

Stromberg-Carlson

TELEPHONES - SWITCHBOARDS - RADIO APPARATUS
– SUPPLIES
1930 CATALOG

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Stromberg-Carlson

TELEPHONES

SWITCHBOARDS

RADIO APPARATUS

SUPPLIES

Stromberg-Carlson

1930

Switchboards
Telephones
Radio Apparatus
Miscellaneous Parts
Construction Material
and
Supplies

Stromberg-Carlson Telephone Mfg. Co.

FACTORY AND GENERAL OFFICES:
100 CARLSON ROAD ROCHESTER, N. Y., U. S. A.

BRANCH OFFICES:
Coca Cola Building
KANSAS CITY, MISSOURI

17 South Jefferson St.
CHICAGO, ILLINOIS

Pacific Coast Representative:
Garnett Young & Co., 390 4th St., San Francisco, Cal.; 766 East
12th St., Los Angeles, Cal.; 401 Polson Bldg., Seattle, Wash.;
422 Lumbermen's Bldg., Portland, Ore.

211-219 Geary Avenue
TORONTO, CANADA
Southern Representative:
Seoville Mercantile Company
609 Rhodes Building, Atlanta, Ga.

Printed in U. S. A.

INTRODUCTORY

THIS catalogue has been written with the idea of presenting to our customers complete lines of high grade Switchboard, Telephone and Radio Equipment, together with Piece Parts, Accessories, Construction Material and Specialties. The equipment listed includes only material of our own manufacture and such items as are considered standard by the majority of telephone companies and radio dealers.

The large assortment of these supplies carried in our stocks at Rochester, Chicago and Kansas City insure prompt shipments.

STROMBERG-CARLSON TELEPHONE MFG. CO.

Notice to Purchasers

When Ordering Goods—Give address in full, and shipping point, taking care to specify our Code Number as well as the name of each article ordered. Unless you specify what is wanted by Code Number, your order may be subject to delay. All requests for information should be made on separate sheets from the order blanks.

Shipments—Always specify whether you desire goods shipped by freight or by express. When shipment is desired by freight, specify the routing. In the absence of specific instructions, we shall use our best judgment in selecting the route, but we are not responsible for extra drayage expense at destination.

Transportation Charges—Unless otherwise specified by us, all goods are sold f. o. b. Rochester, N. Y., or f. o. b. Branch Offices. The transportation charges will therefore be collected from the purchaser by the carriers.

Prices—The prices quoted in the following pages are net and are subject to change without notice.

Unpriced orders will be filled at our lowest market prices prevailing at the date of shipment.

Priced orders for considerable quantities of materials which do not conform in pricing with our latest prevailing market quotations will be requoted before we make shipment.

On the other hand, priced orders for small quantities of materials will be shipped without requotations, unless request is made for revised quotations before shipment.

We shall endeavor to fill all orders at the prices herein quoted, except where it is possible to give the benefit of a lower market.

All Agreements—Are made contingent upon strikes, fires, accidents or causes beyond our control.

Terms—Net cash thirty days from date of invoice.

New Accounts—New accounts are solicited on a credit basis. In order to facilitate prompt service, we request that where you are not rated by commercial agencies, references or other information of a credit character should be forwarded with the order. Special references or information will be immediately acted upon, and the result held in strict confidence for our sole use. When reasonably satisfactory credit standing is established, shipment will follow with all possible dispatch.

To avoid the delay incidental to communicating with regard to references, etc., it would be mutually convenient when immediate shipment is desired to instruct us to ship C. O. D., by express, or parcel post (insured if so instructed) or by freight subject to sight draft through a local bank against bill of lading.

Remittances—May be made by bank draft, postoffice or express money-orders. Cash should be sent only by registered mail. Unless accompanied by orders, all remittances should be addressed to our General Offices at Rochester, New York, where all accounts are kept.

Liability—We cannot be responsible for breakage after having obtained an "In Good Order" receipt from the transportation company.

All claims for breakage and damage should be made without delay to the transportation companies handling the freight. We will gladly assist you present these claims.

Binding Posts



No. 6



No. 7



No. 17



No. 21

Code No.	Description	Finish	Price Each
6	The No. 6 Binding Post is provided with a screw connection for making contact with either cord tips or wire. It is mounted with a 1/2 in. screw and is used on the No. 1160 Extension Bell.	Polished Nickel	\$.15
7	This Binding Post has a lock nut connection with a terminal designed to extend through a wooden terminal board, for a soldered connection. Two 1/2 in. screws are used in mounting.	Polished Nickel	.15
17	No. 17 Binding Post has two connections; one is a lock nut, the other a soldered connection. Two 1/2 in. screws are used in mounting.	Polished Nickel	.15
21	A Binding Post with a lock nut which has wing shaped projections to facilitate turning by hand. The rear connection is for soldering. Two 1/2 in. screws are used in mounting. It is designed for Test Sets.	Black	.20

Drop Blanks

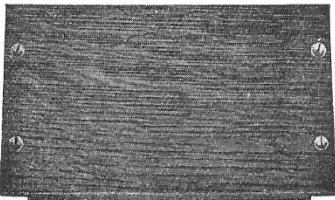
Drop Blanks for use in place of drop mountings when a switchboard is not fully equipped.



No. 33



No. 34



No. 40

Code No.	Material	Mounts	Use	Price Each
33	Steel. Dull black finish	On Drop Mtg. Strip or Panel covering drilling for one drop.	Blank for one No. 11-12-13-14-16 or 17 Drop.	\$.10
34	Steel. Dull black finish	As Blank for one No. 140 Drop Mtg. on Jack Stiles. Used on No. 105 Magneto Switchboard.	Blank for five No. 11 Drops.	.50
40	Wood. Golden Oak finish	As Blank for three No. 140 Drop Mtgs. on Jack Stiles, used on No. 105 Magneto Switchboard.	Blank for fifteen No. 11 Drops.	.75

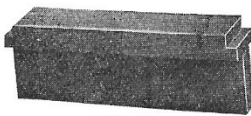
Jack Blanks

All Jack Blanks are secured to the switchboard's framework by jack fasteners. If jack fasteners are required, they should be ordered as a separate item.

The mounting centers of any jack blank is determined by measuring the horizontal distance between centers of jack fastener drillings in the jack stiles.



No. 13





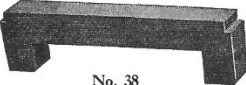
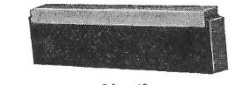


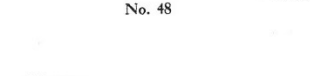
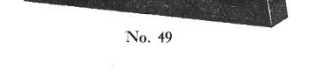
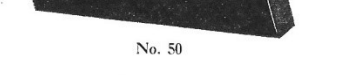


No. 25









No. 31

Code No.	Type of Jack Blanked	Description	Jack Fastener Code No.	Price Each
13	67	Formica faced maple, width 5/16 in., mounting centers 7 5/16 ins.	12	\$.45
23	67	Similar to No. 25, mahogany with holly, width 1 3/4 in., mounting centers 7 5/16 ins.	12	.75
25	67	Formica faced maple, width 1 3/4 in., mounting centers 7 5/16 ins.	12	.55
31	67	Formica faced maple, width 1 1/2 in., mounting centers 7 5/16 ins. Used as blank for No. 67 Jack with No. 120 Lamp Socket.	12	.45

Jack Blanks (Cont.)

Code No.	Type of Jack Blanked	Description	Jack Fastener Code No.	Price Each
 No. 35	93	Black enameled steel, width $\frac{3}{8}$ in., mounting centers 2 ins. Used as blank for operator's cut-in Jack.	—	\$.40
 No. 36	127	Oak with holly, width $1\frac{1}{8}$ ins. mounting centers $8\frac{3}{8}$ ins. Golden Oak Finish.	18-19	.55
 No. 37	127	Similar to No. 36. Mahogany with holly, width $1\frac{1}{8}$ ins., mounting centers $8\frac{3}{8}$ ins.	18-19	.75
 No. 38	127	Black Formica, Satin Finish, width $1\frac{1}{8}$ ins., mounting centers $8\frac{3}{8}$ ins. Used for mounting Pilot Lamps, Test Jacks, etc.	17	.60
 No. 39	127	Similar to No. 43. Black Formica, Satin Finish, width $\frac{7}{8}$ in., mounting centers $8\frac{3}{8}$ ins. Used as blank for No. 127 Jack with No. 121 Lamp Socket.	17	.60
 No. 40	127	Black Formica, Satin Finish, with holly, width $\frac{7}{8}$ in., mounting centers $8\frac{3}{8}$ ins. Used as blank for No. 127 Jack with No. 121 Lamp Socket.	17	.65
 No. 41	127	Similar to No. 43. Black Formica, Satin Finish, width $\frac{3}{4}$ in., mounting centers $8\frac{3}{8}$ ins.	17	.60
 No. 42	127	Similar to No. 40. Black Formica, Satin Finish, with holly, width $\frac{3}{4}$ in., mounting centers $8\frac{3}{8}$ ins.	17	.65
 No. 43	—	Black Formica, Satin Finish, width $\frac{1}{2}$ in., mounting centers $8\frac{3}{8}$ ins. Used as blank for No. 121 Lamp Socket.	17	.55
 No. 44	127	Similar to No. 40. Black Formica, Satin Finish, with holly, width $\frac{1}{8}$ in., mounting centers $8\frac{3}{8}$ ins.	17	.60
 No. 45	127	Similar to No. 43. Black Formica, Satin Finish, width $\frac{3}{8}$ in., mounting centers $8\frac{3}{8}$ ins.	17	.55
 No. 46	130	Oak with holly, width $2\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins. Golden Oak Finish.	18-19	.65
 No. 47	130	Similar to No. 46. Mahogany with holly, width $2\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins.	18-19	.80
 No. 48	130	Black Formica, Satin Finish, width $1\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins. Used for mounting Pilot Lamps, Test Jacks etc.	17	.70
 No. 49	130	Black Formica, Satin Finish, width 1 in., mounting centers $11\frac{1}{8}$ ins.	17	.70
 No. 50	130	Black Formica, Satin Finish, with holly, width $1\frac{1}{8}$ ins., mounting centers $11\frac{1}{8}$ ins.	17	.75
 No. 51	130	Similar to No. 50. Black Formica. Satin Finish, with holly, width 1 in., mounting centers $11\frac{1}{8}$ ins.	17	.75
 No. 52	130	Black Formica, Satin Finish, width $\frac{1}{2}$ in., mounting centers $11\frac{1}{8}$ ins.	17	.60
 No. 53	130	Similar to No. 54. Black Formica, Satin Finish, with holly, width $\frac{9}{16}$ in., mounting centers $11\frac{1}{8}$ ins.	17	.60



Jack Blanks (Cont.)

Code No.	Type of Jack Blanked	Description	Jack Fastener Code No.	Price Each
54	130	Black Formica, Satin Finish, with holly, width $\frac{1}{2}$ in., mounting centers $11\frac{1}{8}$ ins.	17	\$.65
				
No. 54				
55	—	Black Formica, Satin Finish, width $\frac{1}{2}$ in., mounting centers $11\frac{1}{8}$ ins. Used as blank for No. 121 Lamp Socket. Equipped with punchings for terminating lamp wires on unequipped associated multiples.	17	1.25
				
No. 55				
56	—	Similar to No. 55. Black Formica, Satin Finish, width $\frac{3}{4}$ in., mounting centers $8\frac{3}{8}$ ins. Used as blank for No. 121 Lamp Socket. Equipped with punchings for terminating lamp wires on unequipped associated multiples.	17	1.25
57	127	Similar to No. 58. Oak with holly, width $1\frac{1}{8}$ ins. Mounting centers $8\frac{3}{8}$ ins. Dust Apron attached to back. Used only over top strip of multiple jacks. Golden Oak Finish.	17	.60
				
No. 58				
58	127	Mahogany with two holly strips, width $1\frac{1}{8}$ ins., mounting centers $8\frac{3}{8}$ ins. Dust Apron attached to back. Used only over top strip of multiple jacks.	17	.75
				
No. 58				
59	130	Oak with two holly strips, width $2\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins. Dust Apron attached to back. Used only over top strip of multiple jacks. Golden Oak Finish.	17	.65
				
No. 59				
60	130	Similar to No. 59. Mahogany with two holly strips, width $2\frac{1}{2}$ ins., mounting centers $11\frac{1}{8}$ ins. Dust Apron attached to back. Used only over top of multiple jacks.	17	.80
62	130	Similar to No. 36. Oak with holly, width $\frac{3}{4}$ in., mounting centers $11\frac{1}{8}$ ins. Used on unit type multiple switchboard. Golden Oak Finish.	18-19	.60
				
No. 63				
63	127	Oak with holly, width $4\frac{3}{4}$ ins., mounting centers $8\frac{3}{8}$ ins. Used as blank for No. 121 Lamp Socket. Golden Oak Finish.	18-19	.80

Key Blanks

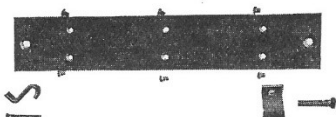
Key Blanks are used in place of keys where the full equipment of keys is not installed or to fill in space between two keys.

They are held in place by key clamps and screws, which are furnished with the order.

Code No.	Blanks for Keys, No.	Description	Mounting Centers	Price Each
	3	Steel, black enamel finish; $2\frac{1}{4}$ ins. x $\frac{1}{4}$ in. Mounts on surface of keyboard with 2-P-6714 machine screws or 2-P-5502 wood screws.	$1\frac{7}{8}$ ins.	\$.20
No. 3				
	7	Steel, black enamel finish; $1\frac{3}{8}$ ins. x $\frac{1}{4}$ in. Mounts in the face of switchboard, on key mounting, with 2-P-4639 machine screws and 2-P-946 nuts.	1 in.	.15
No. 7				

Key Blanks (Cont.)

Code No.	Blanks for Keys, No.	Description	Mounting Centers	Price Each
68	170	Formica on steel top, black finish; 6½ ins. x 1 in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6⅛ ins.	\$.65
69	191	Formica on steel top, black finish; 6½ ins. x ½ in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6⅛ ins.	.25
71	190	Similar to No. 69, formica on steel top, black finish; 5½ ins. x ½ in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	5⅛ ins.	.75
72	170	Similar to No. 77, formica on steel top, black finish; 5½ ins. x 1 in. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	5⅛ ins.	.75
77	170	Formica on steel top, black finish; 6½ ins. x 1⅛ ins. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6⅛ ins.	.75
79	170	Similar to No. 77, formica on steel top, black finish; 5½ ins. x 1⅛ ins. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	5⅛ ins.	.85
83	169	Steel, black enamel finish; 7¼ ins. x 1½ ins. Mounts flush on keyboard with 2-P-12908 machine screws and 2-P-12672 clamps.	6⅜ ins.	1.25



No. 68-Key Blank unassembled



No. 68-Key Blank assembled



No. 69



No. 77



No. 83

Cables—Inter-Comm-Phone

All wires in standard intercommunicating cables are tinned copper, with single silk and single cotton insulation and are color coded—blue, orange, green, brown, slate, etc. (standard code). The cores are saturated with beeswax compound to facilitate installation work, and to protect the cable from moisture.

The covering of the cable may be either a painted cotton braid, indicated by the letter "B" or a pure lead sheath indicated by the letter "L" affixed to the code number of the cable.

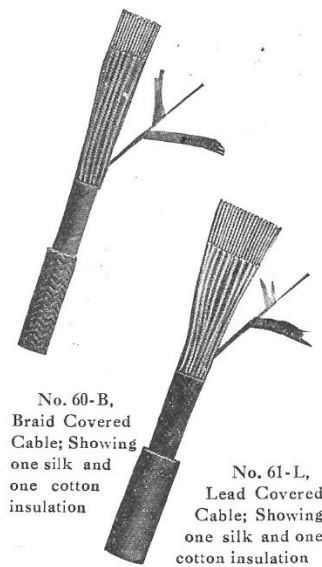
Cables for System No. 1

Selective Talking—Selective Ringing

The cables used with System No. 1 are made up entirely of wires in pairs. All wires in each cable are No. 22 B. & S. Gauge, except the two pairs used for talking and signalling battery which are No. 18 B. & S. Gauge.

Code No.	No. of Pairs	No. of Stations	Approx. Braided Diameters	Lead Thickness	Lead Sheath Thickness	Net Weight per 1000 ft.	List Price per 100 ft.
60-B	14	12	27/64 in.	..	..	130 lbs.	\$ 18.15
60-L	14	12	..	½ in.	1/16 in.	535 "	29.70
61-B	24	22	33/64 "	..	..	195 "	27.30
61-L	24	22	..	1/32 "	1/16 "	685 "	41.25

Note: Quantity discounts on Cable will be quoted upon request.



No. 60-B, Braid Covered Cable; Showing one silk and one cotton insulation



No. 61-L, Lead Covered Cable; Showing one silk and one cotton insulation

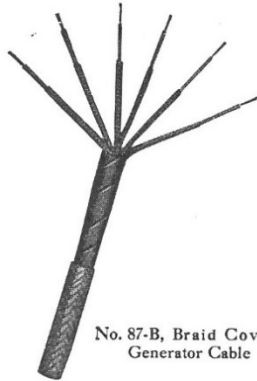
Cables—Inter-Comm-Phone (Cont.)

Cables for System No. 2

Common Talking—Selective Ringing

Cables used with System No. 2 are made up of both single conductors and pairs. In each cable all single conductors are No. 22 B. & S. Gauge and the two pairs used for common talking and common return ringing circuits are No. 18 B. & S. Gauge.

Code No.	No. of Conductors	No. of Stations	Approx. Braided Diameters	Leaded	Thickness Lead Sheath	Net Weight per 1000 ft.	List Price per 100 ft.
77-B	10	6	$\frac{19}{64}$ in.	..	..	65 lbs.	\$ 9.90
77-L	10	6	..	$\frac{11}{32}$ in.	$\frac{3}{64}$ in.	270 "	19.05
78-B	15	11	$\frac{11}{32}$ "	..	..	85 "	12.00
78-L	15	11	..	$\frac{25}{64}$ "	$\frac{3}{64}$ "	320 "	19.80



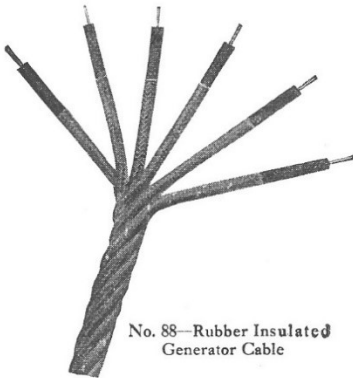
No. 87-B, Braid Covered Generator Cable

Cables—Generator

Four Party Harmonic Ringing

Code No. 87-BE is designed especially for carrying ringing current through the switchboard positions. The cable is made up of six single conductors, No. 22 B. & S. Gauge, with double silk and single cotton insulation, and has a moisture-proof brown-cotton braid overall covering.

Code No.	No. of Conductors	Approximate Diameter	Net Weight Per 1000 ft.	List Price Per 100 ft.
87-BE	6	$\frac{5}{16}$ in.	35 lbs.	\$7.50



No. 88—Rubber Insulated Generator Cable

Code No. 88 Cable is used to carry generator current through partitions or other places where a thoroughly moisture-proof cable is desired without the expense of lead sheathing. Consists of six single conductors No. 18 B. & S. Gauge rubber covered and braided (no outside overall covering).

Code No.	No. of Conductors	Approx. Diameter Braided	Net Weight Per 1000 ft.	List Price Per 100 ft.
88	6	$\frac{5}{16}$ in.	73 lbs.	\$7.50

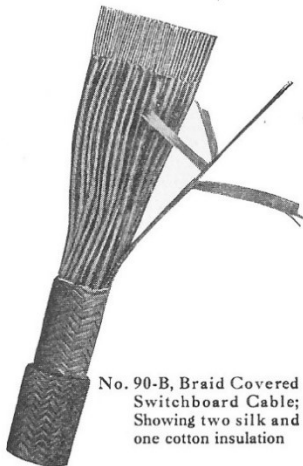
Cables—Switchboard

These cables are used for connecting apparatus within a telephone exchange building. The wires in these cables are tinned copper with double silk and single cotton insulation, color coded. The cores are saturated with beeswax compound to facilitate installation work and to protect the cable from moisture.

The overall covering of the cable may be either a painted cotton braid indicated by the letter "B" or a pure lead sheath indicated by the letter "L"—affixed to the code number of the cable.

No. 22 B. & S. Gauge Cables—Pairs

Code No.	No. of Pairs	Shape	Approx. Diameter	Thickness Lead Sheath	Net Weight Per 1000 ft.	List Price Per 100 ft.
71-B	10	Round	$\frac{3}{8}$ in.	..	70 lbs.	\$ 12.00
71-L	10	"	$\frac{27}{64}$ "	$\frac{3}{64}$ in.	353 "	22.00
66-B	20	"	$\frac{13}{32}$ "	..	139 "	20.00
66-L	20	"	$\frac{35}{64}$ "	$\frac{1}{16}$ "	603 "	29.50
84-B	25	"	$\frac{9}{16}$ "	..	182 "	23.75
84-L	25	"	$\frac{43}{64}$ "	$\frac{3}{64}$ "	733 "	38.00
90-B	50	"	$\frac{5}{8}$ "	..	328 "	43.00
90-L	50	"	$\frac{47}{64}$ "	$\frac{5}{64}$ "	1112 "	70.00
91-B	100	"	1 "	..	558 "	98.00
91-L	100	"	$\frac{9}{64}$ "	$\frac{3}{32}$ "	1798 "	145.00



No. 90-B, Braid Covered Switchboard Cable; Showing two silk and one cotton insulation

Above cables from 10 to 50 pairs inclusive have one spare pair. The 100 pair cable has two spare pairs.

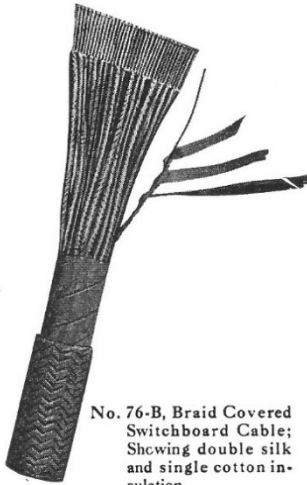
Note: Quantity discounts on Cable will be quoted upon request.

Cables—Switchboard (Cont.)

No. 22 B. & S. Gauge Cables—Triplets

Code No.	No. of Triplets	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price Per 100 ft.
65-B	20	Round	$\frac{9}{16}$ in.	206 lbs.	\$ 30.00
67-B	100	Oval	$1\frac{5}{16} \times \frac{13}{16}$ "	936 "	180.00
72-B	10	Round	$\frac{7}{8}$ "	105 "	13.75
76-B	20	Oval	$1\frac{1}{8} \times \frac{21}{64}$ "	324 "	30.00

Above 10 and 20 triplets cables have one spare triplet. The 100 triplet cable has two spare triplets.



No. 76-B, Braid Covered Switchboard Cable; Showing double silk and single cotton insulation

No. 22 B. & S. Gauge Cables
Singles and Triplets

Code No.	No. of Singles	No. of Triplets	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price Per 100 ft.
68-B	20	20	Round	$\frac{3}{4}$ in.	270 lbs.	\$40.00
69-B	20	20	Oval	$\frac{7}{8} \times \frac{13}{32}$ "	297 "	40.00

Above cables have one spare triplet and one spare single conductor.

No. 19 B. & S. Gauge Cables-Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price Per 100 ft.
86-B	10	Round	$\frac{7}{16}$ in.	130 lbs.	\$ 20.00
85-B	20	"	$\frac{3}{8} \times \frac{5}{64}$ "	212 "	36.00

Above cables have one spare pair.

No. 16 B. & S. Gauge Cables-Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Net Weight Per 1000 ft.	List Price Per 100 ft.
75-B	10	Round	$\frac{1}{2}$ in.	90 lbs.	\$50.00

Note: Quantity discount on Cable will be quoted upon request

Impedance Coils

No. 1 Type

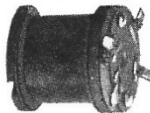


No. 1 Type

A single wound impedance coil with a closed magnetic circuit, encased within a Cross-Talk-Proof iron shell. Used in switchboards and miscellaneous circuits. Mounts on No. P-740 Angle Bracket with No. 8-32 x $\frac{1}{4}$ -in. F.H.I.M. screw, and No. 8 $\frac{1}{2}$ -in. F. H. I. W. screw. Bracket and screws must be ordered separately. When mounted without bracket No. 8-32 x $\frac{1}{2}$ -in. R. H. I. M. screw is used, which is furnished.

Code No.	Approximate Resistance	Price Each
1-A	200 Ohms	\$1.35
1-C	100 "	1.30
1-G	500 "	1.40
1-L	35 "	1.25

No. 10 Type

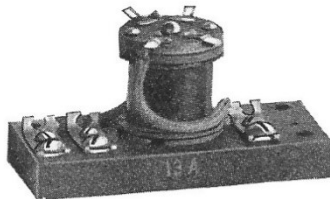


No. 10 Type

This type impedance coil has open magnetic circuit with two windings, parallel wound. Used in key boxes of telephones for Inter-Communicating System No. 1. No. 4 x $1\frac{1}{4}$ " R. H. I. W. screw used for mounting.

Code No.	Approximate Resistance	Price Each
10-A	35 x 35 Ohms	\$1.00
10-B	100 x 100 "	1.25

No. 13 Type



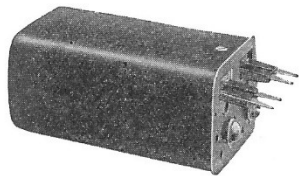
No. 13 Type

Consists of No. 10-A Impedance Coil mounted on maple base. Overall dimensions $1\frac{3}{8}$ " x $2\frac{7}{8}$ " x $1\frac{11}{32}$ ". Has open magnetic circuit. Used with Inter-Communicating Systems Nos. 2 and 3. Two No. 8 R. H. I. W. screws used for mounting.

Code No.	Approximate Resistance	Price Each
13-A	35 Ohms	\$2.00

Impedance Coils (Cont.)

No. 17 Type

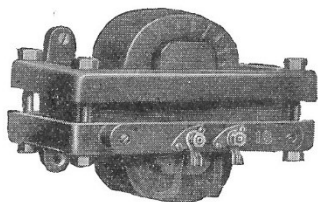


No. 17 Type

Iron clad impedance coil with closed magnetic circuit and Cross-Talk-Proof shell similar to No. 19 Relay Casing. Equipped with two parallel windings. Mounts on steel plate uniformly with a pair of No. 200 Type Relays. Used in Central Energy Switchboards.

Code No.	Approximate Resistance	Price Each
17-A	40 x 40 Ohms	\$3.25
17-C	200 x 200 "	3.50
17-D	85 x 85 "	3.25

No. 18 Type



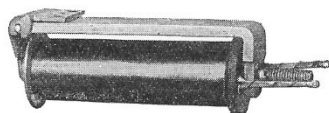
No. 18 Type

This coil has a closed magnetic circuit, and is designed especially for use as "Noise Killer" in connection with Harmonic Converters. Consists of a single winding of very low resistance and high impedance over a core made up of transformer iron laminations mounted with an iron frame. Arranged to mount on either Power Boards or Converter Control Panels. Space occupied— $4\frac{3}{4} \times 7 \times 7$ ins.

Code No.	Approximate Resistance	Mounting Centers	Price Each
18-A	1 Ohm Harmonic Converter	$4\frac{1}{8} \times 3\frac{1}{4}$ ins.	\$17.00
18-B	1 Ohm Single Frequency Converter	$4\frac{1}{8} \times 3\frac{1}{4}$ ins.	17.00

No. 200 Type

Consists of our standard No. 200 Type Single Wound Relay Coil with iron frame. Has closed magnetic circuit, but requires the No. 19 Relay Casing to become Cross-Talk Proof. Mounts on steel plate uniformly with No. 200 Type Relays.



No. 200 Type

Code No.	Approximate Resistance	Price Each
201	5 Ohms	\$1.25
202	15 "	1.25
203	70 "	1.25
204	100 "	1.50
205	200 "	1.60
206	500 "	1.75
207	1000 "	1.85
209	1500 "	2.25



No. 220 Type

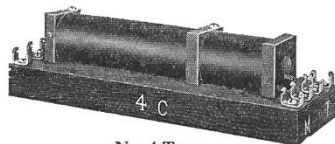
No. 220 Type

The No. 220 Type Impedance Coil is similar to No. 200 Type but equipped with two windings arranged in tandem.

Code No.	Approximate Resistance	Price Each
222	100 x 100 Ohms	\$1.90
223	200 x 200 "	2.00
224	500 x 500 "	2.25
225	1000 x 1000 "	2.35
228	8 x 8 "	1.25
243	100 x 350 N.I.	2.75

Induction Coils

No. 4 Type



No. 4 Type

The No. 4-C Induction Coil—a former standard coil for common Battery Multiple Switchboards. It has four windings brought out to eight terminals. Mounts on a maple base. Overall dimensions $7\frac{5}{16} \times 2\frac{1}{2} \times 1\frac{7}{8}$ ins.

Code No.	Approximate Resistance				Price Each
	Primary	Secondary	Monitor	Test	
4-C	12 Ohms	25 Ohms	42 Ohms	3000 Ohms	\$4.00

Induction Coils (Cont.)

No. 38 Type

These induction coils are of small size for mounting in desk stands and hookswitch boxes—dimensions $3\frac{1}{8} \times \frac{3}{4} \times \frac{3}{4}$ ins. The No. 38-A Induction Coil is designed for Central Energy Systems; used in the Nos. 989 and 990 Desk Stands, and the Nos. 19, 28 and 29 Hookswitch Boxes. The No. 39-A is designed for Magneto Systems; used in No. 992 Desk Stand, and No. 36 Hookswitch Box. Both of these Induction Coils have two windings.

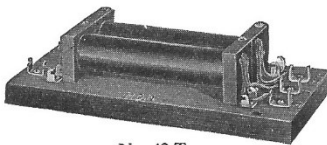


No. 38 Type

Code No.	Approximate Resistance		Price Each
	Primary	Secondary	
38-A	30. Ohms	48. Ohms	\$.90
39-A	1.7 "	19.5 "	.75

No. 42 Type

Standard Induction coil for use in Central Energy Switchboard operator's circuits of the improved anti-side tone type. Consists of two coils mounted together on an oak base. Overall dimensions $6\frac{1}{16} \times 3\frac{1}{4} \times 1\frac{3}{4}$ ins.

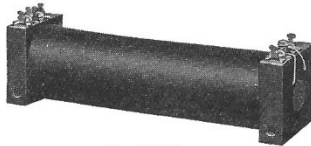


No. 42 Type

Code No.	Used on	Description	Approx. Resis.	Price Each
42-A	P. B. X. Swbds.	Has three windings		\$2.85
		Terminals P to P	— 7.5 Ohms	
		" L to T	— 91. "	
		" T to L.T.	— 464. "	
42-B	C. E. Mult. Swbds.	Has five windings		\$3.75
		Terminals P to P	— 7.5 Ohms	
		" L to T	— 91. "	
		" T to L.T.	— 464. "	
		" Monitor	— 72. "	
" Test	— 86. "			

No. 44 Type

This type of induction coil is furnished in three codes—the No. 44-A the No. 44-B, and the No. 44-C, which are similar in appearance. Mounting space $4\frac{3}{16} \times 1\frac{7}{16} \times 1\frac{1}{8}$ ins.



No. 44 Type

The No. 44-A Induction Coil has two windings and is used in the No. 896 Magneto Telephone and No. 105 Switchboard. The No. 44-B Induction Coil has two windings, and is used in the booster talking circuits of the No. 1156 Desk Set Box and the No. 1155 Wall Telephone. The No. 44-C has three windings and is used in the operator's circuits of multiple switchboards.

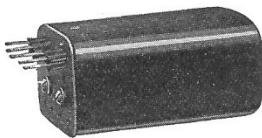
Code No.	Approximate Resistance			Price Each
	Primary	Secondary	Tertiary	
44-A	2.2 Ohms	12.9 Ohms	None	\$.75
44-B	14.3 "	8.9 "	None	1.00
44-C	14.3 "	4.5 "	4.5 Ohms	1.75

Repeating Coils

No. 11-A Talk-Through Type

A highly efficient "Talk-Through" Type Repeating Coil for toll service, also for cord, trunk and other circuits, where it is necessary to establish connection between dissimilar lines, such as—central energy to magneto, grounded to metallic, and unbalanced to balanced. The high frequency bridged loss, when used for the above-mentioned purposes, is remarkably low—approximately 0.4 miles of standard cable.

This Repeating Coil has four concentric windings, brought out to eight terminals, and mounts on steel plates uniformly with the No. 200 Type Relays.

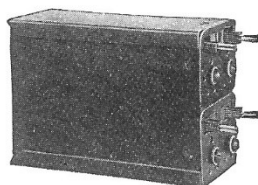


No. 11-A

Code No.	Use	Approximate Resistance Between Terminals	Dimensions of case over Terminals	Price Each
11-A	Central Energy	Ter. 1 and 2—15.6 ohms	Length $4\frac{25}{32}$ ins.	\$4.35
	Exchange	Ter. 3 and 4—16.5 "	Width $2\frac{27}{64}$ "	
		Ter. 5 and 6—19.4 "	Height $1\frac{55}{64}$ "	
		Ter. 7 and 8—20.2 "		

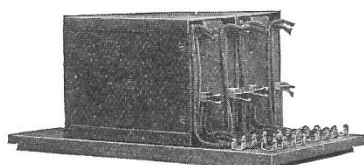
Repeating Coils (Cont.)

No. 12-A Ring-Through, Talk-Through Type

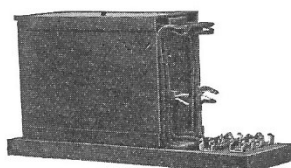


No. 12-A

The No. 12-A Repeating Coil is unexcelled for Ring-Through and Talk-Through service in Phantom, Simplex, and Composite circuits. It is perfectly balanced electrically as to resistance, capacity, and impedance. Remarkably efficient in both talking and ringing transmission—high frequency losses less than 0.35 miles of standard cable. Equipped with two parallel primary and two parallel secondary windings, brought out to eight terminals. The two primary windings are balanced with respect to each other, and also the two secondary windings are balanced with respect to each other; a feature which permits this coil to be used in the center as well as the terminating ends of a circuit. Encased within a cross-talk-proof steel shell so that it can be mounted either in the terminal room on relay rack or in the rear of switchboard on relay gate. Also drilled and tapped to receive machine screws for securing to shelf or wooden base.



No. 12-A X



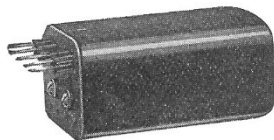
No. 12-A Y

Code No.	Use	Approximate Resistance Between Terminals	Dimensions of case over Terminals	Price Each
12-A	To Form Phantom Simplex, and Composite Circuits.	Ter. 1 and 2—16 ohms Ter. 3 and 4—16 " Ter. 5 and 6—20 " Ter. 7 and 8—20 "	Length 6 $\frac{3}{8}$ ins. Width 2 $\frac{2}{4}$ ins. Height 3 $\frac{1}{8}$ ins.	\$ 7.00
12-AX	For use at Telephone Exchanges in simplex, Composite, & Phantom Circuits.	Consists of two No. 12-A Repeating Coils mounted on a common wooden base, equipped with 16 terminals.	Length 10 $\frac{3}{4}$ ins. Width 4 $\frac{7}{8}$ ins. Height 4 $\frac{1}{4}$ ins.	16.00
12-AY	Phantom Coil at Substation	Consists of one No. 12-A Repeating Coil mounted on a wooden base, equipped with eight terminals.	Length 8 $\frac{3}{4}$ ins. Width 2 $\frac{1}{2}$ ins. Height 4 $\frac{1}{4}$ ins.	8.25

No. 13-A Non-Ring-Through, Talk-Through Type

A Non-Ring-Through, Talk-Through Repeating Coil, manufactured especially for use in Stromberg-Carlson Magneto and Universal Cord Circuits; unexcelled when used in these circuits for talking efficiency as well as non-ring-through properties; guaranteed to prevent the passage of sufficient ringing current through a cord circuit to operate either a ring-off signal or to tap a ringer on any subscriber's telephone. Similar in appearance to the No. 11-A Repeating Coil. Occupies the space of a double relay casing, and mounts on steel plates with the same mounting centers as employed for the No. 200 Type Relays.

The above mentioned remarkable combination of properties possessed by this repeating coil is due not only to unique design but also to the employment of high-grade materials and skilled workmanship.



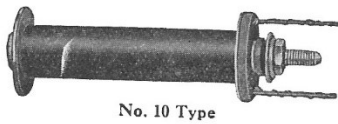
No. 13-A

Code No.	Use	Approximate Resistance Between Terminals	Dimensions of Case over Terminals	Price Each
13-A	On Universal Cord Circuits and the No. 105 Magneto Switchboard	Ter. 1 and 2—15.6 ohms Ter. 3 and 4—16.5 " Ter. 5 and 6—19.4 " Ter. 7 and 8—20.2 "	Length 4 $\frac{2}{8}$ ins. Width 2 $\frac{2}{4}$ " Height 1 $\frac{5}{8}$ "	\$3.50

Resistance Coils

No. 10 and 11 Types

Stromberg-Carlson Resistance Coils have a sufficiently large carrying capacity and radiating surface to prevent them from over-heating when used in the circuits for which they were designed. These resistance coils are wound upon rigid and heat-conducting cores, with special electrical alloy resistance wire; single wound coils are brought out to two terminals; double wound coils are brought out to four terminals. No. 10 is single wound and No. 11 is double concentric wound. Approximate dimensions are 3¼ x 1 in. These coils mount on steel plates uniformly with the No. 200 Type Relays, furnished with mounting nut, bushing and washers.



No. 10 Type

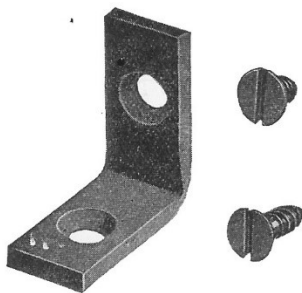


No. 11 Type

Code No.	Use	Winding Data				Price Each
10-A	Tele. & Swbds.	Non-Inductive	1,000	Ohms	Resistance	\$.75
10-B	"	"	3,000	"	"	1.00
10-C	"	"	100	"	"	.50
10-D	"	"	200	"	"	.50
10-E	"	"	50	"	"	.50
10-F	"	"	2,000	"	"	1.00
10-G	"	"	375	"	"	.75
10-H	"	"	500	"	"	.75
11-A		Inductive	Inner Winding	1,100	Ohms Res.	2.00
			Outer	15,000	"	"
11-B	"	"	Inner	500	"	1.00
			Outer	1,000	"	"
11-C	"	"	Inner	50	"	1.00
			Outer	250	"	"
11-D	"	"	Inner	100	"	1.25
			Outer	500	"	"
11-E	"	"	Inner	1,000	"	2.00
			Outer	10,000	"	"
11-F	"	"	Inner	200	"	1.25
			Outer	600	"	"
11-H	"	Non-Inductive	Inner	50	"	1.00
			Outer	50	"	"
11-I	"	Inductive	Inner	1,500	"	1.50
			Outer	1,500	"	"
11-J	"	"	Inner	1,000	"	1.50
			Outer	1,500	"	"
11-K	"	"	Inner	200	"	1.25
			Outer	400	"	"
11-N	"	Non-Inductive	Inner	1,500	"	1.50
			Outer	350	"	"
11-O	"	Inductive	Inner	200	"	1.25
			Outer	1,000	"	"
11-P	"	"	Inner	300	"	1.35
			Outer	1,000	"	"

Impedance and Resistance Coil Mounting

The No. 175 Impedance and Resistance Coil Mounting is a right angle bracket; used to mount impedance or resistance coils individually, but it can also be used for other purposes where this design of mounting is needed. Made of steel with Parker Finish. Furnished with one No. 8 x ½" F.H.I. Wood Screw and one No. 8-32 x ¼" F.H.I.M. screw.



Impedance & Resistance Coil Mounting No. 175

Code No.	Mounts	Dimensions	Price Each
175	Impedance Coils Nos. 1 or 10 type, also Resistance Coils Nos. 10 or 11 Type in switchboards.	Length of either elbow 1 1/8 ins. Width 1/2 in. Thickness 1/8 in.	\$.25

Capacitors

The best grades of paper and foil are used in making Stromberg-Carlson Capacitors. The Capacitor windings are made on power-driven winding machines of our own design and manufacture. The drying and impregnating equipment which is of primary importance in the manufacture of capacitors is of the latest design, including vacuum ovens, vacuum tanks and multi-stage pumps.

Stromberg-Carlson Capacitors are designed to withstand a working temperature of 140° Fahrenheit. This is a much higher temperature than the majority of capacitors are subjected to in use and is obtained through the use of a special high melting point wax.

Tests are made for breakdown, capacitance and insulation resistance before assembly, and these same tests are repeated in the completed assemblies before they are released.

Standard ratings of Stromberg-Carlson Capacitors are in accordance with the National Electrical Manufacturers Association standards, viz.:

Working Voltage D. C. 60 Cycle	Test Voltage D. C. 60 Cycle
175 — 85	350 — 175
350 — 175	700 — 350
550 — 275	1100 — 550
750 — 375	1500 — 750
1000 — 500	2000 — 1000

Insulation resistance, all types — 500 megohm-microfarads.

Stromberg-Carlson Capacitors can be furnished in all types of containers, from tin cans to spot welded sheet steel boxes. It is standard procedure to mount terminal blocks in the covers of the Capacitors, but all other types of terminals can be provided. Both the inverted and the upright mounting types are manufactured.

Materials and processes are under constant investigation in our capacitor laboratory. This laboratory is fully equipped with winding, drying, impregnation and testing facilities, entirely separate from the production department.

Telephone Capacitors



STYLE A



STYLE B

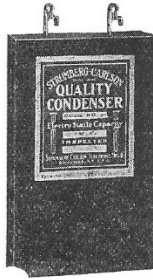
Style A

Code No.	Use	Capacity	Case	Price Each
18	Central Office Equip-ment.	1 M.F.	Black japanned sheet metal, 4 $\frac{3}{4}$ x 1 $\frac{7}{8}$ x $\frac{3}{32}$ inches. Mounts on metal strips like relays.	\$.75
19	Central Office Equip-ment.	2 M.F.	Same as No. 18.	1.00
28	Central Office Equip-ment.	3 $\frac{1}{2}$ M.F.	Same as No. 18.	2.00
29	Central Office Equip-ment.	1 M.F. 500 NI.	Same as No. 18.	1.25
34	Central Office Equip-ment.	3 M.F.	Same as No. 18.	1.75
35	Central Office Equip-ment.	2 M.F.	Same as No. 18.	1.75

Style B

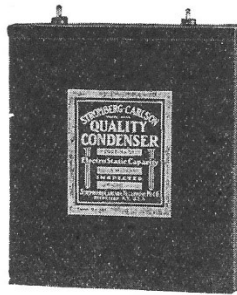
Code No.	Use	Capacity	Case	Price Each
21	300 Har. Extension Bell	1 M.F.	Black japanned sheet metal, 4 $\frac{7}{16}$ x 2 $\frac{13}{16}$ x $\frac{5}{8}$ ins. Mounts with metal capacitor clips.	\$.75
	950 Iron Clad Mine Telephone			
	1155 Wall Telephone			
	1158 Extension Bell (Desk Set Box)			
	1156 Extension Bell (Desk Set Box)			
22	Used in same instruments as No. 21.	2 M.F.	Same as No. 21.	1.00
24	Telephone	1 M.F.	Same as No. 21. 4 $\frac{7}{16}$ x 2 $\frac{3}{32}$ x $\frac{13}{16}$ inches.	.75
25	Radio	1 M.F.	3 $\frac{5}{8}$ x 2 $\frac{1}{32}$ x $\frac{5}{8}$ inches.	.75
36	Telephone	1 M.F.	4 $\frac{7}{16}$ x 2 $\frac{13}{16}$ x $\frac{5}{8}$ inches.	1.25

Telephone Capacitors (Cont.)



STYLE D

Code No.	Use	Capacity	Case	Price Each
26-T	Used principally as a "Sure Ring Capacitor" in the Receiver Circuits of Magneto Telephones. Mounts in either No. 896 Wall Telephone or No. 1000 Desk Telephone, with 3 Pc. 2494 Clips and 3 Pc. 2502 Screws.	½ M.F.	Black japanned sheet metal, $4\frac{7}{16}$ x $2\frac{1}{2}$ x $\frac{5}{8}$ inches. Equipped with Fahnestock terminal Clips.	\$.55



STYLE E

Code No.	Use	Capacity	Case	Price Each
27	Ringling Converters Mounts with metal Capacitor Clips.	5 M.F.	Black japanned sheet metal, $4\frac{15}{16}$ x $4\frac{1}{2}$ x $\frac{3}{4}$ inches. Equipped with sheet metal cover and terminal bushings.	\$2.50

Special Capacitors

Because of the great variety of customer requirements it is impractical to stock capacitors to meet all conditions. Our plant is therefore especially equipped to manufacture capacitors meeting individual specifications.

The typical multiple and fractional capacitors illustrated show the various terminal and mounting arrangements commonly used. These capacitors are not carried in stock but will be manufactured in quantity lots to meet any requirements.

Following is a list of the sizes of various standard sections used in building up capacitor packs. They are here reproduced to aid the designer in laying out sufficient space for capacitors.

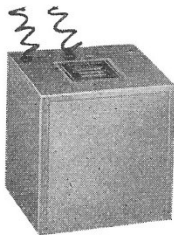
The thicknesses of the various capacitor sections should be added together and 120% of the resulting thickness taken as the outside breadth of the container. The outside container width is $2\frac{1}{8}$ inches. If the breadth exceeds $4\frac{1}{2}$ inches, the sections should be placed in double rows. This will make the can width $5\frac{1}{8}$ inches and the breadth approximately one-half of the former breadth. The container height in all cases is 5 inches. Having obtained the necessary breadth, the nearest larger NEMA container corresponding to this width should be selected.

The figures obtained for container sizes should be checked by the Stromberg-Carlson Engineering Department before deciding definitely on the dimensions.

The method outlined above is for the use of standard parts throughout. This is the preferable layout and results in the greatest economy. However, when these widths, breadths and heights cannot be used, the same value of cubic inches per microfarad can be used and resulting sizes determined having at least one-half inch between the tops of the sections and the top of the container.

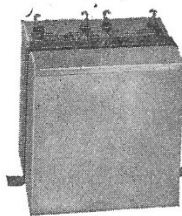
In cases where a ripple voltage is superimposed upon a direct voltage, the equivalent direct voltage may be computed by adding to the direct voltage 1.4 times the peak value of the ripple.

Capacitance in M. F.	Working Voltage		Section Dimensions in Inches		
	D. C.	A. C.	Height	Width	Breadth
0.5	175	85	4	$2\frac{1}{4}$	0.097
1	175	85	4	$2\frac{1}{4}$	0.193
2	175	85	4	$2\frac{1}{4}$	0.368
1	350	175	4	$2\frac{1}{4}$	0.380
2	350	175	4	$2\frac{1}{4}$	0.800
1	550	275	4	$2\frac{1}{4}$	0.698
0.5	750	375	4	$2\frac{1}{4}$	0.503
0.5	1000	500	4	$2\frac{1}{4}$	0.736



STYLE F

Flexible Wire Terminals



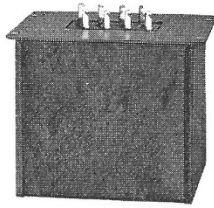
STYLE G

Rigid Terminals with External Mounting Clamp

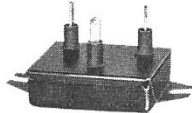


STYLE H

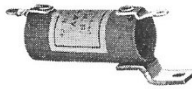
Rigid Multiple Terminals with Mounting



STYLE J
Rigid Terminals, Wrinkle Finish Case



STYLE K
Fractional Capacitor with Mounting Lugs



STYLE L
Fractional Capacitor, Cartridge Type

Special Capacitors (Cont.)

For alternating current applications, sections may be placed in series to obtain capacitors having higher working voltages.

For direct current applications the same procedure may be followed provided each series group is shunted by a high resistance. These resistances serve to produce the desired voltage across each section. If this is not desirable, sections for the voltage desired can be made.

Capacitor Mounting Strips

Stromberg-Carlson Capacitor Mounting Strips are Rust-Proof, made of cold drawn steel, and finished with the Parker Process. Furnished in three styles A B and C which differ only in design. Style A is an oblong plate; B is similar to A but twice the width and mounts two rows of capacitors; C is a right angle bracket. All styles mount the Nos. 18, 19 or 28 Type Capacitors with the exception of style C which mounts only the Nos. 18 and 19 Type Capacitors. Mounting Screws furnished with all orders.

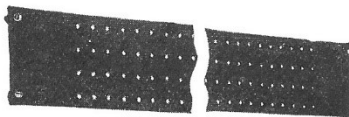
Style A

Code No.	Used on	Number of Capacitors Mounted	Dimensions	Price Each
1	Former Multiple Swbds.	16	Mounting Centers 18 $\frac{1}{8}$ ins. Length 18 $\frac{1}{8}$ " Width 2 " Thickness $\frac{3}{16}$ "	\$1.50
6	Standard Relay Rack	24	Mounting Centers 25 $\frac{1}{2}$ " Length 26 " Width 1 $\frac{1}{8}$ " Thickness $\frac{3}{16}$ "	2.00
7	Standard Type Swbd.	20	Mounting Centers 20 $\frac{5}{8}$ " Length 21 $\frac{1}{8}$ " Width 1 $\frac{1}{8}$ " Thickness $\frac{3}{16}$ "	1.75
8	101-102 Standard P.B.X. Swbd.	16	Mounting Centers 17 " Length 17 $\frac{1}{2}$ " Width 1 $\frac{1}{8}$ " Thickness $\frac{3}{16}$ "	1.00

Style A mounts with 2 No. 12-24 x $\frac{1}{2}$ in. R. H. I. M. screws.



Style A
Capacitor Mounting

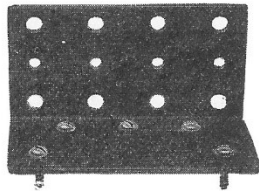


Style B
Capacitor Mounting

Style B

Code No.	Used on	Number of Capacitors Mounted	Dimensions	Price Each
4	Former S-C Relay Bay	40	Mounting Centers 26 ins. Length 26 $\frac{1}{2}$ " Width 4 " Thickness $\frac{3}{16}$ "	\$3.00

Style B mounts with 4 No. 10-32 x 1 in. R. H. I. M. screws, 4 Pc. No. 5900 nuts, and 4 Pc. No. 1101 washers.



Style C
Capacitor Mounting

Style C

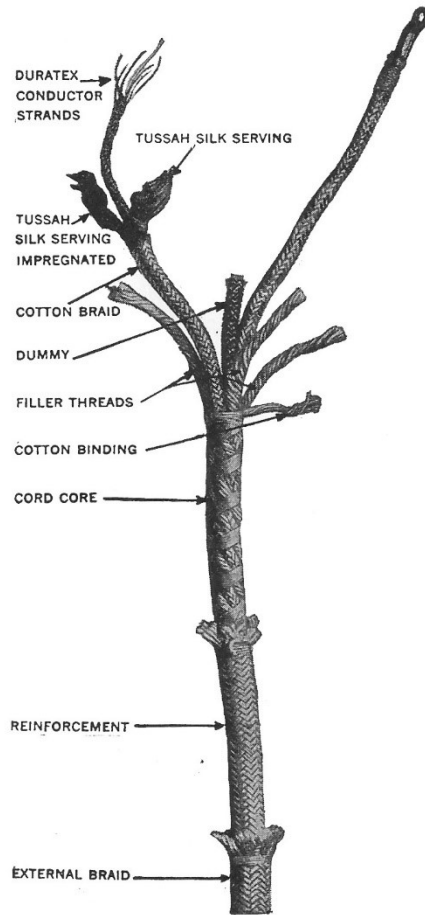
Code No.	Used on	Number of Capacitors Mounted	Dimensions	Price Each
9	P. B. X. Swbds.	4	Mounting Centers 2 $\frac{7}{8}$ ins. Length 3 $\frac{1}{8}$ " Width 2 " Thickness $\frac{1}{8}$ "	\$ 25

Style C mounts with 5 No. 8 x $\frac{3}{4}$ in. R. H. I. W. screws.

Duratex Cords

Switchboard Cord Construction

These cords are of rope construction made from the best materials obtainable, and built not only for remarkable durability but for efficient voice transmission. Every process in the manufacture of Duratex Cords is completed in the Stromberg-Carlson plant.



Construction of Stromberg-Carlson Duratex Cord



Enlarged View of Conductor Strands and Silk Servings

Stromberg-Carlson bronze alloy wire is rolled by special machinery into ribbons .001 of an inch thick. Two of these ribbons are spiralled over a cotton thread to form a conductor strand in such a way that all tension is taken up by the thread. Six of these conductor strands are twisted about another

cotton thread, which takes the strain of the whole conductor. This group of strands is served with two wrappings of high-grade Tussah silk, moisture proofed and covered with a cotton braid. The resultant product is one Duratex Conductor.

The various Stromberg-Carlson Duratex Cords are made by twisting together these "Duratex Conductors" rope fashion into cylindrical forms. Over each cord form is spiralled a tight wrapping of cotton. There is then applied an outside covering of tightly woven braid.

Duratex Cords are so constructed that they possess the following characteristics:

Long Life *Duratex Cords* have 300% longer life than copper tinsel cords.

Moisture Proofed *Duratex Cords* are moisture proofed so as to render them impervious to either climatic conditions or moisture from the operator's hands.

Easily Rebutted *Duratex Cords* are easier to rebut than either steel or tinsel cords.

Low Resistance *Duratex Cords* have a resistance of only 0.90 ohms per six foot length of single conductor. Compare this with 9 to 11 ohms—the resistance of a six foot, steel cord conductor.

Heavy Current Capacity *Duratex Cords*, on account of the low resistance of their rolled ribbon conductors, have ample carrying capacity much greater than is necessary for the heaviest telephone currents.

Flexibility *Duratex Cords*, because of their rope construction, are more flexible than most tinsel cords and are far more flexible than any steel cords.

Interchangeability *Duratex Cords* of the types designed for switchboard service, by virtue of their low resistance characteristics, are adapted to toll service as well as local service, thus eliminating the necessity for stocking two kinds of cords.

Duratex Cords with two or more conductors are furnished with colored tracers, so that each conductor may be readily identified.

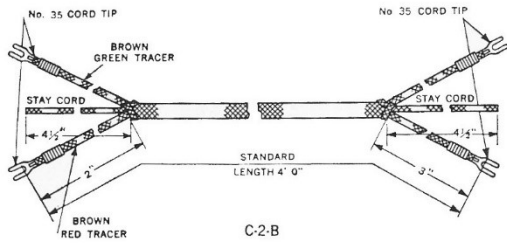
Duratex Hand Set Telephone Cords, *Duratex Desk Stand cords*, *Duratex Operator's Transmitter and Receiver cords* and *Duratex Telephone Receiver cords* are all protected with a dark brown outside braiding. *Duratex Switchboard cords* are protected with a tight, closely-woven outside braiding of glazed cotton and reinforced for a length of eighteen inches at the plug end.

Duratex cords are furnished with all telephones and Switchboards shipped from the Stromberg-Carlson factory.

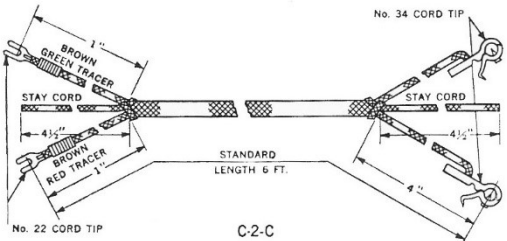
The following pages illustrate and describe a few standard Stromberg-Carlson *Duratex Cords*. Provided that you do not find the cord you want, just send in a cord which fits, then you will be promptly supplied with a quotation on a Stromberg-Carlson *Duratex Cord*.

Duratex Cords (Cont.)

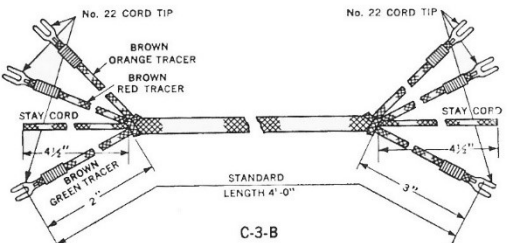
Cords—Hand Set Telephone



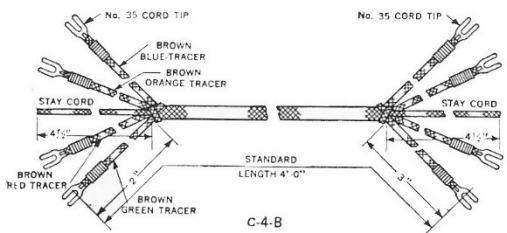
Code No.	Description	Price Each
C-2-B	Number of Conductors, 2. Standard Length, 4 ft. Used with telephones, Nos. 10-P, 10-PC, 10-S, 10-D.	\$.50



C-2-C	Number of Conductors, 2. Standard Length, 6 ft. Used with telephones Nos. 11-C, 11-D, 11-E.	1.10
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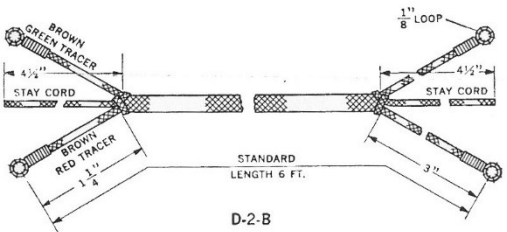


C-3-B	Number of Conductors, 3. 4ft. length used with No. 10 and 12 Hand Set.	.60
	6ft. length used with No. 11-L Hand Set.	.75

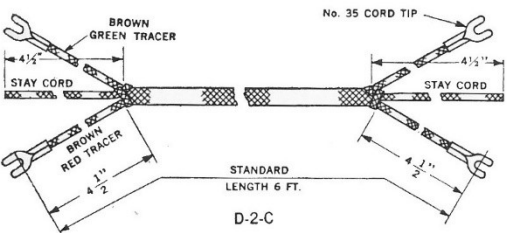


C-4-B	Number of Conductors, 4. Standard Length, 4 ft. Used with telephones Nos. 10 and 13.	.75
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Cords—Desk Stand



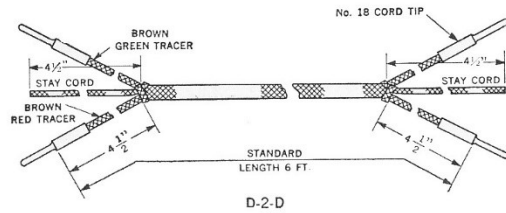
D-2-B	Number of Conductors, 2. Standard Length, 6ft. Used with No. 20-A Receiver and No. 23 Plug.	\$.70
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D-2-C	Number of Conductors, 2. Standard Length, 6 ft.	.50
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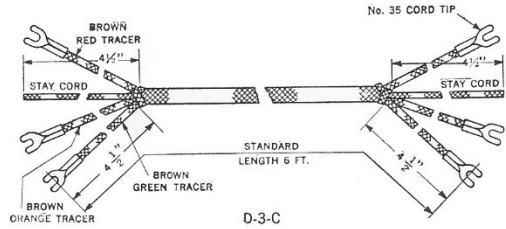
Duratex Cords (Cont.)

Cords—Desk Stand (Cont.)



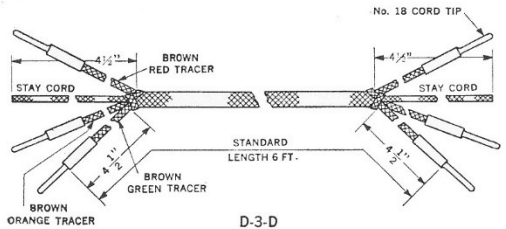
D-2-D

Code No.	Description	Price Each
D-2-D	Number of Conductors, 2. Standard Length, 6 ft. Used with Garford Type Desk Telephone.	\$.55



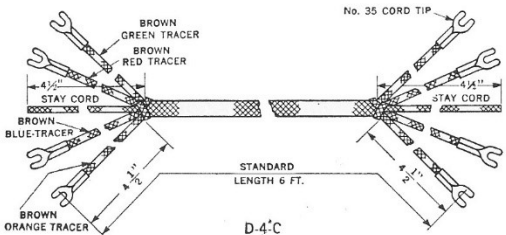
D-3-C

D-3-C	Number of Conductors, 3. Standard Length, 6 ft. Used with telephones Nos. 1168, 1170, 1171, 1173, 1174, 1176.	.65
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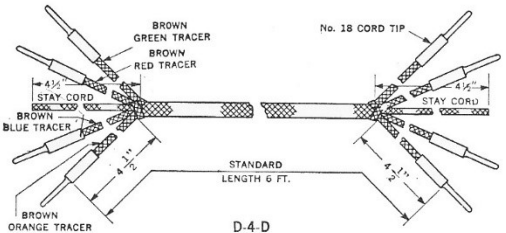
D-3-D

D-3-D	Number of Conductors, 3. Standard Length, 6 ft. Used with Garford Type Desk Telephone.	.70
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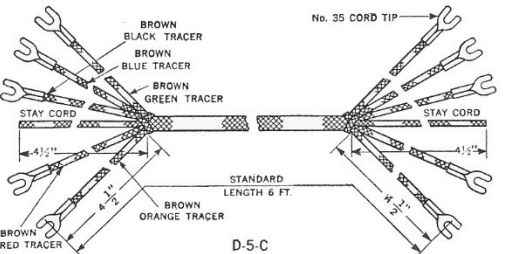
D-4-C

D-4-C	Number of Conductors, 4. Standard Length, 6 ft. Used with telephone No. 1172.	.80
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D-4-D

D-4-D	Number of Conductors, 4. Standard Length, 6 ft. Used with Garford Type Desk Telephone.	.85
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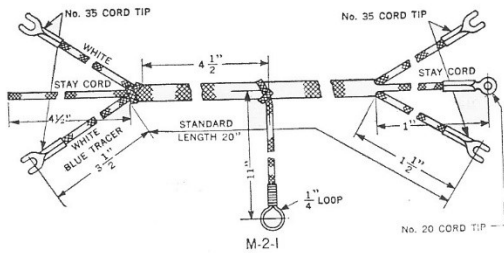


D-5-C

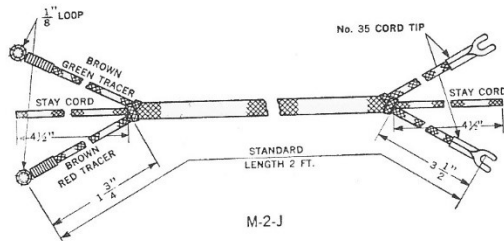
D-5-C	Number of Conductors, 5. Standard Length, 6 ft. Used with telephones Nos 1169, 990, 1128-B, 1128-C, 1175, 1176.	.95
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Duratex Cords (Cont.)

Cords—Mine-a-Phone and Test Set

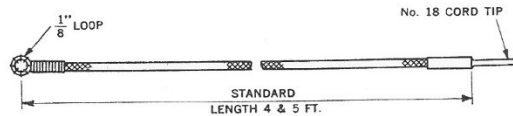


Code No.	Description	Price Each
M-2-I	Number of Conductors, 2. Standard Length, 20 in. Used with No. 890 Mine-A-Phone, No. 950 Iron Clad Telephone, No. 27-B Receiver. Outside braid, white glazed cotton.	\$.40

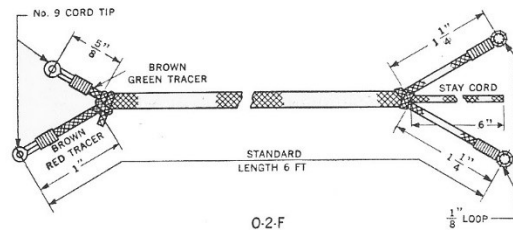


M-2-J	Number of Conductors, 2. Standard Length, 2 ft. Used with No. 844 Test Set. Outside braid, dark brown.	.45
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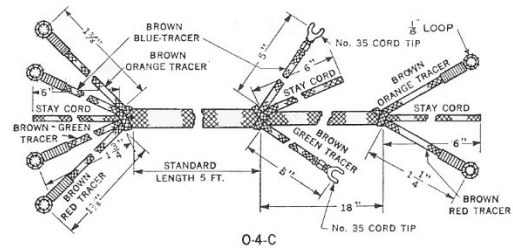
Cords—Operators' Transmitter and Receiver



O-1-A	Number of Conductors, 1. Standard Length, 5 ft. Used with suspended Transmitters.	\$.30
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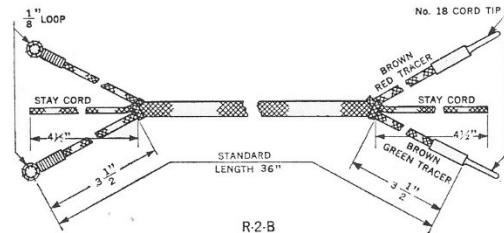


O-2-F	Number of Conductors, 2. Standard Length, 6 ft. Used with No. 20 Receiver and No. 40 Plug.	.65
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O-4-C	Number of Conductors, 4. Standard Length, 5 ft. Used with Operator's Breast Plate Telephone Set with No. 20 Receiver and No. 14 Transmitter using No. 23 Plug; also Garford Type Operator's Telephone Plug.	1.10
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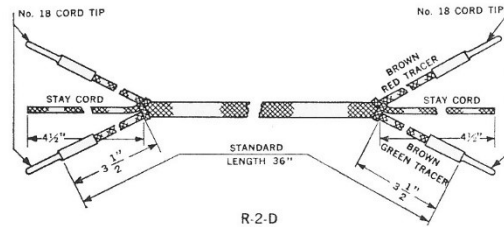
Cords—Telephone Receiver



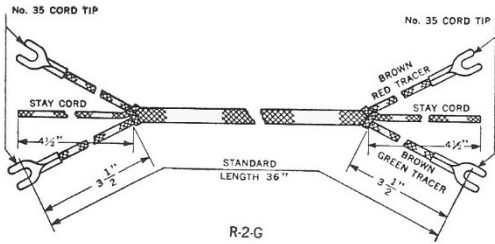
R-2-B	Number of Conductors, 2. Standard Length, 36 in. Used with telephones with other than Stromberg-Carlson Receivers.	.35
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Duratex Cords (Cont.)

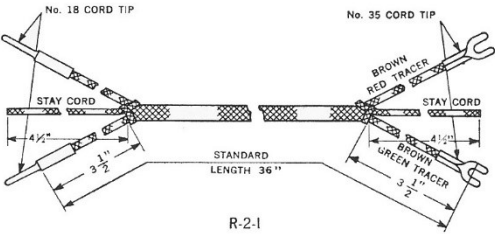
**Cords—Telephone Receiver
(Cont.)**



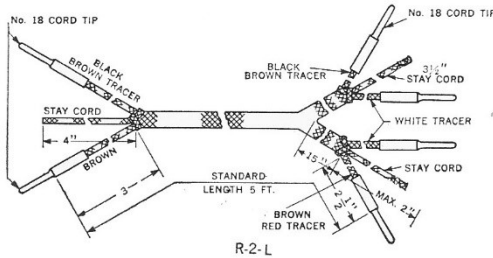
R-2-D



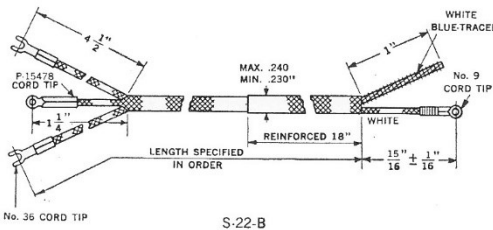
R-2-G



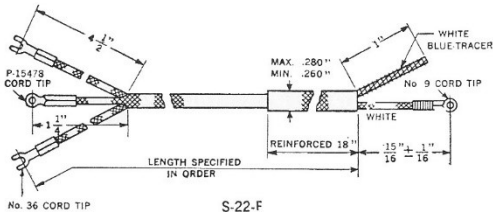
R-2-I



R-2-L



S-22-B



S-22-F

Code No.	Description	Price Each
R-2-D	Number of Conductors, 2. Standard Length, 36 in. Used with telephones with other than Stromberg-Carlson Receivers.	\$.30

R-2-G	Number of Conductors, 2. Standard Length, 36 in. Used with standard Stromberg-Carlson Telephones which are equipped with Nos. 27 and 28 Receivers.	.29
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R-2-I	Number of Conductors, 2. Standard Length, 36 in. Used with Telephones with other than Stromberg-Carlson Receivers.	.30
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R-2-L	Number of Conductors, 2. Standard Length, 5 ft. Used with No. 3-A Radio Head Set.	.90
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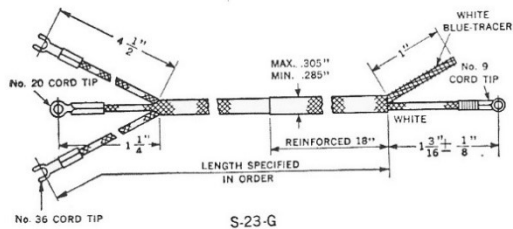
Cords—Switchboard

Code No.	Description	Price Each
S-22-B	Number of Conductors, 2. Standard Length, 3, 6 and 7 feet as specified. Used with plugs Nos. 11, 20, 36 and 57.	3 ft. \$.40
		6 ft. .55
		7 ft. .60

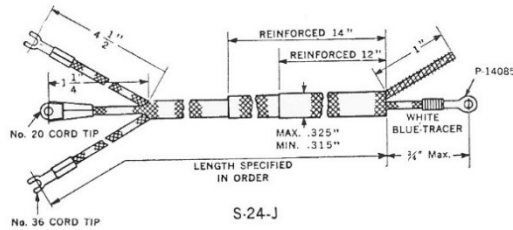
S-22-F	Number of Conductors, 2. Standard Length, 3, 5 and 6 feet as specified. Used with plugs Nos. 56 and 56-X; also Garford 2 Conductor Plugs.	3 ft. .40
		5 ft. .50
		6 ft. .55

Duratex Cords (Cont.)

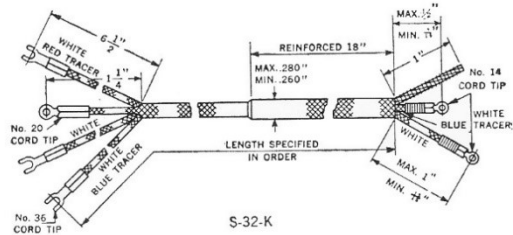
Cords—Switchboard (Cont.)



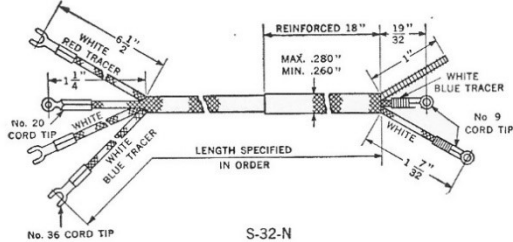
S-23-G



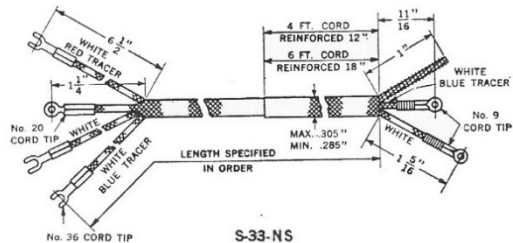
S-24-J



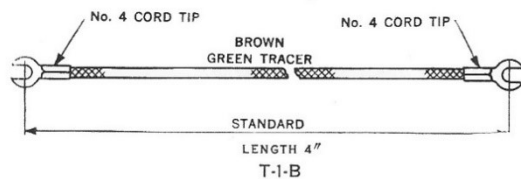
S-32-K



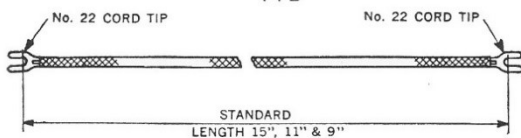
S-32-N



S-33-NS



T-1-B



T-1-E

Code No.	Description	Price Each
S-23-G	Number of Conductors,	2 ft. \$.35
	2. Standard Length, 2, 3,	3 ft. .40
	5 and 6 feet as specified.	5 ft. .50
	Used with plugs Nos. 10,	6 ft. .55
	15, 24, 32, 42 and 43.	

S-24-J	Number of Conductors,	5 ft. .50
	2. Standard Length, 5, 6	6 ft. .55
	and 7 feet as specified.	7 ft. .60
Used with Western Electric plugs No. 47.		

S-32-K	Number of Conductors,	3 ft. .55
	3. Standard Length, 3, 5,	5 ft. .65
	6 and 7 feet as specified.	6 ft. .70
	Used with plugs Nos. 22,	7 ft. .80
37, 49, 53, 53-X, 54,		
54-G, 54-N, 55 and 55-N.		

S-32-N	Number of Conductors,	6 ft. .70
3. Standard Length, 6 feet. Used with Western Electric No. 109 Plug.		

S-33-NS	Number of Conductors,	5 ft. .65
	3. Standard Length 5 and 6 feet as specified.	6 ft. .70
Used with No. 59 Plug and Western Electric No. 110 Plug.		

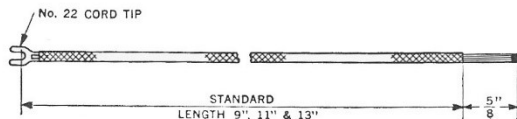
Cords—Terminal

Code No.	Description	Price Each
T-1-B	Number of Conductors, 1. Standard Length, 4 in. Used with No. 10 Transmitter. Outside Braid, Brown Cotton.	\$.05

T-1-E	Number of Conductors, 1. Standard Length, 9, 11 and 15 inches. Used in Desk Telephone. Outside Braid, Brown Cotton.	\$.05
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Duratex Cords (Cont.)

Cords—Terminal (Cont.)



T-1-G

Code No.	Description	Price Each
T-1-G	Number of Conductors, 1. Standard Length, 11 in. Used with Combination Telephones Nos. 10-C and 10-L. Outside Braid, Brown Cotton.	\$.05

Cordage—Telephone

A moisture proofed, Brown Silk covered, 12 end "Duratex Conductor" cordage, used for extra long extensions with Desk Stands, Combination Telephones, and for repair work. Cut in lengths as specified on order. Shipped up to 20 ft. in coils, and over 20 ft. on spools.



Spool showing how both Cordage and Sleeving are shipped

Piece No.	No. of Conductors	Approximate Feet per Pound	Price Per 100 ft.
20021	1	223	\$ 3.50
20022	2	90	6.50
20023	3	87	8.50
20024	4	59	10.50
20025	5	53	12.00

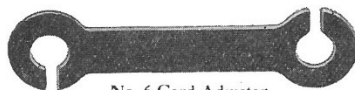
Cotton Sleeving

A tubular cotton fabric used to insulate bare wire for ties or relays, keys, and jacks. Furnished in any color which must be specified when ordering.—Brown carried in stock. Wound—under 400 feet in coils, over 400 ft. on spools.

Piece No.	Inside Diameter	Approximate Feet per Pound	Price Per 100 ft.
20031	$\frac{3}{8}$ in.	1250 ft.	\$.50
20032	$\frac{1}{8}$ in.	380 ft.	.65
20033	$\frac{3}{2}$ in.	300 ft.	.75

Note—If waxed add \$.10 per 100 ft. to the above prices.

Cord Adjusters



No. 6 Cord Adjuster

Used to conveniently regulate cord lengths. These cord adjusters take up the slack, and prevent coiling or knotting of the cords. Made of red sheet fibre $4\frac{1}{2}$ inches long by 1 inch wide.

Code No.	Used With	Price Each
6	All standard two or three conductor, switchboard cords.	\$.05

Cord Fasteners



No. 4 Cord Fastener

A nickel plated brass punching—designed for drive-fit, through cord terminal rack, equipped with tinned eyelet for soldering to switchboard cable, and provided with screw terminal for connecting to switchboard cords.

Code No.	For Use On	Length	Price Each
4	Terminal Racks	$1\frac{9}{16}$ in.	\$.05
5	Switchboards	$1\frac{3}{8}$ in.	.05



No. 5 Cord Fastener

Cord Hooks



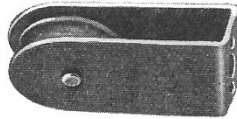
No. 2 Cord Hook

Cord Hooks—used to suspend the terminal end of a switchboard cord from the cord rack, thus removing all strain from the conductors. Made of iron with Parker Finish,—have open screw eye arranged so that cord will not work loose in service, but may be easily detached by hand when changing cords. Length $1\frac{1}{8}$ inches.

Code No.	Description	Price Each
2	Open screw eye hook	\$.015
4-A	Six hooks punched out of a flat strip $2\frac{1}{8}$ in. long.	.08



No. 1 Cord Pulley

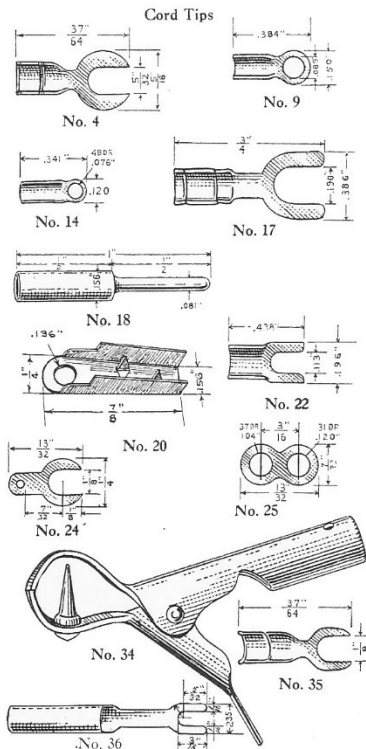


No. 2 Cord Pulley

Cord Pulleys

Code No.	Description	Price Each
1	$\frac{5}{8}$ in. Brass Screw Pulley—width of pulley wheel $\frac{1}{4}$ in. Used to suspend operator's transmitter cord in connection with cord weight. Mounts beneath roof of switchboard.	\$.15
2	Brass frame with boxwood pulley wheel—Width of wheel $\frac{9}{32}$ in. Used with double length switchboard cords. Mounts beneath cord connecting rack.	.15

Cord Tips



Code No.	Description	Net Weight Per 100	Price Per 100
4	Used on transmitter cords of various makes other than Stromberg-Carlson. Fits any terminal which is the same size as a No. 6 Screw.	1½ oz.	\$.75
9	Used on switchboard cords to engage terminals of the Nos. 10, 42, 56 and 57 Plugs. Fits any terminal which is the same size as a No. 2 Screw.	½ "	.75
14	Used on switchboard cords to engage terminals of the Nos. 33, 34, 54 and 55 Plugs. Fits any terminal which is the same size as a No. 1 Screw.	¼ "	.75
17	Used on desk stand cords for connecting to magneto desk set boxes, using lock-nut type binding posts. Fits any terminal which is not smaller than a No. 8 Screw and which is not larger than a No. 10 Screw.	2½ "	1.00
18	Used on radio cords to engage terminals of Stromberg-Carlson Head Sets and Loud Speakers. Also used on telephones other than Stromberg-Carlson.	3¼ "	1.00
20	Used on switchboard cords (stay cord end) to engage cord hooks in switchboards.	2½ "	1.00
22	Used on transmitter cords for connecting transmitters to telephone instruments. Fits any terminal which is the same size as a No. 4 Screw.	½ "	.50
24	Used on various cords to engage any terminal which is the same size as a No. 4 Screw.	¼ "	.50
25	Used on radio cords for connecting stay cord to receiver cord tip.	1 "	.75
34	Used on combination telephone cords in line-men's test sets for making connection to line wires. 1-11, \$.20 each; 12-99, \$.15 each.	2 lbs.	14.00
35	Used on various desk stands and receiver cords. Fits any terminal which is the same size as a No. 4 Screw.	1¼ oz.	.75
36	Used on switchboard cords to engage cord hooks on cord rack in switchboard.	8 "	1.50



No. 6

Cord Weights

Code No.	Description	Price Each
6	A Standard Cord weight for all types of regular switchboard cords, sufficiently weighted to satisfactorily restore cords properly to their respective places when plugs are withdrawn from jacks. Consists of a brass pulley wheel, and a 9 oz. single pulley weight, armoured with steel casing. Overall dimensions—4 x 1 $\frac{23}{32}$ x $\frac{3}{8}$ ins. Size of wheel— $\frac{7}{8}$ in. x $\frac{1}{4}$ in.	\$.35

Designation Strips

No. 2 Type



No. 2 Type Designation Strip

These Designation Strips are used principally in multiple switchboards in connection with trunk jacks. They consist of a maple mounting block, and a nickel plated brass card holder with celluloid protector.

Code No.	Used With	Dimensions	Price Each
2	No. 109 Jack	Length—10 $\frac{3}{8}$ ins. Width— $\frac{1}{2}$ in. Mounting Centers—10 $\frac{1}{8}$ ins.	\$.85
6	No. 67 Jack	Length—6 $\frac{3}{8}$ ins. Width— $\frac{1}{8}$ in. Mounting Centers—7 $\frac{5}{16}$ ins.	.80

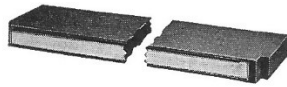


No. 5 Type Designation Strip

No. 5 Type

Designation Strips of this type have nickel plated card holders, and celluloid protectors. Furnished in any length. Specify length when ordering—20 in. and 21 in. lengths carried in stock. The No. 5 and No. 5-D designation strips differ in only one respect—the No. 5 has a polished nickel finish, the No. 5-D has a dull nickel finish.

Code No.	Used On	Dimensions	Price Each
5	Plug Shelf	Specify length, Width— $\frac{1}{2}$ in.	Less than 12 ins \$1.30 12 ins. and over per in., .12
5-D	Plug Shelf	Specify length, Width— $\frac{1}{2}$ in.	

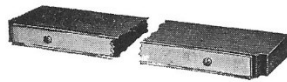


No. 14 Type Designation Strip

No. 14 Type

A type of Designation Strip consisting of a maple mounting block with a designation card, and celluloid protector—both held in place by three nickel plated screws. No. 14 is designed for use with eight panel multiple switchboards, and No. 16, which is similar to the No. 14, is used with six panel switchboards.

Code No.	Used With	Dimensions	Price Each
14	No. 127 Jack	Length—7 $\frac{1}{8}$ ins. Width— $\frac{3}{8}$ in. Mounting centers—8 $\frac{3}{8}$ ins.	\$.80
16	No. 130 Jack	Length—10 $\frac{1}{8}$ ins. Width— $\frac{1}{2}$ in. Mounting centers—11 $\frac{1}{8}$ ins.	.80



No. 15 Type Designation Strip

No. 15 Type

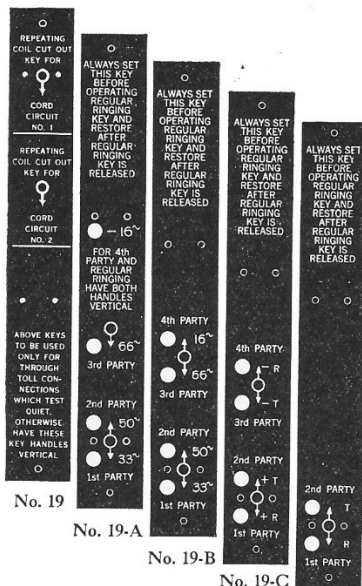
These Designation Strips consist of a dull black finished metal holder and celluloid protector, mounted on maple mounting block. The No. 15 Designation Strip is used in multiple switchboards, and the No. 17 Designation Strip is used in P. B. X. Switchboards.

Code No.	Used With	Dimensions	Price Each
15	No. 127 Jack	Length—7 $\frac{1}{8}$ ins. Width— $\frac{5}{16}$ in. Mounting centers—8 $\frac{3}{8}$ ins.	\$.80
17	No. 130 Jack	Length—10 $\frac{1}{8}$ ins. Width— $\frac{1}{2}$ in. Mounting centers—11 $\frac{1}{8}$ ins.	.80

No. 19 Type

This type consists of a metal mounting block with a card designation strip, and celluloid protector strip, held in place by four nickel plated screws. Used on magneto Non-Multiple switchboards.

Code No.	Used On	Dimensions	Price Each
19	Keyboard of No. 105 Switchboard designating cord circuit operation.	Length—7 $\frac{1}{4}$ ins., Width—1 in. Mounting centers—6 $\frac{1}{8}$ ins.	\$1.00
19-A	Keyboard of No. 105 Switchboard with Harmonic Master Key.	Same as No. 19.	1.00



No. 19
No. 19-A

No. 19-B

No. 19-C

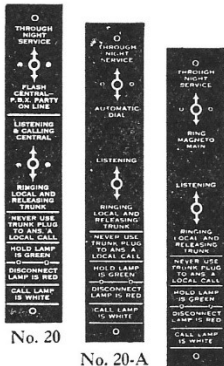
No. 19-D

No. 19 Type Designation Strip

Designation Strips (Cont.)

No. 19 Type (Cont.)

Code No.	Used On	Dimensions	Price Each
19-B	Keyboard of No. 105 Switchboard with Harmonic Master Key.	Length—7¼ ins. Width—1 in. Mounting Centers 6¼ ins.	\$1.00
19-C	Keyboard of No. 105 Switchboard with Pulsating Master Key.	Same as No. 19-B.	1.00
19-D	Keyboard of No. 105 Switchboard with divided circuit Master Key.	Same as No. 19-B.	1.00

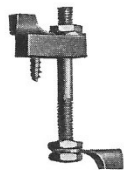


No. 20 Type Designation Strip

No. 20 Type

The No. 20 Type is 1¾ ins. shorter than the No. 19, but is of similar design. Used on P. B. X. Switchboards to indicate the operation of the key cams.

Code No.	Used As	Dimensions	Price Each
20	Trunk designation on keyboard of Nos. 101 and 102 P. B. X. Switchboards connecting with Manual Main Exchange.	Length 5½ ins. Width 1 in. Mounting centers 5⅞ ins.	\$1.00
20-A	Trunk designation on keyboard of Nos. 101 and 102 P. B. X. Switchboards connecting with Automatic Main Exchange.	Same as No. 20.	1.00
20-B	Trunk designation on keyboard of Nos. 101 and 102 P.B.X. Switchboards connecting with Magneto Main Exchange.	Same as No. 20.	1.00



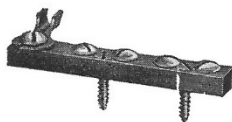
No. 1-A Type Distributing Bar

Distributing Bars

No. 1-A Type

A single point distributing bar with terminal lugs for front and back connections.

Code No.	Points	Used on	Price Each
1-A	1	Terminal boards of P. B. X. Switchboard to connect with battery supply.	\$.30



No. 3 Type Distributing Bar

No. 3 Type

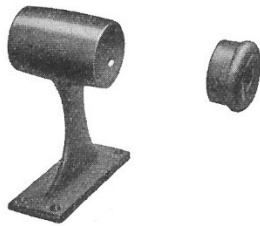
This distributing bar is used for connecting a given number of wires to a common source of current or to a common ground. Provides convenient means of opening up circuits for testing purposes. Consists of a drawn brass bar, screws, and tinned terminal lug.

Code No.	Points	Used on	Length	Price Each
3	4	Switchboard Term. Boards	2⅝ ins.	\$.35
5	6	" " "	3⅝ "	.45
7	8	" " "	4⅝ "	.55
8	10	" " "	5⅝ "	.65
11	16	" " "	8⅝ "	1.00
12	20	" " "	10⅝ "	1.25

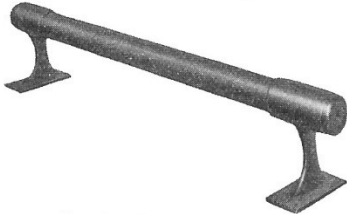
Foot Rails and Foot Brackets

The following foot rails and foot rail brackets form neat and rigid supports as required to meet the demands of telephone exchanges equipped with a switchboard having a keyboard height of over 31 inches.

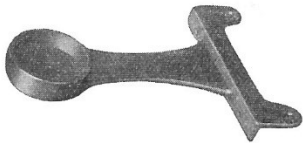
These foot rails and foot rail brackets are made primarily to be used with Stromberg-Carlson Switchboard Sections, however they are readily mounted on practically any modern switchboard section without change. The foot rails are made of steel tubing and the brackets cast iron, both finished with a durable black enamel.



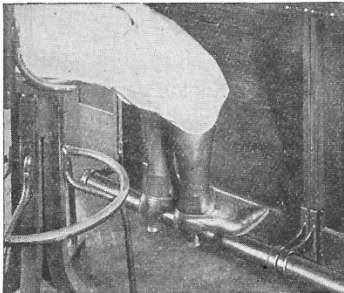
Showing No. 11 Bracket, and Pc.-No. 13566 Cap



Showing No. 11 Bracket, Pc.-No. 13566 Cap, and 2 in. iron pipe foot rail assembled



Code No. 12 Bracket



A comfortable foot rest consisting of 2 Code No. 12 Brackets and Pc.-No. 13700 Foot Rail mounted on unit type multiple switchboard

Code No.	Use	Description	Price Each
11 Bracket.	No. 11 foot rail brackets are used in connection with 3 position multiple switchboard. Mounts on floor in front of Nos. 1, 2, 9, and 10 sections with four No. 12 x 2 ins. F. H. I. W. screws.	Dimensions of Base Length—6½ ins. Width—2½ ins. Thickness—¼ in. Height from floor to center of rail 6 ins. Made to fit any 2¼ in. foot rail.	\$4.00

Note: Foot rails for the above brackets must be ordered as a separate item. A two inch iron pipe, or a foot rail—2½ ins. actual diameter, and 5 feet 6¾ inches in length is used for the 3 position multiple section.

5.00

These foot rails are sold in other lengths which must be specified when ordering. If ornamental cap for the end section of rail is desired, order piece No. 13566 Cap.

.75

12 Bracket.	Mounts on No. 3 unit type multiple switchboard section at any convenient height from the floor, with 4 No. 8 x 5/8 in. R. H. I. W. screws. Two brackets are required for each section.	Bracket secured to the switchboard's end panels by means of screws from the side as well as the front. Dimensions of base. Length—6 ins. Width—1½ ins. Thickness—3/8 in. Takes Pc-13700 2 in. iron foot rail.	6.00
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Pc-13700 Foot Rail	Mounts on No. 3 unit type multiple switchboard section. Requires two Code No. 12 Brackets for each section.	A 2 in. black enamelled iron foot-rail.	2.50
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Note: Order bracket mounting screws as a separate item.

.01

Hand Generators

Piece Parts shown on pages 229-230

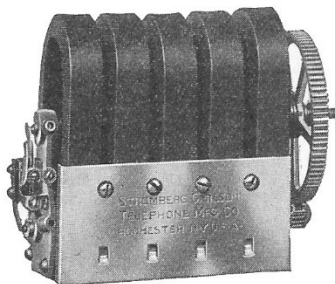
The dominant features of Stromberg-Carlson generators are:—

Ringin Efficiency—Stromberg-Carlson generators furnish a surplus ringin current with ample voltage at all loads.

Ease of Operation—Stromberg-Carlson generators are free from jerky motion and grinding; will ring the longest lines without forcing.

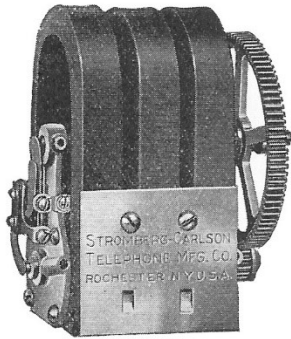
Durability—Stromberg-Carlson generators are built for long life and hard service.

These features are obtained by employing: powerful magnets of special magnet steel, liberal winding space, laminated armature, large bearing surfaces, plenty of oil ducts, rust proofed parts, accurately cut gears, and high grade insulation. All magnetic joints are closely machined. Rotating parts are carefully balanced.

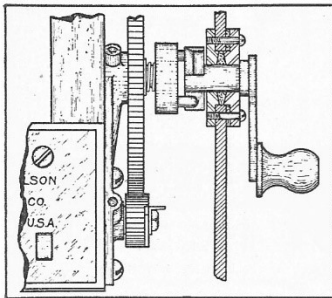


No. 38 Generator

Hand Generators (Cont.) Standard Hand Generators and Their Uses



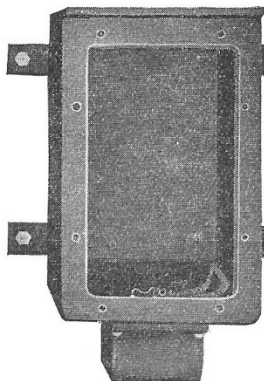
No. 53 Generator



Clutch and Crank Packing
No. 62-A Generator



No. 963 Generator



No. 963 Generator Case

Code No.	No. of Bars	Type	Use	Price Each
38	5	Bridging	No. 896 Telephone No. 1000 Telephone No. 105 Switchboard No. 843 Test Set	\$7.00
53	3	Bridging	No. 896 Telephone No. 1000 Telephone No. 844-E Test Set Nos. 101, 102 and 104 Switchboard	6.50
55	3	Pulsating (Harmonic)	No. 896 Telephone	6.75
62-A	5	Bridging	No. 890 Mine-A-Phone. Same as No. 38 generator, but with a specially de- signed clutch and water proof and gas-proof crank packing, as shown at the left. Overall dimensions, 5 bar type 5 x 7 x 3 ins.; 3 bar type 5 x 5 x 3 ins.	7.50

For extra length shafts required on generators used in Nos. 101, 102 and 105 Switchboards, see page No. 25. Add 60 cents to the price of the generator when furnished with 16 or 18½ inch shafts.

Ironclad Hand Generator

The No. 963 Ironclad, Five-Bar Hand Generator is damp-proof, gas-proof, fire-proof, and especially built for use with the No. 53 Loud Ringing Bell—either underground or on the surface.

It is the ideal generator for operating bells on signalling systems in mines—no commutator to spark, no batteries to become exhausted—always reliable at the critical moment. Output of generator ample to ring simultaneously ten to fifteen bells on one circuit.

The housing is made of two iron castings protected with corrosion-proof black enamel.

Detachable mounting bars are provided for fastening the generator to any surface. The generator is secured to an iron bracket, which is part of the door casting—this insures permanent alignment of crank shaft. For details of generator clutch and generator shaft packing, see No. 62-A Generator.

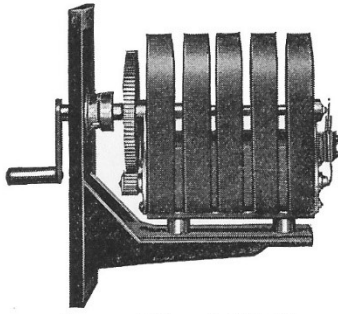
Mounting space 10 x 8 x 10½ inches; net weight 30 pounds. Packed one in a box 12 x 10 x 12 inches. Gross weight, 42 pounds.

Code No	Description	Price Each
963	Ironclad Hand Generator	\$15.00

Generator Parts

Code No.	Part	Description	Gen.	Price Each
2	Crank	For No. 102 Swbd., length 18½ ins.	53	\$1.00
3	Crank	For Nos. 101 & 105 Swbd., length 16 ins.	38-53	1.00
P-11576	Crank	For No. 890 Mine-A- Phone	62-A	.80

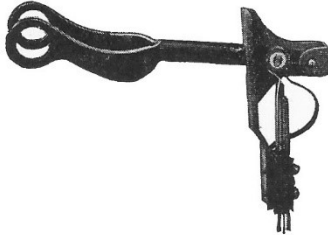
Hand Generators (Cont.)



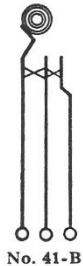
**Door and Mounting Shelf
No. 963 Generator**



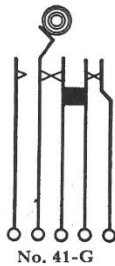
No. 32



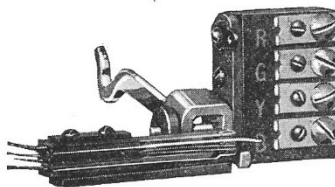
No. 41 Type



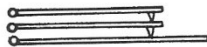
No. 41-B



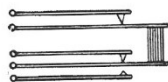
No. 41-G



No. 42 Type



No. 42-B



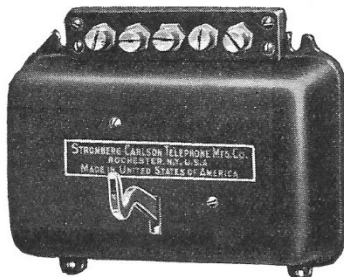
No. 42-G

Code No.	Part	Description	Gen.	Price Each
P-11730	Crank	For Nos. 38, 53, & 55 Generators		\$.30
P-8058	Armature	3 Bar	53	3.00
P-11039	Armature	5 Bar	38-62-A	3.50
P-11395	Armature	3 Bar	55	3.00
P-3556	Magnet		38-53-55-62-A	.35
P-8193	End Plate	Gear End	38-53-62-A	.60
P-8194	End Plate	Shunt End	38-53-55-62-A	.60
P-2545	Screw	End Plate	All types	.01
P-6013	Shunt Springs	Bridging	38-53-62-A	.35
P-2798	Bushing	Shunt	38-53-62-A	.01
P-3493	Insulation	Shunt	38-53-62-A	.01
P-3577	Shaft	(Gear) 5 Bar Bridging	38	.10
P-3575	Shaft	(Gear) 3 Bar Bridging	53-55	.10
P-247	Tip	Shaft	38-53-55-62-A	.01
P-246	Clutch	Shaft	38-53-55-62-A	.06
P-245	Cotter Pin	Clutch	38-53-55-62-A	.02
P-278	Collar (Lock)	Shaft	38-53-55-62-A	.05
P-266	Collar	Spring	38-53-55	.03
P-3737	Screw	Collar	38-53-55-62-A	.005
P-4444	Gear	Large	38-53-55-62-A	.60
P-265	Spring	Shaft	38-53-55-62-A	.02
P-3498	Pinion	Small	38-53-55-62-A	.15
P-4133	Spring	Pinion	38-53-55-62-A	.02
P-3497	Stop	Pinion	38-53-55-62-A	.02
P-11674	Screw	Pinion	38-53-55-62-A	.02
P-11673	Washer	Pinion	38-53-62-A	.02

Hookswitches

Piece Parts shown on page 231

Code No.	Description	Price Each
32	Dummy hook for use on any vertical surface to hold any Hand Set Telephone that is equipped with a ring. Consists of a round plate with a projecting hook and screw. Hook has extra heavy nickel-dipped finish.	\$.50
41-B	Standard hookswitch for central energy and magneto type wall telephones. Hook and frame are made of stamped steel and springs of nickel-silver. The hook is finished black.	.85
41-G	Standard hookswitch for inter-communicating telephones. Construction is the same as No. 41-B excepting the spring combination.	.85
42-B	For use on No. 19 and No. 36 Hookswitch Boxes which are parts of No. 10-C and No. 10-L Combination Telephones. Hook is made of nickel-plated brass, frame, of stamped steel and springs, of nickel-silver.	1.25
42-G	For use on No. 30, No. 31, and No. 32 Hookswitch Boxes which are parts of No. 1135-A and B and No. 10-S and 10-DJ Combination Telephones. Construction is the same as No. 42-B.	1.25



No. 28 Hookswitch Box



No. 30-A Hookswitch Box



No. 31-A Hookswitch Box

Hookswitch Boxes

Code No.	Description	Price Each
19	Central Energy Type Hookswitch Box, used as a part of the No. 10-C Hand Set Telephone. It is equipped with a No. 38-A Induction Coil and a No. 42-B Hookswitch. The cover is made of stamped steel, japanned. There are two terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{7}{8}$ ins.	\$3.00
28	Used as a part of the No. 10-I Hand Set Telephone. It is equipped with a No. 38-A Induction Coil and a No. 42-G Hookswitch. The cover is made of stamped steel, japanned. There are five terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{7}{8}$ ins.	3.75
30-A	Private line Hookswitch Box, used as a part of the No. 10-P Hand Set Telephone. Its construction is the same as a No. 31-A with the addition of a push button. Mounting space $4\frac{3}{4} \times 3\frac{7}{8}$ ins.	5.00
30-B	Center Phone, Substation Hookswitch Box, used as a part of the No. 10-PC Hand Set Telephone. Identical with No. 30-A except in wiring. Mounting space $4\frac{3}{4} \times 3\frac{7}{8}$ ins.	5.00
31-A	Used for selective ringing as a part of the No. 10-S Hand Set Telephone. It is equipped with a No. 42-G Hookswitch and has a 20 ohm buzzer concealed under the cover. The cover is made of stamped steel, japanned. There are four terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{7}{8}$ ins.	4.50
36	Magneto Type Hookswitch Box, used as a part of the No. 10-L Hand Set Telephone. It is equipped with a No. 38-A Induction Coil and a No. 42-B Hookswitch. The cover is made of stamped steel, japanned. There are three terminals at the top of the box. Mounting space $4\frac{3}{4} \times 3\frac{7}{8}$ ins.	3.00

Holly Strips



No. 3



No. 13



No. 15



No. 16

Holly Strips

White Holly Strips—mount between jack strips. Used for segregating each bank of 100 multiple Jacks to the operator's eye.

Code No.	Used With	Dimensions	Material	Price Each
3	Nos. 3, 5, 7, 9, 40, 60 and 109 Type Jacks	Length— $10\frac{1}{8}$ ins. Width— $\frac{1}{2}$ in. Thickness— $\frac{1}{16}$ in. Jack Mounting Centers— $10\frac{1}{8}$ ins.	White Holly with Lacquered Edges.	\$.05
13	No. 67 Jack	Length— $6\frac{3}{8}$ ins. Width— $\frac{1}{2}$ in. Thickness— $\frac{1}{32}$ in. Jack Mounting Centers— $7\frac{1}{8}$ ins.	White Opaque Celluloid	.10
15	No. 127 Jack	Length— $7\frac{1}{8}$ ins. Width— $\frac{3}{8}$ in. Thickness— $\frac{1}{16}$ in. Jack Mounting Centers— $8\frac{3}{8}$ ins.	White Opaque Celluloid	.12
16	No. 130 Jack	Length— $10\frac{3}{8}$ ins. Width— $\frac{1}{2}$ in. Thickness— $\frac{1}{16}$ in. Jack Mounting Centers— $11\frac{1}{8}$ ins.	White Holly with Lacquered Edges	.05

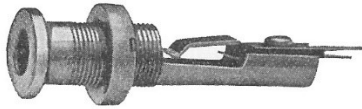
Note: Nos. 13 and 15 mount with 3 No. 21 x $\frac{1}{4}$ in. R.H. Brass Esc. Pins

Switchboard Jacks

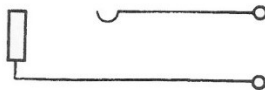
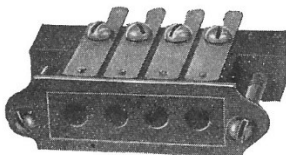
One of the vital parts of a switchboard is the jack. Good jacks are essential to ensure reliable talking connections between subscribers. These jacks must stand up against years of hard service regardless of climatic conditions.

Stromberg-Carlson jacks are built not only to last, but to render reliable service. And whether furnished individually or mounted in strips these jacks are equipped with the best nickel-silver springs, insulated with best quality of Bakelite, Micarta, Formica or Hard Rubber, and to further insure lastingness, these jacks are constructed upon either drawn steel or cast brass frames.

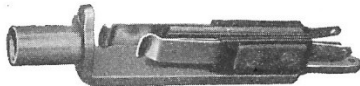
When jacks are mounted on strips they are assembled in groups of five, ten or twenty jacks, equipped with dull finished hard rubber face strips, finished with a plain face, white line divisions or drilled for party line indicators. The latter must be specified (if required). Always state the Type and Code Number of mountings when ordering jacks in strips. Jack Fasteners are not included with the jacks, but must be ordered as a separate item.



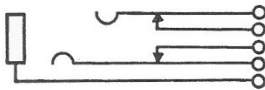
No. 55 Jack Assembly

No. 55 Jack
Spring Combination

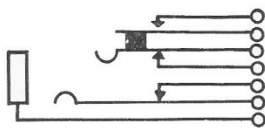
No. 93 Jack Assembly

No. 93 Jack
Spring Combination

No. 101 Jack Assembly

No. 101 Jack
Spring Combination

No. 102 Jack Assembly


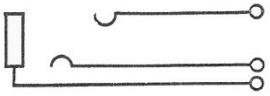

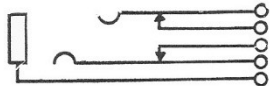
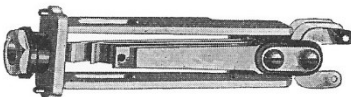
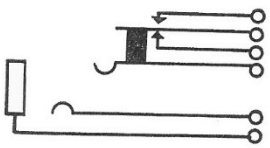
No. 102 Jack
Spring Combination

Individual Jacks

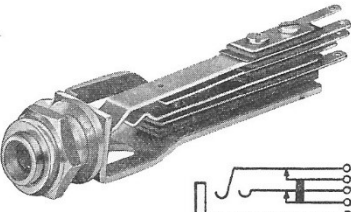
Code No.	Description	Price Per Jack
55	Used on Power Switchboards for Cell Test and in Plug Boxes for Inter-Communicating Telephones. Mounts on wood or slate panels $\frac{3}{8}$ to $\frac{1}{2}$ in. thick and is held in place with a locking ring from behind the panel. Shape—Round Face. Finish—Nickel Polished. Length— $2\frac{1}{8}$ ins. Diameter of Face— $\frac{1}{2}$ in. Mounting Centers— $\frac{5}{8}$ in. Diameter of Mounting Hole— $\frac{3}{8}$ in. Plug required—No. 57 two conductor Plug. Jack Blank required—No. 2 or 3 Plug Hole Blank.	\$.45
93	Standard operator's cut-in Jack for all multiple and non-multiple switchboards whether equipped with suspended transmitter or with a breast plate type set. Mounts below key shelf on lock rail. Shape—Oblong Face. Finish—Black Enamel. Length of Face— $2\frac{7}{8}$ ins. Width of face— $\frac{3}{2}$ in. Depth of Jack from face to tip of springs— $1\frac{1}{8}$ ins. Horizontal Mounting Centers—2 ins. Plug required—No. 23 four conductor Plug. Jack Blank required—No. 35 Jack Blank.	.85
93-B	Same as No. 93 Jack, except the spring combination.	1.00
101	Used principally on toll test panels and on wire chief's test boxes at main distributing frame. Mounts on either wood or rubber panels of $\frac{5}{8}$ in. thickness and is held in place from the rear of the panel by a $\frac{1}{2}$ in. Flat Head Iron Wood or Machine screw. Shape—Round Face, Flush mounting. Finish—Dull Nickel. Length— $3\frac{1}{8}$ ins. Diameter of face— $\frac{3}{8}$ in. Minimum mounting centers— Horizontal— $\frac{11}{16}$ in. Vertical— $\frac{7}{8}$ in. Diameter of Mounting Hole— $\frac{3}{8}$ in. Plug required—No. 10 two conductor single plug, No. 35-A three conductor single plug, No. 31 two conductor twin plug or No. 35 three conductor twin plug. Jack Blank required—No. 2 or No. 3 Plug Hole Blank.	.60
102	Used on toll test panels. Mounts the same as the No. 101 Jack and has the same general description with the exception of the spring combinations.	1.10

Switchboard Jacks (Cont.)

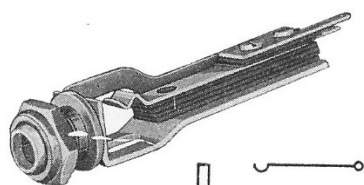
Individual Jacks (Cont.)

Code No.	Description	Price Per Jack
 No. 106 Jack Assembly  No. 106 Jack Spring Combination	106 Plug required—No. 10 two conductor single plug, No. 35-A three conductor single plug or No. 31 two conductor twin plug. Jack Blank required—No. 2 or No. 3 Plug Hole Blank. Used as a Cord Test Jack and is mounted in the Pilot rail. Countersinking is necessary from rear if rail is larger than $\frac{1}{8}$ in. in thickness. It is held in place with a lock ring on the front of panel. Shape—Round Face. Finish—Dull Black. Length overall— $2\frac{7}{8}$ ins. Diameter of Face— $\frac{5}{8}$ in. Diameter of Mounting Hole— $\frac{3}{8}$ in. Plug required—No. 33 two conductor plug, or No. 34 three conductor plug. Jack Blank required—No. 2 or No. 3 Plug Hole Blank.	\$.70
 No. 139 Jack Assembly  No. 139 Jack Spring Combination	139 Used as a test jack on Multiple Switchboards and is generally mounted in the cord test circuit in each operator's position. It is the same as the No. 129 Jack excepting that it takes a different plug. Plug required—No. 53 and 53-X three conductor Plug or No. 56 and 56-X two conductor Plug.	1.10
 No. 140 Jack Assembly  No. 140 Jack Spring Combination	140 Used as a transfer jack in the No. 105 Magneto Switchboard to transfer calls from one position to another position when three or more positions are required to reach the line capacity. Mounts on a $\frac{3}{16}$ in. metal strip and is held in place by a sleeve screwed into the frame of the jack from the front of the panel. The sleeve is insulated with a hard rubber bushing which also properly spaces the sleeve length. This Jack is also mounted with 5 on a strip. Shape—Hexagonal Face. Finish—Nickel Polished. Length— $3\frac{31}{64}$ ins. Face dimensions— $\frac{1}{2}$ in. Mounting Centers— Horizontal— $\frac{1}{16}$ in. Vertical— $\frac{3}{4}$ in. Diameter of Mounting Hole— $\frac{1}{2}$ in. Plug required—No. 42 two conductor Plug, No. 57 two conductor Plug or No. 55 three conductor Plug.	1.25

Radio Jacks

Code No.	Description	Consumer's Price Each
 No. 147 Jack	147 Mounts neatly and securely on Formica, Bakelite and Hard Rubber panels between $\frac{1}{8}$ and $\frac{1}{4}$ ins. thick. Is readily assembled to the panel with a nickel-polished hexagonal nut. Contacts are equipped with low resistance, electrical contact metal, nickel-silver springs and extra-thick phenol fibre insulations. Positive electrical connections between the plug and the jack are assured, as plug-conductor contacts are made through jack springs. The necessity for use of the unreliable jack sleeve contact is thus eliminated. This Jack permits the instantaneous connection of the Head Set directly to either the detector or to any succeeding amplifier stage of the cascade, cutting off unused stages. Takes No. 60 Plug.	\$.50

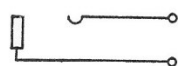
Radio Jacks (Cont.)



No. 151 Jack

Code No.
151

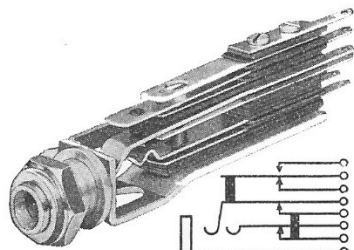
Construction same as No. 147.
This Jack permits connections of phones in detector sets or in any circuit where no local contacts are to be opened or closed.
Takes No. 60 Plug.

Consumer's
Price Each
\$.35

152

Construction same as No. 147.
This Jack permits the instantaneous connection of either a Head Set or a Loud Speaker to the detector or to any amplifier stage of the cascade, cutting off unused stages on both sides; also gives the advantage of automatic filament control.
Takes No. 60 Plug.

.75



No. 153 Jack

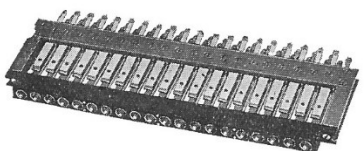
153

Same as No. 147 except that the spring combination is at right angles to the plug hole and all exposed parts are finished in bronze.

.50

Jacks Mounted in Strips

No. 67 Type

No. 67 Jack
on 27 MountingCode No.
67 on 27
Mounting

Description
Used as a standard multiple jack for 9 panel switchboards.

Price
Per Jack
\$.25

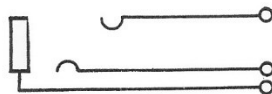
Mounts—20 per strip.
Group Division—White Dots.
Length of face— $6\frac{3}{4}$ ins.
Width of face— $\frac{5}{8}$ in.
Depth of jack from face to tip of springs— $2\frac{1}{8}$ ins.

Mounting Centers— $7\frac{5}{8}$ ins.

Jack Fasteners—No. 12.

Jack Blank required—No. 13 or 25.

Takes No. 33 two conductor plug and No. 34 three conductor plug.

No. 67 Jack
Spring Combination67 on 58
Mounting

Same as No. 67 on No. 27 Mounting, except with white line divisions.
Mounts 20 per strip.

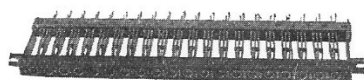
.30

67 on 72
Mounting

Same as No. 67 on No. 27 Mounting, except with plain face.
Mounts 10 per strip. Spaced symmetrically.

.40

No. 109 Type

No. 109 Jack
on 61 MountingCode No.
109 on 59
Mounting

Description
Formerly used as a standard three point jack for two, three, four, and six panel multiple sections. Used only on additions to old S-C installations.

Price
Per Jack
\$.65

Mounts—5 per strip.

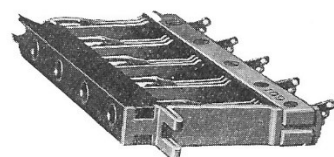
Plain Face.

Length of face— $10\frac{1}{2}$ ins.Width of face— $\frac{1}{2}$ in.Depth of jack from face to tip of springs— $2\frac{1}{8}$ ins.Mounting Centers— $10\frac{1}{8}$ ins.

Jack Fastener—No. 15.

Jack Blank required—No. 6.

Takes No. 42 two conductor plug, No. 57 two conductor plug and No. 55 three conductor plug.



End View No. 109 Jack

109 on 60
Mounting

Same as No. 109 on No. 59 Mounting, only mounts 10 per strip.

.40

109 on 61
Mounting

Same as No. 109 on No. 59 Mounting, only mounts 20 per strip.

.28

109 on 62
Mounting

Same as No. 109 on No. 59 Mounting, only mounts 20 per strip and spaced with white line divisions.

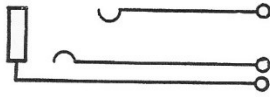
.35

109 on 63
Mounting

Same as No. 109 on No. 59 Mounting, only mounts 20 per strip, spaced with white line divisions, and drilled for party line indicators.

.40

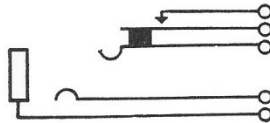
Jacks Mounted in Strips (Cont.)



No. 109 Jack
Spring Combination

Code No.	Description	Price Per Jack
109 on 78 Mounting	Same as No. 109 on No. 59 Mounting, only Mounts 10 per strip and takes No. 16 Number Plates. Jack Blank required—No. 6.	\$.52

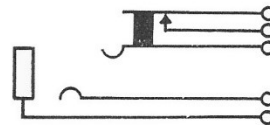
No. 111 Type



No. 111 Jack
Spring Combination

Code No.	Description	Price Per Jack
111 on 61 Mounting	Used for trunk service on multiple switchboards. Similar to No. 109 Jack but with spring combination as shown. Mounts—20 per strip. Plain Face. Jack Fastener—No. 15. Jack Blank required—No. 6.	\$.50
111 on 62 Mounting	Same as No. 111 on No. 61 Mounting, only face has white line divisions.	.55

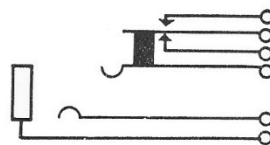
No. 112 Type



No. 112 Jack
Spring Combination

Code No.	Description	Price Per Jack
112 on 61 Mounting	Used for trunk service on multiple switchboards. Similar to No. 109 Jack but with spring combination as shown. Mounts—20 per strip. Plain Face. Jack Fastener—No. 15. Jack Blank required—No. 6.	\$.50
112 on 62 Mounting	Same as No. 112 on No. 61 Mounting, except face has white line divisions.	.55
112 on 63 Mounting	Same as No. 112 on No. 61 Mounting, except face has white line divisions and drilled for party line indicators.	.60

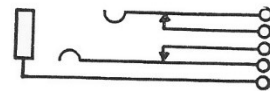
No. 113 Type



No. 113 Jack
Spring Combination

Code No.	Description	Price Per Jack
113 on 59 Mounting	Used for trunk service on multiple switchboards. Similar to No. 109 Jack, but with spring combination as shown. Mounts—5 per strip. Plain Face. Jack Fastener—No. 15. Jack Blank required—No. 6.	\$ 1.00
113 on 60 Mounting	Same as No. 113 on No. 59 Mounting, except mounts 10 per strip.	.75

No. 114 Type

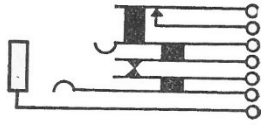


No. 114 Jack
Spring Combination

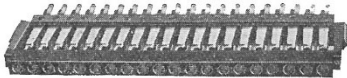
Code No.	Description	Price Per Jack
114 on 59 Mounting	Used for service on P. B. X. and Magneto Switchboards. Similar to No. 109 Jack, but with spring combination as shown. Mounts—5 per strip. Plain Face. Jack Blank required—No. 6. Jack Fastener—No. 15.	\$.90
114 on 60 Mounting	Same as No. 114 on No. 59 Mounting, except mounts 10 per strip.	.65
114 on 61 Mounting	Same as No. 114 on No. 59 Mounting, except mounts 20 per strip.	.50

Jacks Mounted in Strips (Cont.)

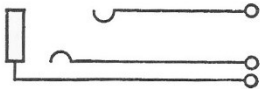
No. 121 Type



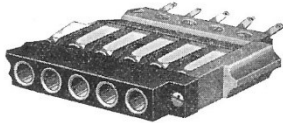
No. 121 Jack Spring Combination



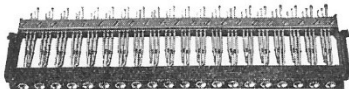
No. 127 Jack on 90 mounting



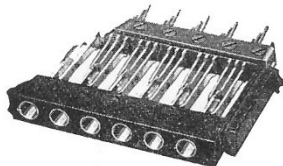
No. 127 Jack Spring Combination



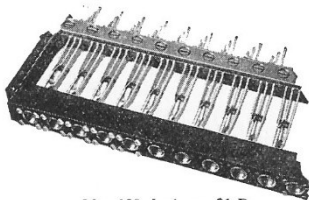
End View No. 127 Jack



No. 130 Jack on 81 mounting



End View No. 130 Jack



No. 130 Jack on 81-B mounting with party line indicators. (No. 7 Type Service Plug)

Code No.
121 on 60
Mounting

Description
Used with generator call, visual signal on multiple switchboards.
Mounts—10 per strip.
Length of face— $10\frac{15}{32}$ ins.
Width of face— $\frac{1}{2}$ in.
Depth of Jack from face to tip of springs $2\frac{1}{8}$ ins.
Mounting centers— $10\frac{1}{16}$ ins.
Plug required—No. 42 two conductor Plug,
—No. 57 two conductor Plug
—or No. 55 three conductor Plug.
Jack Fastener required—No. 15.
Jack Blank required—No. 6.

Price
Per Jack
\$1 00

No. 127 Type

Piece Parts shown on page 231

Code No.
127 on 82
Mounting

Description
Standard for eight panel multiple switchboards.
Mounts—10 per strip.
Plain face.
Length of face— $7\frac{19}{32}$ ins.
Width of face— $\frac{3}{8}$ in.
Depth of Jack from face to tip of sp'gs— $2\frac{3}{8}$ ins.
Mounting Centers— $8\frac{3}{8}$ ins.
Plug required—No. 54 or No. 54-N three Conductor Plug.
Jack Fastener required—No. 21.
Jack Blank required—No. 45.

Price
Per Jack
\$.30

127 on 83
Mounting

Standard for eight panel multiple switchboards. Same as the No. 127 Jack on No. 82 Mounting with the exception that the No. 83 Mounting accommodates 20 Jacks to a strip. The Jack Blank required—either the No. 45, the No. 36 or the No. 37.

.22

127 on 83-A
Mounting

Same as the No. 127 Jack on No. 82 Mounting with the exception that the No. 83-A Mounting accommodates 20 Jacks to a strip and also has white line divisions.

.25

127 on 83-B
Mounting

Same as the No. 127 Jack on No. 82 Mounting with the exception that the No. 83-B Mounting accommodates 20 Jacks to a strip. The face has white line divisions and is spotted for party line indicators.

.25

No. 130 Type

Piece Parts shown on page 232

Code No.
130 on 79
Mounting

Description
Used for two and six panel multiple switchboards.
Mounts—5 per strip.
Plain Face.
Length of Face— $10\frac{3}{8}$ ins.
Width of Face— $\frac{3}{4}$ in.
Depth of Jack from face to tip of springs—3 ins.
Mounting Centers— $11\frac{1}{4}$ ins.
Plug required—No. 56, No. 56-X two-conductor Plug or No. 53-X three conductor Plug.
Jack Fastener required—No. 17.
Jack Blank required—No. 52.

Price
Per Jack
\$.60

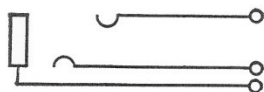
130 on 80
Mounting

Same as the No. 130 on No. 79 Mounting with the exception that the No. 80 Mounting accommodates 10 Jacks to a strip.

.35

Jacks Mounted in Strips (Cont.)

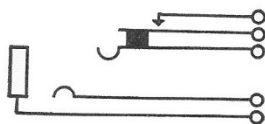
No. 130 Type (Cont.)



No. 130 Jack
Spring Combination

Code No.	Description	Price Per Jack
130 on 81 Mounting	Same as the No. 130 on No. 79 Mounting with the exception that the No. 81 Mounting accommodates 20 Jacks to a strip.	\$.25
130 on 81-A Mounting	Same as the No. 130 on No. 79 Mounting with the exception that the No. 81-A Mounting accommodates 20 Jacks to a strip and has white line divisions.	.30
130 on 81-B Mounting	Same as the No. 130 on No. 79 Mounting with the exception that the No. 81-B Mounting accommodates 20 Jacks to a strip, and besides having white line divisions is drilled for party line indicators.	.35

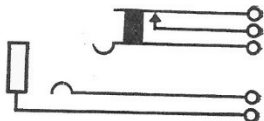
No. 132 Type



No. 132 Jack
Spring Combination

Code No.	Description	Price Per Jack
132 on 81 Mounting	Standard for two and six panel multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combinations as shown. It accommodates 20 Jacks to a strip and has a plain face. Jack Fastener required—No. 17. Jack Blank required—No. 52.	\$.50

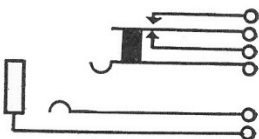
No. 133 Type



No. 133 Jack
Spring Combination

Code No.	Description	Price Per Jack
133 on 81 Mounting	Standard for two and six panel multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combination as shown. It accommodates 20 Jacks to a strip and has a plain face. Jack Fastener required—No. 17. Jack Blank required—No. 52.	\$.45
133 on 81-A Mounting	Same as the No. 133 Jack on No. 81 Mounting with the exception that the No. 81-A Mounting has white line divisions.	.55

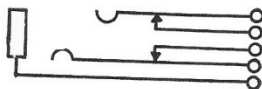
No. 134 Type



No. 134 Jack
Spring Combination

Code No.	Description	Price Per Jack
134 on 79 Mounting	Designed for two and six panel multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combination as shown. Mounts 5 Jacks to a strip and has a plain face. Jack Fastener required—No. 17. Jack Blank required—No. 52.	\$1.00
134 on 80 Mounting	Same as the No. 134 on No. 79 Mounting with the exception that the No. 80 Mounting accommodates 10 Jacks to a strip.	.75

No. 135 Type

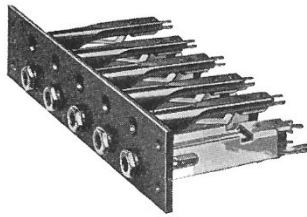


No. 135 Jack
Spring Combination

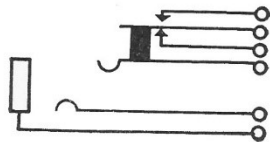
Code No.	Description	Price Per Jack
135 on 79 Mounting	Standard for private branch switchboards and six panel multiple switchboards. It is similar to the No. 130 Jack with the exception of the spring combination as shown. Mounts 5 Jacks to a strip and has a plain face. Jack Fastener required—No. 17. Jack Blank required—No. 52.	\$1.00
135 on 80 Mounting	Same as the No. 135 on No. 79 Mounting with the exception that the No. 80 Mounting accommodates 10 Jacks to a strip.	.65
135 on 81 Mounting	Same as the No. 135 on No. 79 Mounting with the exception that the No. 81 Mounting accommodates 20 Jacks to a strip.	.40
135 on 81-A Mounting	Same as the No. 135 on No. 79 Mounting with the exception that the No. 81-A Mounting accommodates 20 Jacks to a strip and has white line divisions.	.45

Jacks Mounted in Strips (Cont.)

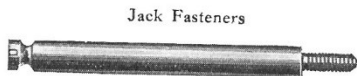
No. 140 Type



Nos. 140 Jack, and 121 Lamp Socket on 84 mounting

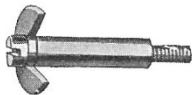


No. 140 Jack Spring Combination

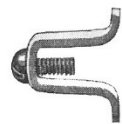


Jack Fasteners

No. 15



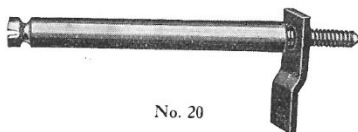
No. 17



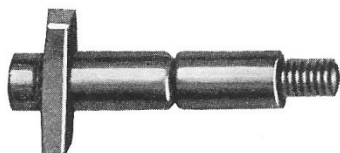
No. 18



No. 19



No. 20



No. 21

Code No.
140 on 84
Mounting

Description

Price
Per Jack
\$2.00

A combination strip of transfer jacks and lamp sockets. Used principally on the No. 105 Magneto Switchboard where 3 or more sections are mounted together, to transfer line calls from the first section to the third, etc. Mounts on the jack stiles at the bottom of the drop and jack panels and occupies the same space as the No. 140 Drop Mounting.
Mts. 5 No. 140 Jacks and 5 No. 121 Lamp Sockets.
Shape—Oblong Face.
Finish—Japan Semi-Gloss.
Length of Face— $7\frac{3}{4}$ ins. Width of Face— $1\frac{1}{8}$ ins.
Mounting Centers— $6\frac{1}{2}$ ins.
Depth of Jack and Lamp Socket from face to tip of springs— $3\frac{3}{4}$ ins.
Plug required—No. 42 two conductor Plug
—No. 57 two conductor Plug
—No. 55 three conductor Plug
Drop Blank required—No. 34.

140 on 85
Mounting

A Mounting strip with transfer jacks. Used principally on the No. 105 Magneto Switchboard, where 3 or more sections are mounted together, to transfer line calls across the board from the first section to the third, etc. Mounts the same as the No. 84 Mounting.
The design is similar to the No. 84 Mounting only without the lamp sockets.
Plug required—No. 55 three conductor Plug.
Drop Blank required—No. 34.

1 65

Jack Fasteners

Jack Fasteners are used for holding the jack blank, jack and lamp socket mountings in place on the switchboard stile strip.

Code No.

Description

Price Each

15

Standard fastener for the No. 109 Jack on Nos. 59, 60, 61, 62 and 63 Mountings. It is a special shaped steel screw, $2\frac{3}{8}$ ins. long. The tool required is a screw driver.

\$.10

17

Standard Butterfly type Jack Fastener which is used with the No. 130 Type Jacks on Nos. 79, 80 and 81 Mountings. Also used with the No. 121 Lamp Sockets on Nos. 79, 80, 81, 82 and 83 Mountings, and on Jack Blanks for Nos. 127 and 130 Jacks and No. 121 Lamp Socket. Consists of a brass screw with a steel washer. Length— $1\frac{7}{8}$ ins. Diameter of Washer— $\frac{1}{8}$ in. The tool required is a No. 44 Wrench.

.10

18

Standard fastener for holding Jack Blanks for Nos. 127 and 130 Jacks in Jack Panels and the No. 127 Jack Strip. Consists of a "U" shaped steel clip with one No. 8-32 x $\frac{3}{8}$ in. Screw. Length— $\frac{5}{8}$ in.

.10

19

The tool required is an ordinary screw driver or an S-C No. 363 Screw Driver.

.10

19

Same as the No. 18 and is standard for holding Jack Blanks in End Panels of switchboards. This Jack Fastener is similar to the No. 18 but is designed in half a U with one No. 8-32 x $\frac{3}{8}$ in. Screw. Length— $\frac{5}{8}$ in.

.10

20

The tool required is an ordinary screw driver or an S-C No. 363 Screw Driver.
Standard Fastener used with the No. 109 and No. 120 Lamp Socket Mountings when stile is drilled for 1 inch centers. Consists of a steel screw with a lug. Length— $2\frac{3}{8}$ ins.
The tool required is a screw driver.

.20

21

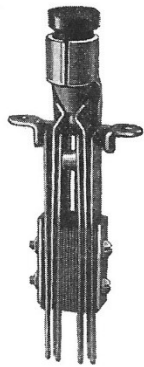
Standard butterfly type fastener used with No. 127 Jack on Nos. 89, 90 and 91 Mountings.

.10

Keys

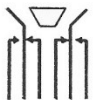
Stromberg-Carlson Keys are furnished in many designs. Each design is required to satisfy the needs of a particular service. There are the Individually Mounted Keys, the Strip Mounted Keys, the Ring-off Signal Type Keys, the Cam Type Keys and the Party Line Indicating Type Keys.

All Stromberg-Carlson Keys are made with high grade nickel-silver springs of sufficient length to be flexible. These springs are insulated with best quality phenol fiber, equipped with commercially pure silver contacts, and securely mounted in rigid steel frames.

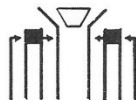


No. 34 Key Assembly

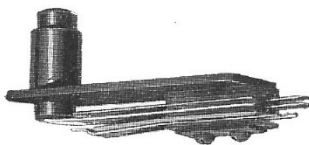
Spring Combinations



No. 34 Key
Non-Locking
No. 119 Key
Locking

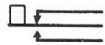


No. 300 Key
Non-Locking
No. 301 Key
Locking

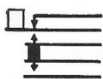


No. 303 Key Assembly

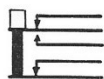
Spring Combinations



No. 303 Key
Non-Locking



No. 304 Key
Non-Locking



No. 305 Key
Non-Locking

Individual Plunger Type

Code No.	Description	Price Each
34	A unit type non-locking key. Mounting centers —1 in. Diameter of shell— $\frac{3}{4}$ in. Designed for mounting in $\frac{7}{8}$ in. key shelf or panel through a $\frac{1}{2}$ in. drill hole. Held in place by two Pe. No. 3939 R. H. I. W. Screws. Used on Central Energy Multiple Switchboards for cord test key and on Magneto Switchboards for order wire key.	\$1.25
119	Similar in design to the No. 34 Key, same spring combinations, but with locking plunger. Used on P. B. X. and Magneto Switchboards for night alarm, code alarm, generator, and battery cut-off key.	1.25
300	Similar in design to the No. 34 Key—non-locking, but with spring combinations as shown. An order wire key used on the No. 105 Magneto Switchboard and also miscellaneously.	1.35
301	Similar in design to the No. 34 Key, but with locking plunger and spring combinations as shown. A position switching key for the No. 105 Switchboard.	1.35

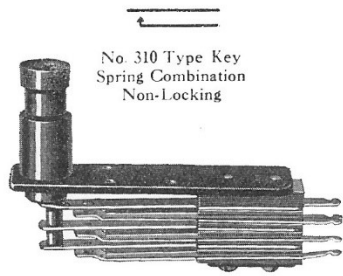
Individual Push Button Type

Code No.	Description	Price Each
303	Used on the No. 896 Magneto Wall Telephone and other subscriber's sets as a "Non-Interfering" Push Button Ringing Key which permits a rural subscriber to ring central (on a metallic line) without ringing the other phones on his line. Mounts below the hookswitch from the inside of the cabinet with the push button protruding through the woodwork, and is secured by three Pe. No. 11998 Wood screws. Designed to mount on any $\frac{1}{2}$ in. woodwork. The plunger bushing fits a $\frac{3}{8}$ in. hole. Push-Button—Non-Locking. Length over springs— $2\frac{15}{16}$ ins. Width— $\frac{3}{4}$ in.	\$.60
304	Similar in design to the No. 303 Key, but with different spring combinations. Used on Magneto Telephones for short circuiting Magneto lines in connection with "Non-Interfering" Ringing.	.80
305	Similar in design to the No. 303 Key, but with different spring combinations. Functions as a hookswitch in the No. 884 Test Set Box. Mounts on upper woodwork inside the telephone box.	.80

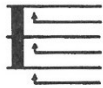
Keys (Cont.)

Individual Push Button Type (Cont.)

Code No.	Description	Price Each
310-A	An Individual Non-Locking Push Button Key for four party harmonic machine ringing. Used in Super-Service Cord Circuits to select the frequency on Central Energy Super-Service Multiple Switchboards. Mounts from under side of key shelf,—bushing protrudes through woodwork and flush with top of key shelf. Diameter of hole must be— $\frac{3}{8}$ in. for clearance of push button. Mounts with 2 Pc. No. 11998 R. H. I. W. Screws. Specify these screws on order. Length of key over springs— $2\frac{1}{8}$ ins. Width— $\frac{3}{4}$ in. Total height— $1\frac{3}{4}$ ins. Designation—White Button with black center. Diameter of button— $\frac{5}{8}$ in. Diameter of colored center— $\frac{3}{8}$ in. Designed for— $\frac{7}{8}$ in. key shelf.	\$1.00
310-B	Same as No. 310-A Key, except designated by White Button with red center.	1 00
310-C	Same as No. 310-A Key, except designated by White Button with blue center.	1.00
310-D	Same as No. 310-A Key, except designated by White Button with green center.	1.00
310-E	Same as No. 310-A Key, except has plain White Button, without colored center. Used on Super-Service Switchboards with a separately mounted designation,—See Labels.—Number Plates Code No. 17.	1.00
312	An individual Non-Locking Push Button Order Wire Key, for Super-Service Switchboards. Designed for mounting from under side of a $\frac{7}{8}$ in. key shelf through a $\frac{1}{2}$ in. drill hole flush with key shelf's surface. Mounts with 2 Pc. No. 11998 R. H. I. W. Screws. Specify these screws on order. Length of key over springs— $2\frac{1}{8}$ ins. Width— $\frac{3}{4}$ in. Total height— $3\frac{1}{8}$ ins. Finish of button—Black. Diameter of button— $\frac{23}{32}$ in.	1.25



No. 312 Key Assembly

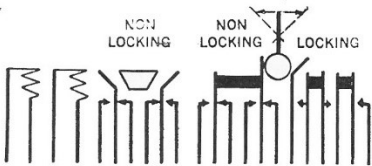


Combined Key and Drop Type

Piece Parts shown on page 234

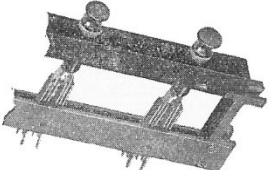
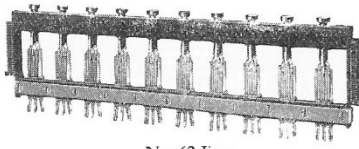
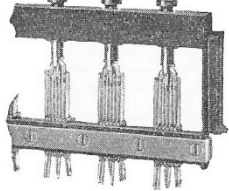
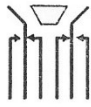
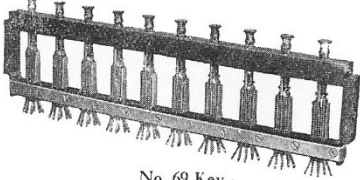
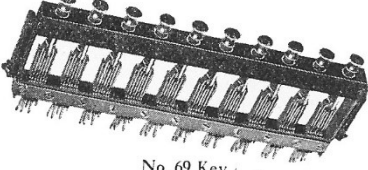
Code No.	Description	Price Each
169-F	This key combines in one compact unit, listening key, ringing keys, and ring-off signals. Furthermore, it has automatically-restored ring-off signals. Used principally on Stromberg-Carlson Magneto Switchboards but is also readily installed on other standard switchboards. Mounts on keyboard. Consists of a steel frame, shutter hoods, regular ringing key, listening key, ring back key, and two coils for actuating ring-off shutter signals. The listening cam is mechanically linked with the shutters of these ring-off signals, so that the latter are automatically restored when the listening key's lever is operated. Ring-off signals are equipped with night alarm contacts and removable coils. Signal shutters are protected by steel hoods, which are equipped with celluloid windows. All exposed metal parts are given a durable black enamel finish so as to match the remaining parts of the keyboard. Size of escutcheon— $7\frac{1}{4} \times 1\frac{1}{8}$ inches. Mounts flush with the keyboard's surface on $6\frac{1}{8}$ inch mounting centers. Resistance of ring-off signals—1000 ohms. For replacing single ring-off coil order No P-12259. Price \$1.45.	\$11.50

No. 169-F Key Assembly



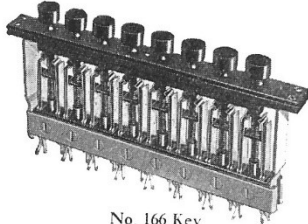
169-F Key Spring Combination

Keys (Cont.)
Plunger Jack Type

	Code No.	Description	Price Per Strip
 <p>End View No. 62 Key on 1 Mounting</p>	62 on 1 Mounting	A former standard strip of Non-Locking Push Button Keys assembled on hard rubber strips and metal frames like jacks. Used for restoring rural line circuits, for testing lines, and for miscellaneous purposes.	\$11.00
 <p>No. 62 Key on 122 Mounting</p>	62 on 122 Mounting	Mounts in the face of two and six panel multiple switchboard sections, Chief Operator's and Wire Chief's Desks, on the same centers as the No. 109 Type Jack. Mounts 10 keys per strip. Length of key strip overall—11 $\frac{15}{16}$ ins. Length of face strip overall—10 $\frac{3}{8}$ ins. Width of face strip overall— $\frac{1}{2}$ in. Depth of key from face to tip of springs—2 $\frac{5}{16}$ ins. Mounting Centers—10 $\frac{1}{8}$ ins. Requires two No. 12 Jack Fasteners. Key Blank required—No. 6 Jack Blank. Price per single key \$1.00.	11.00
 <p>End View No. 62 Key on 122 Mounting</p>	62 on 123 Mounting	A new standard strip of Non-Locking Push Button Keys assembled on hard rubber strips and metal frames like jacks. Used the same as the No. 62 Key on No. 3 Mounting only mounts on the same centers as the No. 130 Type Jack. Mounts 10 keys per strip. Length of key strip overall—11 $\frac{1}{8}$ ins. Length of face strip overall—10 $\frac{3}{8}$ ins. Width of face strip overall— $\frac{1}{2}$ in. Depth of key from face to tip of springs—3 $\frac{1}{16}$ ins. Mounting centers—11 $\frac{1}{16}$ ins. Requires two No. 17 Jack Fasteners. Key Blank required—No. 52 Jack Blank. Price per single key \$1.00.	11.00
 <p>No. 62 Key Spring Combination Non-Locking</p>	69 on 1 Mounting	Same as the No. 62 Key on No. 122 Mounting only smaller. Used in three and eight panel multiple switchboard sections and mounts on the same centers as the No. 127 Jack. Mounts 10 keys per strip. Length of key strip overall—8 $\frac{5}{16}$ ins. Length of face strip overall—7 $\frac{1}{2}$ ins. Width of face strip overall— $\frac{1}{2}$ in. Depth of key from face to tip of springs—3 $\frac{1}{16}$ ins. Mounting Centers—8 $\frac{3}{8}$ ins. Requires two No. 17 Jack Fasteners. Key blank required—No. 43 Jack Blank. Price per single key \$1.00.	11.00
 <p>No. 69 Key on 122 Mounting</p>	69 on 122 Mounting	A strip of former standard locking push button keys assembled on hard rubber strips and metal frames like jacks. Used for switching circuits on Local and Toll Boards, and miscellaneous purposes. Mounts in the face of two and six panel multiple switchboard sections, Chief Operator's, and Wire Chief's Desks on the same centers as the No. 109 Type Jack. Mounts 10 keys per strip. Same dimensions and requirements as the No. 62 Key on No. 1 Mounting. Price per single key \$1.00.	11.00
 <p>No. 69 Key on 123 Mounting</p>	69 on 122 Mounting	A new Standard Strip of Locking Push Button Keys assembled on hard rubber strips and metal frames like jacks. Used for switching circuits on Local and Toll Boards, and miscellaneous purposes. Mounts in the face of two and six panel Multiple Switchboard Sections, Chief Operator's and Wire Chief's Desks on the same centers as the No. 130 Type Jacks. Mounts 10 keys per strip. Same dimensions and requirements as the No. 62 Key on No. 122 Mounting. Price per single key \$1.00.	11.00



No. 69 Key
Spring Combination
Locking



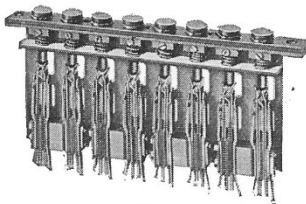
No. 166 Key



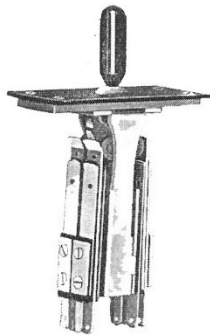
No. 166 Key
Spring Combination
Non-Locking



No. 190 Key
Spring Combinations
Non-Locking



No. 190-D Key



Cam Type Key with
Flush Type Mounting

Keys (Cont.)

Plunger Jack Type (Cont.)

Code No.
69 on 123
Mounting

Description
Same as the No. 69 Key on No. 122 Mounting except smaller. Used in three and eight panel multiple switchboard sections and mounts on the same centers as the No. 127 Jack. Mounts 10 keys per strip. Same dimensions and requirements as the No. 62 Key on No. 123 Mounting. Price per single key \$1.00.

Price
Per Strip
\$11.00

Plunger—Strip Keyboard Type

Code No.
166

Description
Order Wire Key for Switchboards. Mounts on keyboard. Requires two No. 6-32 x $\frac{1}{8}$ in. R.H.I.M. Screws. Grouping—Eight keys per strip. Push Buttons—Non-Locking. Finish of buttons—Black. Mounting Centers— $5\frac{3}{8}$ ins. Depth of key from face to tip of springs— $2\frac{3}{4}$ ins. Price per single key—\$.75.

Price
Per Strip
\$6.00

190-D

This type is a New Standard Order Wire Key, and is used the same as the No. 166 but with more convenience as the keys are made up in groups of two, mounted upon a steel mounting plate so that only as many keys as required need be installed.

8.50

Equipped with eight keys per strip. Mounts on keyboard with 2 No. P-12672 Clamps and 2 No. P-12908 Oval Headed Machine Screws. No. 2 Plug Hole Blank is used when mounting is not fully equipped with keys. Push Button—Non-Locking. Finish—Dull Black. Size of escutcheon— $5\frac{1}{2}$ x $\frac{1}{2}$ ins. Mounting Centers— $5\frac{1}{8}$ ins. Price per single key—\$1.00.

191-E

Same as the No. 190 Key except with longer escutcheon. Size— $6\frac{1}{2}$ x $\frac{1}{2}$ ins. Equipped with ten keys. Price per single key—\$1.00.

11.00

Note (1)—If Order Wire Buttons are to be engraved with letter or number designations, add \$0.10 per button.

Note (2)—Standard button for order wire keys is furnished in black—Other colored buttons are special and add \$0.15 per button.

Cam Type

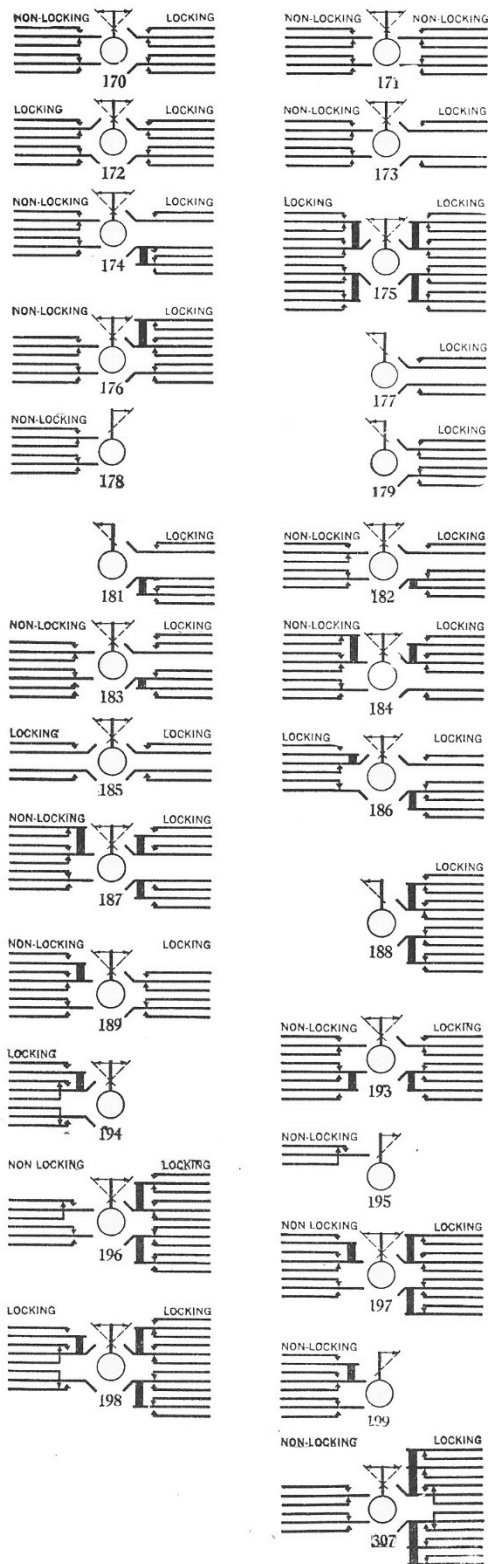
Piece Parts shown on page 235

This key is for standard utility purposes, used in circuits where switching, ringing or listening service is required. It is equipped with either one-way or two-way cam levers in both locking or non-locking types. Provided with spring combinations suitable for practically any circuit, where the use of a cam key is essential.

Both cam and springs are constructed upon a rigid, punched, rust-proofed steel frame. This frame is equipped with a steel top, vertical spring combinations, and free action roller type cams.

A Key Mounting is required for each key. Order this Key Mounting as a separate item. It is furnished for flush keyboard mounting, for surface keyboard mounting, or for switchboard face mounting. See Key Mountings, page 41.

Spring Combinations—Cam Type Keys



Keys (Cont.)

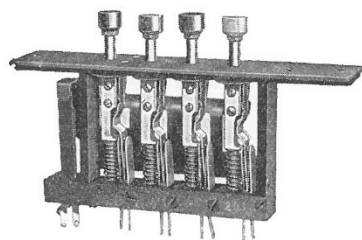
Cam Type (Cont.)

Code No.	Description	Price Per Key Less Mounting
170-A	Cam operates two-ways Locking and Non-Locking	\$1.50
171-A	Cam operates two-ways Non-Locking and Non-Locking	1.50
172-A	Cam operates two-ways Locking and Locking	1.50
173-A	Cam operates two-ways Locking and Non-Locking	1.40
174-A	Cam operates two ways Locking and Non-Locking	1.60
175-A	Cam operates two-ways Locking and Locking	2.50
176-A	Cam operates two-ways Locking and Non-Locking	1.80
177-A	Cam operates one way Locking	1.00
178-A	Cam operates one way Non-Locking	1.00
179-A	Cam operates one way Locking	1.00
181-A	Cam operates one way Locking	1.25
182-A	Cam operates two-ways Locking and Non-Locking	1.50
183-A	Cam operates two-ways Locking and Non-Locking	1.80
184-A	Cam operates two-ways Locking and Non-Locking	1.90
185-A	Cam operates two-ways Locking and Locking	1.40
186-A	Cam operates two-ways Locking and Locking	1.70
187-A	Cam operates two-ways Locking and Non-Locking	2.00
188-A	Cam operates one way Locking	1.60
189-A	Cam operates two-ways Locking and Non-Locking	1.80
193-A	Cam operates two-ways Locking and Non-Locking	2.00
194-A	Cam operates one way Locking	1.50
195-A	Cam operates one way Non-Locking	1.00
196-A	Cam operates two-ways Locking and Non-Locking	2.35
197-A	Cam operates two-ways Locking and Non-Locking	2.45
198-A	Cam operates two-ways Locking and Locking	2.75
199-A	Cam operates one way Non-Locking	1.50
313-A	Cam operates two ways Locking and Non-Locking	2.75
314-A	Cam operates two ways Locking and Locking	3.00

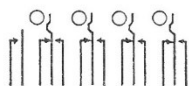
Keys (Cont.)

Party Line Indicating Type

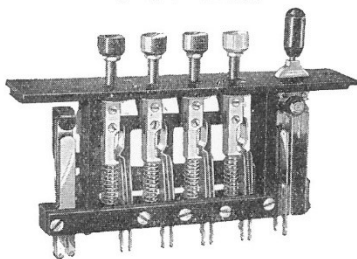
Piece Parts shown on page 236



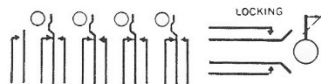
No. 201 Key Assembly



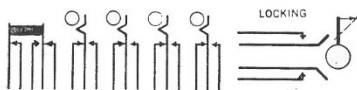
No. 201 Key
Spring Combination



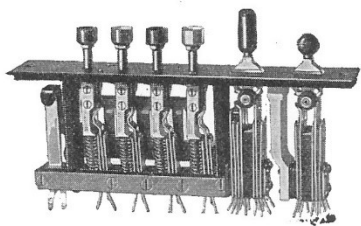
No. 211-B Key Assembly



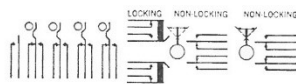
No. 211-B Key
Spring Combination



No. 221-B Key
Spring Combination



No. 231-W. H. Key Assembly



No. 231-W. H. Key
Spring Combination

Code No.

Description

Price Includes
Mtg. Plate

201

A four button, indicating, party line ringing key. Adapted to switchboards that are equipped with either "Manual" or "Machine Ringing" facilities. Each button has three positions,—fully depressed, partially released or indicating, and fully released or normal. The spring combinations individual to each button are actuated when any button is in its "indicating position." The spring combination which is operated by the tumbler plate is actuated only when one of the buttons is in its "fully depressed" position. Each button is fully restored automatically when another button is depressed. The buttons are colored blue, red, green and black. Size of key top— $5\frac{1}{2} \times 1\frac{1}{8}$ ins. Depth of key from surface of escutcheon to the tips of springs,— $2\frac{3}{4}$ ins. Key top mounts flush with keyboard's surface and is finished in dull black.

\$5.50

211-B

This is a four button indicating, party line ringing key combined with a cam type listening key. The action of the buttons is the same as that of the No. 201 Key. Used in cord circuits which are designed for "Machine Ringing" and "Manual Listening."

6.30

The buttons are colored blue, red, green, and black.

Size of key top— $5\frac{1}{2} \times 1\frac{1}{8}$ ins. Depth of key from the surface of escutcheon to the tips of the springs— $2\frac{3}{4}$ ins.

221-B

A four button indicating party line ringing key with a one-way locking cam. Adapted to local "Central Energy" cord circuits which are arranged for "Manual" Four Party Harmonic Ringing and "Manual Listening."

6.55

The key plungers have three positions,—ringing, indicating and normal. The spring combinations individual to each button are actuated in the fully depressed position, but not until after the tumbler plate has actuated the common end springs. Both the end springs and the springs associated with a depressed button return to normal, as the button is released to its indicating position. Each button remains in its indicating position until it is fully restored automatically when another button is depressed. The buttons are colored blue, red, green, and black.

Size of key top— $5\frac{1}{2} \times 1\frac{1}{8}$ ins. Depth of key from the surface of escutcheon to the tips of the springs— $2\frac{3}{4}$ ins.

231-WH

This key consists of a four button indicating party line ringing key mounted with two cam keys. The action of the buttons and the spring combinations controlled by the buttons is identical with that of the No. 201 Key.

8.20

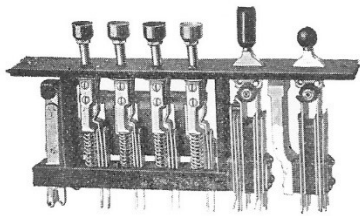
Used in universal cord circuits which are designed for the following features:—Four Party "Machine Ringing," "Manual Listening," and with provision for manual toll ringing on either cord end.

Size of key top— $6\frac{1}{2} \times 1\frac{1}{8}$ ins. The buttons are colored blue, red, green, and black.

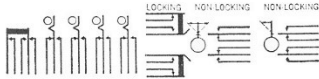
Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.

Keys (Cont.)

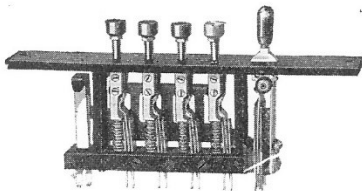
Party Line Indicating Type (Cont.)



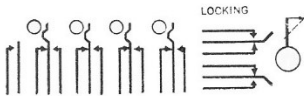
No. 236-W. H. Key Assembly



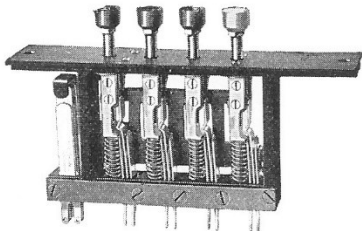
No. 236 W. H. Key Spring Combination



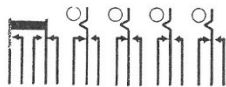
No. 252-A Key Assembly



No. 252-A Key Spring Combination



No. 261 Key Assembly



No. 261 Key Spring Combination



No. 55 Surface Key Mounting


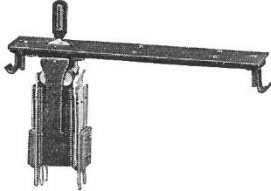
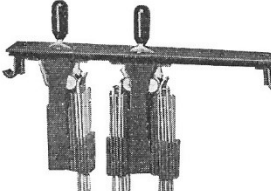
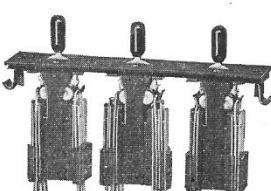
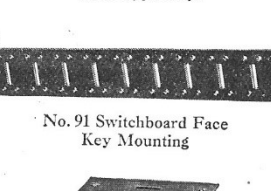
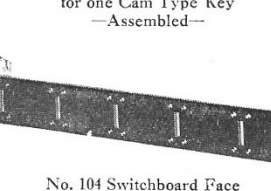


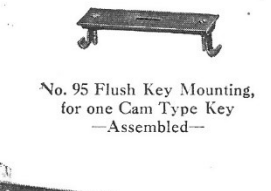


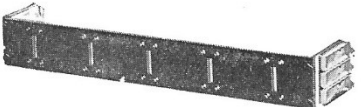
Code No.	Description	Price Includes Mtg. Plate
236-WH	An indicating, four button party line key mounted with two cams. Used in universal cord circuits that are designed for:—"Manual Party Line Ringing" on the calling cord end, "Manual Party Line Ringing" on the answering cord end, "Manual Toll Ringing" on either cord end and "Manual Listening" bridged across the cord circuit. The operation of the buttons is similar to that described for the No. 221-B Key. The buttons are colored blue, red, green, and black. Size of key top— $6\frac{1}{2} \times 1\frac{1}{8}$ ins. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.	\$8.45
252-A	Consists of a four button indicating party line ringing key mounted with a one way locking cam key. The action of the buttons and the spring combinations which are controlled by the buttons is identical with that of a No. 201 Key. This key is generally used as an eight party master key in the following manner:—it is wired in the circuit so as to ring selectively to ground four parties connected on the "ring" side of the line, or to ring selectively to ground four parties connected on the "tip" side of the line. The position of the cam key handle indicates which side of the line is being rung to ground. The buttons are colored blue, red, green, and black. Size of key top— $7\frac{1}{4} \times 1$ in. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.	6.50
261	This key is of the four button indicating party line type adapted for use as an individual, manual, harmonic selective ringing, push button key on local to local trunk circuits. The key plungers have three positions; ringing, indicating, and normal. The spring combinations, that are individual to each button, are actuated only in the fully depressed position and not until after the tumbler has actuated the common end springs. Both the end springs and the springs associated with a depressed button return to normal when the button is released to its indicating position. Each button remains in its indicating position until it is fully restored automatically when another button is depressed. The buttons are colored, blue, red, green, and black. Size of key top— $5\frac{1}{2} \times 1\frac{1}{8}$ ins. Depth of key from surface of escutcheon to the tips of springs— $2\frac{3}{4}$ ins.	5.75

Key Mountings

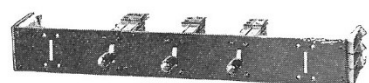
The following Key Mountings are designed to be used with Stromberg-Carlson Keys. They are furnished in three designs—for *surface keyboard mounting*, for *flush keyboard mounting*, and for *switchboard face mounting*.

Code No.	Description	Price Includes Mtg. Screws and Clamps
55	For keyboard surface mounting. Mounts one Cam Type Key. Steel escutcheon. Finish—Black enamel. Length of face— $2\frac{3}{4}$ ins. Width of face— $\frac{3}{4}$ in. Mounting Centers— $2\frac{3}{8}$ ins. Mounts with 2—No. P-5502 Oval Head Wood Screws.	\$.50

Key Mountings (Cont.)

	Code No.	Description	Price Includes Mtg. Screws and Clamps
	66	For keyboard surface mounting. Mounts one Cam Type Key. Steel escutcheon similar to No. 55. Finish—Black Enamel. Length of face— $2\frac{5}{16}$ ins. Width of face— $\frac{3}{4}$ in. Mounting Centers— $1\frac{1}{8}$ in. Mounts with 2 No. P-5502 Oval Head Wood Screws.	\$.50
	82	For keyboard flush mounting. Same as No. 88 except different dimensions. Mounts one Cam Type Key. Formica over steel top. Finish—Dull Black. Length of face— $6\frac{1}{2}$ ins. Width of face—1 in. Mounting Centers— $6\frac{1}{16}$ ins. Mounts with two No. P-12908 Screws and two No. P-12672 Clamps.	.75
	83	Same as the No. 82 Mounting but mounts two Cam Type Keys.	1.00
	84	Same as the No. 82 Mounting but mounts three Cam Type Keys.	1.50
	88	For keyboard flush mounting. Mounts one Cam Type Key. Formica over steel top. Finish—Dull Black. Length of face— $5\frac{1}{2}$ ins. Width of face—1 in. Mounting centers— $5\frac{1}{16}$ ins. Mounts with two No. P-12908 Screws and two No. P-12672 Clamps.	.50
	89	Same as the No. 88 Mounting but mounts two Cam Type Keys.	.75
	90	Same as the No. 88 Mounting but mounts three Cam Type Keys.	1.00
	91	For switchboard face mounting. Mounts ten Cam Type Keys. Steel strip equipped with steel end lugs. Length of face— $10\frac{3}{8}$ ins. Width of face— $1\frac{1}{2}$ ins. Keys spaced—1 in. apart Mounting Strip Centers— $11\frac{1}{16}$ ins. Mounts with two No. 17 Jack Fasteners.	4.00
	92	For keyboard flush mounting. Same as No. 88 except with different dimensions. Mounts one Cam Type Key. Formica over steel top. Finish—Dull Black. Length of face— $5\frac{1}{2}$ ins. Width of face— $1\frac{1}{8}$ ins. Mounting Centers— $5\frac{1}{16}$ ins. Mounts with two No. P-12908 Screws and two No. P-12672 Clamps.	.75
	93	Same as the No. 92 Mounting but mounts two Cam Type Keys.	1.00
	94	Same as the No. 92 Mounting but mounts three Cam Type Keys.	1.25
	95	For keyboard flush mounting. Mounts one Cam Type Key. Formica over steel top. Length of face— $2\frac{3}{4}$ ins. Width of face— $1\frac{1}{8}$ ins. Mounting Centers— $2\frac{5}{16}$ ins. Mounts with two No. P-12908 Screws and two No. P-12672 Clamps.	.75
	104	For switchboard face mounting Mounts five Cam Type Keys Steel strip equipped with steel end lugs. Length of face— $10\frac{3}{8}$ ins.	3.50

Key Mountings (Cont.)



No. 104 Switchboard Face Key Mounting, assembled with three Cam Type Keys



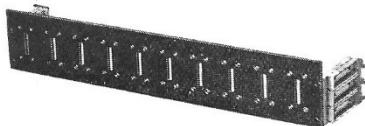
No. 114 Flush Key Mounting, for one Cam Type Key - Assembled -



No. 115 Flush Key Mounting, for two Cam Type Keys - Assembled -



No. 116 Flush Key Mounting, for three Cam Type Keys - Assembled -

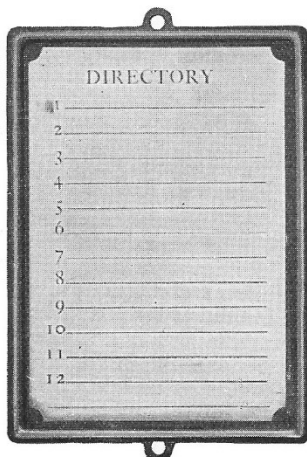


No. 120 Switchboard Face Key Mounting

Labels—Card Frame



No. 2



No. 3

Code No.	Description	Price Includes Mtg. Screws and Clamps
111	Width of face—1½ ins. Keys spaced 2 ins. apart. Mounting Centers—11¼ ins. Mounts with two No. 17 Jack Fasteners For keyboard flush mounting Same as the No. 114 Mounting except for dimensions. Mounts one Cam Type Key Formica over steel top Finish—Dull Black Length of face—6½ ins. Width of face—1½ ins. Mounting Centers—6¼ ins. Mounts with 2 No. P-12908 Screws and 2 No. P-12672 Clamps.	\$.75
112	Same as the No. 111 Mounting but mounts two Cam Type Keys.	1.00
113	Same as the No. 111 Mounting but mounts three Cam Type Keys.	1.25
114	For keyboard flush mounting Mounts one Cam Type Key Formica over steel top Finish—Dull Black Length of face—7¼ ins. Width of face—1½ ins. Mounting Centers—6¼ ins. Mounts with 2 No. P-12908 Screws and 2 No. P-12672 Clamps.	.75
115	Same as the No. 114 Mounting but mounts two Cam Type Keys.	1.00
116	Same as the No. 114 Mounting but mounts three Cam Type Keys.	1.25
119	Same as the No. 114 Mounting except for dimensions. Mounts three Cam Type Keys Length of face—5½ ins. Width of face—¾ in. Mounting Centers—5¼ ins.	1.50
120	For switchboard face mountings Mounts ten Cam Type Keys Same as the No. 91 Mounting except for dimensions. Length of face—10¾ ins. Width of face—2 ins. Keys spaced—1 in. apart Mounting Centers—11¼ ins. Mounts with two No. 17 Jack Fasteners	4.00

Labels—Card Frames

Code No.	Use	Description	Price/Each
2	Mounts Subscriber's number on face of No. 7 Type Transmitter.	Construction—Steel, black enameled frame holding white bristol-board with transparent celluloid protector. Length—2½ in. Width—¾ in.	\$.10
3	Mounts operator's instruction cards on No. 101 P. B. X. Switchboards and on toll boards.	Construction—Brass frame, with japanned semi-gloss black finish, holding buff colored card with glass protector. Length—3¼ ins. Width—2¼ ins.	.25

Labels—Number Plates

Number Plates—used on jack stiles to designate subscriber's multiple; on plug boards to designate cord circuits; on keyboards to designate keys; and on power boards to designate switches.

Labels—Number Plates



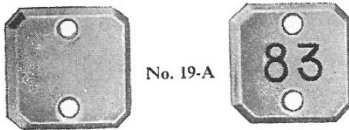
No. 13



No. 17



Nos. 17 A-B-C and D



No. 19-A

Code No.	Description	Price Each
13	A round number plate, used on wood drop mounting panels, keyboards, terminal strips, etc. Consists of white opaque celluloid engraved with black figures— $\frac{1}{8}$ in. high. Mounts flush—drive fit. Diameter— $\frac{1}{4}$ in. Thickness— $\frac{3}{16}$ in.	\$.35
17	Round number plate used on plug boards and keyboards, associated principally with the No. 310-E Key on Super-Service Switchboards. Consists of white opaque celluloid or colored Erinoid—plain or engraved with figures or letters— $\frac{3}{16}$ in. high. Mounts flush—drive fit. Diameter— $\frac{7}{16}$ in. Thickness— $\frac{5}{16}$ in.	.35
17-A	Same as No. 17 only Black Erinoid.	.35
17-B	Same as No. 17 only Red Erinoid.	.35
17-C	Same as No. 17 only Blue Erinoid.	.35
17-D	Same as No. 17 only Green Erinoid.	.35
19-A	Square number plate used on multiple finishing stiles. Consists of white ivory with black engraved figures—style to be specified. Three figures or less— $\frac{3}{32}$ in. high, four or more $\frac{5}{64}$ in. Mounts with 2 No. P-12910 O. H. M. Screws or two No. P-6782 O. H. W. Screws. Size— $\frac{11}{16}$ in. square. Thickness— $\frac{7}{64}$ in.	.45
19-B	Same as No. 19-A only Red Ivory.	.45

Switchboard Lamps

Stromberg-Carlson Tipless Switchboard Lamps meet the most exacting requirements of telephone service. These lamps are—

Built for long life with uniform brilliancy throughout life.

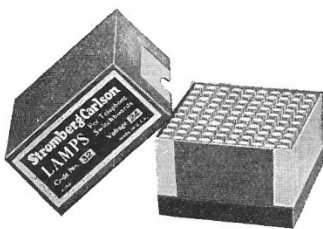
Equipped with rugged filaments, porcelain bases, and highly evacuated bulbs.

Arranged to fit any standard lamp socket that is used in telephone service. Length overall— $1\frac{23}{32}$ inches. Diameter 0.300 inch.

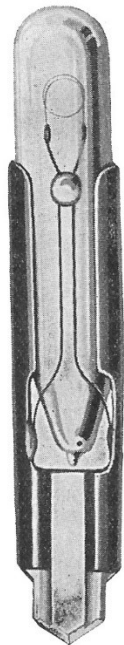
Operating through a maximum range of voltage varying with a minimum fluctuation of signal value.

Will give an average life of 1000 active hours.

The following types of lamps are carried in stock for immediate shipment—100 lamps in a box. Shipping weight per box— $1\frac{1}{2}$ lbs.

No. 32
Switchboard Lamps

Switchboard Lamps (Cont.)



No. 32
Switchboard Lamp,
Enlarged View

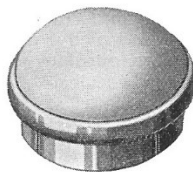
Code No.	Voltage	Used In	Current Consumption (Amperes)	
			Minimum	Maximum
16	12	Transfer trunk circuits on Magneto Switchboards.	.090	.110
28	30	Government Switchboards.	.090	.110
31	16	Series—Lamp, Line Circuits on P. B. X. Switchboards.	.090	.110
32	16 to 28	Central Energy Multiple and P. B. X. Switchboards—11 Cell Systems. Replaces Nos. 12 and 14 Lamps.	.060	.085
33	36 to 48	Central Energy Multiple and P. B. X. Switchboards—20 Cell Systems. Replaces Nos. 10, 22, and 24 Lamps.	.060	.085

Prices

1 to 99.....	\$.33	each
100 to 499.....	.31½	“
500 and over.....	.29	“

Lamp Caps

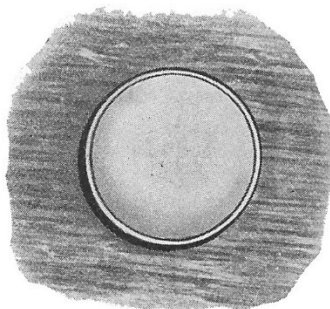
Stromberg-Carlson Lamp Caps are built to combine neatness with durability—the lenses are made of specially annealed glass to resist breakage from impact with plugs, and are mounted in bushings made from seamless brass tubing which is later spun over to retain the jewels,—other end of shank is slotted for close fitting in lamp socket.



No. 23 Pilot Type

No. 23 Pilot Type

Code No.	Color	Description	Price Each
23-A	White Translucent	A pilot lamp cap used on Central Energy Multiple, Non-Multiple, and P. B. X. Switchboards. Designed for use with the No. 9 Individual Lamp Socket. This lamp cap is equipped with an attractive sandblasted opalescent lens. Maximum diameter of face— $\frac{11}{16}$ in. Diameter of shank is 0.811 in. or fits $\frac{11}{16}$ in. hole.	\$.35
23-B	Red Jewel	Same as the No. 23-A Lamp Cap but colored.	.35
23-C	Green Jewel	Same as the No. 23-A Lamp Cap but colored.	.35



No. 23 Pilot Type
Mounted

No. 27 Supervisory Type

Code No.	Color	Description	Price Each
27-A	White Translucent	A Supervisory Lamp Cap associated with trunk circuits, with cord circuits, and with miscellaneous circuits where caps are not required to be numbered. Designed for use with the No. 12 Lamp Socket on the keyboard and the No. 121 Lamp Socket in the switchboard's face. This lamp	\$.10

Lamp Caps (Cont.)

No. 27 Supervisory Type (Cont.)

Code No.	Color	Description	Price Each
		cap is equipped with a glossy milkwhite non-breakable opal. Maximum diameter of face— $\frac{3}{8}$ in. Diameter of shank is 0.340 in. or fits— $\frac{11}{32}$ in. hole	
27-B	Red Translucent	Same as the No. 27-A except colored and sand-blasted to avoid reflection	\$.10
27-C	Green Translucent	Same as the No. 27-A except colored and sand-blasted to avoid reflection.	.10
27-D	Colorless Transparent	Same as the No. 27-A except clear.	.10
27-E	Normally White Translucent—Red when illuminated	Same as the No. 27-A except equipped with an invisible colored disc to give red color when illuminated.	.10



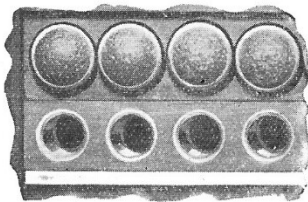
No. 27 Supervisory Type

No. 29 Line Type

Code No.	Color	Description	Price Each
29-A	Transparent Opal	Associated with line lamps in 20 per strip mounting on eight Panel Multiple Switchboards. Designed principally for use with the No. 121 Lamp Socket on No. 83 Mounting. Equipped with a glossy, transparent non-breakable lens and removable number disc which is held in place by an invisible ring. Disc numbered as specified. Maximum diameter of face— $\frac{3}{8}$ in. Diameter of shank 0.320 in. or fits a $\frac{1}{16}$ in. hole.	\$.10
29-B	Red Opal	Same as the No. 29-A except colored lens is sand blasted to avoid reflection.	.10
29-C	Green Opal	Same as No. 29-B.	.10
29-D	White Translucent	Same as the No. 29-A except equipped with glossy, milk white lens.	.10
29-E	Cloudy	Same as No. 29-A except lens is marked "●".	.10
29-F	Cloudy	Same as No. 29-A except lens is marked "+".	.10
29-G	Cloudy	Same as No. 29-A except lens is marked "-".	.10



No. 29 Line Type



No. 29 Line Type Mounted and associated with line jacks

No. 30 Line Type

Code No.	Color	Description	Price Each
30-A	Transparent Opal	A lamp cap used on P. B. X. and Multiple Switchboards over line lamps. Designed for use with the No. 121 Lamp Socket on Nos. 79, 80, 81 or 82 Mountings. Equipped with a glossy, transparent non-break-	\$.10



No. 30-A Line Type

Lamp Caps (Cont.)

30 Line Type (Cont.)



No. 30-D



No. 30-J



No. 30-K



No. 31-A Supervisory Type



No. 31-B Supervisory Type

Code No.	Color	Description	Price Each
		able opal and removable paper number disc which is held in place by an invisible ring. Disc numbered as specified. Diameter of face— $\frac{3}{8}$ in. Diameter of shank 0.340 in. or fits— $\frac{1}{16}$ in. hole.	
30-D	White Dot Designation	Same as the No. 30-A but furnished with special designation as shown.	\$.10
30-J	White Cross Designation	Same as No. 30-D.	.10
30-K	White Line Designation	Same as No. 30-D.	.10

No. 31 Supervisory Type

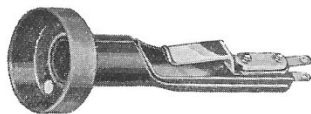
Code No.	Color	Description	Price Each
31-A	White Translucent	New standard lamp cap used with both trunk and cord circuits on P. B. X. and Multiple Switchboards. Designed only for use with the No. 13 Lamp Socket. Equipped with a glossy milk white non-breakable lens. Maximum diameter of face— $\frac{1}{2}$ in. Diameter of shank 0.343 in. or fits $\frac{1}{16}$ in. hole. Shank has chamfered edges.	\$.10
31-B	Red Translucent	Same as the No. 31-A except lens is sand-blasted to avoid reflection.	.10
31-C	Green Translucent	Same as No. 31-B.	.10

Lamp Sockets

Stromberg-Carlson Lamp Sockets are furnished in two types: those for mounting individually and those for mounting in strips. Both of these types are provided with all metal frames so as to readily distribute and radiate the heat generated by the lamps. Every Stromberg-Carlson Lamp Socket with the exception of Code Nos. 7, 10, and 11, takes a standard switchboard lamp and lamp cap. Code Nos. 7, 10 and 11 Lamp Sockets take Edison base lamps.

Lamp Sockets which are mounted in strips for use in the face of switchboard align with jacks of the same code number of mounting.

Mounting screws, fasteners, and lamp caps are not included with the lamp sockets, but should be ordered separately.



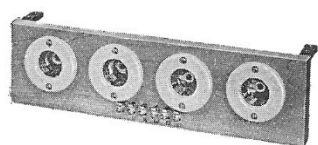
No. 9 Lamp Socket

Individual Lamp Sockets

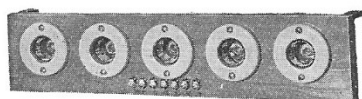
Code No.	Description	Price Each
9	For pilot lamp service on P. B. X. and Multiple Switchboards. Used with standard switchboard lamps and the No. 23 Lamp Cap. Mounts on the face of the switchboard in any standard panel with two P-128 Wood Screws. Consists of steel frame with brass head for lamp cap; equipped with insulating fiber tubing and nickel silver springs. Length overall— $2\frac{1}{8}$ ins. Diameter of head— $\frac{1}{8}$ in. Diameter of sleeve— $\frac{1}{16}$ in.	\$.20

Lamp Sockets (Cont.)

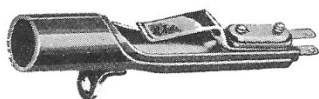
Individual Lamp Sockets (Cont.)



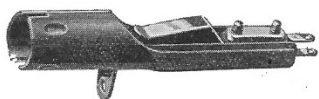
No. 10 Lamp Socket



No. 11 Lamp Socket



No. 12 Lamp Socket



No. 13 Lamp Socket

Code No.	Description	Price Each
10	Mounted lamp sockets designed to mount four Mazda resistance lamps for generator protection, used in multiple switchboards where four party ringing service is required. Strip fastened to the roof of the switchboard with four No. 10 x 3/4 in. R. H. I. W. Screws (Blued). Consists of a white shellaced maple mounting strip equipped with:— four No. 9514 Bryant Porcelain Edison Base Lamp Sockets; six No. 4 Cord Terminals; and two steel supports for mounting. Length overall—13 ins. Breadth overall—3 1/2 ins. Thickness overall—2 3/4 ins.	\$5.00
11	Mounted lamp sockets designed to mount five Mazda resistance lamps for generator protection, Used in multiple switchboards where four party, ringing and toll service is required. Same as the No. 10 Strip, except equipped with five lamp sockets and seven terminals. Length overall—16 ins. Breadth overall—3 1/2 ins. Thickness overall—2 3/4 ins.	5.75
12	Used on P. B. X. and Multiple Switchboards for Supervisory lamp service. Consists of a steel frame with a fiber tubing for insulating purposes and nickel-silver springs. Mounts from the under surface of any standard—7/8 in. key shelf with one No. 4 x 1/2 in. R. H. I. W. Screw. Takes standard switchboard lamp and the No. 27 Lamp Cap. Length over springs—2 7/8 ins. Diameter of sleeve—7/16 in. Mounting lug—1/8 in. from face.	.20
13	A new standard lamp socket for cord circuits and supervisory lamp service. Replaces the No. 12 and used on all new work. Used on P. B. X., Multiple, and Super-Service Switchboards. Consists of a steel frame with a fiber tubing, for insulating purposes, and nickel-silver springs. Mounts from the under surface of any standard—7/8 in. panel with one No. 4 x 1/2 in. R. H. I. W. Screw. Takes standard switchboard lamp and the No. 31 Lamp Cap. Length over springs—2 23/32 ins. Diameter of sleeve—1/2 in. Mounting lug—3/7 in. from face.	.20

Lamp Sockets Mounted in Strips

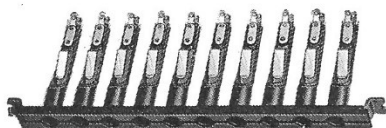
Code No.	Description	Price Each Socket
121 on 59 Mounting	Former style lamp sockets used on Stromberg-Carlson Switchboards made previously to 1917. Used only on additions to old S-C installations on two, three, four, and six panel multiple sections in connection with the No. 109 Type Jack. Takes standard switchboard lamp and No. 30 Individual Lamp Cap. Consists of face plate, mounting extensions, and sleeve sockets—all made of steel with black enamel finish. Equipped with nickel-silver springs. Sleeve socket insulated from springs with black tubular sheet fiber. Mounts 5 sockets per strip on—2 5/8 in. centers. Length of face—10 3/8 ins. Mounting extensions—1/2 in. each. Length overall—11 15/16 ins. Width—1/2 in. Mounting centers—10 17/16 ins. Depth of lamp socket from face to tip of springs—2 1/8 ins. Jack Fastener required—No. 15.	\$.60

No. 121 Lamp Socket
on 59 Mounting

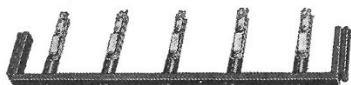
Lamp Sockets (Cont.)

Lamp Sockets Mounted in Strips (Cont.)

Code No.	Description	Price Each Socket
121 on 60 Mounting	Same as the No. 121 Lamp Socket on No. 59 Mounting, except mounts 10 sockets per strip on $1\frac{1}{8}$ in. mounting centers.	\$.35
121 on 61 Mounting	Same as the No. 121 Lamp Socket on No. 59 Mounting, except mounts 20 sockets per strip on $\frac{1}{2}$ in. centers.	.30
121 on 67 Mounting	Used in connection with the No. 122 Type Jack on S-C former standard eight panel multiple switchboards made previously to 1917. Takes standard switchboard lamp and No. 30 Individual Lamp Cap. Same material and construction as the No. 121 on No. 59 Mounting only shorter. Mounts 10 sockets per strip on $\frac{1}{8}$ in. centers. Length of face— $7\frac{37}{64}$ ins. Mounting extensions— $\frac{3}{8}$ in. each. Length overall— $8\frac{3}{4}$ ins. Width of face— $\frac{1}{2}$ in. Mounting Centers— $8\frac{3}{4}$ ins. Depth of lamp socket from face to tip of springs— $2\frac{7}{8}$ ins. Jack Fastener required—No. 15	.35
121 on 79 Mounting	A new Standard Lamp Socket for two, three, four and six panel associated multiple and P. B. X. Switchboards. Used in connection with the No. 130 Type Jacks and mounts the same. Replaces Garford Type and used on all new work. Takes standard switchboard lamp and No. 30 Individual Lamp Cap. Consists of a face plate, lugs, and sleeve sockets—all made of steel with black enamel finish. Equipped with nickel-silver springs. Sleeve sockets insulated from springs with black tubular sheet fiber. Mounts 5 sockets per strip on 2 in. centers. Length of face— $10\frac{3}{8}$ in. Extension of end Lugs— $\frac{3}{16}$ in. each with additional $\frac{1}{8}$ in. tongue on rear of lug. Length overall— $10\frac{3}{4}$ ins. Width of face— $\frac{1}{2}$ in. Mounting Centers— $11\frac{1}{16}$ ins. Depth of lamp socket from face strip to tip of springs— $2\frac{7}{8}$ ins. Jack Fastener required No. 17	.50
121 on 80 Mounting	Same as the No. 121 Lamp Socket on No. 79 Mounting, except mounts 10 sockets per strip on 1 in. centers.	.30
121 on 81 Mounting	Same as the No. 121 Lamp Socket on No. 79 Mounting, except mounts 20 sockets per strip on $\frac{1}{2}$ in. centers, and also drilled not only for the No. 30 Lamp Cap, but also for the No. 26 Lamp Cap.	.25
121 on 82 Mounting	A Standard Lamp Socket for eight panel multiple switchboards. Used in connection with No. 127 Type Jacks. Replaces Garford Type and used on all new work. Takes standard switchboard lamp, and either the No. 30 Individual or the No. 24 Twin Lamp Cap. Similar to the No. 79 Mounting only shorter and mounts 10 sockets per strip on $\frac{3}{4}$ in. centers. Length of face— $7\frac{1}{2}$ ins. Extension of end lugs— $\frac{3}{16}$ in. Length overall— $7\frac{3}{4}$ ins. Width of face— $\frac{1}{2}$ in. Mounting centers— $8\frac{3}{8}$ ins. Depth of lamp socket from face strip to tip of springs— $2\frac{7}{8}$ ins. Jack Fastener required No. 17	.30



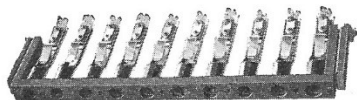
No. 121 Lamp Socket on 67 Mounting



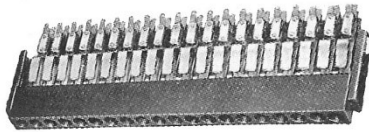
No. 121 Lamp Socket on 79 Mounting



No. 121 Lamp Socket on 80 Mounting



No. 121 Lamp Socket on 82 Mounting



No. 121 Lamp Socket
on 83 Mounting



No. 2-C
Operator's Telephone Set



No. 2-C
Operator's Telephone Set
in Service

Lamp Sockets (Cont.)

Lamp Sockets Mounted in Strips (Cont.)

Code No.	Description	Price Each Socket
121 on 83 Mounting	A Standard Lamp Socket for eight panel multiple switchboards. Used on all new work in connection with the No. 127 Type Jack. Takes standard switchboard lamp, and the No. 29 Individual Lamp Cap. Consists of a moulded black Bakelite or Formica face strip with satin finish on face, sheet steel frame for mounting the springs, and the two end lugs. Equipped with 20 pair of nickel-silver springs. Face drilled for 20 lamps on $\frac{3}{8}$ in. centers. Length of face— $7\frac{1}{2}$ in. Extension of end lugs— $\frac{1}{8}$ in. each. Length overall— $7\frac{3}{4}$ ins. Width of face— $\frac{1}{2}$ in. Mounting Centers— $8\frac{3}{8}$ ins. Depth of strip from face to tip of springs— $2\frac{1}{8}$ ins. Jack Fastener required No. 17.	\$.25

Operator's Telephone Set

Operators like Stromberg-Carlson Telephone Sets on account of the sanitary wire head band, and the easily adjusted white enameled breast plate which is quickly regulated by a movable slide on the neck band so as to bring the transmitter's mouthpiece the required distance from the operator's lips.

As a further convenience to the operator a ball and socket joint permits a wide range of adjustment for the semi-vulcanized rubber mouthpiece which is shaped to insure proper concentration of voice waves directly upon the transmitter's diaphragm.

These telephone sets are constructed mostly of aluminum and Bakelite; this combines lightness with strength; and for efficiency they are equipped with sensitive long distance receivers and powerful long distance transmitters.

A five foot four conductor moisture-proofed "Duratex Cord" connects the set to a four point detachable plug. Each complete Operator's Telephone Set weighs only 16 oz.

Code No.	Description	Price Per Complete Set
2-C	Central Energy Operator's Breast Plate	\$8.55
2-L	Magneto Operator's Breast Plate	8.55

Switchboard Plugs

Stromberg-Carlson plugs are equipped with bronze tip conductors—to withstand wear; special alloy steel tip rods—for strength; best quality tough, hard rubber—for insulation; and heavy black fibre shells—for protection. The tip rods are threaded through and spun over the end of the tip conductor.

Three conductor plugs, Code Nos. 53, 53-X and 54, are equipped with bronze dead rings—to protect

the insulation between the tip and ring conductors.

Plug screws for both terminals and shells are drilled for pilot screw driver.

Order plugs by code number. If this is impossible, send in a sample plug or state serial number of switchboard on which the plugs will be used.

No extra charge is made for attaching cords to plugs when the order includes both plugs and cords.



No. 10 Plug



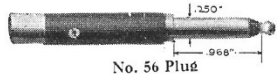
No. 42 Plug

Two Conductor Plugs

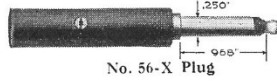
Code No.	Used With	Class of Service	Cord Used	Price Each
10	34, 101, 102 Jacks	Manual restoring drop magneto swbds.	S-23-G	\$1.25
42	11 Drop	No. 105 Swbd. and other plug restoring drop type magneto swbds.	S-23-G	.75
56	130 Jack	Garford magneto swbds. (replaces Garf'd No. 5060)	S-22-F	.75

Switchboard Plugs (Cont.)

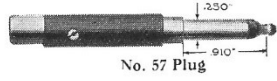
Two Conductor Plugs (Cont.)



No. 56 Plug



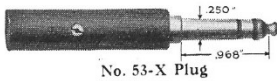
No. 56-X Plug



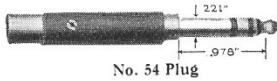
No. 57 Plug



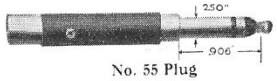
No. 53 Plug



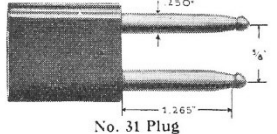
No. 53-X Plug



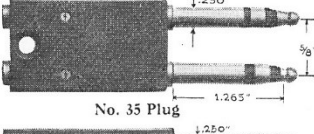
No. 54 Plug



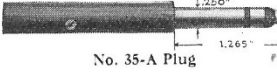
No. 55 Plug



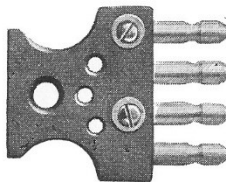
No. 31 Plug



No. 35 Plug



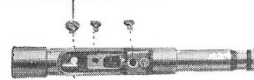
No. 35-A Plug



No. 23 Plug



Type X Shell



Regular Shell

Plug Parts

Code No.	Used With	Class of Service	Cord Use	Price Each
56-X	130 Jack	C. E., P. B. X. and Multiple Swbds. using 2 conductor cord circuits.	S-22-F	.75
57	109 Jack	Former standard Central Energy, P.B.X. and Multiple Swbds. using 2 conductor cord circuits (replaces former plug No. 36)	S-22-B	.75
60	147, 148 Jacks	Radio (See Radio Apparatus).	Any style	Consumer's Price Each .60

Three Conductor Plugs

Code No.	Used With	Class of Service	Cord Used	Price Each
53	130 Jack	Former standard replaces Garford No. 4815.	S-32-K	\$1.00
53-N	Garford 3210-4260 Jacks	Former standard Garford Multiple Swbds. Also replaces Garford No. 2990.	S-32-K	1.00
53-X	130 Jack	Nos. 101, 102 and 103 C. E., P. B. X. and Multiple Swbds. Also replaces Garford No. 7645.	S-32-K	1.00
54	127 Jack	Central Energy Multiple	S-32-K	1.00
54-D	127 Jack	Central Energy Multiple	S-32-K	1.00
54-N	Garford 110 Jack	Former standard Garford Swbds. Also replaces Garford No. 390.	S-32-K	1.00
55	109 Jack	Former standard Multiple Swbds. using 3 conductor cord circuits. Replaces former No. 37.	S-32-K	1.00

Note:—"N" indicates non-depressed ring. "X" indicates over-all shell insulating the plug's butt.

Test Plugs

Code No.	No. of Cond'rs	Used With	Class of Service	Cord Used	Price Each
31	2	101 Jack	Test Panel	M-22-C	\$2.50
35	6	101 Jack	Test Panel	M-6-D	3.50
35-A	3	101 Jack	Test Panel	S-32-K	1.50

Operator's Plug

The No. 23 Operator's Plug is furnished with all Stromberg-Carlson switchboards. Adapted for either HEAD BAND receivers or BREAST PLATE type operator's telephone sets.

Code No.	No. of Cond'rs	Used With	Class of Service	Cord Used	Price Each
23	4	93 Jack	Operator's Plug.	O-4-C (B.P. Type) D-2-B (Head Rec. Type)	\$1.00
40	2	58 Jack	Former standard Operator's Plug.	O-2-F	1.75

Plug Parts

Plug Code No.	Piece No.	Shells		Shell Screws		Terminal Screws	
		Price Each	Piece No.	Price Each	Piece No.	Price Each	
10	P-8851	\$.07	P-5729	\$.005	P-5729	\$.005	
35-A	P-12836	.07	P-4836	.005	P-8300	.005	
40	P-7453	.40	P-5566	.005	P-8300	.005	
42	P-8339	.07	P-13061	.005	P-5729	.005	
53	P-13010	.07	P-4836	.005	P-8300	.005	
53-N	P-13010	.07	P-4836	.005	P-8300	.005	
53-X	P-13060	.10	P-13061	.01	P-8300	.005	
54	P-13010	.07	P-4836	.005	P-8300	.005	
54-N	P-13010	.07	P-4836	.005	P-8300	.005	
55	P-13010	.07	P-4836	.005	P-8300	.005	
56	P-13010	.07	P-4836	.005	P-5729	.005	
56-X	P-13060	.10	P-13061	.01	P-5729	.005	
57	P-13010	.07	P-4836	.005	P-5729	.005	

Switchboard Plugs (Cont.)

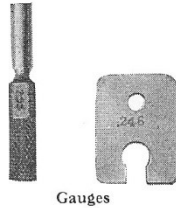
Plug and Jack Gauges

These gauges should be in every telephone exchange—they indicate when plugs and jacks are so worn that talking connections will be unreliable.

When a plug passes through the slot in the plug gauge, it should be replaced.

If the jack gauge fits into the jack, the jack should be replaced. State code number of jack and plug when ordering gauges.

Each set includes one plug gauge and one jack gauge, with canvas carrying case.



Gauges



No. 5 Plug Seat



No. 6 Plug Seat



No. 9 Plug Seat



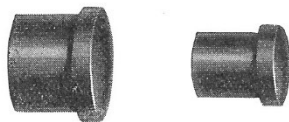
No. 7 Service Plug



No. 14 Service Plug



No. 15 Service Plug



No. 1 and No. 10 Plug Hole Blanks.

Piece No.	Diameter	Used for Gauging	Price Per Set
13070	.246	Plug Nos. 42, 53, 55, 56, and 57. Jack Nos. 49, 109, 130 or both Stromberg-Carlson and Garford plug restoring drops.	\$4.00
13071	.255		
13114	.217	Plug Nos. 39, 54, 54-N, 54-G. Jack Nos. 22, 127.	4.00
13118	.226		
13113	.197	Plugs Nos. 33, 33-K, 34, 34-K. Jack No. 67.	4.00
13119	.205		

Plug Seats

Code No.	Used With Plug	Diam Hole	Description	Price Each
5	42	$\frac{3}{16}$	Black fibre	\$.05
6	53	$\frac{5}{16}$	Black fibre	.05
9	53	$\frac{5}{16}$	Brass and leather with seat detachable from rear of switchboard to facilitate plug and cord replacements.	.15

Service Plugs

Code No.	Diam.	Description	Price Each
7-A to E	.065	Party Line Indicators For 109 and 130 Type Jacks	1 to 99 \$.05
14-A to E	.221		100 to 499 .04
15-A to E	.249	For 127 Type Jacks	500 to 999 .03
		Out of Service, etc. For 109 and 130 Type Jacks	1000 and over .025

Colors as follows:

A—Green; B—Red; C—Blue; D—White; E—Black.

Note—Quantity prices include assorted colors.

Plug Hole Blanks

Code No.	Material	Used in Place of	Price Each
1	Comp.	Nos. 42 and 53-X Plugs and Nos. 6 and 8 Lamp Sockets	1-199 \$.05
3	Comp.	Nos. 33 and 34 Plugs	.05
5	Comp.	Nos. 34 and 119 Keys	.05
6	Comp.	Nos. 53, 54 and 57 Plugs	.05
7	Comp.	No. 12 Lamp Socket	.10

Receivers

Piece Parts shown on pages 237-238



No. 20-A Receiver with Sanitary Wire Headband

The receivers supplied with Stromberg-Carlson Telephones and Switchboards are unapproached for either talking efficiency or durability.

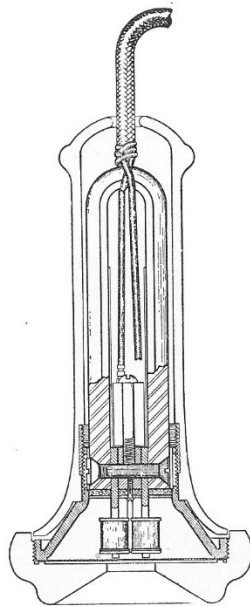
The Coils are of high grade enamelled copper wire.

The Shells of the substation receivers are of the best quality bakelite. The shells of the operator's (watch case) type receivers are of rigid aluminum stampings.

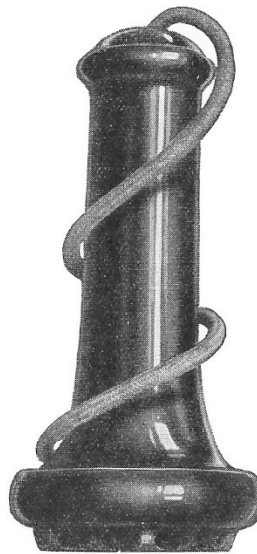
The Magnets in the magnet-equipped receivers are of one-piece "U"-shaped construction free from joints, breaks or welds.

The Ear-Caps on all types of receivers either—substation or operator's—are of bakelite.

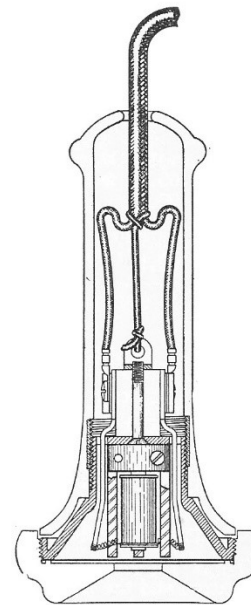
The Diaphragms are of the best grade of ferro-type metal, perfectly flat, evenly gauged, rust proofed and accurately tuned to the average frequency of the voice. Great care is taken to remove all clamping strain from these diaphragms so they will be perfectly free to vibrate. One of the most important precautions that have been taken to insure proper clamping is evident in the sub-station hand receivers. In these receivers there is a double threading of the receiver shell. The inner threading



Cross Section View of No. 27 Receiver



Front Perspective Nos. 27 and 28 Receivers



Cross Section View of No. 28 Receiver

These receivers are built to stand hard usage throughout years of service and without impaired efficiency.

The Spool Heads are non-metallic so as to eliminate spool head eddy current losses.

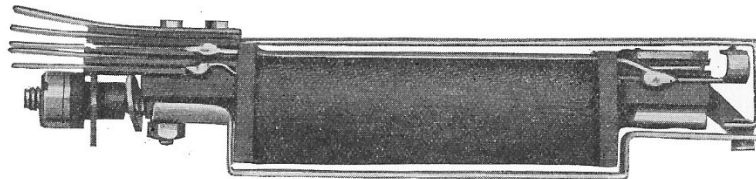
holds the weight of the magnet and the coils in place, This relieves the outer or ear cap threading of all the strain usually incident from holding those heavy parts in place. Obviously the only function of the latter threading is to clamp the diaphragm.

Receivers (Cont.)

Code No.	Description	Price Each	Code No.	Description	Price Each
19-A	A watch case receiver with permanent magnet, used on No. 844 Lineman's Test Set. Provided with two coils, connected in series, each wound to 40 ohms; total resistance of receiver 80 ohms. Equipped with No. M-2-J Brown, Duratex Cord, 2 ft. in length. Cord ends finished with No. 35 Cord Tips. Weight of receiver with cord—4½ oz.	\$2.25	27-A	A hand receiver with permanent magnet used on all Stromberg-Carlson Substation instruments except Mine-A-Phones and Inter-Comm-Phones. Provided with two coils, connected in series, each wound to 40 ohms, total resistance of receiver 80 ohms. Equipped with No. R-2-G Brown Duratex Cord, 3 ft. in length. Weight of receiver with cord—14 oz.	\$2.00
20-A	A watch case operator's receiver, with permanent magnet, furnished with all Stromberg-Carlson Switchboards. Provided with two coils, connected in series, each wound to 40 ohms, total resistance of receiver 80 ohms. Equipped with sanitary wire head band and a 6 ft. two conductor, brown Duratex Cord. Code No. O-2-F Cord for attaching to the No. 40 Plug, Code No. O-2-E Cord for attaching to the No. 13 Plug, Code No. O-4-C Cord for attaching to the Nos. 1-C or 1-L Operator's Telephone Sets, or Code No. D-2-B Cord for attaching to the No. 23 Plug. Weight of receiver with cord—5½ oz.	2.50	27-B	Identical to the No. 27-A Receiver but used in the Nos. 890 and 950 Ironclad Telephones and therefore equipped with specially-designed receiver cord—the No. M-2-I. Length of cord—16 ins. Weight of receiver with cord—14 ozs.	2.10
			28-A	A substation, hand receiver of the direct current type (without permanent magnet). Used on Inter-Comm-Phones where the induction coil is omitted and the transmitter is connected in series with the receiver. Provided with a single coil wound to 41 ohms. Equipped with No. R-2-G Brown Duratex Cord, 3 ft. in length.	2.45

Relays

Piece Parts shown on page 239-240



No. 190 Type Relay (Actual Size)

No. 190 Compact Type

The No. 190 Type of Relay is used in the line circuits of all Stromberg-Carlson Central Energy Switchboards—both P. B. X. and Multiple Switchboards. It has proved its superiority over other types of line relays through years of continued use. Following are some of the features of this relay:

High Efficiency—Largely due to having the armature and the traveling contact spring combined in one element. A construction which requires less magnetic effort for operating contacts in telephone circuits. The efficiency of the relay is further increased due to the fact that the armature is rigidly and metallically fastened to one end of the relay's core. This means that the relay operates with but one air gap.

Compactness—But one-third to one-half of the space is required for this relay that is required for other types of relays. Obviously, this compactness

permits more space for adjustment, therefore, closer mounting centers can be employed, which means a marked saving of space either in the switchboard section or on the relay racks in the terminal room.

Light Weight—The lightest in weight of any standard relay. This means easier handling during installation and less danger of the relay's breaking loose from its mounting during shipment.

Strength—Unexcelled by any relay regardless of weight. In fact, the contact-carrying element of this relay is nearly twice as heavy and twice as strong as any contact-carrying element that is found on even the heaviest types of relays.

Accessibility—All contacts are at the extreme front end of the relay, easily inspected, easily adjusted, and easily tested, even when the relays are mounted on the closest possible centers.

Reliability—Owing to its simplicity of construction, its high grade materials, and its careful manufacture this relay is unexcelled for reliable operation. In fact, many instances are on record where the

Relays (Cont.)

No. 190 Compact Type (Cont.)

owners of multiple switchboard installations that are completely equipped with this type of relay, do not consider line relay trouble an item worthy of comment. This reliability is due to the following conditions:

The armature construction does not permit binding or getting out of alignment.

The contact's surfaces have commercially pure platinum faces. The spool heads and the spring insulations are made from "Phenol Fiber,"—a material which makes the very highest grade of insulating material due to the fact that it not only is free from chemicals which are injurious to relay winding but also is neither hygroscopic nor affected by temperature changes.

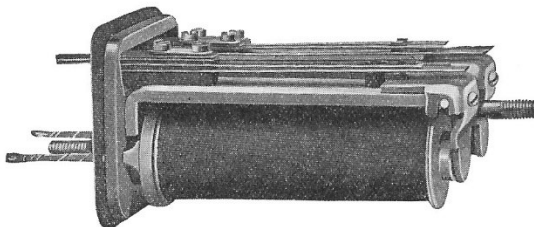
The windings are of the best grade of commercially pure, heavily-enameled copper wire.

The following relays of this type are available:

Code No.	Resistance	Spring Arrangement	Price Each
194-C	800 ohms	One make and one break	\$1.50
193-BB	320 ohms	Double break	1.55
194-A	800 ohms	One make	1.45
195-A	320 ohms	One make	1.55
With 1000 ohms N.I. shunt winding			
196-A	1000 x 1000 ohms	One make	1.60
197-BB	34 ohms	Double break	1.40

No. 200 Type

Piece Parts shown on page 241



Two No. 200 Type Relays Mounted

This relay is standard equipment in all Stromberg-Carlson trunk and cord circuits. It is designed especially to satisfy the requirements of circuits where large winding space is desired, where various spring combinations are necessary, where the timing of a relay's action is an important feature, where high impedance is essential and where more than one winding is required on a relay.

The features of this relay are:

- (a) Large winding space.
- (b) Heavy Magnetic Circuit.
- (c) Pin-pivoted, definitely-located armature of the "L" shaped type.
- (d) Non-magnetic, metallic front spool head which annularly projects beyond the relay's core so as to form an anti-freeze stop for the armature.
- (e) Facilities for the quick removal of the relay's coil.
- (f) Visible contacts located at the front end of the relay.
- (g) Phenol Fiber spring insulation.

How to Order No. 200 Type Relays

The scheme for coding No. 200 Type Relays provides for assigning group numbers for the various styles of windings, viz: "single wound", "tandem wound", "concentric wound", "copper core", and "copper head." The last digit in each number indicates the resistance, for example: No. 201 indicates a 5 ohm winding; No. 202, a 15 ohm winding, etc. The spring combination is assigned by affixing a letter to the code number or two or three letters, depending on the groups of spring combinations desired, as shown in the accompanying diagrams (see next page).

The No. 200 Type Relay may be furnished with 1, 2 or 3 sets of spring combinations which will be mounted in alphabetical order from left to right looking at the terminal end of relay,—excepting for relays with 3 spring combinations having 2 combinations alike, then the odd combination shall be mounted in the middle. When three sets of springs are used, only one set of the E, F, G, H, or L combinations should be used.

Prices of No. 200 Type Relays

Note:—Prices of relays are less relay casings and less mounting strips. These parts, when furnished, are extra, in addition to labor charges, as follows:

- (a) When mounted and assembled with casing add \$.10 per relay
- (b) When, in addition, mounting strip also is to be "Strapped" for the common wiring add \$.15 per relay.
- (c) When used as a restoring relay in combination with No. 300-X type relays, the letter "X" should be affixed to the code number. Regular armature is replaced with special armature (P-12901) and add \$.25 per relay.

Example:

40 No. 204-AC Relays (each No. 204-AC Relay includes—one No. 204 Relay Coil, one "A" Spring Combination and one "C" Spring Combination).....	@ \$2.15	\$ 86.00	\$ 86.00
20 No. 19 Casings..	.50	10.00	10.00
1 No. 85 Mounting Strip.....	"	2.50	2.50
40 Relays Mounted.	.10	4.00	4.00
		Total \$102.50	
40 Relays "strapped" @	.15		6.00
			\$108.50

Prices of Relay Coils

(Relay Frame and Winding Only)

Note:—To figure price of complete relay be sure to add price for spring combinations as required.

Note:—* affixed to a Code No. denotes no freeze.

Code No.	Single Wound Coil	Price Each
*201	5 ohms	\$1.50
202	15 "	1.50
203	70 "	1.50
204	100 "	1.75
205	200 "	1.85
206	500 "	2.00
207	1000 "	2.10
208	800 "	2.10
209	1500 "	2.25
210	5000 "	2.65
212	18 " with 50 ohms N.I. shunt.	1.75
213	320 "	1.75
214	2000 "	2.50

Relays (Cont.)

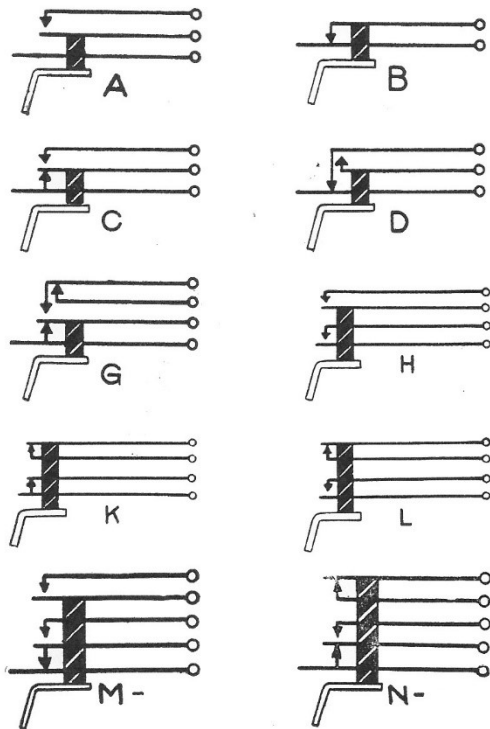
Prices of Relay Coils (Cont.)

Code No.	Tandem Wound Coil	Price Each
221	60-60 ohms.....	\$2.00
222	100-100 ".....	2.15
223	200-200 ".....	2.25
224	500-500 ".....	2.50
225	1000-1000 ".....	2.60
226	50-50 ".....	2.00
227	100-250 ".....	2.25
228	75-75 ".....	2.10
229	200-2000 ".....	2.50
231	500-1000 ".....	2.50
232	400-400 ".....	2.35

Concentric Wound Coil

241	500-100 N. I. ohms.....	\$2.25
242	1000-100 " ".....	2.50
243	100-350 " ".....	2.25
244	500-350 " ".....	2.25
245	500-2000 " ".....	2.75
246	100-60 " ".....	2.00
247	100-1000 " ".....	2.25
248	500-500 " ".....	2.25
251	500-1000 ohms.....	2.25
252	500-100 ".....	2.25
253	200-500 ".....	2.25
*254	175-2100 ".....	2.75
*255	100-10000 ".....	3.50
256	250-500 N. I. ohms.....	2.50
257	250-670 " ".....	2.50
258	500-500 " ".....	2.75
259	100-200 " ".....	2.25

*Used with "AY" springs only.



Single Wound Copper Sleeve on Core Coil

261	100 ohms.....	\$1.90
262	200 ".....	2.00
263	500 ".....	2.10
264	1000 ".....	2.25
265	50 ".....	1.75
274	500-500 ohms.....	2.65
275	500-1000 ".....	2.75

Copper Slug on Armature End

281	160-200 N. I. ohms.....	\$2.25
285	500 ohms.....	2.15
291	500-100 N. I. ohms.....	2.50

The prices specified for all No. 200 Type relay codes cover the frame and winding only and to arrive at the price of a complete relay, add for each spring combination as follows:

Prices of Spring Combinations Only

A	One make.....	\$.15
B	One break.....	.15
C	One break and make.....	.25
D	One make before break.....	.30
G	One break and make before break.....	.40
H	Two makes.....	.35
K	Two breaks.....	.35
L	One make and one break.....	.35
M	One break and make and one make.....	.40
N	One break and make and one break.....	.40
O	One make before break and one make.....	.55
AY	One make (light gauge spring).....	.15
BY	One break (light gauge spring).....	.15
CY	One make and break (light gauge spring).....	.25
EY	One double make (light gauge spring).....	.25
FY	One break and double make (light gauge spring).....	.35

Note:—These prices on spring combinations apply only when assembled with complete relays; when sold separately, add 50% to above prices.

No. 300 Type

This type relay is adapted for use with any style of ringing current—alternating, pulsating, or superimposed.

It is furnished as either a non-locking or a locking relay. Provided a non-locking relay is desired order a spring combination without the suffix letter "X". Provided a locking relay is desired order a spring combination with the suffix letter "X".

Each No. 300 Type Relay will be furnished with any one (not more than one) of the following spring combinations.

A	One make.....	\$.15
B	One break.....	.15
C	One make and break.....	.25
X	One make locking with armature.....	.25
AA	Two makes.....	.35
BB	Two breaks.....	.35
CC	Two makes and two breaks.....	.50
AX	One make and one make locking with armature.....	.40
BX	One break and one make locking with armature.....	.40
CX	One make and break and one make locking armature.....	.50

The above spring combination prices should be added to the following:

Prices Relay Frame and Winding Only

306	500 ohms.....	\$2.75
307	1000 ".....	3.00
313	400-500 ohms.....	3.25

Relays (Cont.)

Prices Relay Frame and Winding Only
(Cont.)

Important Notice—When used as an “X” relay be sure to add to the above prices for the No. 200 type relay associated with it.

Example:

1 No. 306-AX Relay made up with:
1 No. 306 Relay frame and wind'g \$2.75

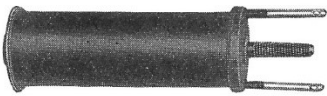
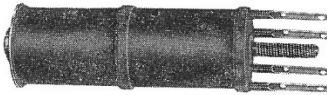
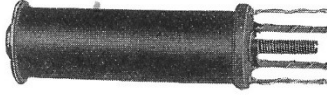
1 AX spring combination.....	.40	\$3.15
1 No. 204-BBX Relay made up with:		
1 No. 204 Relay frame and wind'g	\$1.75	
1 No. X Armature.....	.25	
1 BB Spring Combination.....	.30	2.30
Total.....		\$5.45

The No. 300 type relay takes same mounting and casing as No. 200 type.

Relay Coils

The following Stromberg-Carlson Relay Coils do not include the relay frames or spring combinations. For those parts refer to “Relays—200 Type.”

When ordering Relay Coils state not only the Piece Number of the Relay Coil which is desired but also the Resistance of the Relay Coil.

	Piece No. of Relay Coil	For Relay Code	Type	Resistance	Price Each
	12234	193	Single	320	\$.75
	12235	194	“	800	.75
	12265	195	“	320-1000 NI	.90
	12276	201	“	5	1.00
	12277	202	“	15	1.00
	12278	203	“	70	1.00
	15491	204	“	100	1.25
	12280	205	“	200	1.35
	12266	206	“	500	1.50
	12267	207	“	1000	1.60
	12281	208	“	800	1.60
	12282	209	“	1500	1.75
	12283	210	“	5000	2.15
	12285	212	“	18-50 NI	1.25
	15435	213	“	320	1.25
15436	214	“	2000	2.00	
	12286	221	Tandem	60-60	1.50
	12287	222	“	100-100	1.65
	12288	223	“	200-200	1.75
	12289	224	“	500-500	2.00
	12290	225	“	1000-1000	2.10
	12291	226	“	50-50	1.50
	12292	227	“	100-250	1.75
	12293	228	“	75-75	1.60
	12294	229	“	200-2000	2.00
	12295	231	“	500-1000	2.00
	12296	232	“	400-400	1.85
	12297	241	Concentric	500-100 NI	1.75
	12298	242	“	1000-100 NI	2.00
	15197	243	“	100-350 NI	1.75
	15198	244	“	500-350 NI	1.75
15199	245	“	500-2000 NI	2.25	
	15200	246	“	100-60 NI	1.50
	15201	247	“	100-1000 NI	1.75
	15202	248	“	500-500 NI	1.75
	15203	251	“	500-1000	1.75
	15204	252	“	500-100	1.75
	15205	253	“	200-500	1.75
	15207	255	“	100-10000	3.00
	15208	256	“	250-500	2.00
	15209	257	“	250-670	2.00
	15210	258	“	500-500	2.25
	15211	259	“	100-200	1.75
	15212	261	Single (Copper Core)	100	1.40
	15429	261-Z	“	100	1.40
	15213	262	“	200	1.50
	15430	262-Z	“	200	1.50
15214	263	“	500	1.60	
15431	263-Z	“	500	1.60	
15215	264	“	1000	1.75	
15432	264-Z	“	1000	1.75	
15216	265	“	50	1.25	
15433	265-Z	“	50	1.25	
15217	274	Concentric	500-500	2.15	
16480	275	“	500-1000	2.25	

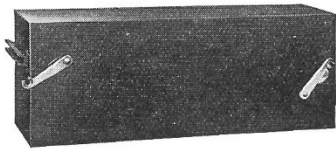
Relay Coils (Cont.)

Piece No. of Relay Coil	For Relay Code	Type	Resistance	Price Each
15218	281	Double (Copper Head)	160-200 NI	\$1.75
15434	285	Inductive	500	1.85
15219	291	"	500-100 NI	2.25
15220	306	Single	500	1.50
15221	307	"	1000	1.60
15222	313	Concentric	400-500	2.00
13086	343	"	500	2.00
15220	366	Single	500	2.00
17809	254	Concentric	175-2100	2.25

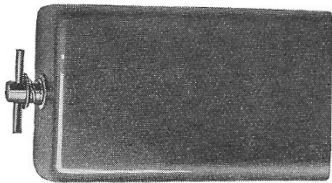
Relay Casings

There are two distinct types of relay casings—those used to eliminate cross talk as well as to afford protection from dust and those which afford only protection from dust.

Stromberg-Carlson Relay Casings are furnished in both of these types. The cross talk proof type relay casing is of aluminum—the dust proof type is of steel construction.



No. 16 Relay Casing



No. 19 Relay Casing



No. 21 Relay Casing

Code No.	Description	Price Each
6	Protects two Nos. 37, 60, 84 or 150 Type Relays. Used on Nos. 11, 24, 29, 31, 32, 54, 69, 74, 78, 80, 88, 89 Relay Mountings. Dimensions—5 x 1 $\frac{5}{16}$ x 2 $\frac{3}{8}$ ins.	\$.50
16	Protects 50 No. 190 Type Relays. Used on Nos. 83 and 91 Relay Mountings. Made of steel. Dimensions—3 $\frac{1}{2}$ x 3 $\frac{5}{8}$ x 9 $\frac{9}{16}$ ins.	1.50
17	Protects 40 No. 190 Type Relays. Used on Nos. 84 and 96 Relay Mountings. Made of steel. Dimensions 3 $\frac{1}{2}$ x 3 $\frac{5}{8}$ x 7 $\frac{3}{4}$ ins.	1.50
18	Protects 20 No. 190 Type Relays. Used on Nos. 86, 88 and 98 Relay Mountings. Made of steel. Dimensions 3 $\frac{1}{2}$ x 3 $\frac{5}{8}$ x 4 $\frac{1}{8}$ ins.	1.00
19	Protects 2 No. 200 Type Relays. Used on Nos. 85, 87, 89, 90, 92, 95, 98, 100, 101, 102 and 103 Relay Mountings. Made of aluminum—cross talk proof. Dimensions 4 $\frac{5}{16}$ x 1 $\frac{5}{8}$ x 2 $\frac{5}{8}$ ins.	.50
20	Protects 20 No. 200 or 10 No. 320 Type Relays. Used on No. 85 Relay Mounting. Made of steel. Dimensions 4 $\frac{1}{2}$ x 3 $\frac{3}{4}$ x 11 $\frac{1}{4}$ ins.	2.00
21	Protects 10 No. 200 or 5 No. 320 Type Relays. Used on No. 85, 90, 101 or 102 Relay Mounting. Made of steel. Dimensions 4 $\frac{1}{2}$ x 1 $\frac{5}{8}$ x 11 $\frac{1}{4}$ ins.	1.25
23	Protects 40 No. 190 Type Relays. Used on No. 97 or 105 Relay Mounting. Made of steel. Dimensions 3 $\frac{3}{4}$ x 1 $\frac{5}{8}$ x 23 $\frac{9}{32}$ ins.	1.50

Relay Mountings

All relay mountings are made of $\frac{3}{16}$ in. strip steel, japanned.

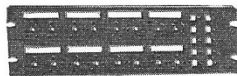
Code No.	Description	Price Each
83	Mounts 100 No. 190 Type Relays in two groups, horizontally. Requires two No. 16 Relay Casings. Mounting centers, 25 $\frac{1}{2}$ ins. Length, 26 ins. Width, 3 $\frac{3}{4}$ ins.	\$5.00
84	Mounts 120 No. 190 Type Relays in three groups, horizontally. Requires three No. 17 Relay Casings. Mounting centers, 25 $\frac{1}{2}$ ins. Length, 26 ins. Width, 3 $\frac{3}{4}$ ins.	6.00

Relay Mountings (Cont.)

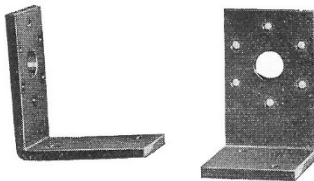
Code No.	Description	Price Each
85	Mounts 40 No. 200 Type Relays, horizontally. Requires either 20 No. 19, 2 No. 20 or 2 No. 21 Relay Casings. Mounting centers, 25½ ins. Length, 26 ins. Width, 3¾ ins.	\$4.00
86	Mounts 60 No. 190 Type Relays in three groups, horizontally. Requires three No. 18 Relay Casings. Mounting centers, 20⅝ ins. Length, 21⅛ ins. Width, 3¾ ins.	3.50
87	Mounts 16 No. 200 Type Relays, horizontally. Requires 8 No. 19 Relay Casings. Mounting centers, 20⅝ ins. Length, 21⅛ ins. Width 1⅞ ins.	2.00
88	Mounts 60 No. 190 Type Relays in three groups, horizontally. Requires three No. 18 Relay Casings. Mounting centers 17 ins. Length, 17½ ins. Width 3¾ ins.	3.50
89	Mounts 12 No. 200 Type Relays, horizontally. Requires 6 No. 19 Relay Casings. Mounting centers, 17 ins. Length, 17½ ins. Width, 1⅞ ins.	1.50
90	Mounts 10 No. 200 Type Relays horizontally. Requires either 5 No. 19 or 1 No. 21 Relay Casings. Mounting centers, 13 ins. Length, 13½ ins. Width, 1⅞ ins.	1.50
91	Mounts 100 No. 190 Type Relays in two groups horizontally. Requires two No. 16 Relay Casings. Mounting centers, 20⅝ ins. Length, 21⅛ ins. Width, 3¾ ins.	4.00
92	Mounts 16 No. 200 and 10 No. 190 Type Relays, horizontally. Requires 8 No. 19 Relay Casings. Mounting centers, 13 ins. Length, 13½ ins. Width, 3¾ ins.	3.50
93	Mounts 1 No. 200 Type Relay on floor of cabinet. Length, 1½ ins. Width 1⅞ ins.	.65
94	Mounts 1 No. 200 Type Relay on side of cabinet. Length, 1⅞ ins. Width, 1 in.	.65
95	Mounts 2 No. 200 Type Relays on side of cabinet. Requires 1 No. 19 Relay Casing. Length, 2⅜ ins. Width, 1 in.	.65
96	Mounts 40 No. 190 Type Relays horizontally. Requires 1 No. 17 Relay Casing. Mounting centers, 8⅝ ins. Length, 8⅞ ins. Width, 3¾ ins.	2.00
101	Mounts 12 No. 200 Type Relays and 2 No. 19 Condensers horizontally. Requires 1 No. 19 and either 1 No. 21 or 6 No. 19 Relay Casings. Mounting centers, 18⅝ ins. Length, 18⅞ ins. Width, 1⅞ ins.	2.00
102	Mounts 14 No. 200 Type Relays and 2 No. 19 Condensers horizontally. Requires 2 No. 19 and 1 No. 21 Relay Casings. Mounting centers 25½ ins. Length, 26 ins. Width, 1⅞ ins.	3.00
104	Mounts 20 No. 200 Type Relays horizontally. Mounting centers, 25½ ins. Length, 26 ins. Width, 1⅞ ins.	2.00
105	Mounts 40 No. 190 Type Relays horizontally. Requires 1 No. 23 Relay Casing. Mounting centers, 25½ ins. Length, 26 ins. Width, 1⅞ ins.	1.75



No. 87 Relay Mounting



No. 92 Relay Mounting



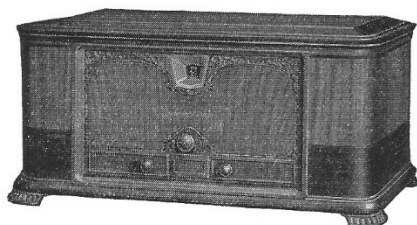
No. 94 Relay Mounting



No. 102 Relay Mounting

Radio Apparatus

A. C. Type Receivers



No. 641 Radio Receiver



No. 642 Radio Receiver

Code No.	Description	Price
641-A	The No. 641 Stromberg-Carlson is a Treasure Chest or table model in which the famous Stromberg-Carlson Tone is given new brilliance through the use of three screen grid tubes in the radio frequency circuit. The high amplification afforded by these tubes and the total shielding of the Receiver, in the Stromberg-Carlson way, make possible "Linear" Power Detection—an improved detection necessitated by modern transmission from broadcast stations having high modulation.	\$155.00
	The Receiver operates direct from A. C. house lighting current of 60 cycles. Complete volume control from the most powerful to the weakest station is obtained with one single motion knob. Tuning is with a single selector (illuminated) having divisional and kilocycle markings. Electrical reproduction of records through the audio system of the Receiver is provided for by means of a jack in the back panel, which makes a permanent connection with the phonograph. Finished in Walnut, with vertical and horizontal graining of exquisite beauty, this compact Treasure Chest Receiver is ideal for those who prefer a table model cabinet and the latitude afforded by the use of an external speaker. The size of the cabinet is: Height 11 inches; Width 23 inches; Depth 14 inches. Price is less tubes.	
641-B	Same as No. 641-A except designed for operation from A. C. house lighting current of 25-50 cycles.	155.00
640	Tube package for the above receivers, includes three UY-224 A. C. Screen Grid Tubes, one UY-227, one UX-245, and one UX-280 Radiotrons.	21.00
642-A	The No. 642 Stromberg-Carlson is a beautiful Console with built-in Electro-Dynamic Speaker. Like the No. 641 Receiver it utilizes three screen grid tubes in the radio frequency circuit, making possible the improved "Linear" Power Detection necessary to give perfect tone under the new conditions of broadcast modulation. Tuning is very easy with a single dial station selector (illuminated) having divisional and kilocycle markings. Operation is entirely direct from A. C. house lighting current of 60 cycles. A phonograph jack at back of Receiver allows permanent phonograph connection. The built-in Electric-Dynamic Speaker reproduces pure fundamental tones at an exceptionally wide range of volume. It is of the true "moving coil" type, giving <i>sound volume</i> with	259.00

Radio Apparatus (Cont.)

A. C. Type Receivers (Cont.)

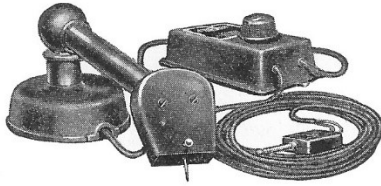


No. 846 Radio Receiver

Code No.	Description	Price
	<i>small power output</i> from the Receiver. The large diameter cone is corrugated, with flexible support to insure accurate low frequency response. The size of the handsome Walnut-finished cabinet is ideal for the average room, measurements being : Height 49½ inches ; Width 26 inches ; Depth 16½ inches. Sliding panels, when closed, conceal the set and speaker. Price is less tubes.	
642-B	Same as No. 642-A except designed for operation from A. C. house lighting current of 25-50 cycles.	\$259.00
640	Tube Package for the above receivers, includes three UY-224 A. C. Screen Grid Tubes, one UY-227, one UX-245, and one UX-280 Radiotrons.	21.00
846-A	The No. 846 Stromberg-Carlson marks the utmost limits to which the science of broadcast reproduction has advanced, while its marvelous tonal excellence is matched by the luxurious beauty of its half-octagonal cabinet. In this model an Automatic Volume Control with Visual Meter Tuning and Silent Key eliminates nerve-wracking blasts of programs and background noises while tuning from station to station. This volume control also maintains automatically uniform volume regardless of the usual effects of the fading of incoming broadcast signals. Three UY-224 A. C. Screen Grid Tubes are used in the radio amplifier and a UY-227 in both the Automatic Volume Control circuit and in the "Linear" power detector. The audio amplifier employs one UY-227 in the first stage and two UX-245 tubes in a "push-pull" for the output. Two UX-280 Rectifier Tubes furnish power to the Receiver and the built-in Electro-Dynamic Speaker. There is a phonograph jack for electrical reproduction of records. The receiver operates direct from A. C. house lighting current of 60 cycles. The cabinet is finished in dark Walnut ; its six supporting legs giving an appearance of unusual style and richness. The dimensions of the cabinet are : Height 47 inches ; Width 27 inches ; Depth 16 inches. Price is less tubes.	347.50
846-B	Same as No. 846-A, except designed for operation from A. C. house lighting current of 25-50 cycles.	347.50
846	Tube package for the above receivers, includes three UY-224 A. C. Screen Grid Tubes, three UY-227, 2 UX-245, and 2 UX-280 Radiotrons.	32.50

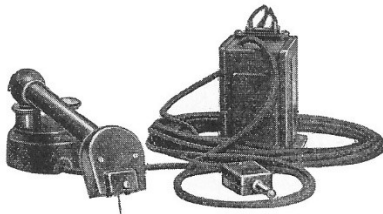
Radio Apparatus (Cont.)

Magnetic Pick-up Outfits



No. 2-B Magnetic Pick-up

Code No.	Description	Price
2-B	The Magnetic Pick-up is readily installed in any standard phonograph. It plugs into the phonograph jack of a Stromberg-Carlson Receiver and makes possible electrical reproduction of records through the wonderful audio system of the Stromberg-Carlson Receiver, thus converting even an old phonograph to the equivalent of the most modern electrical reproducing instrument. A specially designed control, located between the Pick-up and the Receiver, regulates the volume without muffing or distorting the music. A rich finish adds beauty to this device. For connecting to the receiving set a No. 60 Plug and long cord are provided.	\$33.00

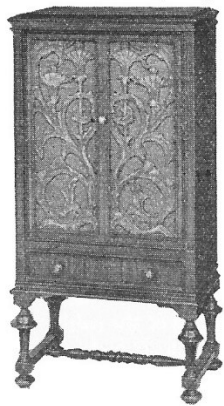


No. 3-A Magnetic Pick-up

3-A	This Magnetic Pick-up is designed for use with Nos. 523, 524, 633, 634, 734, 635, 636 and 638 Stromberg-Carlson Receivers and other makes of radio receivers. An Input Transformer is included in this Magnetic Pick-up Outfit which is designed for use only with Nos. 641, 642 and 846 Stromberg-Carlson Receivers, and other makes having power detector. In other respects it is the same as No. 2-B.	39.00
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Loud Speakers

Code No.	Description	Price
25-A	The No. 25-A Stromberg-Carlson Electro-Dynamic Speaker combines a new degree of tonal range and volume with an exterior of unusual beauty. Through the use of a cabinet with its possibilities for scientific baffling, a new beauty of true tone in the lower frequencies is assured. Uniformity of response without sacrifice of efficiency is brought about by the use of a 10-inch corrugated cone, with a specially made "lively" diaphragm. <i>Sound volume with small power output</i> from the Receiver is the result of the true "moving coil" operating principle. High volume with minimum movement of the driving coil is made possible by the large diameter cone. Hum is kept down to an imperceptible degree there being no balances to adjust or maintain. A switch within the cabinet and an A. C. outlet in the bottom permits operation with receivers not equipped with a loud speaker A. C. outlet. Operating power for the speaker field is supplied by a UX-280 Rectifier Tube contained within the speaker cabinet. The speaker operates direct from A. C. house lighting current of 60 cycles. The Cabinet is finished in Walnut with a beautifully fashioned grille and a screen concealing the working parts. The dimensions are: Height 36 inches; Width 19 inches; Depth 11 inches. Price is less tube.	85.00
25-B	Same as No. 25-A, except designed for operation from A. C. house lighting current of 25-50 cycles.	85.00
	UX-280 Rectifier Tube	3.00



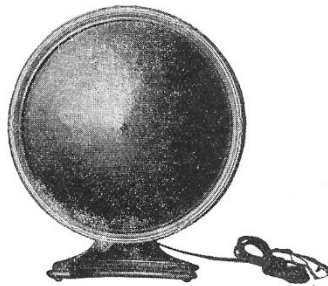
No. 25 Electro Dynamic Speaker

Radio Apparatus (Cont.)

Loud Speakers (Cont.)



No. 16 Cone Speaker



No. 14 Cone Speaker



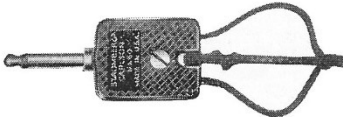
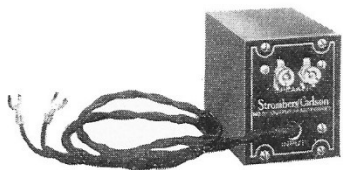



No. 3-A Head Set

Code No.	Description	Price
16	The No. 16 Cone Speaker is of large pedestal type embodying many new features. It brings to radio a fidelity of tone never before attained and a wealth of volume. Its natural tone is largely due to the construction of the cone which is seamless and is built of acoustically correct fiber, knit together by a special process so that it has no grain. At the center, "apex," the cone is thinner than at the outside edge, for the higher frequencies are thus given better reproduction. This gradation of the thickness of the cone also does away with objectionable paper rattle, giving a beauty of tone never before possible in large cone speakers. And by taking advantage of this ability to use a large cone efficiently, this speaker is able to employ a driving mechanism of minimum movement. This feature insures permanence of adjustment and long life.	40.00
17	The cone of the No. 17 Speaker is of the same construction and appearance as the No. 10. However, it is provided with a wall bracket and an artistic silk cord and roseate for attaching it to the wall.	35.00
14	A new table model Stromberg-Carlson Cone Speaker of improved design. Built to reproduce with naturalness every tone which the receiver delivers. The cone of this speaker is seamless, with thin apex and thicker edge to insure evenness of sound reproduction. Short drive rods in the electrical unit make surer rendition of the high frequencies. Exceptionally rigid in construction so that there will be no rattle to mar the performance. This new speaker has a rich brown crackle finish with a relief of dull gold. The back has a handsome metal grill with a Rayon Marquisette screen concealing the working parts. Diameter overall 16 inches. Height overall 18 inches. 10 foot cord attached.	22.50
15	For those who wish to use the No. 14 Speaker with receivers other than Stromberg-Carlson's, this type (No. 15) is available, incorporating an audio filter, which takes the place of the filter built into the audio system of every Stromberg-Carlson Receiver.	25.00

Head Sets

3-A	Combining lightness of weight, ease of adjustment and exceptional purity of tone, the No. 3-A Head Set satisfies the demands of the most critical. A cloth covering on the head pieces permits wearing the head set with comfort. The cord is a Stromberg-Carlson Duratex, so constructed as to give long life and freedom from bothersome "kinking." The head pieces contain strong permanent magnets, specially designed diaphragms for the attainment of pure tone, and <i>Layer Wound and Layer Insulated Coils</i> to withstand high plate voltages.	5.50
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Radio Apparatus (Cont.) Accessories

Code No.	Description	Price
60	This plug is built especially for the exacting requirements of radio service. It is adapted to cords with spade tips, cords with pin tips, cords with loops, stranded conductors either with or without tips, and solid conductors with or without tips and of any diameter. The handle of the plug is fashioned from the finest Bakelite with diamond-shaped corrugations on the exposed sides, giving the user the advantage of a firm grip.	\$.60
		
	No. 60 Radio Plug	
5	The function of this transformer is to prevent the high plate voltage used on the second audio stage from reaching the fine high resistance windings of the loud speaker. It is recommended when plate voltages above 135 volts are used on the UX-112 tube and for all installations in which the UX-171 tube is used. The turns ratio of this transformer is 1-1, the windings and the iron core being selected to give efficient matching of the two connected circuits and to pass the large plate current of the UX-171 tube which would be impossible if the circuit extended through the comparatively high resistance circuit of the loud speaker. The transformer is equipped with a two-conductor cord which connects to the receiver output binding posts, the loud speaker cord connecting to two terminals on the top of the transformer.	6.00
		
	No. 5 Audio Output Transformer	
10	This instrument is designed to eliminate rattling and discordant sounds in a cone speaker used with a receiving set not incorporating a power tube in the last audio stage. It is but 4½ inches long and is finished in brown crystalline lacquer. On one end is a cord with two tips for connection to the output binding posts of the receiver, while on the other end are two pin type jacks for the insertion of standard cord tips usually provided on loud speaker cords. The filter passes all lower, intermediate and some of the higher frequencies, so that high quality of reproduction may be obtained on receivers in which the audio output tube or the detector tube is easily overloaded.	3.50
		
	No. 10 Audio Filter	
R-2-L	A 2 conductor 5 foot, brown covered, "Dura-tex," moisture proofed cord which is forked in two branches—one for each receiver of a double head set. This is the standard cord for the No. 3-A Radio Head Set. Equipped with the No. 18 Pin Type Cord Tips on one end and No. 37 Cord Tips on the other end.	.90
		
	No. R-2-L Cord	
R-2-K	For use with No. 2-A Radio Head Set.	.90
R-2-D	A 2 conductor 5-foot, brown covered, "Dura-tex" cord, moisture proofed. Used for connecting the various units of receiving apparatus. Especially desirable where first-class construction combined with neatness is essential. This cord is equipped with pin tips on both ends.	.80
R-2-M	A 2 conductor 5-foot brown covered "Dura-tex," cord, moisture proofed. Used for connecting the Nos. 2-A, 3-A, 4-A, or 4-B loud speakers to the receiving set.	.80
R-2-N	A 2 conductor 35-foot brown covered "Dura-tex" cord, moisture proofed. Used for connecting the No. 16 Loud Speaker to the receiving set.	3.00
		
	No. R-2-D Cord	
20021	Single conductor brown covered, "Dura-tex" cordage, moisture proofed. Cut in lengths as specified on order.	Per ft. .10
20022	A 2 conductor brown covered cordage the same as No. 20021 but 2 conductors. Cut in lengths as specified on order.	.15

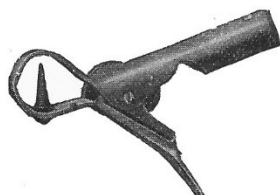
Radio Apparatus (Cont.)

Accessories (Cont.)

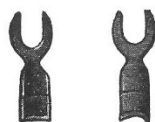
Code No.	Description	Price
2-A	This is an aerial outfit which includes all materials necessary for installing a high grade outside aerial.	\$6.00
18	Pin type tip used for attaching the cord to Radio Head Sets. Also very convenient to finish the end of cordage in setting up circuits. Well adapted for use with Fahnestock spring binding posts.	.01
34	A handy, brass, nickel plated cord tip in the form of a spring clip with steel point and saw toothed jaws; for quick, reliable connections. May be soldered to any type of cordage.	.25
35	Spade tip for placing under any type of thumb nut or thumb screw binding post. Arranged for soldering to standard cords or cordage.	.01
2870	UX-201-A Radiotron Detector or Amplifier Tube.	1.25
2976	UX-171-A Radiotron Power Tube (for last audio stage).	2.25
2958	UX-280 Rectron Tube.	3.00
2957	Tungar No. 277465 Bulb (2 Amp.).	4.00
2955	Tungar No. 289881 Bulb (1 Amp.).	4.00
2951	UX-216-B Rectron Tube.	7.25
2950	UX-210 Radiotron Super-Power Output Tube.	9.00
3004	UY-227 Radiotron Tube.	2.50
2783	100-Amp. hour Exide "A" Battery for use when 60-cycle current is not available.	17.90
2869	45 volt, heavy duty, Eveready "B" Battery	4.25
2898	22½ volt Eveready "C" Battery.	1.75
2819	4½ volt Eveready "C" Battery.	.60
101	Loop Outfit, for Nos. 634, 633, 602, 601 Receivers.	22.50
102	Envelope Loop, for No. 734 Receiver.	30.00



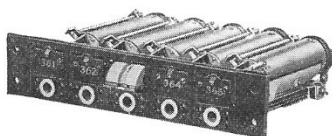
No. 18 Cord Tip



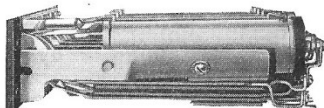
No. 34 Cord Tip



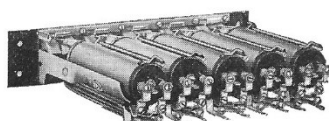
No. 35 Cord Tip



No. 11 Drop
on No. 140 Drop Mounting



No. 11 Drop
Side View

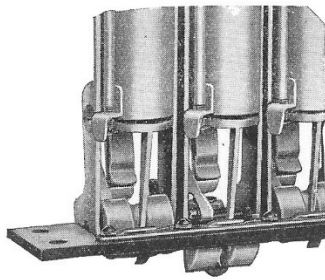


No. 11 Drop
Rear View

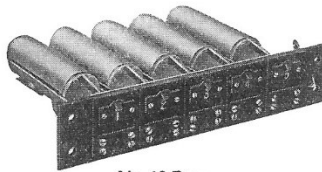
Drop Signals

Piece Parts shown on pages 227-228

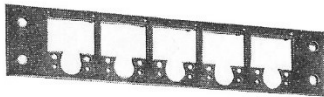
Code No.	Description	Price Each
11-A	Standard line equipment for use in all Stromberg-Carlson magneto switchboards. Shutter is automatically restored to normal position by insertion of plug in jack, which is an integral part of the apparatus. Jack is designed to fit No. 42 Plug. Equipment consists of a drop signal and corresponding line jack assembled in one unit so that the complete apparatus may be installed or removed from the switchboard as a unit. The jack is of the double cut-off type; the line is clear of all drop connections when the plug is in the jack. Contact springs are made of nickel-silver. Conspicuousness of signal when in calling position is one great advantage of this drop. When operated the shutter presents three white surfaces against a black background which immediately attracts attention from any position on the board. Coil of 500 ohms resistance is removable from back of board so that changes may be made without disturbing the operator. All terminals are of the screw type which not only facilitates testing and inspecting but also eliminates the use of a soldering copper. Engraved number plates are removable and interchangeable.	\$3.75



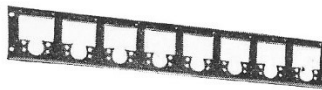
No. 11 Drop
Showing Night Alarm Contacts



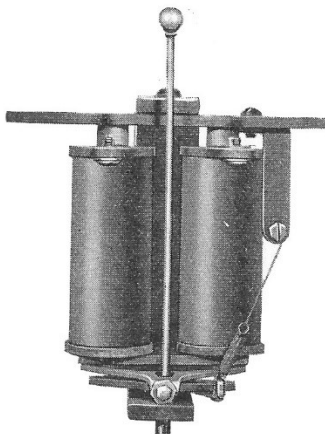
No. 12 Drop
on No. 140 Drop Mounting



No. 140 Drop Mounting



No. 146-A Drop Mounting



No. 10 Type

Drop Signals (Cont.)

Code No.	Description	Price Each
	Separate contacts for continuous and code ringing night alarm bells are provided so that either or both systems may be used in the same board without interference.	
	Drops of this type are regularly mounted five per strip. No charge is made for mounting strip when 3 or more drops are ordered.	
	Single drop measures $4\frac{7}{8} \times 1\frac{3}{32} \times 1\frac{7}{16}$ ins.	
	Face of strip to mount 5 drops $7\frac{7}{16} \times 1\frac{7}{16}$ ins.	
12-A	Clearing out drop, used on magneto switchboard with No. 11 Drop line equipment. Similar to No. 11 except that it has no jack or self restoring equipment. Coil is of 500 ohms resistance.	\$2.50
	Single drop measures $4\frac{7}{8} \times 1\frac{3}{32} \times 1\frac{7}{16}$ ins.	
	Face of mounting strip to mount 5 drops $7\frac{7}{16} \times 1\frac{7}{16}$ ins.	
12-F	Coil 1000 ohms resistance. Otherwise, same as No. 12-A.	2.60
16-A	Same as No. 11-A but designed for use with a No. 53 Plug.	3.75
17-A	Same as No. 13-A but designed for use with a No. 53 Plug.	3.75

Drop Mounting Strips

Code No.	Description	Price Each
140	Made of strip steel to mount five standard Stromberg-Carlson drops. Finish, dull black. Mounts on a No. 105 Switchboard. Requires a No. 33 Drop Blank for unequipped spaces. Face of strip is $7\frac{7}{16} \times 1\frac{7}{16}$ ins.	\$1.75
143	Same as No. 140 except that the night bell terminal is extended.	2.00
146-A	Made of strip steel to mount 8 standard Stromberg-Carlson drops. Finish, dull black. Mounts the same as No. 130 Jack, using No. 17 Jack Fastener. Requires No. 33 Drop Blank for unequipped spaces. Face of strip is $10\frac{3}{8} \times 1\frac{1}{2}$ ins.	6.00
146-B	Differs from No. 146-A in end lugs only. Mounts the same as No. 109 Jack using No. 15 Jack Fastener. Face of strip is $10\frac{1}{2} \times 1\frac{1}{2}$ ins.	6.00

Ringer Signals

Piece Parts shown on pages 242-244

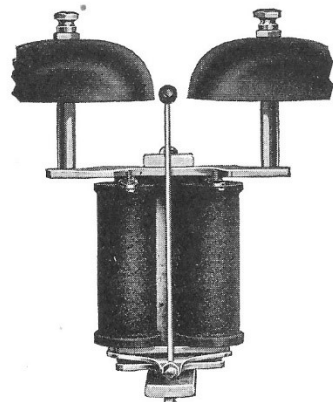
All Ringer Signal prices are Less Gongs

Code No.	Description	Price Each
10-C	A polarized, biased ringer. Made without gong posts for use on the No. A-11740 Switchboard. Resistance 1600 ohms.	\$2.35
28-A	A polarized buzzer for use in test sets. Resistance 1000 ohms.	2.00
28-C	Same as No. 28-A. Resistance 1600 ohms.	2.10
28-H	Polarized buzzer for use in No. 105 Switchboard. Resistance 100 ohms.	1.90
35-A	Polarized, straight line ringer for use in No. 890 Mine-a-Phone. Made with impregnated coils and double permanent magnets. Mounted on a moisture proof plate. Designed for 4 inch gongs. Resistance 1000 ohms.	3.80
	Gongs (black steel) and locknuts, per set.	1.20

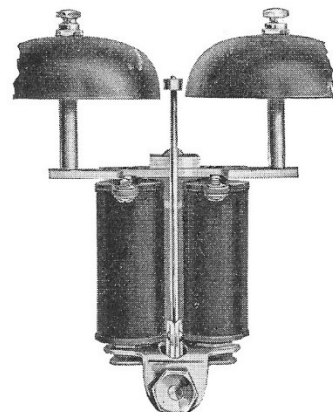
Ringer Signals (Cont.)



No. 28 Type

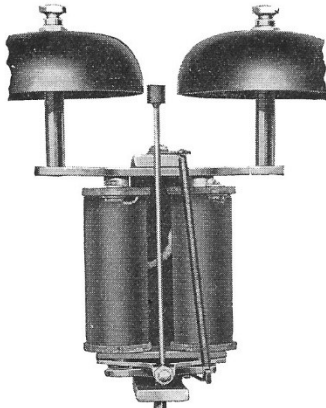


No. 46 Type

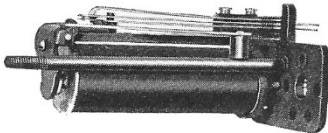


No. 47 Type

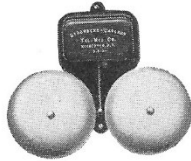
Code No.	Description	Price Each
35-B	Same as No. 35-A. Resistance 1600 ohms. Gongs and locknuts, per set.	\$3.90 1.20
35-E	Same as No. 35-A. Resistance 2500 ohms. Gongs and locknuts, per set.	4.00 1.20
37-A	Direct current vibrating ringer used in Stromberg-Carlson Nos. 903, 965, 968 and 1122 Telephones. Equipped with a vibrating armature and adjustable break contact. Resistance 20 ohms. Black steel gongs, screws and nuts, per set.	1.25 50
46-A	Straight line polarized ringer for use in all standard Stromberg-Carlson Central Energy and Magneto Telephones equipped for straight line ringing. Armature pivots on a brass yoke bridging the pole pieces and is adjusted by a single screw. Further adjustment is obtained through eccentric gong drillings. Spool terminals are designed for either screw or soldered connections. Resistance 1000 ohms. Gongs (black steel), screws and nuts, per set.	1.75 .25
46-C	Same as No. 46-A. Resistance 1600 ohms. Gongs, screws and nuts.	1.85 .25
46-F	Same as No. 46-A. Resistance 2500 ohms. Gongs, screws and nuts.	2.05 .25
47-E	Harmonic ringer tuned to 16 cycles for use in a Four Party System. Pole pieces of the coils are made with a locknut adjustment which provide very close regulation of the air gap. Mounts on the same cabinet drillings as No. 46 Type Ringer. Each ringer is carefully tuned and permanently adjusted at the normal voltages and rated frequency. Resistance 2500 ohms. Gongs (black steel), nuts and screws, per set.	2.50 .25
47-F	Same as No. 47-E but tuned to 33 cycles. Resistance 500 ohms. Armature interchangeable with Nos. 47 G & H. Gongs, nuts and screws.	2.50 .25
47-G	Same as No. 47-E but tuned to 50 cycles. Resistance 500 ohms. Armature interchangeable with Nos. 47 F & H. Gongs, nuts and screws, per set.	2.50 .25
47-H	Same as No. 47-E but tuned to 66 cycles. Resistance 500 ohms. Armature interchangeable with Nos. 47 F & G. Gongs, nuts and screws, per set.	2.50 .25
47-I	Same as No. 47-E but designed for a two frequency system. Tuned to 20 cycles. Resistance 2500 ohms. Gongs, nuts and screws, per set.	2.50 .25
47-J	Same as No. 47-I. Tuned to 60 cycles. Resistance 500 ohms. Gongs, nuts and screws, per set.	2.50 .25
47-K	Same as No. 47-E but designed for a synchronic system. Tuned to 30 cycles. Resistance 500 ohms. Gongs, nuts and screws, per set.	2.50 .25
47-L	Same as No. 47-K but tuned to 42 cycles. Gongs, nuts and screws, per set.	2.50 .25
47-M	Same as No. 47-K but tuned to 54 cycles. Gongs, nuts and screws, per set.	2.50 .25
47-N	Same as No. 47-K but tuned to 25 cycles. Gongs, nuts and screws, per set.	2.50 .25



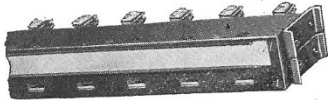
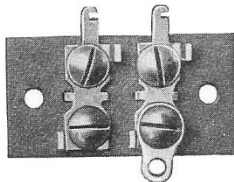
No. 49 Type



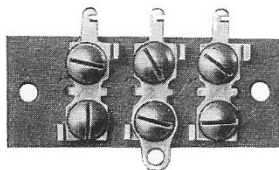
No. 51-A Buzzer



No. 53 Type Loud Ringing Bell

No. 18 Visual Signal
on No. 121 Mounting

No. 1-A Terminal Block



No. 2-A Terminal Block

Ringer Signals (Cont.)

Code No.	Description	Price Each	
49-A	Polarized, biased ringer used in a party line system which has selective signalling by means of positive and negative pulsating current. Mounts on the same cabinet drillings as the No. 46 Type. Single screw armature adjustment. Resistance 1000 ohms.	\$1.90	
	Gongs, nuts and screws, per set.		.25
49-C	Same as No. 49-A. Resistance 1600 ohms.	2.00	
	Gongs, nuts and screws, per set.		.25
49-F	Same as No. 49-A. Resistance 2500 ohms.	2.20	
	Gongs, nuts and screws, per set.		.25
51-A	A.C. and D.C. buzzer for use in the No. 101 Switchboard. Resistance 900 ohms.	3.50	
102-C	Polarized, biased ringer for use on old type switchboards. Complete with drop and gongs. Resistance 1600 ohms.	4.25	
		1-4	Over 5
53-A	This bell is very rigidly made, being designed for both outdoor and indoor service. The cases are of stamped steel, heavily enameled, and the six inch gongs are of pressed steel, heavily nickel plated. The ringer coils are treated with waterproof insulating varnish. Standard finish of the bell is black enamel for the case and nickel plate for the gongs. Coils wound to 1000 ohms.	\$11.65	\$11.00
53-C	Same as No. 53-A but with coils wound to 1600 ohms.	11.95	11.25
53-F	Same as No. 53-A but with coils wound to 2500 ohms.	13.15	12.40

Additions

For No. 22 Condenser (2 MF) add \$1.00 each.

Note: Add Condenser when used on Central Energy Systems.

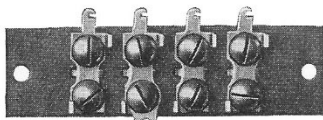
Visual Signals

Code No.	Description	Price Each
120	18 on Mounting. A very compact signal which may be mounted as close as half inch from center to center and is $2\frac{7}{8}$ inches long. Used as "busy" signal on toll boards. Resistance 1700 ohms. Dimensions— $10\frac{3}{8}$ x 1 ins.	\$1.50
121	18 on Mounting. Mounts 10 signals. Similar to No. 117. Dimensions— $10\frac{3}{8}$ x 1 ins.	1.75
122	18 on Mounting. Mounts 10 signals. Similar to No. 120. Dimensions— $7\frac{13}{16}$ x 1 ins.	1.75

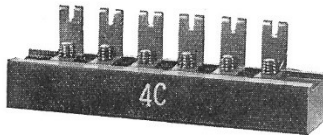
Terminal Blocks

Code No.	Description	Price Each
1-A	Two conductors, each equipped with two screw and one solder connections. Mounted on sheet fiber. Dimensions— $1\frac{5}{8}$ x $\frac{7}{8}$ x $\frac{1}{8}$ ins.	\$.15
2-A	Same as No. 1-A but has 3 conductors. Dimensions— $2\frac{1}{8}$ x $\frac{7}{8}$ x $\frac{1}{8}$ ins.	.18
3-A	Same as No. 1-A but has 4 conductors. Used in Nos. 1171, 1172, 1173, and 1174 Telephones. Dimensions— $3\frac{1}{16}$ x $\frac{7}{8}$ x $\frac{1}{8}$ ins.	.20
4-A	Same as No. 1-A but has 5 conductors. Used in No. 1175 Telephone. Dimensions— $3\frac{3}{8}$ x $\frac{7}{8}$ x $\frac{1}{8}$ ins.	.25

Terminal Blocks (Cont.)

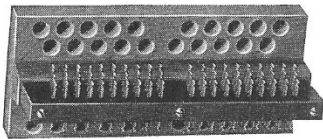


No. 3-A Terminal Block

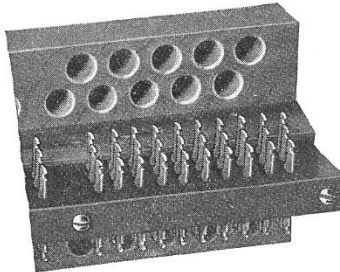


No. 4-C Terminal Block

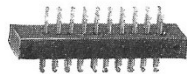
Code No.	Description	Price Each
4-C	Six conductors mounted on hard rubber. For use in switchboards for attaching generator leads. Dimensions— $2\frac{3}{4} \times \frac{7}{8} \times \frac{7}{16}$ ins.	\$.60
5-A	Same as No. 1-A but has 6 conductors. Used in Nos. 965 and 1122 Telephone. Dimensions— $4\frac{3}{8} \times \frac{7}{8} \times 1\frac{1}{8}$ ins.	.30
6-A	Same as No. 1-A but has 7 conductors. Dimensions— $4\frac{7}{8} \times \frac{7}{8} \times 1\frac{1}{8}$ ins.	.35
7-A	Same as No. 1-A but has 8 conductors. Dimensions— $4\frac{5}{8} \times \frac{7}{8} \times 1\frac{1}{8}$ ins.	.40
8-A	Same as No. 1-A but has 9 conductors. Dimensions— $5\frac{1}{8} \times \frac{7}{8} \times 1\frac{1}{8}$ ins.	.45
9-A	Same as No. 1-A but has 10 conductors. Dimensions— $5\frac{5}{8} \times \frac{7}{8} \times 1\frac{1}{8}$ ins.	.50
13-A	Same as No. 1-A but has 14 conductors. Dimensions— $7\frac{5}{8} \times \frac{7}{8} \times 1\frac{1}{8}$ ins.	.80



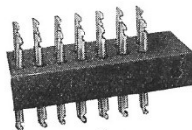
No. 45 Terminal Strip



No. 45 Terminal Strip



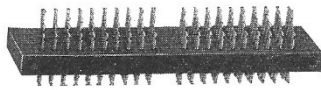
No. 72 Terminal Strip



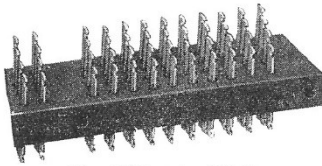
No. 72 Terminal Strip

Code No.	Description	Price Per Strip
44	Consists of 20 circuits with two terminals per circuit (20 pairs). This is No. 77 Terminal Strip mounted on a wood base for use on vertical intermediate distributing frames. Dimensions— $7 \times 3 \times 2\frac{5}{8}$ ins.	\$2.00
45	Consists of 20 circuits with three terminals per circuit (20 triplets). This is No. 78 Terminal Strip mounted on a wood base for use on vertical intermediate distributing frames. Dimensions— $7 \times 3 \times 2\frac{9}{16}$ ins.	2.80
46	Consists of 20 circuits with four terminals per circuit (20 quad). This is No. 80 Terminal Strip mounted on a wood base for use on vertical intermediate distributing frames. Dimensions— $7 \times 3 \times 3\frac{1}{16}$ ins.	3.60
49	Consists of 25 circuits with two terminals per circuit (25 pairs). This is No. 68 Terminal Strip mounted on wood base for use on vertical main distributing frames. Dimensions— $7 \times 3 \times 2\frac{5}{8}$ ins.	2.50
62-67	See Inter-Comm-Phones.	
68	Consists of 25 circuits with two terminals per circuit (25 pairs). Mounted in hard rubber for use on main distributing frames. Dimensions— $6\frac{3}{4} \times 1\frac{5}{8} \times 1\frac{3}{8}$ ins.	2.50
70	Consists of 20 circuits with one terminal per circuit. Mounted in hard rubber for use as extra terminals beside main distributing frame protectors. Dimensions— $10\frac{1}{2} \times \frac{1}{8} \times 1\frac{1}{8}$ ins.	1.60
71	Consists of 20 circuits with two terminals per circuit. Mounted same as No. 70. Dimensions— $10\frac{1}{2} \times 1\frac{1}{2} \times 1\frac{1}{8}$ ins.	2.00
72	Consists of 10 circuits with two terminals per circuit (10 pairs). Mounted in hard rubber for use in switchboards and intermediate distributing frames. Dimensions— $3\frac{23}{32} \times 1\frac{5}{8} \times 1\frac{3}{8}$ ins.	1.00
73	Consists of 10 circuits with three terminals per circuit (10 triplets). Mounted same as No. 72. Dimensions— $3\frac{23}{32} \times 1\frac{1}{2} \times 1\frac{3}{8}$ ins.	1.40
74	Consists of 10 circuits with four terminals per circuit (10 quad). Mounted same as No. 72. Dimensions— $3\frac{23}{32} \times 1\frac{1}{4} \times 1\frac{3}{8}$ ins.	1.80
75	Consists of 10 circuits with five terminals per circuit. Mounted same as No. 72. Dimensions— $3\frac{23}{32} \times 1 \times 1\frac{3}{8}$ ins.	2.20

Terminal Strips (Cont.)



No. 80 Terminal Strip



No. 80 Terminal Strip

Code No.	Description	Price Each
76	Consists of 10 circuits with six terminals per circuit. Mounted same as No. 72. Dimensions— $3\frac{3}{4}$ x $2\frac{1}{2}$ x $1\frac{5}{8}$ ins.	2.60
77	Consists of 20 circuits with two terminals per circuit (20 pairs). Mounted same as No. 72. Dimensions— $6\frac{3}{4}$ x $\frac{1}{8}$ x $1\frac{3}{8}$ ins.	2.00
78	Consists of 20 circuits with three terminals per circuit (20 triplets). Mounted same as No. 72. Dimensions— $6\frac{3}{4}$ x $1\frac{1}{4}$ x $1\frac{1}{2}$ ins.	2.80
79	Consists of 20 circuits with four terminals per circuit (20 quad). Mounted in hard rubber for use on intermediate distributing frame answering jacks. Dimensions— $6\frac{3}{4}$ x $1\frac{9}{16}$ x $1\frac{1}{8}$ ins.	3.60
80	Consists of 20 circuits with four terminals per circuit (20 quad). Mounted same as No. 72. Dimensions— $6\frac{3}{4}$ x $1\frac{9}{16}$ x $1\frac{5}{8}$ ins.	3.60
81	Consists of 20 circuits with five terminals per circuit. Mounted same as No. 72. Dimensions— $6\frac{3}{4}$ x $1\frac{3}{4}$ x $1\frac{5}{8}$ ins.	4.40
82	Consists of 20 circuits with six terminals per circuit. Mounted same as No. 72. Dimensions— $6\frac{3}{4}$ x $2\frac{1}{2}$ x $1\frac{5}{8}$ ins.	5.20

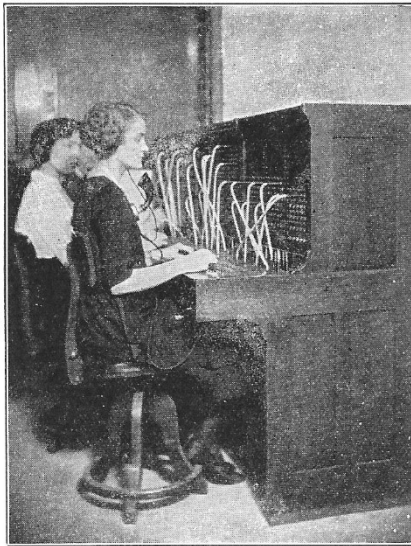
No. 105 Magneto Switchboard

150 Lines Capacity—Drops

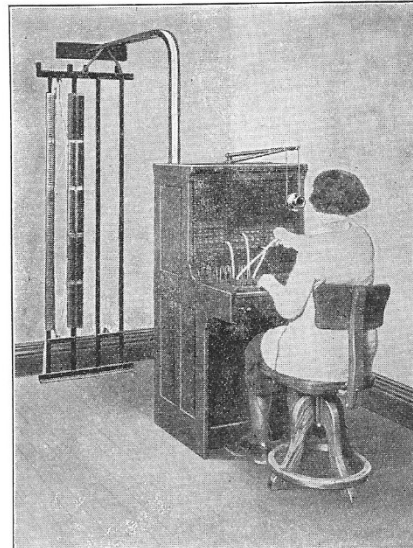
The Stromberg-Carlson No. 105 Switchboard answers every requirement that is encountered in the rendering of high grade magneto telephone service. *This Switchboard is adapted not only to any type of magneto line, but to any size of Magneto exchange.* It has more features for speed, accuracy,

No. 105-A Switchboard equipped with 30 lines and wired for 50 lines—capacity 150 lines.

No. 105-B Switchboard equipped with 50 lines and wired for 100 lines—capacity 150 lines.



Three Positions of the No. 105 Switchboard in Operation



One Position of No. 105 Switchboard with No. 1 Protector Frame and No. 1 Cable Rack

efficiency, economy, convenience, durability and universal adaptability than any other Magneto Switchboard.

The following three codes of the No. 105 Type Switchboard are carried in stock ready for immediate shipment:

No. 105-C Switchboard equipped with 100 lines and wired for 150 lines—capacity 150 lines.

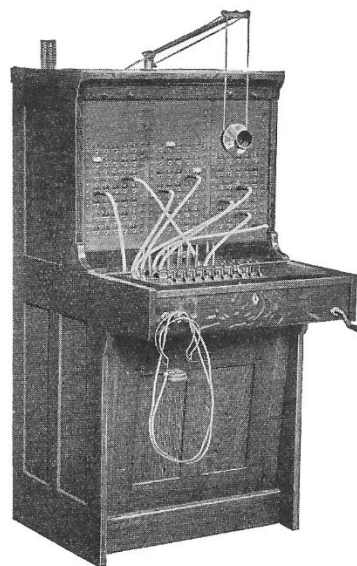
Prices, shipping weights and additional data regarding equipment will be found on page 74.

No. 105 Magneto Switchboard (Cont.)

Cabinet Design

The cabinets of the Nos. 105-A, 105-B and the 105-C Switchboards are identical in every respect, with the exception of the immediate equipment and the immediate wiring.

The following features are convincing proof that these cabinets are built, not only for allowing service



Left Front Perspective No. 105-C
Switchboard

expansion and for providing every operative convenience, but for displaying remarkable durability and for presenting a pleasing appearance:

Kiln dried quarter-sawed oak woodwork finished in dull golden oak provides a neat and durable cabinet.

Flush design of the cabinet's end panels permits the building up of the switchboard installation as the requirements of the exchange expand, in single position units, each of 150 line capacity, always presenting the appearance of one continuous switchboard.

Heavy steel drop frame of angle construction, affords not only a support for the line signals, but also a rigid bracing for the switchboard's cabinet.

Formica veneer over the entire keyboard surface gives a dull black ebony finish with unexcelled mar-resisting and wear-resisting qualities.

Especially prepared black fibrous veneer over plug board protects against the impact of the plugs.

Short reach and wide keyboard add to the operator's convenience.

Removable front and rear lift-out panels expose all interior parts for inspection.

Low height of keyboard permits the operator to rest her feet comfortably on the floor.

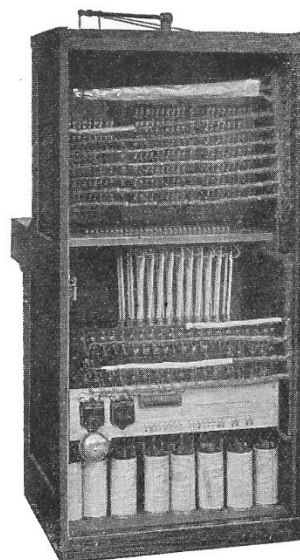
Line Equipment

Each equipped line circuit of the No. 105 Switchboard includes, one No. 11-A—500 ohm drop.

The features of this line equipment are as follows:
Plug restored drop shutters promote speed in operating.

Prominent multi-faced drop shutters visible from every angle, increase operating efficiency.

Removable drop number plates make it convenient and economical to always have the line



Rear Perspective No. 105-C
Switchboard

signals correctly designated so as to insure the elimination of errors due to incorrectly numbered drops.

Double cut-off contacts on each line jack sever both sides of the drop coil from the line. This guarantees a highly efficient, balanced talking circuit.

Removable drop coils permit economical repairs.

Unit type, drop mountings each containing groups of 5 drops, facilitate adding extensions in a most practical manner.

Line cable, extending 12 ft. from the top of the section, affords ample provision for connecting to a standard Stromberg-Carlson No. 1 Protector Frame.

Micrometer adjustment of code alarm on each line drop permits not only close adjustment of the alarm feature but also the privilege of entirely removing that feature when it is not desired.

Full metallic line circuit wiring with looped-in wire for connecting ground to all drops as required, provides facilities so that any signal in the switchboard may be associated with a grounded line, a metallic line, a common return line or a central checking line.

Cord Circuit Equipment

The cord circuits of the No. 105 Magneto Switchboard are designed for accurate operating, for fast operating, and for durability. Each fully equipped cord circuit has two No. 19 Condensers, two No.

No. 105 Magneto Switchboard (Cont.)

S-23-G 5 foot Cords, two No. 42 Plugs, two No. 6 Cord Weights, one No. 169-F Key, and one No. 13-A Repeating Coil.

The features of these cord circuits are as follows:

Automatically restored ring-off shutters save the operator's time and therefore speed up service.

Ring-off signals location, as mounted on the keyboard in plain view to the operator, reduce the number of mistakes due to taking down the wrong connection.

Double ring-off signals increase the efficiency of operating by designating to the operator just which party to a connection has rung off.

Non-ring-through cord circuits eliminate much confusion between subscribers and operators because a subscriber's "ring-off" cannot pass through one of these cord circuits to the connected line.

Repeating coil type cord circuits throughout the switchboard insure maximum talking efficiency

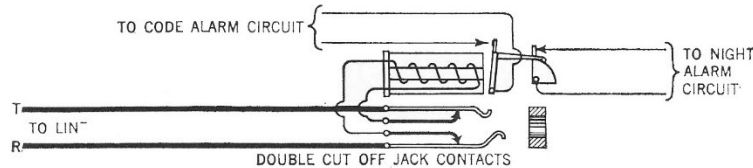
Bakelite—a practically non-hygroscopic material.

Convenient—The quickly removed head band and the handy cut-in plug, regularly furnished, are especially convenient for the attendant who has various duties other than those of operating and who, therefore, frequently has occasion to leave the switchboard.

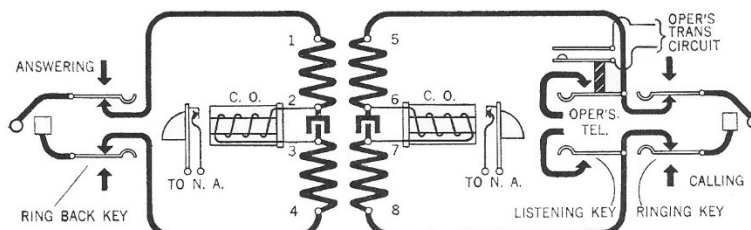
Convertible—It is a simple matter to change from suspended type of transmitter to the breast plate type or vice-versa—that conversion is a simple matter because the wiring is all in place for either type of transmitter. If a breast plate type of transmitter is desired the No. 2-L Operators' Telephone Set will be furnished in place of the regular suspended transmitter.

Generator Equipment

The apparatus furnished for ringing the subscribers station instruments consists of,—one No. 38 Generator, one No. 3 Crank Shaft, one No. 119 Key, and one No. 28-H Ringer.



Line Circuit of the No. 105 Switchboard



Cord Circuit of the No. 105 Switchboard

Note:—The First Two Cord Circuits also include a Repeating Coil Key

with minimum noise from inductive disturbances.

Zero-loss cord circuits—the first two cord circuits on the left—controlled by repeating coil keys furnish ideal talking conditions for long distance service.

Operators' Telephone Equipment

A suspended operators' telephone set is regularly furnished with the No. 105 Switchboard. The following apparatus is included: one No. 20-A Induction Coil, two No. 0-1-A-5 foot Transmitter Cords, one No. D-2-B-6 foot Receiver Cord, four No. 531 Dry Batteries, one No. 93 Jack and one No. 15 Transmitter Arm.

This operators' equipment has the following features:

Noiseless—Flexible cords are used to suspend the transmitter so that it will not render the operator's circuit noisy by picking up floor vibrations.

Sanitary—The operator's receiver is provided with a wire head band which is not only light in weight but free from either dust-collecting or moisture-absorbing surfaces. As a further sanitary protection the transmitter's mouthpiece is of

Power Ringing is recommended for the busy switchboard, it speeds up service during rush hours, and lightens the work of the operator. This switchboard is completely wired and equipped for connecting with any type of power ringing circuit.

Emergency Ringing is accomplished by means of the No. 38 Generator which is of powerful five bar construction. The above mentioned No. 119 Key is utilized for switching from the source of hand generator current to the source of power generator current supply or vice-versa as required.

Signalling Indication is one of the features of this switchboard, it helps the operator because through its use she knows with reasonable certainty not only when she is ringing out on a line but also whether the line is in proper condition for signalling purposes. It further aids the operator in ringing code signals on party lines. This Signalling Indication is accomplished by means of a ringer which responds to the flow of signalling current in the generator circuit.

Keyboard Space for Mounting a Master Key affords facilities so that the switchboard may be converted readily for connecting with any of the following classes of service: Signalling with Divided

No. 105 Magneto Switchboard (Cont.)

Circuit Ringing, Signalling with Pulsating Ringing, or Signalling with Harmonic Ringing.

Ring Back Key on Each Cord Circuit permits ringing on the answering cord without the inconvenience of reversing the connection.

Night Alarm Circuit and Code Alarm Circuit

The following distinct and independently controlled alarm circuits are furnished with each No. 105 Switchboard:

The Night Alarm Circuit—This circuit is arranged to give a continuous ring as long as a drop shutter remains in the operated position, and while the Night Alarm Key is pushed in.

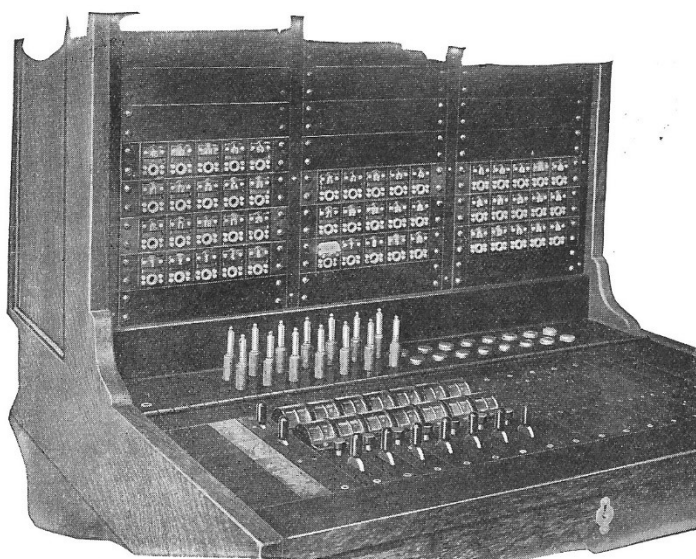
positions. This purpose is accomplished by means of what is known as a "Position Switching Key."

The No. 105 Magneto Switchboard is drilled, blanked and wired for a Position Switching Key which may be installed readily at any future time when it is needed. The requirements consist of one No. 301 Key marked "SW."

Transfer Circuit

When a magneto switchboard grows so as to require three or more operator's position equipments, it is obvious that some means must be provided for transferring calls from position to position so that any two lines not in the same or in adjacent positions may be connected.

Transfer Circuits answer these requirements and



Close-up View of Keyshelf of No. 105-B High Efficiency Switchboard

The Code Alarm Circuit—This circuit is arranged to give a buzz each time the armature of a line drop is actuated by a subscriber ringing on his line. In other words this code alarm is designed to repeat the code signals as they are made on the various lines with which the switchboard is connected. The value of the code alarm is to inform the operator when removed a short distance from the switchboard—as during a light load period—whether her services are required at the switchboard or whether a subscriber is simply signalling another party on his own line. The code alarm is controlled by a push button key.

The apparatus requirements for both of these alarm circuits include—One 20 ohm, 3 inch Night Alarm Bell; one 20 ohm Code Alarm Buzzer; four No. 531 Columbia Dry Batteries; one No. 119 Night Alarm Key; and one No. 119 Code Alarm Key.

Position Switching Key

A switchboard consisting of two or more positions requires facilities for switching the operator's set of one position to the cord circuits of an adjacent position and vice versa. Such facilities are essential particularly during light load periods when it is desirable to have one operator handle two or more

are provided for in each position of the No. 105 Magneto Switchboard. There is space for fifteen transfer jacks in three strips of five each.

When transfer circuits are needed specify the following material for each group of five transfer circuits:—ten No. 140 Jacks, on 85 Mounting, five jacks in a position. Wiring in accordance with Cable Form drawing B-1731 will be furnished with the jacks.

Order Wire Keys

Where Transfer Circuits are in service it is desirable to have Order Wire Keys. Space is provided on the Keyboard of each No. 105 Magneto Switchboard for three Order Wire Keys.

Provided Order Wire Keys are needed, specify for each order wire circuit in a position—one No. 300 Key. Wiring in accordance with Cable Form drawing B-1731 will be furnished with the keys.

Instruction Book

Furnished with each No. 105 Switchboard is an instruction book, known as Bulletin 1025, which gives practical directions covering the installation and operation. This volume is in fact a switchboard text book, written in an interesting manner, and

No. 105 Magneto Switchboard (Cont.)

readily understood by the average reader. Numerous cuts clearly illustrate the circuit operations, as well as the instructions for most efficient manner of installing the equipment. Wiring diagrams and a list of the apparatus contained in the No. 105 Switchboard are included in this volume, eliminating the use of easily lost blue prints and typewritten lists.

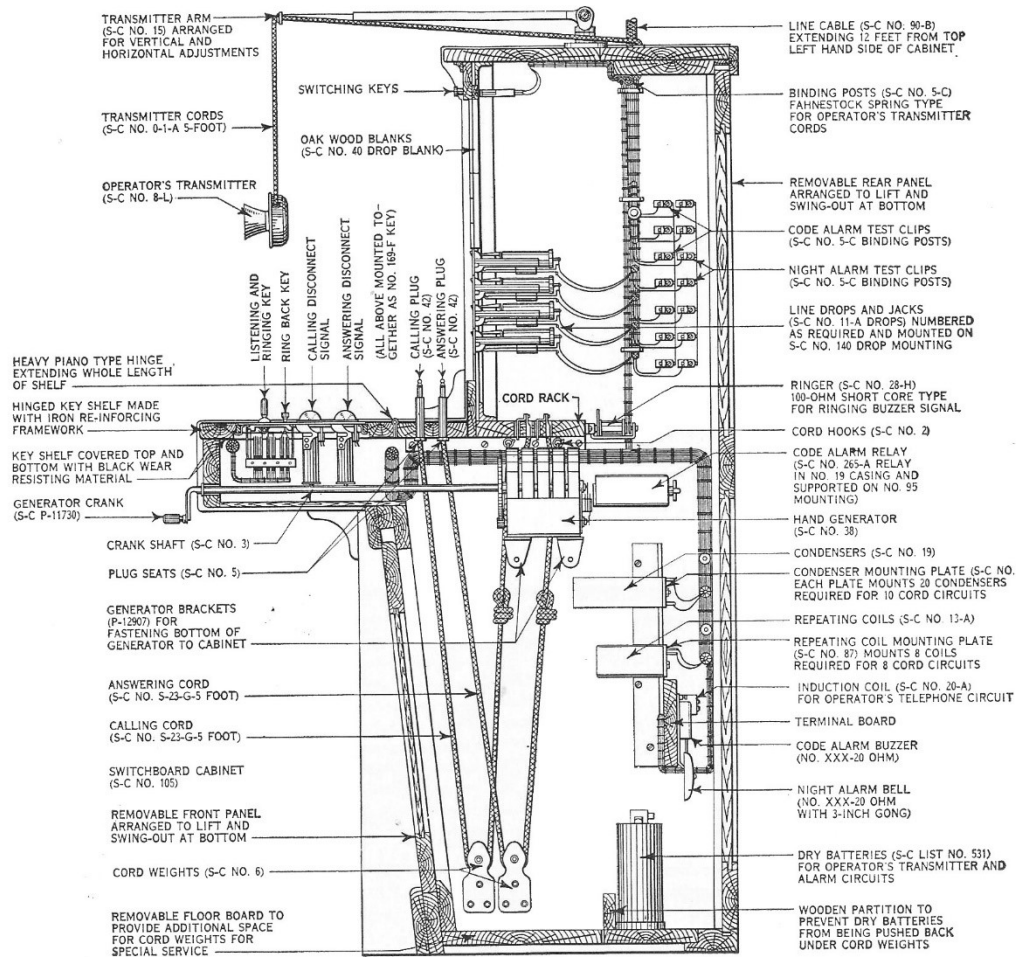
Switchboard Tools

The following set of switchboard tools is regularly furnished with each No. 105 Switchboard. These tools have been carefully designed to aid in the

Service Department

The Stromberg-Carlson Tel. Mfg. Co. maintains a Service Department where bulletins are prepared on various phases of maintenance, and on operating problems met in exchanges of a size using the No. 105 Switchboard. These bulletins contain many helpful hints both to the manager, wire chief and operator, and will be mailed as issued to all purchasers of our No. 105 Switchboard Equipments.

To place an order for any of the following three standard stock switchboards it is necessary to specify only the code number of the switchboard that is desired,—for instance: to order a No. 105 Magneto Switchboard which is equipped with 50



Cross Section No. 105 Type Switchboard

switchboard maintenance and are constructed of the best materials.

- No. 42 Screw Driver for changing cords in plugs.
- No. 7 Spring Adjuster for jack springs.
- No. 39 Wrench for jack sleeves.
- No. 52 Screw Driver for the large, drop screws.
- No. 56 Screw Driver for the small, drop screws.

lines and 7 cord circuits, simply specify "1 No. 105-B Switchboard."

Standard Stock Switchboards

Code	Wired for Lines	Cords	Equipped with Lines	Cords	Shipp'g Weight	Price
105-A	50	15	30	5	360 lbs.	\$395.00
105-B	100	15	50	7	400 "	485.00
105-C	150	15	100	10	450 "	698.00

No. 105 Magneto Switchboard (Cont.)

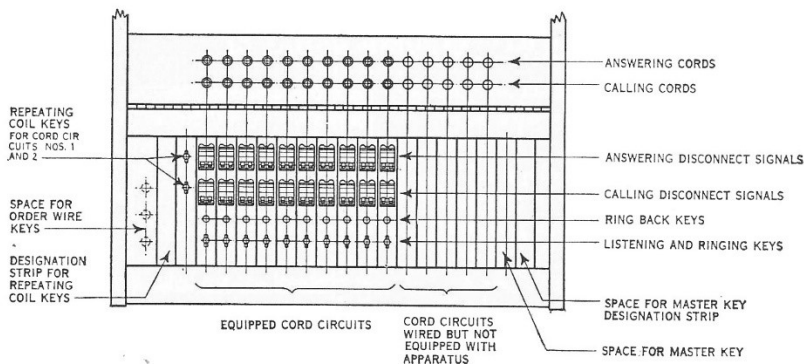
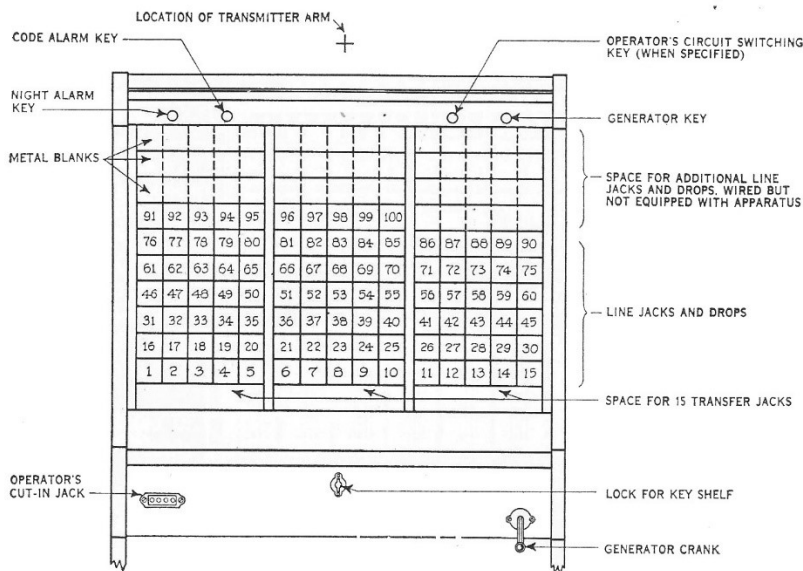
Modified Stock Switchboards

Provided less equipment is desired than that included with the Standard Stock No. 105-A Switchboard, add a \$5.00 packing and repacking charge to the price of the complete 105-A Switchboard; then deduct, at the rate of \$2.50 per line circuit and \$15.00 per cord circuit for the circuit equipments omitted.

On the other hand, provided more equipment is desired than that included with any particular one of the three Standard Stock Switchboards, add a \$5.00 packing and repacking charge to the price of the Standard Stock Switchboard which nearest approaches the requirements—then add to that sum, for the additional equipment needed,—at the following prices.

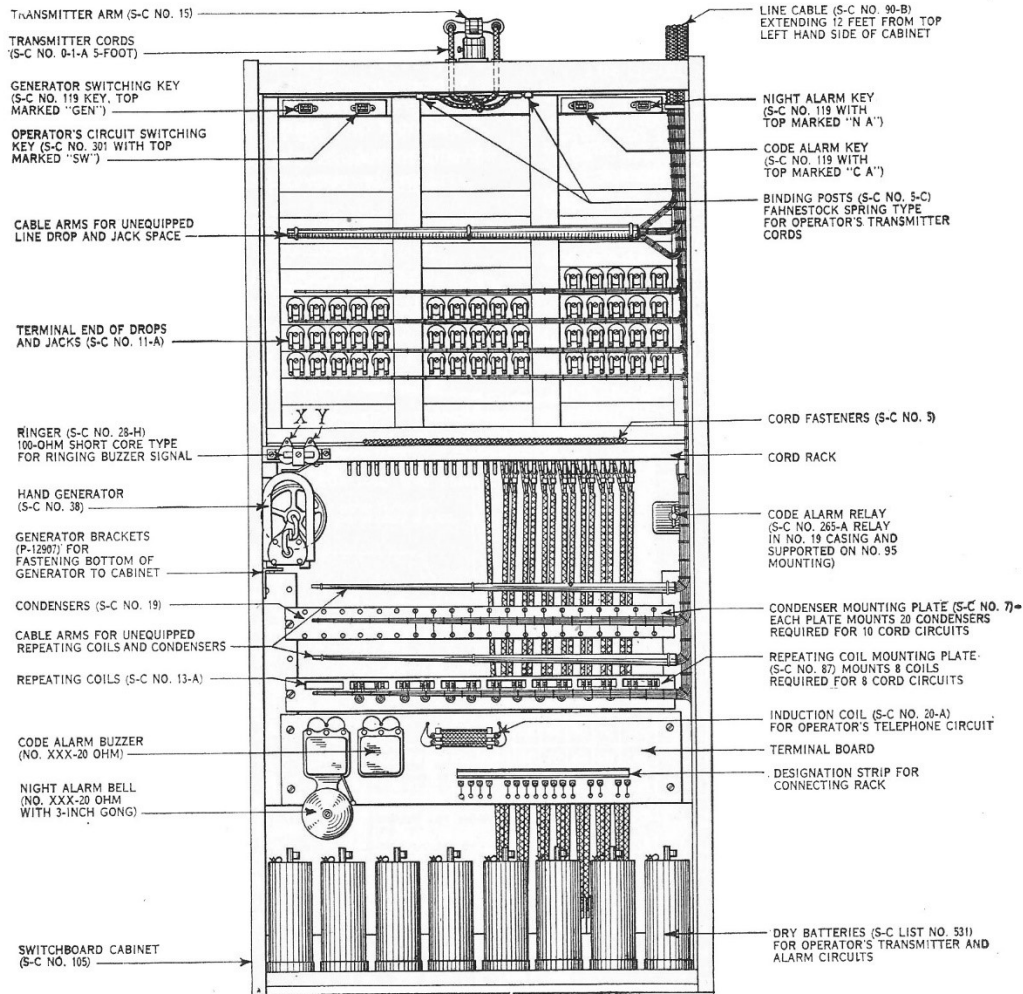
Additional line equipments.....	\$ 3.75 each
Additional cord equipments.....	18.00 "
Position Switching Key—No. 301 Key marked "SW".....	3.00 "
Transfer Circuit Unit consisting of five No. 140 Jacks on No. 85 Mounting 5 jacks per strip with cable to alternate position.....	29.15 "
Order Wire Circuit—consisting of one No. 300 Key with cable to alternate position.....	1.25 "
Master Key—either pulsating or harmonic.....	10.00 "

Note: Protectors and Protector Frames are described on page 79.

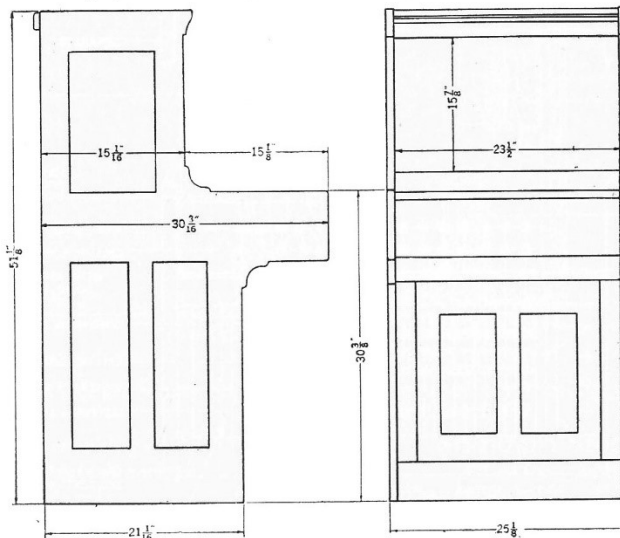


Face and Keyboard Equipment Diagram of the No. 105-C Switchboard

No. 105 Magneto Switchboard (Cont.)



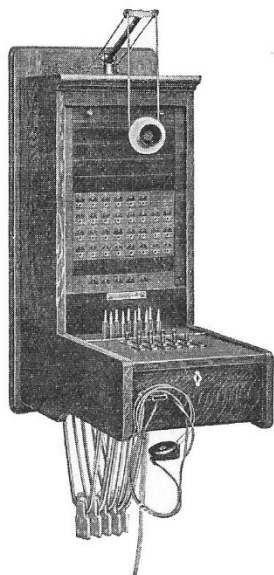
Rear Equipment Drawing of the No. 105 Type Magneto Switchboard



Dimensions of the No. 105 Switchboard

No. 107 Magneto Switchboard

40-Line Capacity—Drops



No. 107 Switchboard

A very compact wall type magneto switchboard well adapted to systems which do not require an operator's constant attendance. This switchboard will connect with all types of magneto lines—full metallic lines, grounded lines, central checking lines or heavily loaded party lines that employ code ringing.

All apparatus is contained in a neat, quartered oak cabinet, finished in durable golden oak. The front section and also the keyboard are both hinged, so as to permit access to the interior parts.

Full metallic wiring is provided to the switchboard's ultimate capacity. The line circuit wiring is of

sufficient length to extend twelve feet from the back of the switchboard.

Each line equipment consists of a No. 11 Drop, provided with 500 ohm removable type drop coil. These drops have interchangeable number plates, double cut-off jack contacts and plug restored shutters.

Efficient talking connections are established between lines by means of well designed cord circuits. Each of these cord circuits includes two No. 42 Plugs, two No. S-23-G-3 ft. Cords, one No. 12-A Ring-Off Drop, one No. 193-A (Ringing and Listening) Key and one No. 178-A (Ring Back) Key.

The operator's telephone equipment is comprised of a transmitter suspended from an adjustable arm, an operator's watch case, wire head band receiver, a removable cut-in plug, a cut-in jack and an induction coil.

The operator's auxiliary equipment consists of a five bar hand generator with switch and terminals for power generator. This operator's auxiliary equipment also includes a night alarm bell with controlling switch.

Dry batteries are furnished not only for the operator's set but also for the night alarm circuit.

Wall mounting space $15\frac{7}{8}$ x 36 ins.

Standard Equipment and Prices

Wired for 40 Lines and 5 Cord Pairs

Code	Lines Eqpd.	No. of Cord Pairs	No. of Rep. Coil Pairs	Total No. of Cord Pairs	Approx. Weight Packed	Price
107-A	10	2	1	3	100 lbs.	\$275.00
107-B	15	3	1	4	105 "	307.00
107-C	20	3	1	4	110 "	327.00
107-D	25	4	1	5	115 "	359.00
107-E	30	4	1	5	125 "	379.00
107-F	40	4	1	5	130 "	419.00

No. A-11741 Magneto Switchboard

15 Line Capacity—Drops

This is a very handy, compact switchboard, just what is required in any community where an operator is not necessarily in constant attendance.

All apparatus is contained in a neat, quartered oak wall cabinet, finished in pleasing dull golden oak. The front section hinges exposing interior parts for inspection.

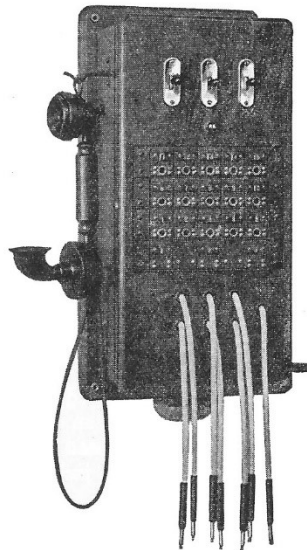
Full metallic wiring is provided for the line equipment to the capacity of the switchboard. This wiring is contained in a neatly formed, machine made, 15 pair cable which extends 12 ft. from the back of the switchboard. Each line circuit includes

one No. 11-A Drop mounted on a metal strip, provided with removable coil and a removable number plate.

The equipped cord circuits each include two No. S-23-G-2 ft. Cords, two No. 42 Plugs, one No. 173 (listening and ringing) Key and one No. 12-A Drop. This ring-off signal is wound to 500 ohms resistance.

A very complete operator's equipment is supplied. This includes a handy combination telephone, a night alarm, a five bar generator, dry batteries for the operator's circuit and dry batteries for the night alarm circuit.

No. A-11741 Magneto Switchboard (Cont.)



No. A-11741 Switchboard

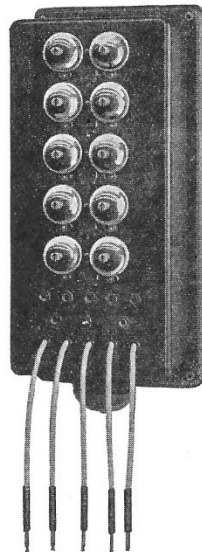
Standard Equipment and Prices

Wired for 15 Lines and 3 Connecting
Cord Circuits

Code No.	Description	Price
A-11741-A	Wall type switchboard for magneto service. Equipped with ten No. 11-A drop lines, two connecting cord circuits and one answering cord circuit. Mounting space $9\frac{3}{8}$ x $17\frac{3}{8}$ ins. Approximate shipping weight 60 lbs.	\$110.00
A-11741-B	Wall type switchboard for magneto service. Equipped with fifteen No. 11-A drop lines, three two-conductor cord circuits and one answering cord circuit. Mounting space $9\frac{3}{8}$ x $17\frac{3}{8}$ ins. Approximate shipping weight 65 lbs.	135.00

No. A-11740 Magneto Switchboard

5 Line Capacity—Ringers



No. A-11740 Switchboard

This switchboard is arranged for use in connection with any standard magneto wall telephone. It is an ideal switchboard for rendering magneto service

in small communities where an operator's constant attendance is not required and where code signalling is employed on heavily loaded lines.

The cabinet is of compact wall design constructed of kiln dried quarter-sawed oak finished in dull golden oak. The front section hinges so as to permit access to the interior parts.

Each line terminates at the switchboard on an indicating drop shutter type of ringer—Code No. 102-C. These ringers are wound to 1600 ohms, are provided with sensitive clear-toned gongs and are wired in a full metallic line circuit which is adapted for use on any magneto line, full metallic lines, grounded lines, or central checking lines. A five pair cable extends the line wiring to a distance twelve feet from the switchboard's rear. The jacks associated with the ringer signals are mounted, handily, immediately above the connecting cord circuits.

Two connecting cord circuits provide facilities so that two separate conversations can be carried on simultaneously. These cord circuits each include two No. 42 Plugs, two No. S-23-G 2-foot Duratex Cords and one No. 55 (operator's listening-in) Jack. The latter item is mounted immediately above the cord equipment. The line ringers act as ring-off signals.

No. A-11740 Magneto Switchboard (Cont.)

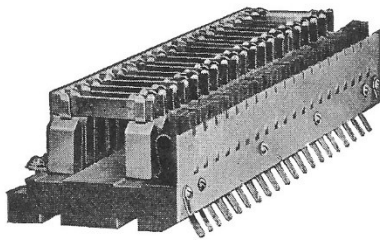
The operator's equipment consists of an answering cord and plug which is required to connect with the associated wall telephone (the telephone is not included with the switchboard). With this answering plug the operator may connect to any line equipment or cord equipment for talking and signalling purposes.

A night alarm is furnished, connected with the five ringer signals in the line circuit. This night alarm includes a 20 ohm bell, controlling switch and three dry cells.

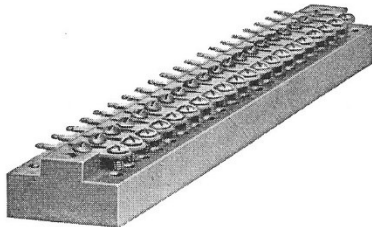
Standard Equipments and Prices

Code No.	Description	Price
A-11740	Wall type ringer switchboard for magneto service. Wired and equipped with five lines two connecting cord circuits, one answering cord circuit and one night alarm. Wall mounting space $9\frac{3}{8}$ x $17\frac{3}{8}$ ins. Approximate shipping weight 35 lbs.	\$47.50

Protectors for Magneto Switchboard Installations



No. P-12606 Protector Strip

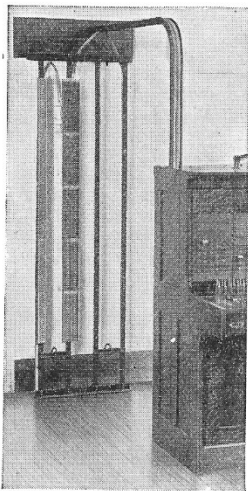


No. P-12607 Jumper Strip

The Stromberg-Carlson No. 69-A Protector is designed especially for use in magneto exchange service. It is of the well-known carbon block and mica-protected fuse type. It mounts 50 pairs high on the Stromberg-Carlson No. 1 Protector Frame and it is recommended not only for all No. 105 Switchboard installations but also for all Nos. 107, A-11740, A-11741-A and A-11741-B Switchboard installations.

Code No.	Description	Price
69-A	Protector consists of one No. P-12606 ten pair carbon block and mica fuse strip and one No. P-12607 ten pair jumper strip complete with Western Union type fuses.	\$6.00

Protector Frame for Magneto Switchboard Installations



Two No. 1 Protector Frames and No. 1 Cable Rack installed with No. 105 Switchboard

The Stromberg-Carlson No. 1 Protector Frame is of the sectional wall type and is therefore of flexible capacity.

It is built for No. 105 Switchboard installations. However it is admirably adapted to any magneto switchboard installation.

Each protector frame unit mounts 50 pairs of No. 69-A Protectors.

For a 50 line installation order one No. 1 Protector Frame; for a 100 line installation order two No. 1 Protector Frames, and so on to any desired capacity—adjacent units fasten together so as to always present the pleasing appearance of one continuous iron framework.

This protector frame makes a remarkably neat and practical installation at a very low cost.

Code No.	Description	Price
1	Unit type protector frame 50 lines capacity. Mounts No. 69-A Protectors.	\$6.00

Cable Rack for No. 105 Switchboard Installations

A cable rack is essential for neatness in any magneto switchboard installation.

The Stromberg-Carlson No. 1 Cable Rack is designed for carrying overhead the cabling between the No. 105 Switchboard and the No. 1 Protector Frame.

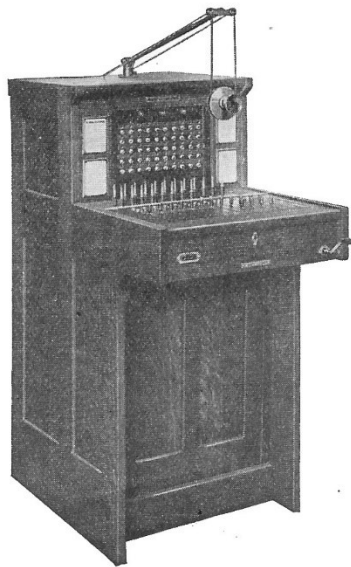
This cable rack is constructed of heavy channel iron, rust-proofed, painted black, equipped at the protector frame end with wall-mounting brackets and equipped at the switchboard end with roof of switchboard mounting brackets.

Order one No. 1 Cable Rack for each section of No. 105 Switchboard.

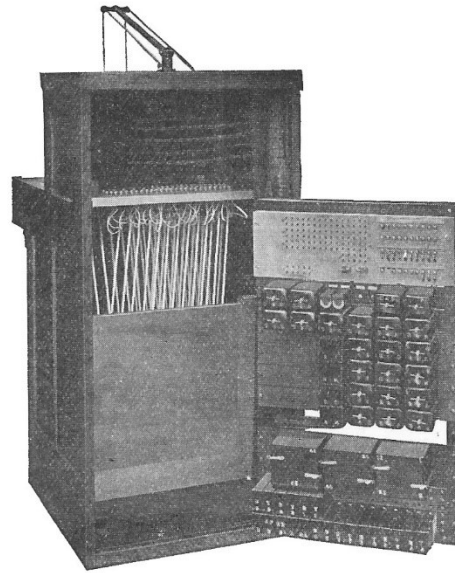
Code No.	Description	Price
1	Cable Rack for one position of No. 105 Switchboard, connecting with the No. 1 Protector Frame. See illustration on page 79. Carries one, two or three fifty pair cables.	\$7.00

Private Branch Exchange Switchboards

50, 100 and 300 Lines Capacity



Front Perspective of No. 101 Switchboard



Rear Perspective of No. 101 Switchboard

There are three types of Stromberg-Carlson Floor Mounted Private Branch Exchange (P. B. X.) Switchboards—

The No. 101 Switchboard of 50 Lines Capacity

The No. 102 Switchboard of 100 Lines Capacity

The No. 106 Switchboard of 300 Lines Capacity

These three switchboards answer every practical requirement that is demanded in P. B. X. telephone service. They are adapted for connecting with any type of city exchange—Central Energy, Magneto, or Automatic. Furthermore, these three P. B. X. Switchboards provide ample range in capacity for any number of P. B. X. stations, up to the point where a Multiple P. B. X. Switchboard would be more economical.

The No. 101 P. B. X. Switchboard, the No. 102 P. B. X. Switchboard, and the No. 106 P. B. X. Switchboard have identical operating characteristics—the same circuits are used in these switchboards. This

means that an operator who is accustomed to handling one of these switchboards can readily handle the other.

The No. 101 P. B. X. Switchboard, the No. 102 P. B. X. Switchboard, and the No. 106 P. B. X. Switchboard use identical apparatus parts, such as: relays, jacks, lamp sockets, lamps, plugs, cords, receivers, transmitters, keys, etc. Therefore *all parts are interchangeable from the No. 101 P. B. X. Switchboard to the No. 102 P. B. X. Switchboard, or the No. 106 P. B. X. Switchboard and vice versa.* On account of this interchangeability a small stock of apparatus parts will answer an operating company's requirements for extensions or for repairs to any of these switchboards.

Cabinet Design

The cabinet for the No. 101 P. B. X. Switchboard is very compact—measures only 42¾ ins. high, 20¾ ins. wide and 30 ins. deep—occupies but 3¼ square feet of floor space.

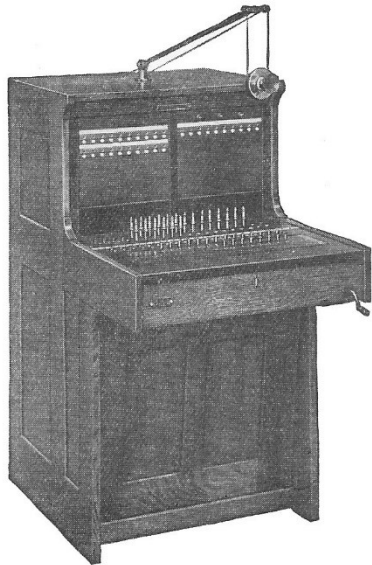
Private Branch Exchange Switchboards (Cont.)

The cabinet for the No. 102 P. B. X. Switchboard is also very compact considering that this switchboard has a capacity of 100 lines, which is double the capacity of the No. 101 Switchboard. The height is 45½ ins., the width 25¼ ins., and the depth 35 ins.

The cabinet for the No. 106 P. B. X. Switchboard is even more compact considering that this switchboard has a capacity of 180 lines when equipped with jacks mounted 10 per strip, and 300 lines when equipped with jacks mounted 20 per strip. The height is 51 ins., the width is 25¼ ins., and the depth is 35 ins.

The cabinet for the No. 101 Switchboard is of single panel construction with directory cards on either side of the panel. The cabinets for the No. 102 and No. 106 Switchboards are of two panel construction without the directory cards.

All these cabinets have the following common characteristics:—



Front Perspective of No. 102 Switchboard

Specially prepared black fibrous veneer over plug board protects against the impact of the plugs.

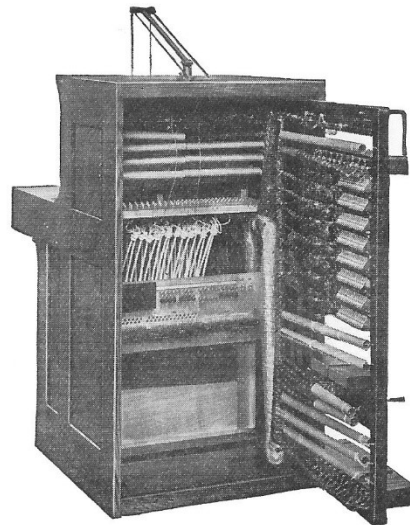
Steel key frame mounts the keys securely flush with the keyboard's surface.

Heavily constructed, carefully drilled and tapped jack stiles support the line jacks and line lamp sockets in the switchboard's face.

Horizontally swinging relay gate mounts the terminal board, the line relays, the trunk relays, the cord relays, the condensers and the miscellaneous coils in a most accessible manner. This relay gate is of angle construction with welded corners.

Maple Terminal board affords connecting facilities for all outside circuits such as line circuits, trunk circuits, battery feed circuit and power generator circuit.

Carefully made, well insulated cable forms eliminate any possibility of either cross-talk or cross-



Rear Perspective of No. 102 Switchboard

Minimum height permits operator looking over the switchboard's top.

Flush sides simplify matching additional sections when necessary.

Quartered oak woodwork finished in dull golden oak combines attractiveness with durability.

Removable lift out panels for both front and rear of switchboard facilitate both inspection and repairs.

Heavy piano hinge extending entirely across the keyboard guarantees ample strength where many switchboards are weak.

Substantial keyboard lock prevents tampering with the interior parts of the keyboard pocket.

Low keyboard height of only 31⅝ ins. permits the operator resting her feet on the floor in comfort.

Formica veneer over entire keyboard surface gives a dull black ebony finish with unexcelled mar-resisting and wear-resisting qualities.

ringing originating within the switchboard. The talking conductors and also the miscellaneous conductors are of No. 22 B. & S. Gauge commercially pure copper wire.

Each conductor is wrapped with two layers of silk in reverse directions, and one layer of cotton. The latter insulation is colored in accordance with a predetermined color code. The battery and ringing leads are of No. 18 B. & S. Gauge stranded conductor with rubber covering and D. S. and S. C. braiding.

Line Equipment

Each line circuit in either the No. 101, the No. 102, or No. 106 Switchboard includes, when fully equipped, a No. 194-A Relay, a No. 135 Jack, a No. 121 Lamp Socket, a No. 31-A Lamp Cap and a No. 32 Lamp.

Some of the line equipment features are—

Balanced talking conditions—both battery

Private Branch Exchange Switchboards (Cont.)

and ground are cut off the line-jack when the operator plugs up to answer.

Uniform signal to the operator regardless of the line's length—the line lamp is in a local, relay-controlled circuit.

Battery economy—the high winding of the line relay requires but a minimum battery current for operation.

Reliable signal—the line lamps are equipped with highly evacuated, tipless bulbs, rugged filaments and porcelain bases.

Cord Equipment

Stromberg-Carlson P. B. X. Cord Circuits are of the double lamp supervisory type with three conductor plugs and three conductor cords. Each cord circuit includes:—two No. 53-X Plugs, two No. S-32-K 3-foot or 5-foot cords, two No. 6 Cord

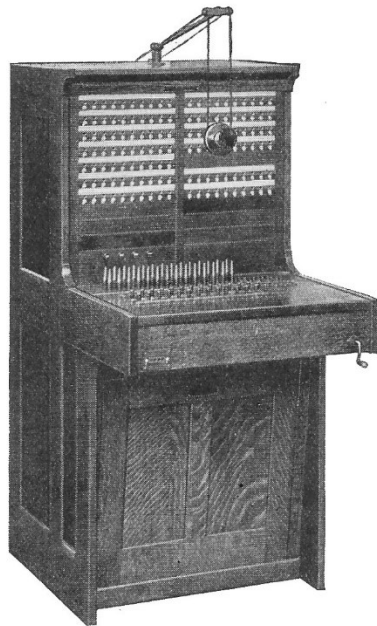
Simplicity—The supervisory relays each have only one break contact; that contact controls the supervisory lamps. There are no other electrically controlled contacts in the cord circuit.

Neat and Serviceable Keyboard Equipment—The keys mount flush on the keyboard and are neatly covered with a dull black, wear resisting substance that is a good insulator. The supervisory lamp caps are of the non-breakable type, therefore they require no unsightly guards.

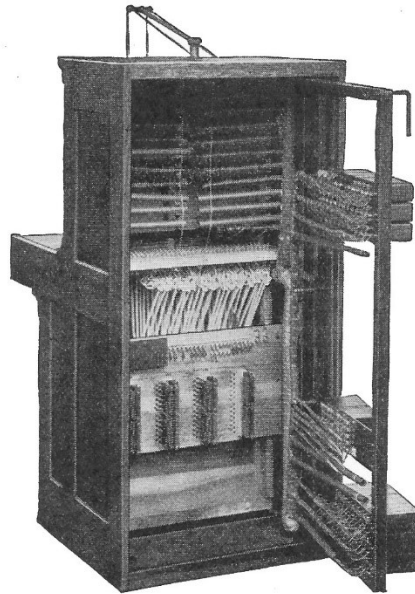
Transmission Efficiency—Both the tip and the sleeve talking conductors are entirely free from either series resistances or series retardation coils.

Trunk Equipment

The trunks furnished in the No. 101, the No. 102 and the No. 106 P. B. X. Switchboards are provided with universal wiring, so that it is unnecessary to



Front Perspective No. 106 Switchboard



Rear Perspective No. 106 Switchboard

Weights, two No. 13 Lamp Sockets, two No. 31-B Lamp Caps, two No. 32 Lamps, one No. 173-A Key, two No. 222-B Relays and two No. 19 Condensers.

The following equipment and circuit features are found in Stromberg-Carlson P. B. X. Cord Circuits:

Correct Battery Feed—Condensers separate the flow of transmission battery to the answering and the calling stations so that each station gets its proper proportion of current.

Balanced Transmission—Both the tip and the sleeve battery transmission coils to each station are placed on the same relay.

Battery Economy—The battery transmission feed not only supplies talking current, but also furnishes energy to operate the supervisory relays.

modify the key cable when adapting the P. B. X. trunking apparatus to connect with any of the following types of main exchanges:

- (a) Central Energy Manual Main Exchanges through a normal loop resistance.
- (b) Central Energy Manual Main Exchanges through an abnormally high loop resistance.
- (c) Automatic Main Exchanges through a normal loop resistance.
- (d) Automatic Main Exchanges through an abnormally high loop resistance.
- (e) Magneto Main Exchanges through any practical loop resistance.

Stromberg-Carlson P. B. X. Switchboards will be furnished equipped with trunks for service in accordance with paragraph (a) unless modifications are

Private Branch Exchange Switchboards (Cont.)

requested to conform with the requirements as outlined in paragraphs (b), (c), (d) and (e).

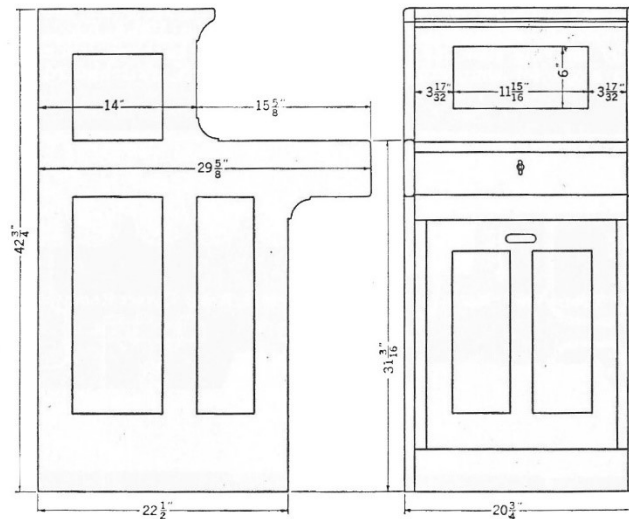
Each Central Energy Manual Exchange Circuit which is arranged for operating through a normal loop resistance [see paragraph (a)] includes at the P. B. X. Switchboard—one No. 53-X Plug, one No. S-32-K 3-foot or 5-foot cord, one No. 6 Cord Weight, three No. 13 Lamp Sockets, one No. 31-A Lamp Cap, one No. 31-B Lamp Cap, one No. 31-C Lamp Cap, three No. 32 Lamps, one No. 184-A Key, one No. 196 Key and one No. 1-A Trunk Circuit Plate.

These trunks have the following advantageous characteristics:—

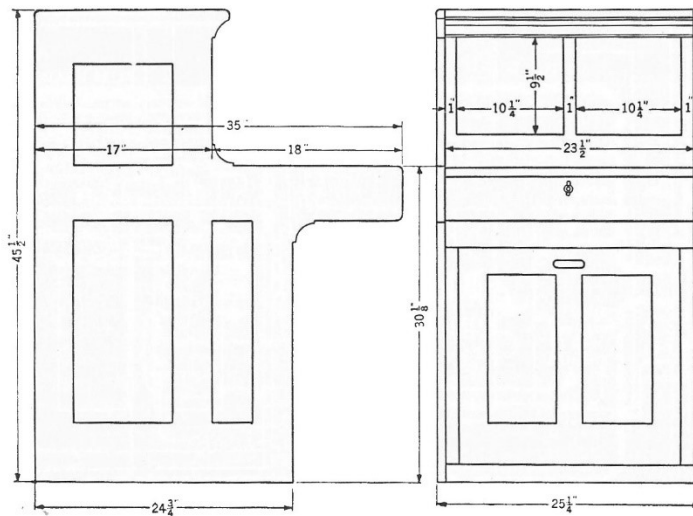
■ The Ending of the Trunks at the P. B. X. Switchboard on Plugs permits the use of all the cord circuits on the P. B. X. switchboard for

local to local service, the convenient connection of local lines to trunk lines for through-night service and the elimination of the complicated apparatus in the P. B. X. cord circuits that is necessary where jack ended trunks are employed. The plug ending of the P. B. X. trunks also has the advantage that the Main Exchange and the P. B. X. operators simultaneously receive disconnect signals.

Triple Supervision—facilitates fast and accurate operating. A white calling lamp lights when the Main Exchange operator rings out on a P. B. X. trunk line. A green hold lamp lights when the P. B. X. operator throws her listening key to answer a call coming through the Main Exchange operator. The presence of this signal always indicates that the trunk is being held by some act of the operator and signifies an off-normal condition, for



Dimensions of No. 101 Switchboard



Dimensions of No. 102 Switchboard

Private Branch Exchange Switchboards (Cont.)

example: it relights when the P. B. X. party hangs up, provided that the trunk listening key is accidentally left in the operated position; it also will flash under the same conditions if the P. B. X. party moves the hook of his telephone up and down—but it will not light when the operator monitors a connection. A red disconnect lamp lights when the P. B. X. party hangs up after completing a connection.

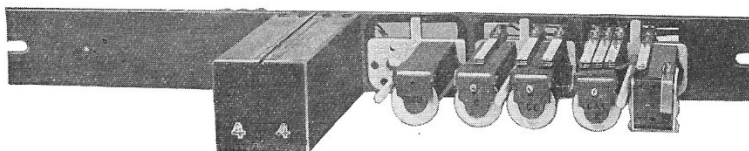
A Flashing Key—provides effective means for signalling the Main Exchange operator by flashing either the line or the answering supervisory signal before that operator.

The Trunk Circuit Plates—furnish facilities for quickly changing trunks as necessary to connect with any type of Telephone Main Exchange (see paragraphs (a), (b), (c), (d) and (e), page 82). The ease with which trunks may be added, omitted or modified by means of these trunk circuit plates makes it practical to curtail P. B. X. investment to a minimum. That curtailment of investment may be accomplished not only by carrying just one type of P. B. X. switchboard in stock for connecting with

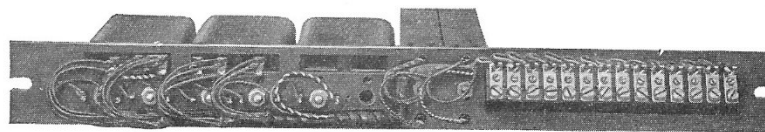
any type of Main Exchange, but by equipping each P. B. X. switchboard as it goes into service with only the exact number of trunks needed for present traffic, omitting provision for future traffic requirements.

Each Central Energy Manual Exchange Trunk which is arranged for operating through an abnormally high loop resistance (see paragraph (b)), includes at the P. B. X. switchboard the same apparatus as that required for the Central Energy Manual Exchange Trunks which operate through a normal loop resistance except that a No. 2-A Trunk Circuit Plate replaces the No. 1-A Trunk Circuit Plate.

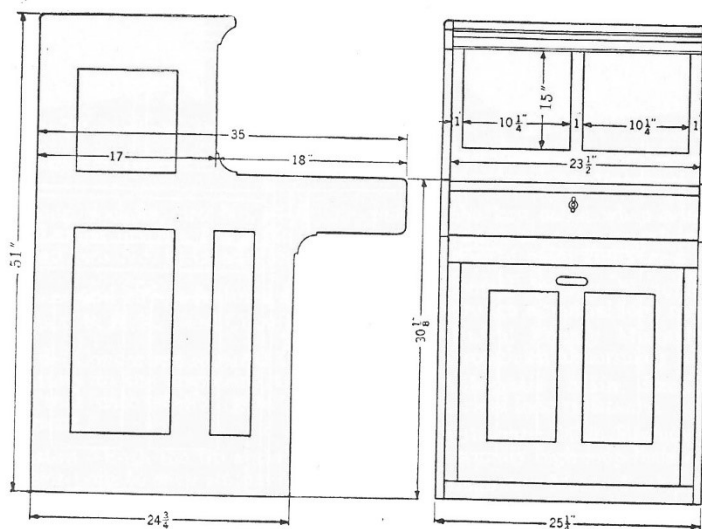
Night Switching Keys are recommended with this type of trunk—to cut the repeating coils and the associated apparatus in the No. 2-A Trunk Circuit Plate out of circuit for night service. Where night switching keys are installed in trunks that will be used for night service, the No. 196-A Key is replaced by the No. 198-A Key. The installation of night switching keys requires no change in the wiring of the P. B. X. switchboard.



Front View, No. 1-A Trunk Circuit Plate, Relay Covers Removed

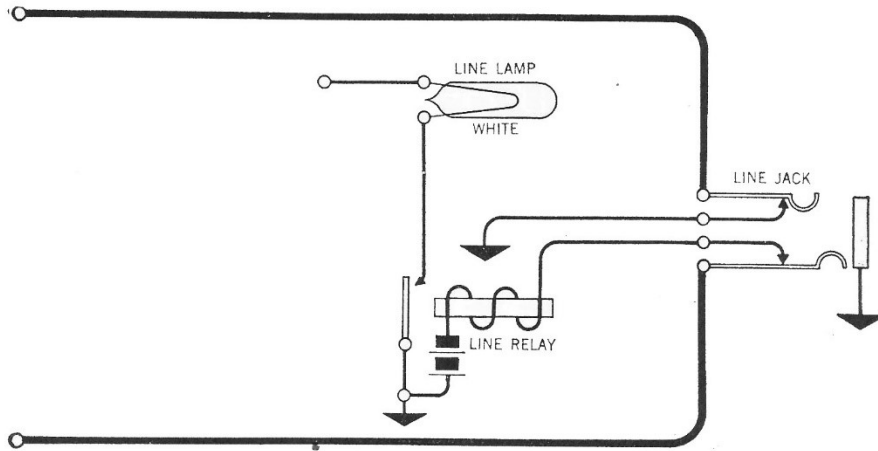


Rear View, No. 1-A Trunk Circuit Plate, Relay Covers in Place

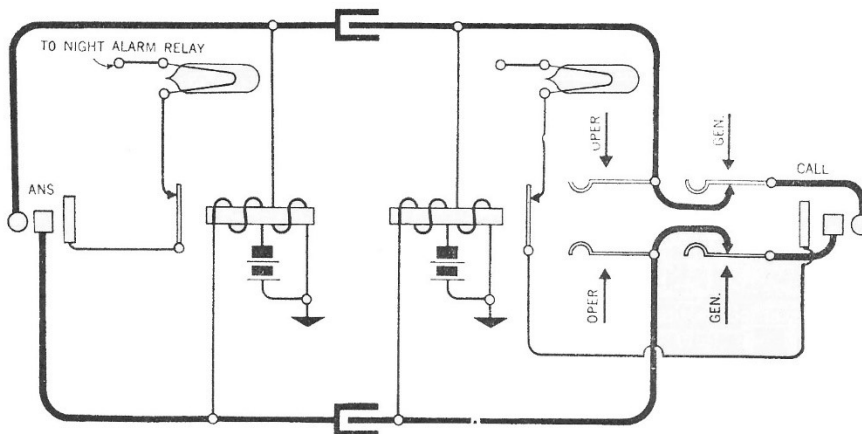


Dimensions of No. 106 Switchboard

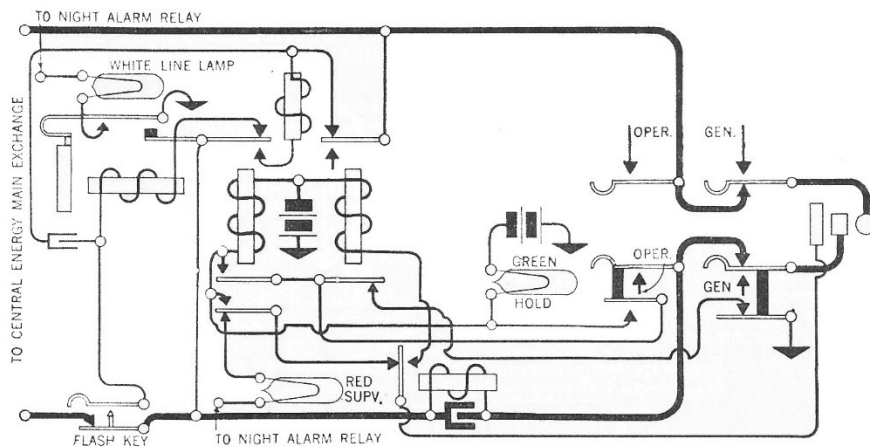
Private Branch Exchange Switchboards (Cont.)



Standard Line Circuit

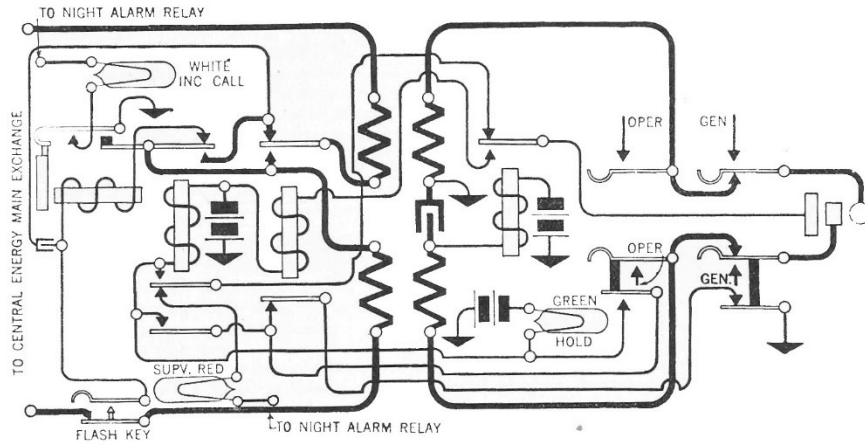


Standard Cord Circuit

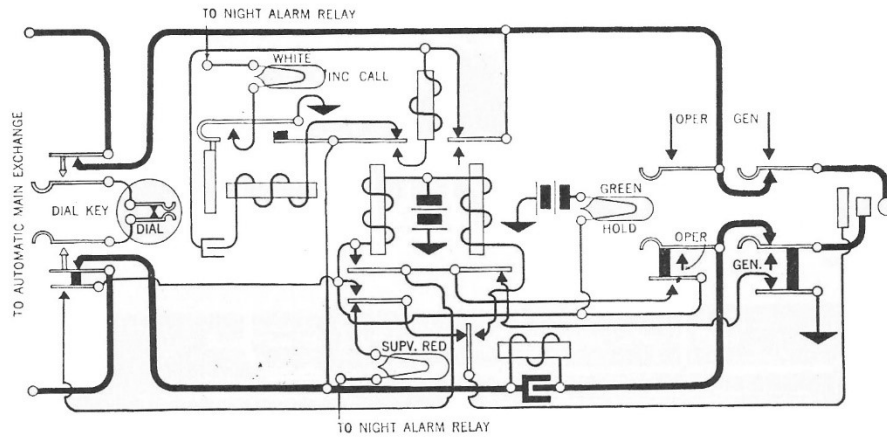


Trunk—Central Energy Manual Main Exchange—through a Normal Loop Resistance

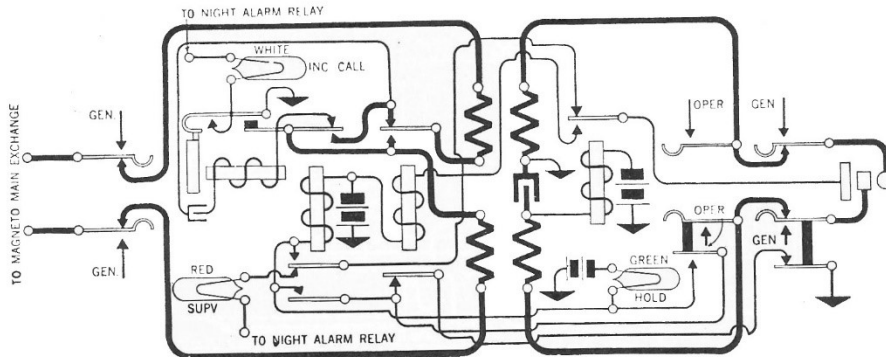
Private Branch Exchange Switchboards (Cont.)



Trunk—Central Energy Manual Main Exchange—through an Abnormally High Loop Resistance

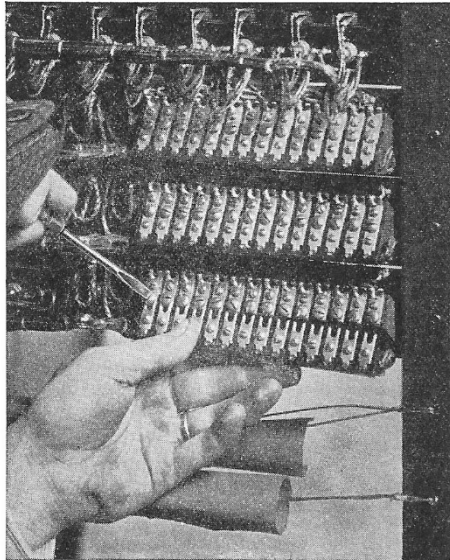


Trunk—Automatic Main Exchange—through a Normal Loop Resistance



Trunk—Magneto Main Exchange—through any Practical Loop Resistance

Private Branch Exchange Switchboards (Cont.)



Attaching Terminals to No. 2-A Trunk Circuit Plate

Each Trunk which is arranged for connecting to an Automatic Main Exchange through a normal loop resistance (see paragraph (c) includes at the P.B.X. Switchboard one No. 53-X Plug, one No. S-32-K 3-foot or 5-foot cord, one No. 6 Cord Weight, three No. 13 Lamp Sockets, one No. 31-A Lamp Cap, one No. 31-B Lamp Cap, one No. 31-C Lamp Cap, three No. 32 Lamps, one No. 196-A Key and one No. 1-A Trunk Circuit Plate. Common to all of these trunks on each P. B. X. Switchboard there will be required one calling device (automatic dial).

Each Trunk which is arranged for connecting to an Automatic Main Exchange through an abnormally high loop resistance (see paragraph (d) includes at the P. B. X. switchboard the same apparatus as that required for the Automatic Main Exchange Trunks which operate through a normal loop resistance except that a No. 2-A Trunk Circuit Plate replaces the No. 1-A Trunk Circuit Plate.

Night Switching Keys are recommended with this type of trunk—to cut the repeating coil and the associated apparatus in the No. 2-A Trunk Circuit Plate out of the circuit for night service. Where night switching keys are installed in trunks that will be used for night service, the No. 196-A Key is replaced by the No. 198-A Key. The installation of night switching keys requires no change in the wiring of the P. B. X. switchboard.

Each Trunk which is arranged for connecting to a Magneto Main Exchange (see paragraph (e), includes at the P. B. X. switchboard one No. 53-X Plug, one No. S-32-K 3-foot or 5-foot Cord, one No. 6 Cord Weight, three No. 13 Lamp Sockets, one No. 31-A Lamp Cap, one No. 31-B Lamp Cap, one No. 31-C Lamp Cap, three No. 32 Lamps, one No. 196-A Key, one No. 199-A Key, one No. 197-A Key and one No. 2-A Trunk Circuit Plate.



Installing the No. 2-A Trunk Circuit Plate on the No. 102 Switchboard

Operators' Telephone Equipment

The operator's telephone equipment that is regularly furnished with either the No. 101, the No. 102 or the No. 106 P. B. X. Switchboard is of the suspended transmitter type and includes—one No. 15 Transmitter Arm, one No. 8-C Transmitter, two No. O-1-A 4-foot Transmitter Cords, one No. 20-A Receiver, one No. 23 Plug, one No. D-2-B-6 foot Receiver Cord, one No. 42-A Induction Coil, two No. 204 Impedance Coils, four No. 19 Condensers and one No. 93 Operator's Cut-In Jack.

This operator's equipment has the following features:—

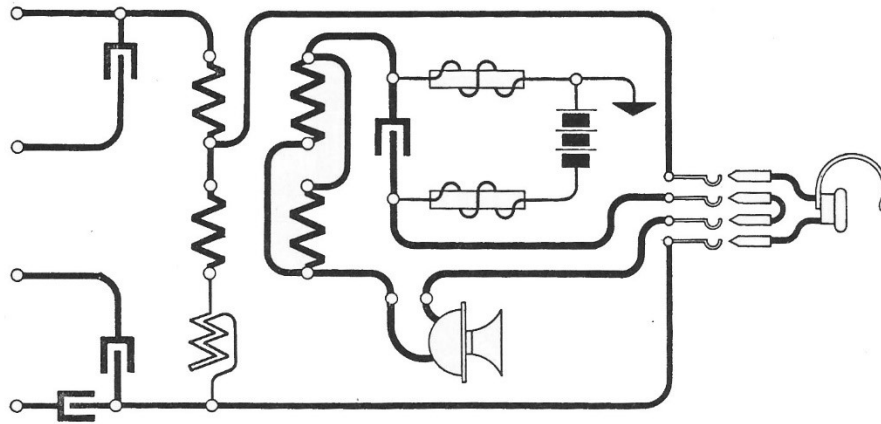
Noiseless—Flexible cords are used to suspend the transmitter so that it will not render the operator's circuit noisy by picking up floor vibrations. As a further means of protecting the operator from the influence of extraneous noises an anti-side-tone induction coil is provided.

Sanitary—The operator's receiver is provided with a wire head band which is not only light in weight, but free from either dust-collecting or moisture-absorbing surfaces. The transmitter is provided with a non-hydroscopic, removable mouthpiece.

Fool-Proof—Condensers in the circuit make it impossible for the operator to cross a cord circuit with a trunk circuit by overlapping the operation of the listening keys in those circuits.

Convenient—The suspended type of transmitter as regularly furnished with its quickly removed head receiver is convenient for the attendant who has various duties to perform other than those of a P. B. X. operator and who frequently has occasion to leave the switchboard.

Private Branch Exchange Switchboards (Cont.)



Standard Operator's Circuit

Convertible—It is a simple matter to change from breast type transmitter to suspended type or vice versa—the wiring is all in place for either type of transmitter. If a breast type transmitter is desired, the No. 2-A Operator's Telephone Set will be furnished in place of the regular suspended transmitter.

Generator Equipment

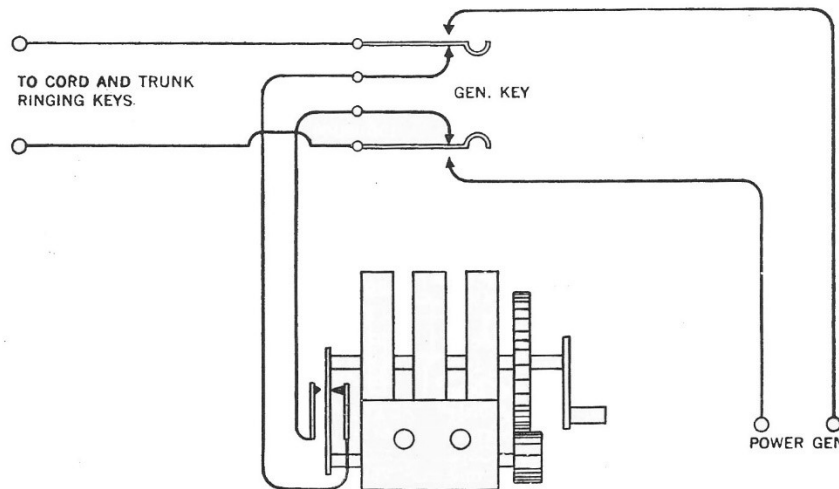
The operator's facilities for the ringing of station instruments consists of a generator circuit which includes:—one No. 53 Generator, one No. 3 Crank Shaft, one No. 119 Key and one No. 28-H Ringer.

Regular Ringing—is accomplished by means of 20 cycle alternating current which is brought into the P. B. X. switchboard from a power generator. This power generator may be either a rotary converter or a vibrating converter. However, the greatest ringing economy is accomplished by using a Stromberg-Carlson No. 5-B Converter, which is of the vibrating type (see P. B. X. accessories). This converter, when connected with a Stromberg-

Carlson P. B. X. switchboard, runs only during the periods in which it is required for ringing, such as: from the moment when a calling cord is plugged up until the called subscriber answers—also from the moment when a trunk listening key is thrown until the called P. B. X. subscriber answers. Each P. B. X. Switchboard which will receive its ringing current from the No. 5-B Converter requires one No. B-10 Relay. This relay is known as the converter-starting relay. It is provided for in the wiring of the No. 101, the No. 102 and the No. 106 P. B. X. Switchboards.

Emergency Ringing—is accomplished by means of a hand generator. A key is furnished for switching from hand to power generator or vice versa. Terminals also are furnished for connecting to an outside source of power generator ringing current.

Signalling Indication—is one of the features of Stromberg-Carlson P. B. X. Switchboards. This provides a great help to operators because through its use the operators know with reasonable assuredness, not only when they are ringing out on a line,



Standard Generator Circuit

Private Branch Exchange Switchboards (Cont.)

but also whether the line is in proper condition for signalling purposes. This "signalling indication" is accomplished by means of a ringer in the generator circuit which responds to the flow of signalling current.

Night Alarm Equipment

To assist the operator in performing her duties each Stromberg-Carlson P. B. X. Switchboard is provided with a night alarm. The apparatus for this purpose includes—one No. 119 key, one No. W.E. B-10 Relay and one No. 50-L Buzzer.

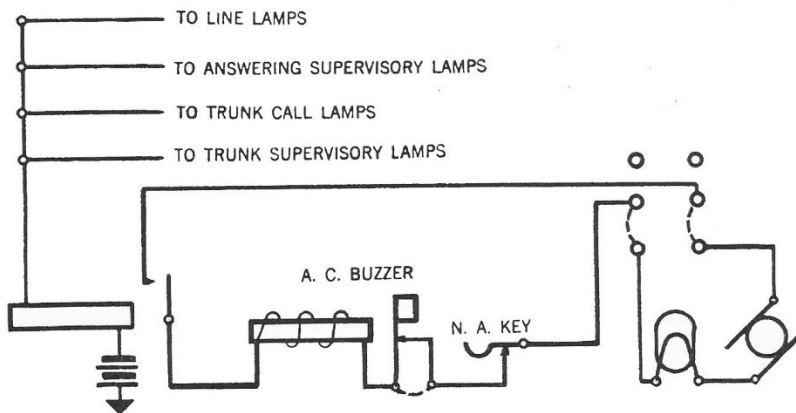
The night alarm is controlled by the Push Button Key, which is mounted near the top of the switchboard. When this key is fully "pulled out" in its operating position, the night alarm sounds simultaneously with incoming line calls; with incoming

trunk calls; with the answering cord's disconnect signals and with the trunk's disconnect signals.

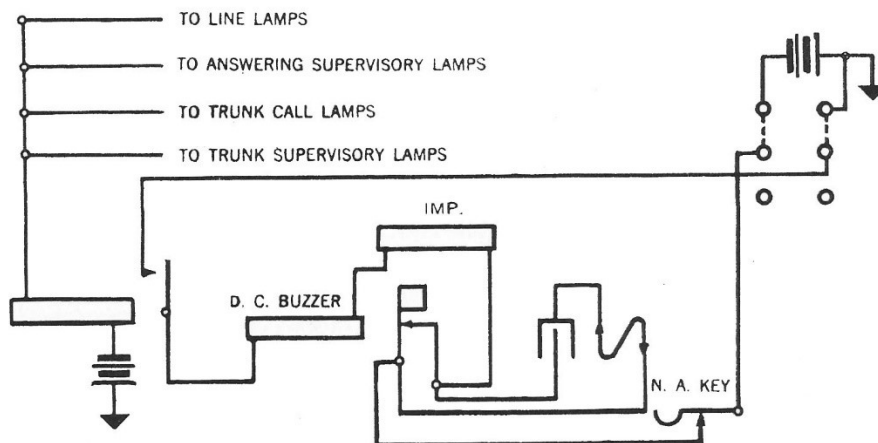
The following two types of night alarm circuits are available.

The Regular Night Alarm Equipment—which is arranged to operate off the switchboard's source of power ringing current. This type of night alarm will be furnished unless the *Special Night Alarm Equipment* is requested.

The Special Night Alarm Equipment—which is necessary when the power ringing current is derived from an intermittently operated Stromberg-Carlson No. 5-C Converter. This type of night alarm is arranged to operate from the switchboard's source of battery supply and requires the following additional apparatus:—one No. 202 Impedance Coil and one No. 29 Condenser.



Standard Night Alarm Circuit—when A. C. Night Alarm is Used



Standard Night Alarm Circuit—when D. C. Night Alarm is Used

Operation of the Nos. 101, 102 and 106 P. B. X. Switchboards

The following is a complete narrative of the functions and operations of the circuits of standardized P. B. X. switchboards. The subjects are divided for convenience as follows:

- 1—Local P. B. X. Calls
- 2—Trunk Calls, Outgoing from P. B. X. Switchboard
- 3—Trunk Calls, Incoming to P. B. X. Switchboard
- 4—Direct Line Night Service over trunk.

1—Local P. B. X. Calls

(A) P. B. X. Subscriber Calls:

When a P. B. X. party desires another P. B. X. party the call is made in the usual way by removing the telephone receiver from the hookswitch, thereby lighting the line lamp in the P. B. X. Switchboard.

(B) P. B. X. Operator Answers Call:

The act of plugging into the corresponding P. B. X. line jack, located directly under the lighted line lamp, with the answering (back) plug of a P. B. X. cord circuit, cuts off the line signalling apparatus in the jack and extends the talking circuit to the P. B. X. cord circuit. The operator listens by throwing the combined listening and ringing key handle of the P. B. X. Circuit towards the plugs (locking position) so as to connect her talking equipment.

(C) Ringing the Called P. B. X. Subscriber:

If another P. B. X. party is desired then the calling plug (front) of the P. B. X. cord circuit is inserted into the jack of the desired P. B. X. line. This lights the calling (front) supervisory lamp of the P. B. X. cord circuit.

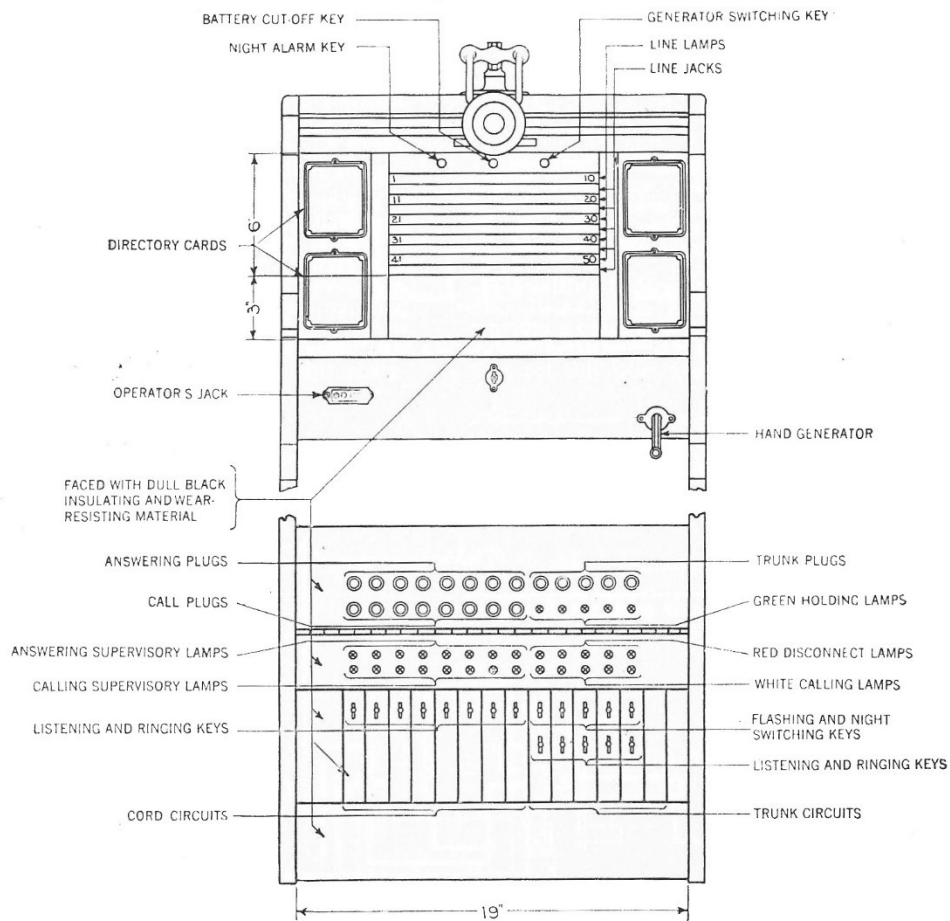
Throwing the combined listening and ringing key handle towards the operator (non-locking position) rings the desired party.

(D) Ringing with Power Generator:

When power generator current is available, then the generator switching key marked "GEN" should be depressed so that this current will be connected to the ringing key common wires. This allows the ringing to be done by the simple movement of the ringing key without any other manual operations on the part of the operator.

(E) Ringing with Hand Generator:

If the power generator current is not available then the generator switching key, marked "GEN" should have its plunger in the "out" position, so that the ringing current provided by turning the crank of the hand generator will be connected to the ringing key by common wires.



Face and Keyboard Equipment—No. 101.—50 Line P. B. X. Switchboard

Operation of P. B. X. Switchboards (Cont.)

(F) Two P. B. X. Parties Connected for Talking:

The responding of the called P. B. X. party by the removing of the receiver from the hook of the called telephone, causes the calling (front) supervisory lamp of the P. B. X. cord circuit to be extinguished. The circuit now is completed and in the talking condition, all signal lamps associated with this particular connection being extinguished.

(G) P. B. X. Parties Disconnect:

When both P. B. X. parties hang up the receivers at the telephones, the corresponding two supervisory lamps in the connecting P. B. X. cord circuit will light. This notifies the operator that the conversation is completed and that the cord circuit used can be pulled down.

(H) P. B. X. Party Recalls:

If either P. B. X. party desires immediate attention of the operator when a conversation is completed, the moving of the hookswitch up and down slowly will flash the corresponding supervisory lamp in the P. B. X. cord circuit. This is the customary signal for the operator to listen-in on the cord circuit for further orders.

(I) Common Night Alarm:

The line lamps and the answering supervisory lamps of this standard P. B. X. switchboard are connected to a common night alarm which rings when any one or more of these con-

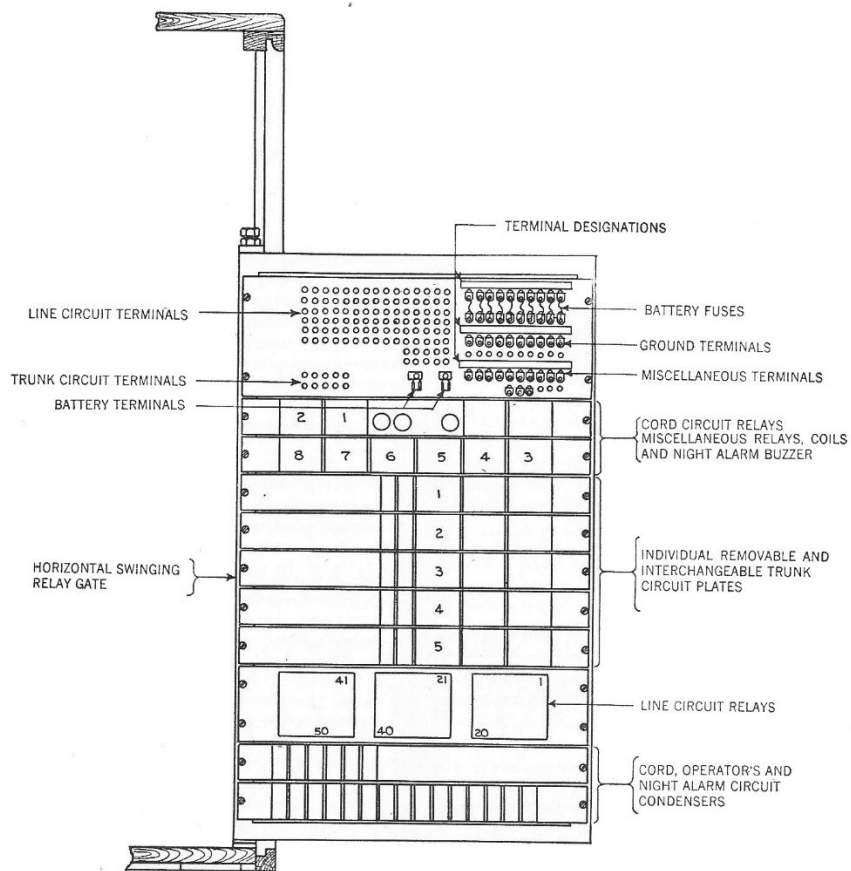
nected line or supervisory lamps are lighted, providing that the night alarm switching key, marked "NA" is in its operated position (plunger pulled out). When this key is fully depressed (locking position) the night alarm is disconnected.

2—Trunk Calls, Outgoing from P.B.X. Switchboard

The trunk circuit used with this standardized P. B. X. Switchboard is designed to be connected to any regular subscriber's line circuit at the central office, so that the central office answering and calling functions will be the same as those of a regular telephone.

(A) Ordering of Central Connection by P. B. X. Party:

When the P. B. X. operator answers a local call from a P. B. X. line by means of a regular P. B. X. cord circuit and finds that the P. B. X. party desires a "city" line, then the answering plug of this local cord circuit is removed from the P. B. X. line jack and the plug of a non-busy trunk line inserted in its place. This allows the P. B. X. party to call any desired central office number direct. Also it allows the P. B. X. party to recall the central office operator in the customary manner for subsequent numbers by moving the telephone hookswitch up and down, and without disturbing the P. B. X. operator.



Rear Equipment No. 101-50 Line P. B. X. Switchboard

Operation of P. B. X. Switchboards (Cont.)

The P. B. X. operator must be cautioned to always answer each local call P. B. X. line lamp signal by means of a P. B. X. cord circuit rather than through a trunk plug, so as to avoid a false calling signal at the central office. This instruction is given on a designation plate, located at the right hand side of the key shelf.

(B) *Ordering of Central Connection by P. B. X. Operator:*

If the P. B. X. party desires that the P. B. X. operator do the calling of the central office subscriber, then the P. B. X. operator throws the combined listening and ringing key lever of a non-busy trunk into the listening position, which is towards the plugs (locking). It is not necessary that the corresponding trunk plugs be inserted in the jack of the P. B. X. line until the P. B. X. operator knows whether the desired central office subscriber can be reached.

The operation of this trunk listening key causes a holding circuit to be locked across the trunk line and at the same time lights the line lamp at the central office. The P. B. X. operator gives the desired number to the central operator and if the called party responds, then the latter is told that a P. B. X. party wishes to speak and is requested to hold the line until the P. B. X. party is located. Now, the trunk plug of this particular trunk line is inserted in the line jack of the P. B. X. party who originated the call, and the P. B. X. line rung in the usual way by throwing the combined listening and ringing key of the trunk circuit towards the operator (non-locking position).

(C) *Holding of Trunk Indicated by Green Lamp:*

The trunk holding lamp "green" lights when the trunk listening key is first thrown and remains lighted until the P. B. X. party responds. This lamp serves as a positive indication that the trunk is being held by the operator as it lights and remains lighted only as long as the holding circuit is connected across a trunk line. This green lamp is used for no other purpose, so as to avoid confusion of signals.

(D) *Trunk Holding Connection Cannot be Accidentally Released:*

When the trunk holding circuit is established and the green lamp is lighted, this condition is securely locked against accidental release through crossing of plug and jack or through condenser kicks, by several new safeguards which make this trunk practically fool-proof.

(E) *Trunk Disconnect:*

When the P. B. X. party is through talking and hangs up the telephone receiver, the central office disconnect signal is immediately operated; also a disconnect "red" signal is lighted in the trunk circuit at the P. B. X. switchboard. Either the central office operator or P. B. X. operator can pull down the connection first, without causing any difference in the disconnect functions of the P. B. X. or central office switchboard.

(F) *Trunk Disconnect Pilot and Night Alarm Circuits:*

The red disconnect lamp in the P. B. X. trunk circuit is connected to the common night bell circuit the same as for the local line lamps and local cord circuit answering supervisory lamp.

(G) *Trunk Cleared of Useless Bridged Apparatus During Talking:*

This trunk circuit is so designed that when the P. B. X. battery is connected for talking the trunk calling relay and holding coil (if the trunk is arranged for holding coil) are removed from across the circuit so as to avoid high frequency transmission losses.

(H) *Trunk Instantly Available for Incoming Calls from Central when P.B.X. Party Hangs Up:*

The instant the P. B. X. party hangs up, after a conversation, the trunk line calling signal circuit is re-established at the

P. B. X. switchboard so that the central office can call-in on a trunk, even before the P. B. X. operator has pulled down the trunk connection. Thus it is possible to have a calling (white) lamp and a disconnect lamp (red) light on a trunk at one time. This condition is not confusing as the P. B. X. operator knows that the only way a calling signal (white lamp) can be lighted is by the central office operator ringing on the trunk line, also that the presence of a disconnect signal (red lamp) on this same trunk indicates that the P. B. X. party is through talking and has hung up. In such a case the P. B. X. operator will pull down the trunk plug and answer the trunk line the same as for any incoming trunk call, subsequently described.

(I) *Trunk Flashing Keys:*

If for any reason the P. B. X. operator wishes to flash the supervisory lamp at the central office, when a P. B. X. party is on the connected line, this can be done by simply throwing the combined flashing and night switching key handle towards the operator (non-locking position). This opens the trunk circuit as long as the key is held in the operated position, or the circuit can be intermittently opened and closed by the corresponding operating of this key handle. As a result of this opening and closing of the trunk line circuit at the P. B. X. switchboard, the central office supervisory lamp will be flashed, which is the customary indication for a recall or for immediate attention from the central office operator.

The P. B. X. trunk listening key handle can be thrown to listening position when "flashing back" so that the P. B. X. operator's telephone set will be on the circuit in readiness and the P. B. X. operator can respond immediately when the central operator comes in on the circuit.

This flash circuit is so arranged as to do away with disagreeable clicks which would otherwise be introduced in the connected P. B. X. subscriber's telephone as well as in the operator's head telephone, when working this key.

3.—Trunk Calls, Incoming to P. B. X. Switchboard

(A) *Central Office Rings on Trunk Line to Call P. B. X. Switchboard:*

As previously stated, these trunk circuits are designed to terminate in the central office on regular subscriber's line circuits. Thus the central office operator calls a P. B. X. switchboard by ringing on the trunk line the same as for calling a local subscriber's telephone.

This ringing current operates a mechanically latching type of alternating current relay in the P. B. X. end of the trunk, positively lighting a calling lamp with white cap, which is located in line with the trunk plug.

(B) *Trunk Calling Night Alarm Circuit:*

This trunk calling lamp (white) is connected to the common night bell circuit of the P. B. X. switchboard the same as for the local line trunks, etc.

(C) *Answering a Trunk Call:*

The P. B. X. operator answers a call coming in over the trunk line from central office, by throwing the lever of the associated combined listening and ringing key towards the trunk plug (locking position) so as to connect her telephone set.

(D) *Trunk Automatically Held:*

The act of throwing the trunk listening key lever by the P. B. X. operator provides and locks up a holding condition for the trunk and also lights a green lamp which stays lighted as long as this holding condition exists.

When the trunk is arranged for "short line" service, this condition is established by means of a retardation coil connected across the trunk, while for "long line" service, with a repeating coil in the trunk, the holding condition is maintained by the closing of the circuit through the middle of the line half of the repeating coil.

This holding condition in the trunk is necessary to keep the

Operation of P. B. X. Switchboards (Cont.)

supervisory signals of the central office cord and trunk circuits extinguished, so that the central office portion of the connection will not be pulled down prematurely.

When the holding condition is established and the green holding lamp is lighted, then this condition is locked from further interference so that the P. B. X. operator can return the trunk listening key to normal without releasing the trunk.

This allows several calls to be answered in quick succession, holding such calls as require connection to P. B. X. lines, until the operator has time to complete these calls.

(E) *Releasing the Trunk:*

If a trunk call is not to be extended to a P. B. X. line then the operator can release the trunk without plugging into a line jack, by simply throwing the combined listening and ringing key handle into the ringing position, towards the operator (non-locking) before letting go of the key handle. This releases the lock on the holding condition and indicates by extinguishing of the green holding lamp, that the trunk is no longer held.

(F) *Extending a Trunk Call to a P. B. X. Line:*

If the incoming trunk call is to be extended to a P. B. X. line, the P. B. X. operator simply inserts the corresponding trunk plug into the jack of the desired line and throws the combined listening and ringing key handle towards herself, as in ringing with a local P. B. X. cord circuit previously described. The trunk holding lamp (green) remains lighted until the P. B. X. party responds, when it is extinguished and the trunk is cleared from all bridged apparatus which is not required for talking purposes.

(G) *Listening-In on Trunk Conversation does not Re-Connect the Holding Coil:*

If, for any reason, the P. B. X. operator listens-in on the trunk conversation, the holding coil (used on a short line trunk) will not be re-connected across the line and the green holding lamp will not be re-lighted. In this case the trunk is held by the presence of the P. B. X. telephone talking circuit apparatus, which is then across the circuit. By not having this holding coil across the circuit, bridged transmission losses, due to listening-in on a conversation are correspondingly reduced.

(H) *P. B. X. Party can Flash P. B. X. Operator if Trunk Listening Key is Accidentally Left in its Operated Position:*

The holding portion of the trunk circuit is so designed that the accidental leaving of the trunk listening key in its operated position (possible when the operator's head telephone is not in use) will not tie up the trunk circuit. The hanging up of the receiver at the connected P. B. X. telephone will cause the holding lamp (green) to give a steady light. Then if the P. B. X. party wishes immediate attention, the working of the hook-switch slowly up and down will cause this green lamp to flash and thereby attract the operator's attention for immediate service.

The green lamp is intended solely to indicate to the operator that the trunk is being "held" by the mechanism of the P. B. X. switchboard which is under her control. Thus any lighting of this green lamp demands the P. B. X. operator's immediate attention.

4—Direct Line Night Service over Trunk

This standard P. B. X. switchboard is designed to give night service by inserting the trunk plugs into the jacks of a corresponding number of P. B. X. lines, upon which it is desired to give night service. Several important safeguards are provided to avoid interference with this night service.

When the P. B. X. is arranged for "short line" trunk service without repeating coil (No. 1-A Circuit Plate), then night service can be given without the use of special trunk switching keys. All that is necessary is to see that the battery cut-off key is depressed as described under the following heading "B."

When the P. B. X. is arranged for "long line" trunk service with a repeating coil to feed talking and signaling battery from the P. B. X. switchboard to the P. B. X. subscriber (through

a No. 2-A Circuit Plate), then night service can be given direct or with the aid of a night switching key. The wiring for this switching key is provided in each switchboard but the key is furnished only on special order. The operation of this key is as follows:

(A) *Night Switching Key Clears Trunk Circuit from all Series and Bridged Apparatus:*

A night switching key when desired for the "long line" trunk of the repeating coil type, is provided on special order. When this switching key handle is in its vertical position, the trunk is connected for "day service" with the signalling apparatus in circuit. With the handle of this key thrown towards the trunk plug, the trunk is connected through direct (for night service) without any bridged or series apparatus or coils in the circuit.

This same key lever is used as previously described for flashing purposes, by throwing the lever handle towards the operator, which is non-locking position.

The plugging up of one of these standard trunks into any P. B. X. line, with the switching key set for night service gives the same condition for that particular connected P. B. X. telephone instrument as for a regular central office subscriber's line and telephone, with the same transmission conditions for local and toll service.

(B) *Night Service Assured Even when the Night Key is not Thrown:*

This standardized P. B. X. switchboard is provided with the usual battery cut-off switch, so that all current for operating the P. B. X. lamps and relays, with the exception of the supervisory relays, can be disconnected when the operator leaves the switchboard at night.

This battery cut-off switch is a No. 119 Key, with top stamped "BAT", wired to connect battery when plunger is pulled out and disconnect battery when plunger is locked "in."

The retaining of battery current for these supervisory relays in the repeating coil trunk, makes it possible to signal the central office from the connected P. B. X. telephone whether the night switching key is in its correct position or not. This is a valuable safeguard because night service lines are usually employed for night watchmen or emergency purposes where reliable outgoing trunk service is vital.

Operation of Trunks From Magneto Main Exchange

When these standardized P. B. X. switchboards are equipped with ring-back keys in the trunks for use in connection with a magneto central office, these trunks will operate as follows:

(A) *Trunk Calls from Magneto Central:*

Calls from a magneto central office light the white calling lamp in the P. B. X. trunk, the same as calls from a Central Energy office. The P. B. X. operator answers these calls by throwing the handle of the trunk listening key, which is in line with a lighted trunk lamp, towards the trunk plug. This act extinguishes the white calling lamp and lights the green holding lamp. The green lamp remains lighted to remind the operator that she has a central office call, until the trunk is released, either by the operator throwing the listening key in the opposite direction or by the extending of the call as described in the next paragraph.

(B) *Extending a Trunk Call from Magneto Central:*

If the incoming call is to be extended to a P. B. X. telephone, then the P. B. X. operator inserts the trunk plug in the jack of the desired line and rings by throwing the handle of the trunk listening key towards herself. When the P. B. X. party responds the green lamp will be extinguished, showing the P. B. X. operator that the central office trunk call has been disposed of.

(C) *Disconnecting Magneto Trunk:*

Now when the P. B. X. party hangs up, the red lamp, which is located in line with the trunk cord, will light to show disconnection. This red lamp can be flashed for a re-call by the P. B. X. party working the hookswitch of the telephone up and down in the customary manner for such re-calls.

Operation of P. B. X. Switchboards (Cont.)

The P. B. X. operator finishes the disconnection by pulling down the trunk plug and then ringing off the central office by throwing towards herself the handle of the key located next to the trunk plug.

(D) Trunk Calls to Magneto Central:

Calls from a P. B. X. party which are intended for the magneto central office are extended by the P. B. X. operator removing the local cord circuit plug, used in answering the call, and substituting a trunk plug. The P. B. X. operator now rings the magneto central office by throwing the handle of the key, located nearest to the trunk plug, towards herself, listening-in to supervise the connection as is customary on magneto switchboards.

Operation of Trunks From Automatic Main Exchange

When these standardized P. B. X. switchboards are equipped with dial keys in the trunk circuits and with automatic dials, then the operation of the trunks will be as follows:

(A) Trunk Calls from Automatic Central:

Calls from the central office to a P. B. X. party are handled

exactly as from Central Energy main exchanges as described on page 92 of this catalogue.

(B) Disconnecting the Automatic Trunks:

The disconnecting of these trunk calls is made direct to the central office when the P. B. X. party hangs up, leaving the trunk in readiness for immediate incoming calls, even before the P. B. X. operator has pulled down the connection, as described in paragraph "H" on page 92.

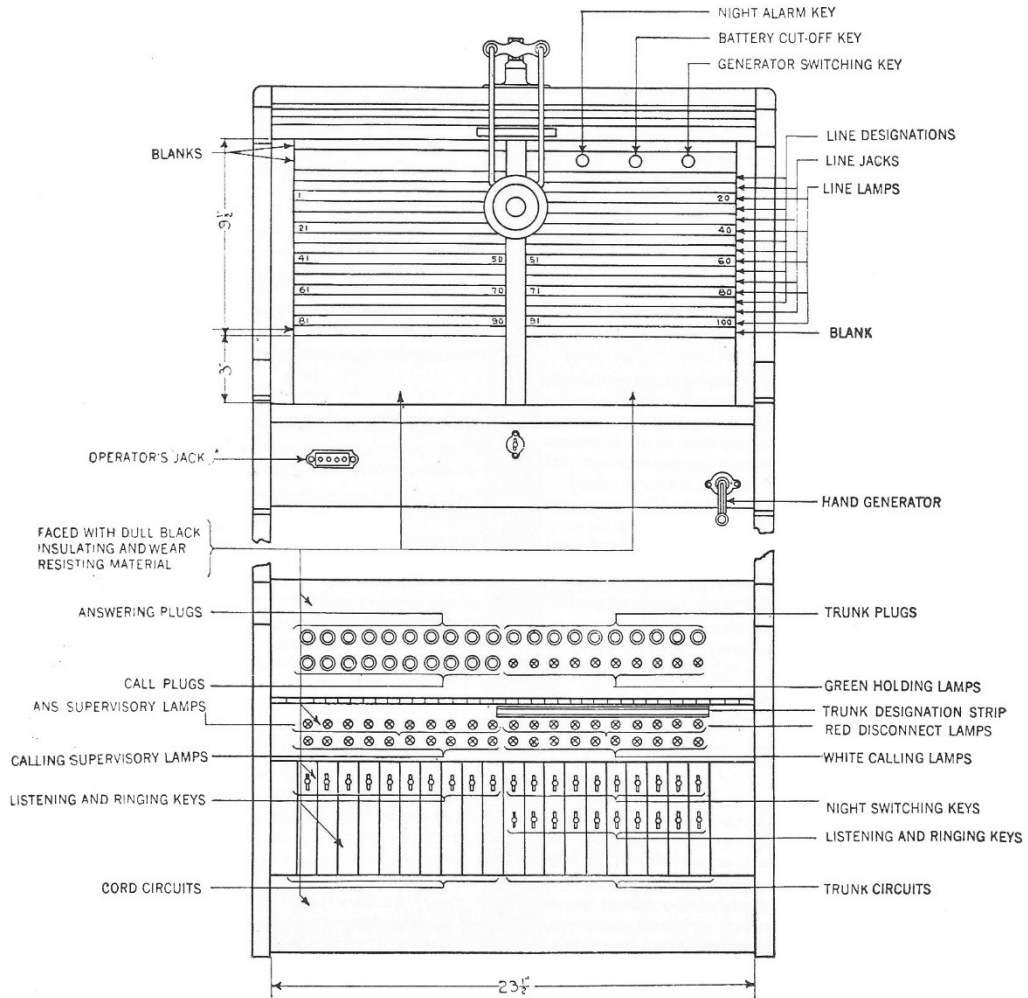
The red trunk lamp lights for this disconnection at the P. B. X. switchboard and can be flashed for re-call in the usual manner by working the telephone hook up and down.

(C) Trunk Calls to Automatic Central:

Calls from the P. B. X. telephones to the automatic office are made by the P. B. X. operator as follows:

First, the dial switching key handle (key nearest to trunk plug) is thrown towards the operator so as to connect the dial to the trunk and at the same time establishes the holding connection across the trunk circuit as described in paragraphs "B" and "C" on page 92 of this catalogue.

Second, the operator dials the number wanted in the automatic central office by working the dial in the regular way.



Face and Keyboard Equipment—No. 102 P. B. X. Switchboard

Operation of P. B. X. Switchboards (Cont.)

The green lamp of this particular trunk lights to show that the holding condition is existing on the trunk and remains lighted until either the P. B. X. operator releases the same by hand or until the trunk is connected to a P. B. X. line and answered by a P. B. X. party. The releasing by hand is described in paragraph "E" on page 92.

(D) Trunk Automatically Held After Dialing:

After the P. B. X. operator dials the number wanted in the automatic central office, then the circuit is held by the holding condition just described, even after the trunk dial switching key is restored and until the call has been answered by the P. B. X. line or released by the P. B. X. operator as described in paragraph "C" on page 92.

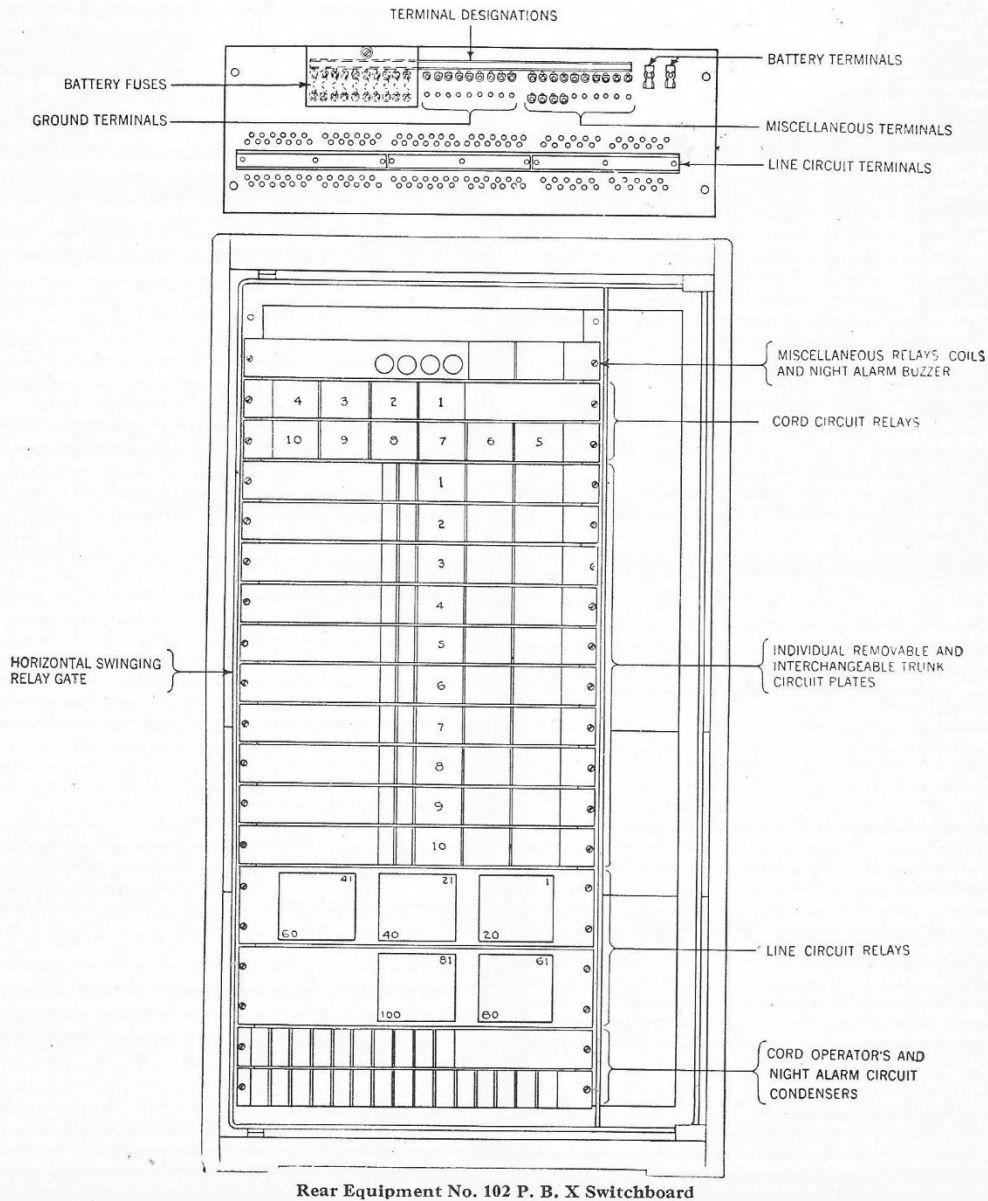
(E) Trunk Night Service to Automatic Central:

Night service from some of the P. B. X. telephones to the

automatic central office can be provided as described on page 93 of this catalogue by furnishing the particular P.B.X. telephones with dials, and in the case of the No. 2-A Circuit Plate (repeating coil type of trunk) throwing the night switching key so that its handle will be towards the trunk plug. The No. 1-A Circuit Plate type trunk circuit will allow the dialing through to the central office without using the night switching key. In all cases the battery cut-off switch should be thrown so as to prevent the accidental lighting of lamps in the P. B. X. switchboard during the night.

(F) Special Advantages of Automatic Trunk:

The advantages described in paragraph "D", on page 92, and "G" and "H" on page 93 apply also for this standardized trunk when used in connection with an automatic central office.



P. B. X. Switchboards (Cont.)

**Standard Equipments, Weights and Prices
of Nos. 101, 102, and 106**

To order any of the following switchboard equipments it is necessary to specify only the code number of the switchboard which has the correct provisions in equipment and in wiring. For instance:—to order a No. 101 P. B. X. switchboard that is finished in dull golden oak and that is equipped with 20 lines, 4 cord pairs and 3 trunk lines it is necessary to specify only as follows:—"1 No. 101-B Switchboard No. 20 Finish."

*Equipments marked with this symbol are carried in stock—other equipments listed can be furnished subject to slight delay in delivery.

All of the above P. B. X. switchboards are designed to operate off eleven cells of storage battery. Quotations on P. B. X. switchboards that are designed to operate off other voltages will be furnished upon request.

No. 101 Type P.B.X. Switchboards wired for—	Code Number	No. of Lines Equipped	No. Cord Pairs Equipped	No. of Trunks Equipped	Approx. Weight Packed	Price Golden Oak No. 20 Finish
50 lines	*101-A	10	4	2	300 Lbs.	\$375.70
8 Cord Prs.	*101-B	20	4	3	310 "	415.80
5 Trunks	*101-C	30	5	3	320 "	476.55
	101-D	40	6	4	330 "	548.30
	101-E	50	8	4	340 "	603.70
No. 102 Type P.B.X. Switchboards, wired for—						
100 Lines	102-A	10	4	2	390 "	430.00
10 Cord Prs.	*102-B	20	4	3	400 "	490.00
10 Trunks	102-C	30	5	3	410 "	535.00
	*102-D	40	6	3	420 "	585.00
	102-E	50	8	3	430 "	650.00
	102-F	60	8	3	440 "	685.00
	102-G	70	8	4	450 "	745.00
	102-H	80	10	4	460 "	810.00
	102-I	90	10	4	470 "	845.00
	102-J	100	10	5	480 "	885.00
No. 106 Type P. B. X. Switchboards wired for						
180 Lines	106-A	100	8	5	500 "	875.00
8 Cord Prs	106-B	150	8	6	550 "	1060.00
11 Trunks	106-C	180	8	7	580 "	1170.00
300 Lines	106-D	200	6	5	560 "	1175.00
8 Cord Prs	106-E	240	7	6	600 "	1330.00
7 Trunks	106-F	280	8	7	675 "	1485.00

For quotations on special woodwork and special woodwork finishes address the nearest Stromberg-Carlson office.

- For more cord pairs equipped add. \$14.50
- For fewer cord pairs equipped deduct. 13.00
- For more C. E. Trunks equipped add. 32.90
- For fewer C. E. Trunks equipped deduct 29.60

Changes may be made in the standard impedance coil trunk circuit as follows:

- For repeating coil (for long trunks) each \$7.10
- For modifying trunk to connect with local battery main exchange each. 7.00
- For modifying trunk to connect with automatic main exchange (customer to furnish dial), each. 1.50

Prices are F. O. B. Rochester, N. Y., and Chicago, Ill.

See Switchboard Accessories for Test Sets

No. 104-C Cordless—10 Lines Capacity

This Switchboard is recommended for Private Exchange Systems of not more than 10 lines; also for Private Branch Exchange Systems of not more than 10 local lines and three trunk lines to the main exchange.

Both the apparatus and the circuits are arranged to operate either as an isolated system independent of any commercial telephone exchange or as a branch system in conjunction with any commercial type of telephone exchange. The standard equipment is provided with trunking facilities for connecting with a Central Energy Main Exchange but is arranged so that it requires only slight changes to adapt it for service in connection with an Automatic System. Such changes are made without sacrificing any of the essential operating features.

On account of the No. 104-C Switchboard's compact design, it is particularly desirable for office use. It may be placed on a desk or table handy for operating by a clerk, stenographer or any person who has other office duties to perform.

The apparatus used in the No. 104-C Switchboard is practically the same as that used in the Stromberg-Carlson No. 101—50 line and the No. 102—100 line P. B. X. Switchboards. This makes possible the interchanging of apparatus with those switchboards which in many instances proves an important feature because it is a means of holding the stock

requirements of a telephone company to a minimum.

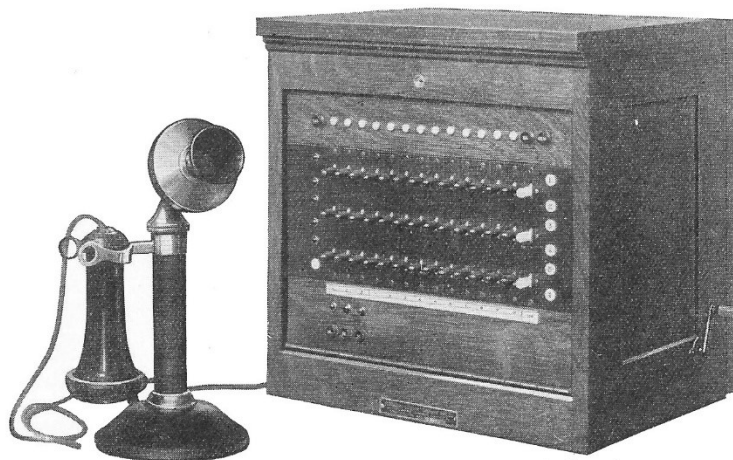
The routine of operations for these switchboards is likewise standardized with the routine of the No. 101 and the No. 102 types of P. B. X. Switchboards. The exception of course, is that the connections on this switchboard are made by means of keys instead of by means of the plugs and cords that are used on the No. 101 and the No. 102 P. B. X. Switchboards. Obviously, this standardization of operating routine is another important advantage to every telephone company that uses P. B. X. equipment,—it means maximum efficiency in operating force with minimum schooling.

Cabinet Design

As previously stated, the cabinet for the No. 104-C P. B. X. Switchboard is very compact. The principal overall dimensions are as follows:—Height—16 inches. Width—16 inches. Depth at base—12¼ inches. Depth at top—11½ inches.

The front panel is hinged and the rear panel is entirely removable. This construction provides for the quick inspecting and testing of all apparatus and circuits. A terminal board is furnished in the upper portion of the cabinet, accessible from the rear. The terminal board carries all line, trunk, battery and generator terminals. Each group of these

No. 104-C Cordless—10 Lines Capacity (Cont.)



Front View 104-C Cordless Switchboard

terminals is plainly designated so as to avoid mistakes when installing the apparatus.

Unless otherwise specified on the order, the exterior cabinet woodwork will be furnished in quarter-sawed oak and finished in dull golden oak.

The cable that is provided for inter-connecting the apparatus within the cabinet—excepting the generator leads, the battery leads and the pilot circuit wiring—will be made up of No. 22 B. & S. Gauge copper conductors with double silk and single cotton servings.

The generator leads will be of No. 22 B. & S. Gauge copper conductors with double silk servings and a cotton braid.

Battery leads and the pilot circuit conductors will be of No. 18 B. & S. Gauge copper conductors with double silk and single cotton servings.

Line Equipment

Each Line circuit includes:—one No. 194-A Relay, one No. 12 Lamp Socket, one No. 31-A Lamp Cap, one No. 32 Lamp, two No. 318-A Connecting Keys and one No. 193-A combined Connecting and Ringing Key.

The line circuit features for this switchboard are identical to those described on Page 81 for the No. 101 and the No. 102 types of P. B. X. Switchboards.

Connecting Equipment

Stromberg-Carlson No. 104-C Cordless Switchboards are equipped with the single lamp supervisory type of connecting circuit. Each connecting circuit includes:—one No. 222-D Relay, one No. 12 Lamp Socket, one No. 31-B Lamp Cap, one No. 32 Lamp and either a No. 188-A one way listening Key or one-half of a two way No. 302 listening Key. The features of these connecting circuits are as follows:—

Key Control—All connections between either P. B. X. stations or trunks and P. B. X. stations are made by means of keys.

Balanced Transmission—Both the tip and the sleeve battery transmission coils to each station are placed on the same relay.

Battery Economy—The battery transmission not only supplies talking current, but also furnishes energy to operate the supervisory relays.

Simplicity—The supervisory relays each have only one break contact; that contact controls the supervisory lamps. There are no other electrically controlled contacts in the cord circuit.

Transmission Efficiency—Both the tip and the sleeve talking conductors are entirely free from either series resistances or series retardation coils.

Trunk Equipment

The trunk lines for Main Exchange connections, each, include:—one No. 306-X Relay, one No. 263-XZ A B C Relay, one No. 207-B B B Relay, one No. 204-A Relay, one No. 206 Impedance Coil, two No. 22 Condensers, two No. 175-A Keys, one No. 196-A Key, two No. 12 Lamp Sockets, one No. 31-A Lamp Cap, one No. 31-C Lamp Cap and two No. 32 Lamps.

These trunks have the following characteristics:—

Three Lamp Supervision—A white call lamp indicates that the Main Exchange Operator is calling the P. B. X., a green hold lamp indicates that the trunk is being held by the P. B. X. operator, and a red disconnect lamp indicates when the connected P. B. X. subscriber hangs up. This disconnect lamp is associated with the connecting circuit equipment.

Key Control—As stated in a preceding paragraph, all connections between either P. B. X. stations or trunks and P. B. X. stations are made by means of keys.

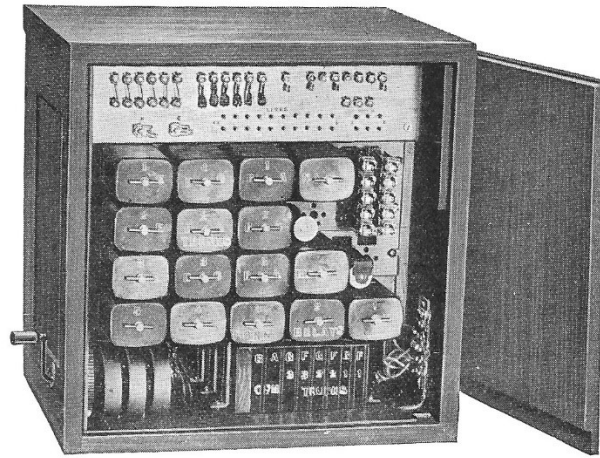
Convertible—Provision for connecting with an Automatic Main Exchange is made in the wiring so that when such service is required it is necessary to change only one key in each trunk, and to install only one dial common to all the converted trunks.

Operator's Telephone Equipment

The operator's telephone equipment that is furnished with the No. 104-C P. B. X. Switchboard is of the desk stand type and includes:—one No. 1168 Desk Stand, one No. D-4-A 6-ft. Cord, one No. 44-B Induction Coil, one No. 222 Impedance Coil, and two No. 22 Condensers.

Handy—This desk stand equipment permits the operator answering calls without troubling with a head band.

No. 104-C Cordless—10 Lines Capacity (Cont.)



Rear View No. 104-C Cordless P. B. X. Switchboard

Battery Economy—This desk stand equipment has the further advantage of being very economical of battery current—no current is used except when the operator has the receiver removed from its hook.

Generator Equipment

The operator's facilities for the ringing of station instruments includes:—one No. 119 Key, one No. 53 Generator and one No. P-11730 Crank.

Regular Ringing—is accomplished by means of 20 cycle current which is brought into the P. B. X. Switchboard from a power generator. The power generator current usually is brought in either from the main exchange or from a Stromberg-Carlson No. 5 Converter, which is of the vibrating type, (see P. B. X. accessories). This converter when connected with the No. 104-C Cordless Switchboard runs only during the periods in which it is required for ringing.

Emergency Ringing—is accomplished by means of the hand generator. A key is provided for switching from the hand generator to the power generator or vice versa. Terminals also are provided for connecting to the outside source of power ringing current.

Operation of No. 104-C Cordless P.B.X. Switchboard

The following is a complete narrative of the functions and operations of the circuits of the No. 104-C Cordless Switchboard. The subjects are divided for convenience as follows:

- 1—Local P. B. X. Calls
- 2—Trunk Calls, Outgoing from P. B. X. Switchboard
- 3—Trunk Calls, Incoming to P. B. X. Switchboard
- 4—Direct Line Night Service over Trunk

Arrangement of Keys and Lamps

The Trunk and Local Line Keys are arranged from left to right and numbered 1 to 3 and 1 to 10 respectively, with their

Night Alarm Equipment

Each No. 104-C Cordless P. B. X. Switchboard is furnished with a night alarm. The apparatus for this purpose includes:—one No. 50-L Buzzer, one No. B-10 Relay and one No. 119 Key.

The night alarm buzzer sounds not only on the incoming line calls and the incoming trunk calls, but also on the connecting circuit's disconnect signals and the trunk's disconnect signals.

The operation of the night alarm is controlled by a push button switch.

Two types of night alarm circuits are available:—

The Regular Night Alarm Equipment—which is arranged to operate off the switchboard's source of power ringing current. That type of night alarm will be furnished unless the *Special Night Alarm Equipment* is specified.

The Special Night Alarm Equipment—which is necessary where the power ringing current is derived from an intermittently operated Stromberg-Carlson No. 5 Converter. That type of night alarm is arranged to derive its current from the switchboard's source of battery supply. It requires the following additional apparatus:—one No. 202 Impedance Coil and one No. 29 Condenser.

associated call lamp signals (white) mounted above. The Trunk Hold Lamps (Green) are mounted below the Trunk Keys. The Trunk Releasing Keys are mounted below the Trunk Hold Lamps. The connecting circuits run horizontally numbering from top down, with the associated disconnect lamps (Red) mounted at the left. A listening key is associated with each connecting circuit and is mounted at the right of the Local Line Keys. Connections may be made between any number of local lines, or between any number of local lines and a trunk, by throwing the handles of the associated keys in the same horizontal row in the same position.

No. 104-C Cordless—10 Lines Capacity (Cont.)

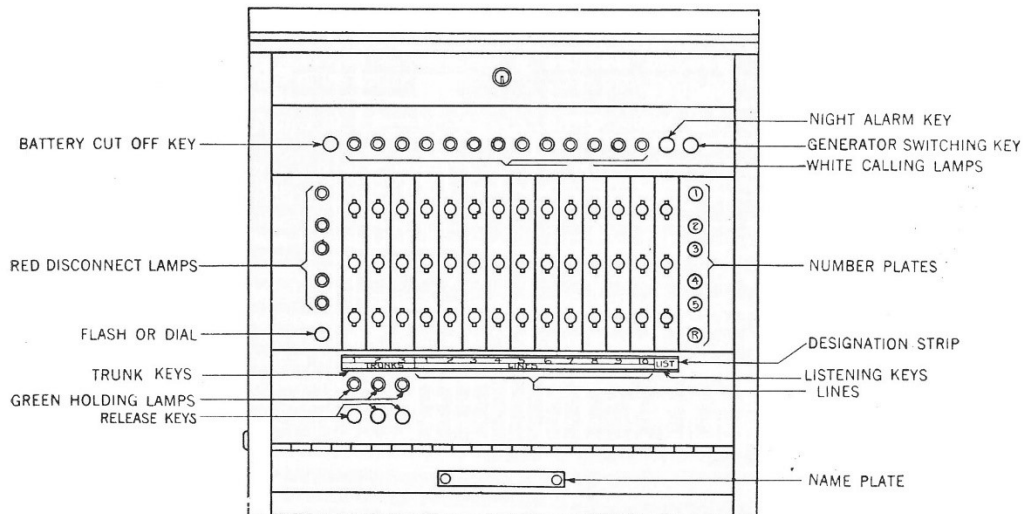


Diagram showing arrangement of apparatus in front panel of the No. 104-C Cordless P. B. X. Switchboard.
This panel is hinged at bottom to allow convenient inspection of the equipment and its connections.

1—Local P. B. X. Calls

(A) P. B. X. Party Calls:

When a P. B. X. party desires another P. B. X. party the call is made in the usual way by removing the telephone receiver from the hookswitch, thereby lighting the line lamp in the P. B. X. switchboard, corresponding to the number of the line calling.

(B) P. B. X. Operator Answers Call:

The operator answers by throwing an associated connecting key on an idle connecting circuit, which also cuts off the line signalling apparatus and extinguishes the lamp; and then throwing the listening key associated with the connecting circuit used, which places her telephone set on the connection with the party calling.

(C) Ringing the Called P. B. X. Party:

If a connection with another P. B. X. party is desired, that party is then called by pressing down on the non-locking key in the lower horizontal row, corresponding to the number of the line wanted, which rings the telephone bell in the desired party.

(D) Ringing with Power Generator:

When power generator current is available, then the generator switching key should be depressed so that current will be connected to the ringing key commons. This allows the ringing to be done by the simple movement of the ringing key and without any other manual operations on the part of the operator.

(E) Ringing with Hand Generator:

If the power generator current is not available then the generator switching key should have its plunger in the "out" position so that the ringing current provided by turning the crank of the hand generator will be connected to the ringing key common wires.

(F) Two P. B. X. Parties Connected for Talking:

The connections are then completed by throwing the connecting key associated with the called line on to the connecting circuit, to which the calling line had been previously connected. The circuit is then complete and in talking condition.

The operator may disconnect her telephone set from the

circuit at any time by restoring her listening key which is associated with that particular connecting circuit.

(G) P. B. X. Parties Disconnect:

When both P. B. X. parties hang up the receivers at the telephones, the disconnect lamp (red) associated with the connecting circuit on which they have been connected, will light. This notifies the operator that the conversation is completed and that the connecting keys may be restored to normal position.

(H) P. B. X. Party Recalls:

If either party desires the immediate attention of the operator when a conversation is completed, the moving of the hookswitch up and down slowly will flash the disconnect lamp of the connecting circuit to which they have been connected. This is the customary signal for the operator to listen-in on the circuit for further orders, which may be done by throwing the listening key on to the connecting circuit.

(I) Common Night Alarm:

The line lamps and disconnect lamps are connected to a common night alarm relay which operates a night alarm buzzer, provided that the night alarm switching key is in its operating position (See description of N. A. Circuit).

2—Trunk Calls, Outgoing from P.B.X. Switchboard

The trunk circuit is designed to be connected to any regular subscriber's line circuit at the central office, so that the central office answering and calling functions will be the same as for those of a regular telephone.

(A) Ordering of Central Connection by P. B. X. Party:

When the P. B. X. operator answers a local call from a P. B. X. party and finds that the P. B. X. party desires a central office line, the connection is completed by throwing the associated connecting key of an idle trunk on the connecting circuit to which the calling party has been previously connected. This bridges the P. B. X. party's telephone set across the trunk line, which operates the central office signal. Thus allowing the P. B. X. party to call any desired central office number direct.

No. 104-C Cordless—10 Lines Capacity (Cont.)

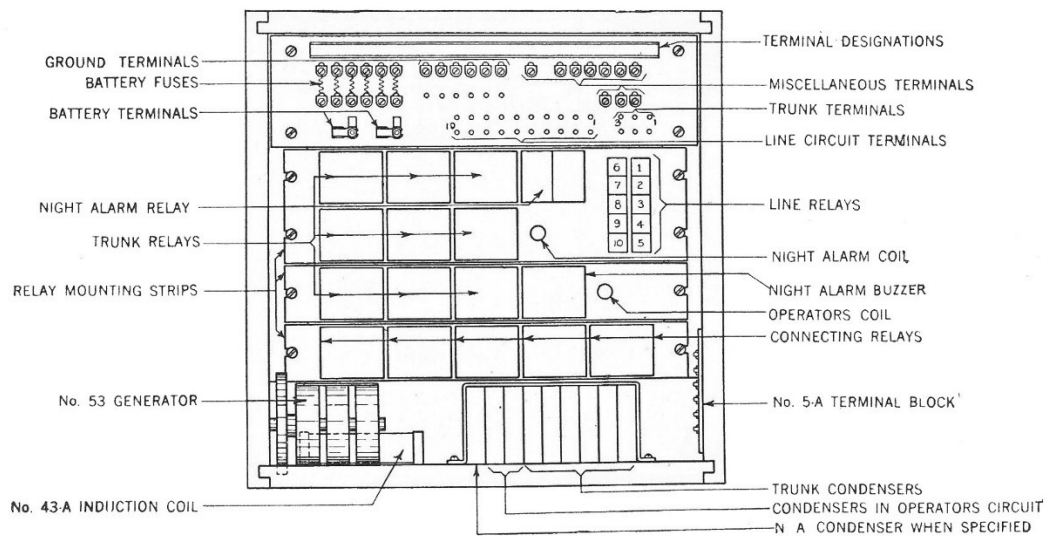


Diagram showing arrangement of apparatus inside the 104-C Cordless P. B. X. Switchboard as viewed from rear.
All equipment in plain sight and located so as to be readily accessible.

It also permits the P. B. X. party to recall the central office operator in the customary manner for calling subsequent numbers by moving the hookswitch up and down.

(B) *Ordering of Central Office Connections by P. B. X. Operator:*

If the P. B. X. party desires that the P. B. X. operator do the calling of the central office party, then the P. B. X. operator throws a connecting key of an idle trunk and a listening key on the idle connecting circuit. It is not necessary that the calling P. B. X. party be connected to the trunk until the P. B. X. operator knows whether or not the desired central office subscriber can be reached.

The operation of the trunk connecting key and the listening key causes a holding circuit to be locked across the trunk line and at the same time lighting the line lamp at the central office. The P. B. X. operator gives the desired number to the central office operator and if the called party responds, then the latter is told that a P. B. X. party wishes to speak and is requested to hold the line until the P. B. X. party is located. The P. B. X. party who originated the call is rung in the usual way by depressing the ringing key associated with his line. The associated connecting key is then thrown on the same connecting circuit as that to which the trunk has been connected.

(C) *Holding of Trunk Indicated by Green Lamp:*

The trunk holding lamp (green) lights when the trunk connecting key and the listening key are both thrown and remains lighted until the P. B. X. party responds. This lamp serves as a positive indication that the trunk is being held by the operator because it lights and remains lighted as long as the holding circuit is connected across a trunk line. In order to avoid confusion of signals this green lamp is used for only the above mentioned purpose.

(D) *Trunk Holding Connection Cannot be Accidentally Released:*

When the trunk holding circuit is established and the green lamp is lighted, this condition is securely locked against accidental release by several safeguards which make this trunk practically fool-proof.

3—Trunk Calls, Incoming to P. B. X. Switchboard

(A) *Central Office Rings on Trunk Line to Call P. B. X. Switchboard:*

As previously stated, these trunk circuits are designed to terminate in the central office on regular subscriber's line circuits. Thus the central office operator calls a P. B. X. switchboard by ringing on the trunk line the same as for calling a regular subscriber's telephone.

This ringing current operates a mechanically latching type of alternating current relay in the P. B. X. end of the trunk, positively lighting a calling lamp (white).

(B) *Trunk Calling Night Alarm Circuit:*

The trunk calling lamp (white) is connected to the common night alarm relay the same as for local P. B. X. lines.

(C) *Answering a Trunk Call:*

The P. B. X. operator answers a call coming in over the trunk line from central office, by throwing an associated connecting key and listening key on to the same idle connecting circuit,

(D) *Trunk Automatically Held:*

The act of throwing the trunk connecting key and the listening key handles by the P. B. X. operator provides and locks up a holding condition by connecting a retardation coil across the trunk and also lights a green lamp which stays lighted as long as this holding condition exists. This holding condition in the trunk is necessary to keep the supervisory signals of the central office cord and trunk circuits extinguished, so that the central office portion of the connection will not be pulled down prematurely.

When the holding condition is established and the green holding lamp is lighted, then this condition is locked from further interference so that the P. B. X. operator can restore the listening key to normal without releasing the trunk. This allows several calls to be answered in quick succession, holding such calls as require connection to the P. B. X. lines, until the operator has time to complete these calls.

(E) *Releasing the Trunk:*

If a trunk call is not to be extended to a P. B. X. line or the

No. 104-C Cordless—10 Lines Capacity (Cont.)

P. B. X. party does not respond, then the operator can release the trunk by pressing the non-locking trunk releasing key, marked "REL," on its top, which is located just below the green holding lamp. This releases the lock on the holding condition and indicates that the trunk is no longer held, by extinguishing of the green holding lamp, and lighting the supervisory lamp at the central office.

(F) Extending a Trunk Call to a P. B. X. Line:

If the incoming trunk call is to be extended to a P. B. X. line, then the P. B. X. operator rings the P. B. X. party and completes the connection the same as for a local P. B. X. call.

(G) Listening in on Trunk Conversation does not Re-Connect the Holding Coil:

If, for any reason, the P. B. X. operator listens-in on the trunk conversation, the holding coil will not be re-connected across the line and the green holding lamp will not be re-lighted. In this case the trunk is held by the presence of the P. B. X. telephone talking circuit apparatus, which is then across the circuit. Since the holding coil is disconnected from the circuit, under this condition, the bridged transmission losses, due to listening-in on a conversation, are correspondingly reduced.

(H) P. B. X. Party can Flash P. B. X. Operator If Trunk Listening Key is accidentally Left in its Operated Position:

The holding portion of the trunk circuit is so designed that the accidental leaving of the listening key in its operated position will not tie-up the trunk circuit. The hanging up of the receiver at the connected P. B. X. telephone will cause the holding lamp (green) to give a steady light. Then if the P. B. X. party wishes immediate attention, the working of the hook-switch slowly up and down will cause this green lamp to flash and thereby attract the operator's attention for immediate service.

The green lamp is intended solely to indicate to the operator that the trunk is being "held" by the mechanism of the P. B. X. switchboard which is under her control. Thus any lighting of the green lamp demands the P. B. X. operator's immediate attention.

4—Direct Line Night Service over Trunk

One or more P. B. X. lines may be connected to a trunk line for direct connection with the central office for night service as follows:

By throwing the associated connecting keys of the desired P. B. X. lines and the trunk line on to the same connecting circuit and cutting off the battery from the P. B. X. switchboard by depressing the battery switching key. This will establish direct connection, enabling the P. B. X. stations to call and be called by the central office operator.

Resistance of Trunk Lines and P. B. X. Line Wires

In order to insure the positive operation of the central office line and supervisory relays, it is essential that the trunk line wires do not exceed 500 ohms in resistance, when these central office relays have a standard adjustment for operation through 1000 ohms. This is due to the fact that the trunk holding coil in this cordless P. B. X. Switchboard is 500 ohms in resistance and taken together with the foregoing line resistance, will give 1000 ohms, or the total amount of resistance through which the central office relays will work. If the central office relays will work through a resistance greater than 1000 ohms, then the trunk line resistance can be correspondingly greater. The resistance of the P. B. X. line wires should not exceed 250 ohms for reasons similar to the above,

Standard Cordless P. B. X. Switchboards for Special Use

The trunk circuit in the standard cordless P. B. X. switchboard which has been described, is designed to operate in conjunction with any type or make of centrally-operated Central Energy system. This trunk circuit may, however, be adapted to operate in connection with subscriber-operated (so-called automatic) systems by slight changes without sacrificing any of its good features.

Trunk for Connecting to Subscriber Operated Switchboard

When the central office is of the so-called Automatic type, where the subscribers call each other by means of dials, and where the system operates on the two-wire central battery plan, then the standardized P. B. X. switchboard can be used by making only one single change in the key equipment, wiring being provided in the switchboard cable for the dial. The flashing key is replaced by a locking make-before-break key which is wired to a dial, the latter being common to the P. B. X. switchboard.

(A) Operation of Switchboard:

The operation of the switchboard is the same in every respect as when used in connection with a centrally-operated, Central Energy system, excepting the Trunk Calls outgoing from the P. B. X. switchboard.

(B) Trunk Calls to Automatic Central:

Calls from the P. B. X. telephones to the Automatic office are made by the P. B. X. operator as follows:

First the dial switching key of the trunk to be used (key in lower horizontal row associated with trunk) is depressed so as to connect the dial to the trunk and at the same time establishes the holding connection across the trunk circuit.

The green lamp of this particular trunk lights to show that the holding condition is existing on the trunk and remains lighted until either the trunk is connected to a P. B. X. line and answered by a P. B. X. party or is released by the P. B. X. operator.

(C) Trunk Automatically Held after Dialing:

The P. B. X. operator dials the number desired on the Automatic Central Office and then restores the dialing key to normal position. The trunk line may be connected to the P. B. X. line circuit by means of the connecting keys, either before or after the number is dialed, as the circuit is held by the holding condition established in the trunk as described in the above paragraph.

(D) Connection in Central Office Controlled by P. B. X. Telephone:

The connection in the central office is automatically controlled by the P. B. X. telephone, so that when the P. B. X. party hangs up his receiver the central office apparatus is released by the opening of the circuit and the trunk is immediately available for another incoming call, even before the P. B. X. operator has restored the connecting keys to this normal position.

(E) Trunk Disconnect:

When the P. B. X. party is through talking and hangs up the telephone receiver, the central office disconnect signal is immediately operated; also the disconnect lamp (red) of the P. B. X. switchboard connecting circuit is lighted. Either the central office operator or the P. B. X. operator can disconnect first, without causing any difference in the disconnect functions of the P. B. X. or central office switchboard.

(F) Trunk Cleared of Useless Bridged Apparatus During Conversation:

This trunk is so designed that when talking condition is established, the trunk calling relay and holding coil are removed

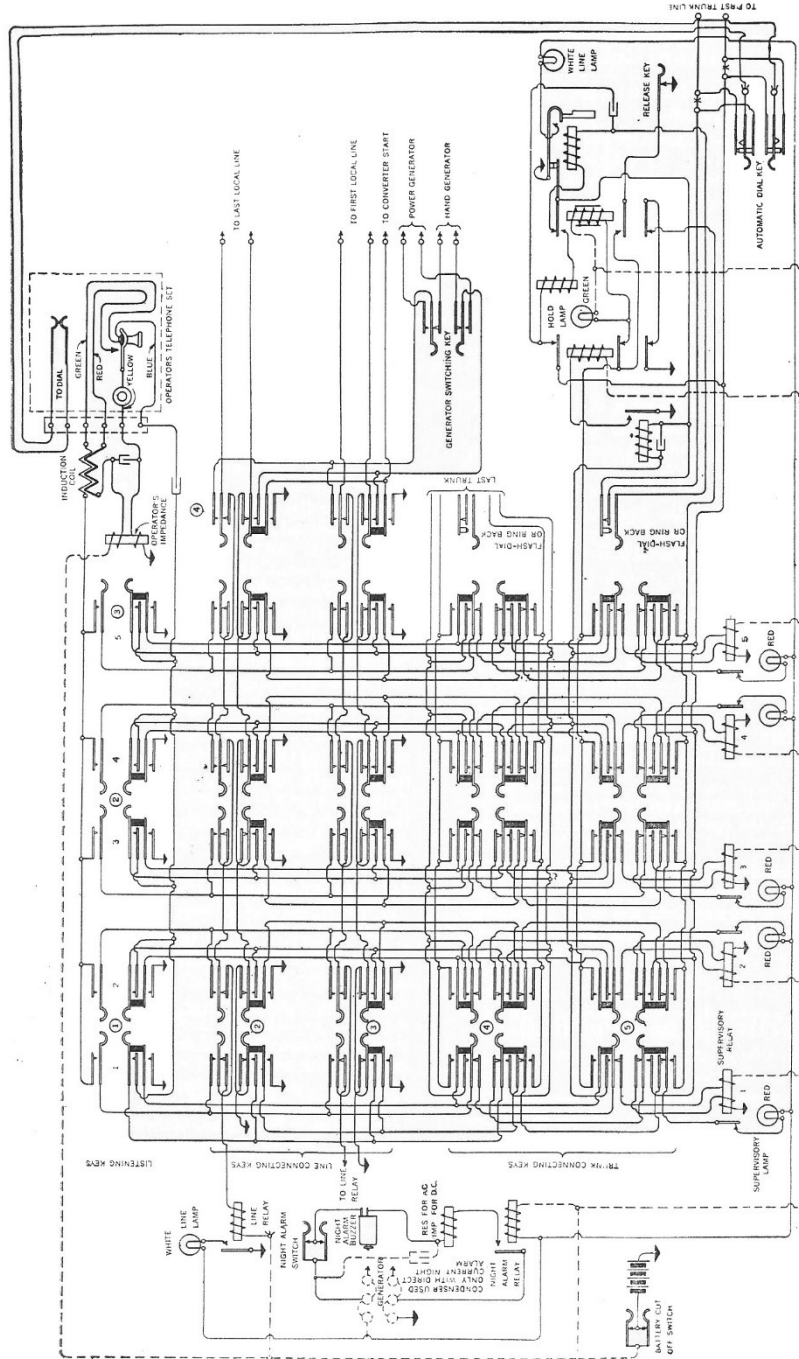
No. 104-C Cordless—10 Lines Capacity (Cont.)

from across the circuit so as to avoid high frequency transmission losses.

(G) *Trunk Instantly Available for Incoming Calls from Central when P. B. X. Party Hangs Up:*

The instant the P. B. X. party hangs up, after a conversation, the trunk line calling signal circuit is re-established at the P. B. X. switchboard so that the central office can call in on a trunk, even before a P. B. X. operator has restored the connecting keys. Thus it is possible to have a trunk calling

lamp (white) and a disconnect lamp (red) lighted at the same time. This condition is not confusing as the P. B. X. operator knows that the only way a calling signal (white lamp) can be lighted is by the central office operator ringing on the trunk line, also that the presence of a disconnect signal (red lamp) on the connecting circuit to which the trunk is connected indicates that the P. B. X. party is through talking and has hung up, In such a case the P. B. X. operator will restore the P. B. X. line connecting key and answer the trunk line the same as for any incoming trunk call, subsequently described.



General theoretical of 104-C Cordless P. B. X. Switchboard as regularly furnished for service in connection with a "Central Energy" main exchange.

No. 104-C Cordless—10 lines Capacity (Cont.)

(H) Trunk Flashing Key

If for any reason the P. B. X. operator wishes to flash the supervisory lamp at the central office when a P. B. X. party is on the connected line, this can be done by simply depressing the non-locking key in the lower horizontal row associated with the trunk. This opens the trunk circuit as long as the key is held in the operated position, or the circuit can be intermittently opened and closed by the corresponding operating of this key. As a result of this opening and closing of the trunk line circuit at the P. B. X. switchboard, the central office supervisory lamp will be flashed, which is the customary

indication for recall or for immediate attention from the central office operator.

The P. B. X. Listening Key can be thrown on to the connecting circuit when "flashing back" so that the P. B. X. operator's telephone set will be on the circuit in readiness so that the P. B. X. operator can respond immediately when the central office operator comes in on the circuit.

This flash circuit is arranged to eliminate disagreeable clicks which would otherwise be introduced in the connected P. B. X. party's telephone, and in the operator's telephone when operating this key.

Standard Equipment, Weight and Price of the No. 104-C Cordless P. B. X. Switchboard

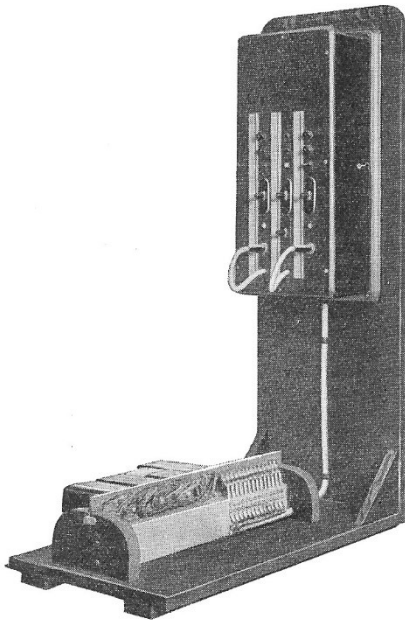
To order a Stromberg-Carlson No. 104-C Cordless P. B. X. Switchboard it is necessary to specify only the Code No. as follows:

Code No.	Description	Net Price
104-C	Cordless P. B. X. Switchboard in quartered-oak cabinet; fin-	\$275.00

ished in golden oak; operates off 22 volt battery supply; wired for and equipped with 10 lines, 3 trunks, and 5 connecting circuits. Shipping weight 105 pounds.

See Switchboard Accessories for Test Sets

Test Set for P. B. X. Trunk Circuit Plates (For the No. 101 and the No. 102 Switchboards)



No. 3-A Test Set for P. B. X. Circuit Plates

The development of the Trunk Circuit Plate and the standardization of Stromberg-Carlson P. B. X. Switchboards so that the Trunk Circuit Plates could be interchanged from one P. B. X. switchboard to another P. B. X. switchboard has developed a

demand for the Stromberg-Carlson No. 3-A Test Set. This test set is designed for the purpose of thoroughly and quickly testing trunk circuit plates.

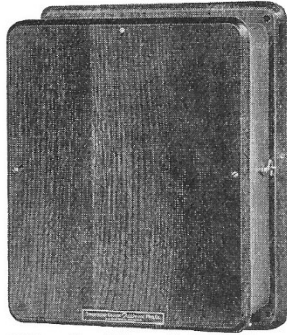
The No. 3-A Test Set contains all the apparatus required to put trunk circuit plates through their proper sequence of operations; it duplicates the operation of the trunks as they exist in practice. With the No. 3-A Test Set a trunk circuit plate is tested by simply slipping it into grooved slots—no soldering or other connecting work is required,—there is a shoe on the No. 3-A Test Set which has spring clips that engage the terminals of the trunk circuit plate. The test is then made quickly and accurately by simply manipulating keys and by observing the action of the lamps.

Every telephone company using several Stromberg-Carlson P. B. X. Switchboards should have a No. 3-A Test Set in its repair shop. This permits the centralizing of the repair work on all trunk circuit plates at one point,—then it is necessary to carry in stock only a couple of extra trunk circuit plates which can be used to replace defective circuit plates that are being tested.

Detailed instructions are furnished with each No. 3-A Test Set.

Code No.	Description	Price
3-A	Test Set for the Trunk Circuit Plates of the No. 101 and the No. 102 P. B. X. Switchboards	\$135.00

No. 5 Type P. B. X Ringing Converter



Closed View No. 5 Type P. B. X. Converter

This piece of apparatus converts 20 to 22 volt battery current to 22 cycle ringing current.

The equipment consists of a vibrator with pole-changing contacts, a transformer of the step-up type and a condenser to suppress contact sparking. These pieces of apparatus are neatly connected by means of a hand-formed cable which is brought out to four binding posts—two for the incoming battery current and two for the outgoing ringing current.

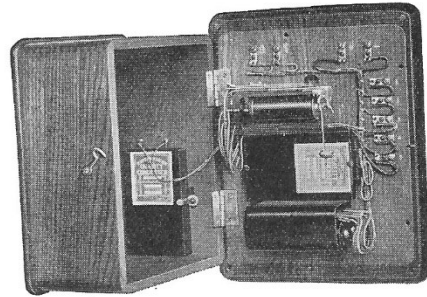
The complete complement of parts and the wiring is contained in a compact oak cabinet which is finished in dull golden oak. This cabinet measures only 9 x 11 $\frac{1}{4}$ x 5 $\frac{5}{8}$ inches. It is provided with a hinged cover and it is equipped with drillings for four mounting screws.

The No. 5 Type Ringing Converter will carry a heavy load—it will ring simultaneously as many as forty bells bridged across one circuit.

The No. 5 Type Ringing Converter operates economically—it consumes only .03 of an ampere when ringing without load, only .09 of an ampere when ringing one bell and only .12 of an ampere when ringing eight bells.

The No. 5 Type Ringing Converter is built to stand up under hard usage—it consists of only a few parts all of which are, not only simple in design, but substantial in construction. It is self-protecting—it cannot be injured by ringing on a short-circuited line and it requires neither auxiliary lamps nor other resistances in the ringing leads.

The No. 5 Type Ringing Converter is readily connected to Stromberg-Carlson P. B. X. Switchboards—each No. 101 or No. 102 P. B. X.



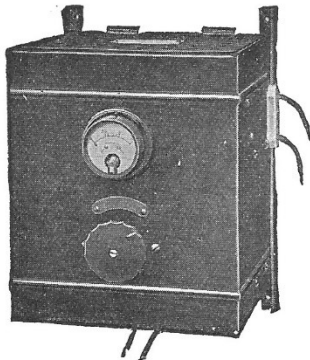
Open View No. 5 Type P. B. X. Converter

Switchboard is wired so that it may be supplied with ringing current from the No. 5 Converter by merely adding a No. B-10 Starting Relay and equipping switchboard for "Special Night Alarm Equipment," adding one No. 202 Impedance Coil and one No. 29 Condenser. The complete wiring is provided in either of these switchboards for the control of the converter through the starting relay. The arrangement is such that the converter will be set in operation whenever a calling plug of a P. B. X. cord circuit is inserted in the jack of a P. B. X. line or whenever the P. B. X. operator answers a trunk call from the main exchange. In either case, the converter continues to operate until the called party responds or the operator abandons her attempts to obtain an answer.

Code No.	Description	Price
5-A	Ringling Converter to be used only where two sets of storage batteries are supplied.	\$27.25
5-B	Identical to the No. 5-A Converter excepting that it is equipped with a noise-killing device and therefore must always be specified where the P. B. X. is supplied from the current of but one battery.	30.00
2	16-20 Cycle Transformer. For use with either a 5-A or 5-B Converter. Mounts the same as No. 19 Relay Casing.	5.75

Note—Both the No. 5-A and 5-B Converters are equipped with one No. 29 Condenser for radio interference eliminator.

Tungar Rectifiers—for Battery Charging



List No. 2816 Tungar Rectifier

Where a P. B. X. switchboard cannot derive its battery supply from a central telephone exchange there is no better source of operating current than that afforded by a Tungar Rectifier floating a small storage battery.

This type of rectifier is designed to operate continuously across the P. B. X. battery and to deliver just enough current to keep the battery normally charged.

Simple to Install—The Tungar Rectifier is equipped with two double conductor cords. The installation is completed by connecting one of these cords to any convenient lamp socket, provided the lamp socket is on a 60 cycle 105-125 volt circuit and

Tungar Rectifiers (Cont.)

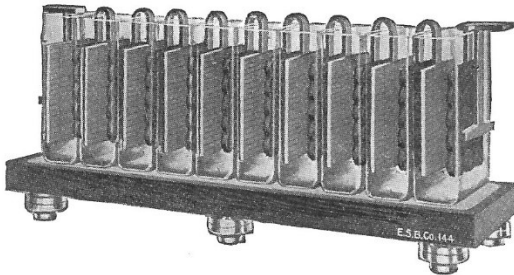
by connecting the other cord to the battery—the red lead to the positive pole—the black and white lead to the negative pole. The Tungar Rectifier requires only a small space. Its dimensions are $6\frac{3}{4}$ x $9\frac{1}{8}$ x $7\frac{3}{8}$ inches.

Easy to Operate—Just turn on the switch in the lamp socket; regulate the resistance stick until the proper charging current has been obtained and then inspect the battery at monthly periods.

Economical to Operate—The energy taken from the lighting circuit with a .5 ampere 30 volt charge, will be less than 60 watts. The cost per day for this current at a \$.05 rate will be about \$.07. Further economy is accomplished with this rectifier because its constant operation requires the installation of only a minimum size of battery.

List No.	Description	List Price	
		F.O.B.	Shipping Point
2814	Tungar Rectifier operates off 60 cycle 115 volt circuit (voltage limits 105-125). Delivers 30 volt charging current at .3 to .5 amperes.	\$50.00	
2815	Renewal Bulb for List No. 2814 Tungar Rectifier.	5.00 net	
2816	Tungar Rectifier complete, of the 2 bulb type, with List No. 2817 external reactance and with ammeter. Operates from 60 cycle 115 volt circuit (voltage limit 105-125). Delivers 20 volt charging current at 3 amperes.	120.00	
2818	Renewal Bulb for List No. 2816.	4.00 net	

Battery



Typical P. B. X. Battery with Sand Tray and Insulators

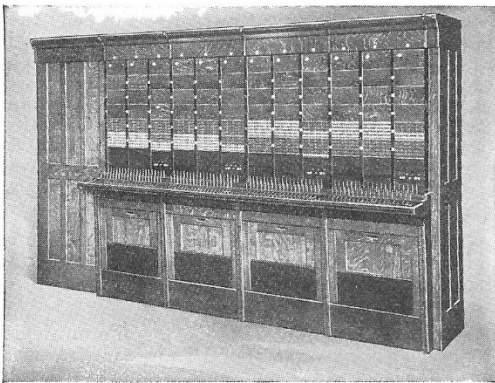
As stated in the preceding paragraphs a P. B. X. Switchboard installation which includes a Tungar Rectifier also requires a small battery—one only large enough to absorb the noise of the rectifier and to carry over surges in the traffic load.

The following battery will answer the requirements:—

List No.	Description	List Price
2813	Battery for P. B. X. installations of not over 100 lines capacity, and for floating continuously across a Tungar Rectifier. This battery includes:— twelve glass jars (one extra), eleven elements, eleven glass covers, two bolt connectors, two terminal lugs, one hydrometer, one wooden sand tray, six single petticoat insulators and electrolyte. The capacity of this battery is 12 ampere hours and its normal charging rate is $1\frac{1}{2}$ amperes.	\$63.94

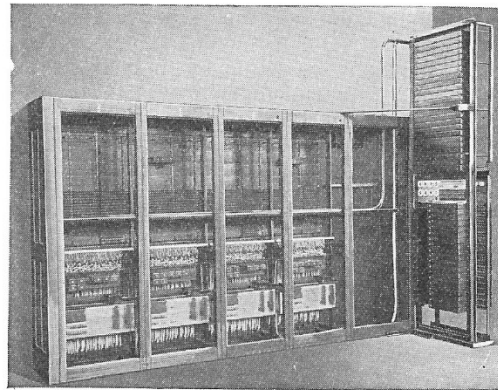
Multiple Switchboards

Super-Service—for Central Energy Exchanges



Front Perspective of Four No. 12 Super-Service Switchboard Sections with Cable Section

Stromberg-Carlson Super-Service Switchboards are designed for Central Energy Multiple Exchanges of any size—from two positions up. These switchboards are the result of over 30 years' experience



Rear Perspective of Four No. 12 Super-Service Section with Cable Section and with Terminal Section

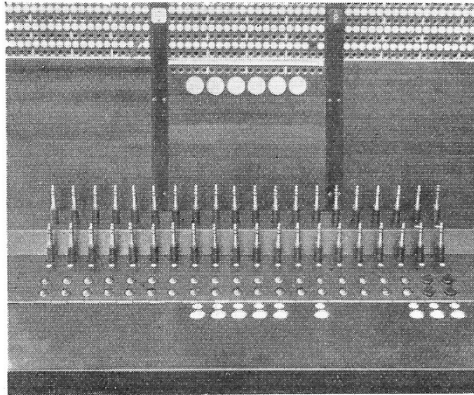
building apparatus for telephone operating companies. They are furnished with many novel features not only in circuit design but in apparatus arrangement.

Multiple Switchboards (Cont.)

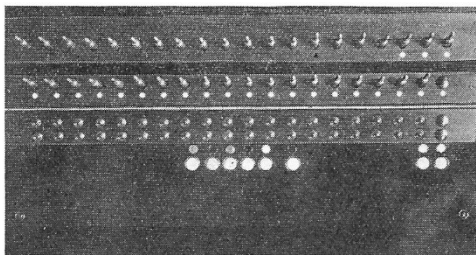
The line equipment, however, is of the standard well-known three wire bridging type which consists of a line relay, a cut-off relay, a lamp signal and a jack. This line circuit may be arranged in an associated lamp multiple with one or more appearances of multiple lamps or it may be arranged with ancillary answering jacks. The exact arrangement of the lamp signals for most economical operating depends upon the size of the exchange.

The cord circuits are each equipped with the following seventeen features most of which are exclusive characteristics of Stromberg-Carlson Super-Service Switchboards. These features provide not only remarkable speed in operating but remarkable accuracy in operating.

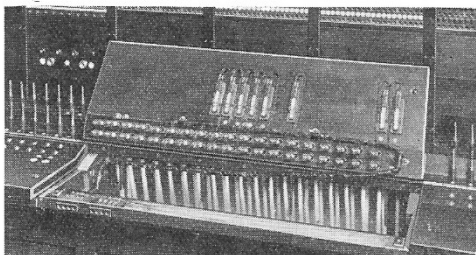
Operator's Bar—prevents the operator from plugging-in on an established connection and makes it impossible for more than one operator to answer a call.



Close-Up View of Keyboard and Face Layout for No. 12 Super-Service Section



Close-Up View, Looking Vertically Down Upon the Keys and Plugboard of Super-Service Switchboard Section No. 12



View of Open Keyboard, on Super-Service Section No. 12

Advance Plugging-In—speeds up service by permitting the operator to plug up one call while she is answering a previous call,—the operator's head set is held from the second call until she has disposed of the first call.

Operator's Listening Indication—indicates by means of a dimmed answering supervisory lamp which cord circuit is bridged by the operator's set. This takes the guesswork out of listening without keys. It relieves the operator from the fatigue that is due to the mental strain of studying cord location.

Operator's Secret Service—prevents the operator from listening upon an established connection.

Audible Busy Test—guards against connecting a party with a busy line,—it gives a distinctive series of clicks in the operator's ear when she tests the thimble of the called party's multiple with the tip of a calling plug.

Reverting Busy Test with Tone—informs the operator when she is making a busy test upon a line whereon one subscriber is attempting to obtain a connection with another subscriber upon his own line.

Instantaneous Ringing Cut-Off—protects the called subscriber from being rung in the ear—it cuts off the ringing current the instant the called subscriber answers.

Calling Subscribers Ringing Control—stops the ringing when the calling subscriber abandons the call and therefore not only saves ringing current but relieves the operator of close supervision.

Reverting Call Ringing—assists subscribers on the same line to ring one another because it provides facilities to ring a subscriber with only the calling cord plugged up. This not only eliminates reversing call jacks but also prevents confusion in the handling of the reverting calls.

Operator's Cut-In—connects the operator with the calling party the instant an answering cord is plugged into the calling party's line. This feature also eliminates the listening key and disconnects the operator from the cord circuit the instant the ringing is started.

Operator's Ringing Control—requires but one push of the proper frequency button to start the ringing. It necessitates only one ringing button for each frequency common to all the cord circuits on an operator's position—and it permits fast touch methods of key location in place of the slow sight methods of key location that were necessary on older types of switchboards which bristled with sixty or more ringing control buttons to an operator's position.

Machine Ringing—continues the ringing intermittently and independently of the operator's ringing control buttons. It requires no supervision on the part of the operator.

Ringing Tone—consists of a uniform ringing tone which is independent of either ringing frequency or of line length. It denotes to the calling subscriber that the operator has established ringing conditions. This feature makes it unnecessary for the operator to lose time informing the subscribers that she is ringing their parties.

Manual Ringing Indication—indicates to the operator that ringing has been started and provides a check to show that the proper frequency has been selected.

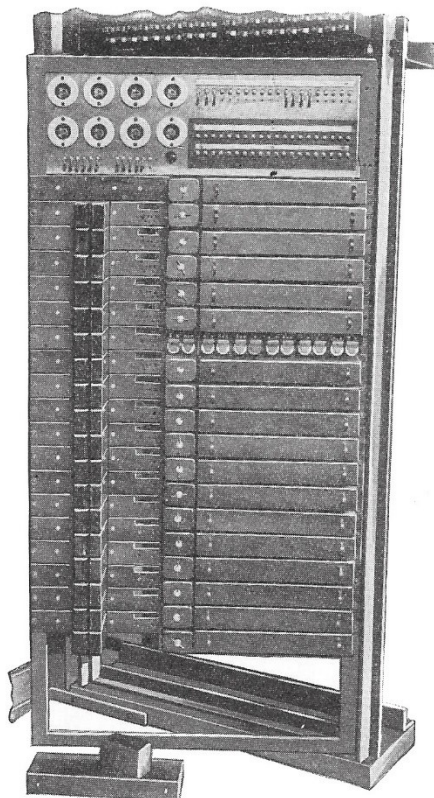
Multiple Switchboards (Cont.)

Dark Keyboard—darkens both supervisory lamps during the ringing period. This eliminates confusion of signals and consequently relieves the operator of studying signals.

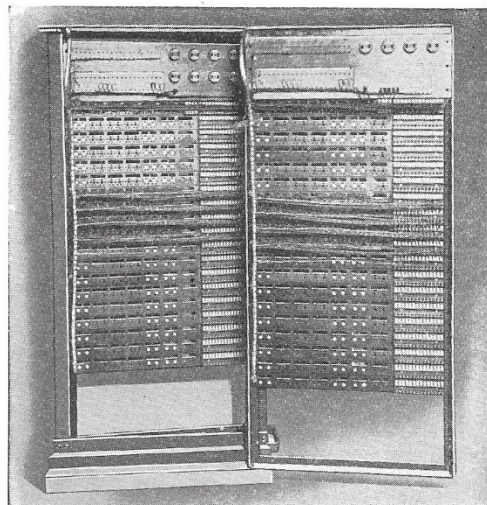
Positive Supervision—informs the operator of each step she is to take on a connection. This reduces operator's nerve strain to a minimum.

Flash Recall—flashes the answering supervisory lamp and therefore helps the calling subscribers to regain the operator's attention to his recall.

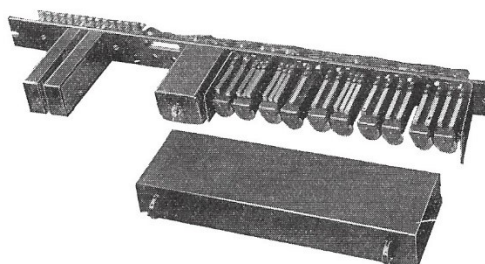
condenser, etc. The latter parts obviously are not essentially handy to the operator. This reduction in the number of keys between the keyboard apparatus and the remaining apparatus of the cord circuit makes it practical to place all of the cord circuit apparatus, with the exception of what mounts before the operators, in the terminal room where it is convenient to inspect and maintain.



Cord Circuit Apparatus Section of Relay Bay Showing One Gate Partly Closed



Cord Circuit Apparatus Section of Relay Bay Showing One Gate Open



View of No. 7-A Cord Circuit Plate

Call Registration—registers accurately the number of calls answered by each operator. This feature not only shows the value of each operator but also provides data for traffic studies.

Emergency Ringing—furnishes emergency ringing facilities when only uninterrupted ringing current is available.

All the above mentioned features are essential for fast and accurate operating. The Operator's Ringing Control Feature, however, not only has helped add speed with accuracy but has permitted many remarkable improvements in central office layout and in keyboard layout.

The reason why the Operator's Ringing Control Feature permits improvements in central office layout is because fewer wires are required between the cord circuit's keyboard apparatus and the remaining parts of the cord circuit, such as relays,

The reason why the Operator's Ringing Control Feature permits improvements in keyboard layout is because fewer keys are required to an operator's position. With Operator's Ringing Control the indicating party ringing keys individual to each cord circuit are eliminated. The party ringing is accomplished by only one group of ringing control buttons common to an operator's position,—one ringing control button for each frequency.

All of the above mentioned circuit features and layout improvements combined in one switchboard speed up service to a point where a change from the conventional switchboard section design is essential to place sufficient lines before an operator so that she can work to the limit of her possibilities.

The No. 12 section is built especially for the Stromberg-Carlson Super-Service Switchboard. It is a switchboard section which is built to give operators an opportunity to reach sufficient calls so they can work to the limits of the possibilities that are

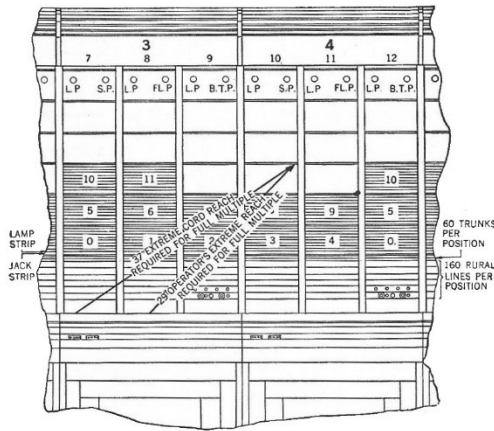
Multiple Switchboards (Cont.)

derived by the Super-Service Switchboard features. The following are the outstanding details in the design of this section:

Capacities: 2500 lines on a five panel basis; 3500 lines on a seven panel basis; and 4000 lines on an eight panel basis.

Short cord reach to maximum capacity.

Shallow keyboard pockets especially designed to give maximum knee room to the operators.

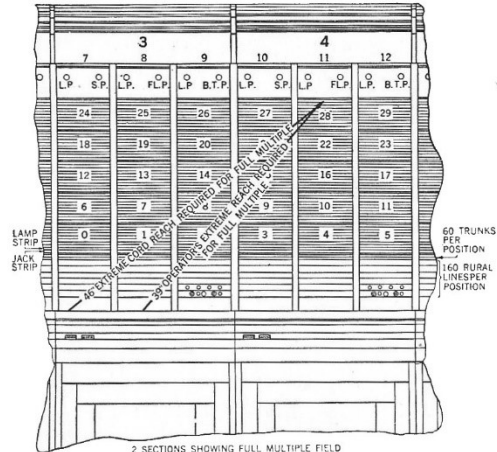


Front Elevation of Two No. 12 Super-Service Switchboard Sections with 1200 Line Lamps and Associated Jacks Arranged in a 5-Panel Multiple

Simplicity of keyboard due to the absence of all individual four party keys.

Accessible location of both the answering and the calling plugs. Each level of plugs is raised so as to be in convenient position for quick handling.

Sloping position of the supervisory lamps so as to provide a prominent signal to the operator.



Front Elevation of Two No. 12 Super-Service Switchboard Sections with 3000 Line Lamps and Associated Line Jacks Arranged in a Six-Panel Multiple

Accessibility of both the answering and the calling plugs.

Piano hinge extending entirely across the width of the keyboard.

Smooth formica veneer over the entire keyboard's surface—finished in dead black.

A light weight, swinging relay gate for mounting the miscellaneous relays, impedance coils and condensers.

Terminal board for mounting the position fuses, enclosed under a metal fire-proof covering.

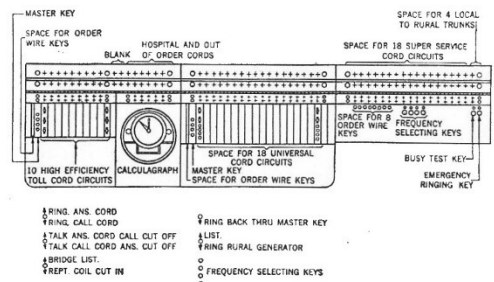
Convenient location of cord circuit terminals for connecting the keyboard apparatus with the relays and condensers which are located in the terminal room.

Heavy steel frame reinforcement which extends from the roof of the section to the floor and supports face equipment, multiple cable, relay gate and terminals.

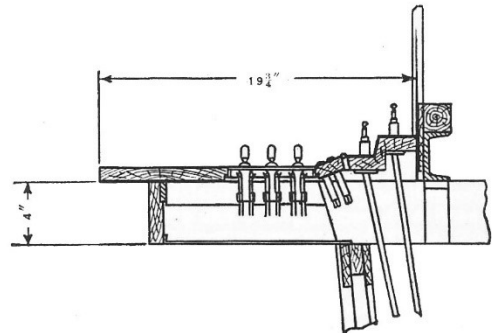
Fire screen protection designed so as to completely isolate the multiple cables, multiple jacks and multiple lamps from the lower portion of the section.

Cord rack design which makes it easy to change cords.

Swinging gate for miscellaneous relays, impedance coils and condensers.

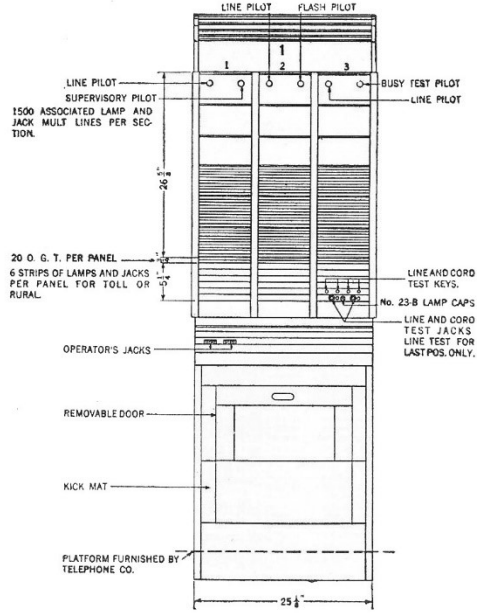


Layout of One Toll Position, One Rural Position and One Local Super-Service Position, in Three No. 12 Super-Service Stations

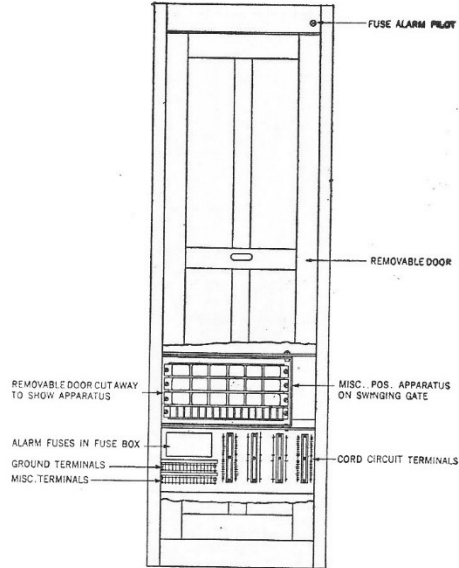


Cross-Sectional View Exhibiting Design of the Keyboard as Furnished in either Toll or Rural Positions

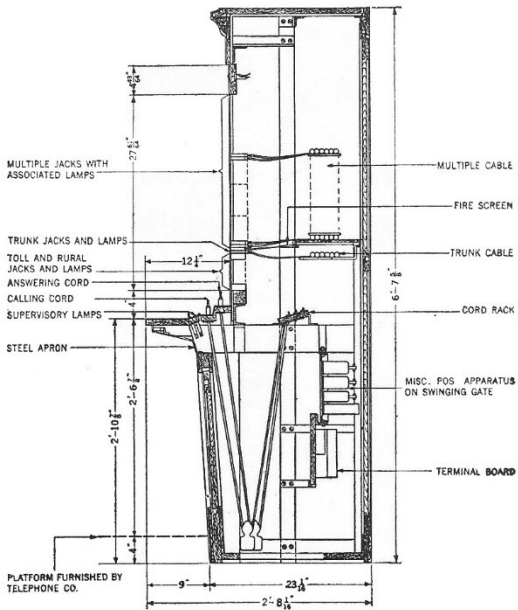
Multiple Switchboards (Cont.)



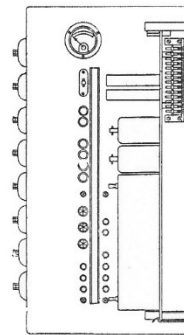
Front Elevation of No. 12 Super-Service Section



Rear Elevation of No. 12 Super-Service Section



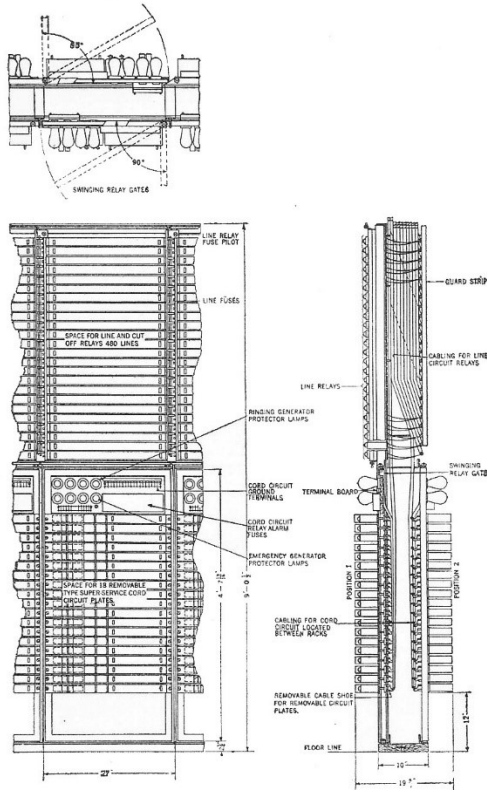
Cross Sectional View of No. 12 Super-Service Section



Test Set for Checking the Operation of the No. 7-A Cord Circuit Plate

Multiple Switchboards (Cont.)

Relay Bays—For Super-Service Switchboards



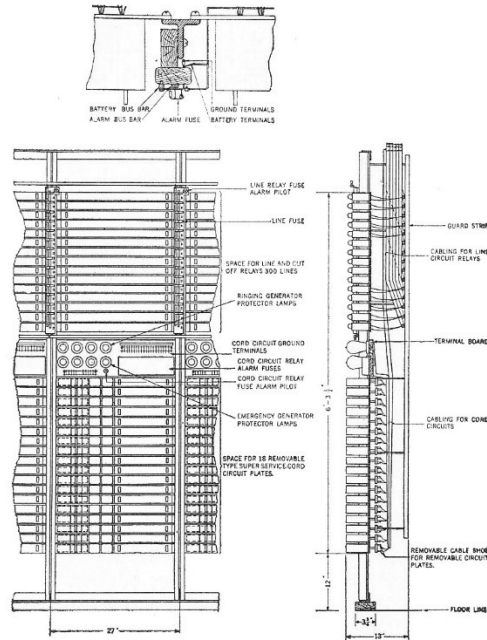
Front Elevation, Side Elevation and Plan Views of Position and Line Relay Equipment where Swinging Gates are Required

This arrangement is used with Main Distributing Frames which have a capacity of 160 Lines per Vertical.

As previously stated—on page 106—the simplicity of the operator's Ringing Control Feature permits locating the cord circuit relays and the cord circuit condensers in the terminal room on relay bays.

By locating this apparatus in the terminal room the following advantages are derived over locating such apparatus in the switchboard section as has been the past practice :

1. The fire hazard is greatly reduced.
2. The congestion of apparatus in the rear of the switchboard section is eliminated.
3. Switchboard maintenance is simplified because it is centralized to the terminal room where it does not interfere with operating.



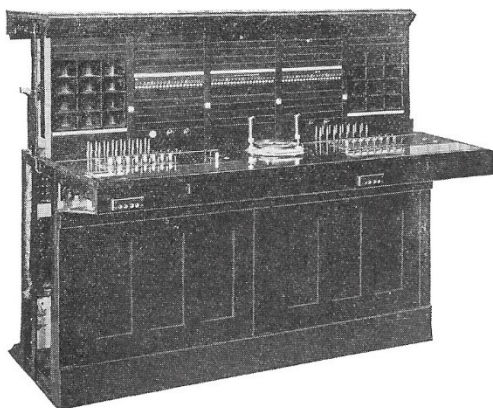
Front Elevation, Side Elevation and Plan Views of Position and Line Relay Equipment where Swinging Gates are Not Required

This arrangement is used with Main Distributing Frames which have a capacity of 160 Lines per Vertical.

4. The cord circuit apparatus is rendered more accessible—better working light and greater working comfort is afforded than is possible where the apparatus is mounted inside a switchboard section.
5. More switchboard sections can be placed in a given-sized operating room because a smaller section will accommodate the switchboard apparatus.
6. Installation is simplified because the switchboard sections are of not only smaller units but lighter units and therefore far more easily brought into the building.

Ask for complete specifications covering your requirements in a Super-Service Switchboard.

Toll Switchboards



Front Perspective of Standard Toll Section

Stromberg-Carlson Toll Switchboards are found in many of our nation's important toll centers.

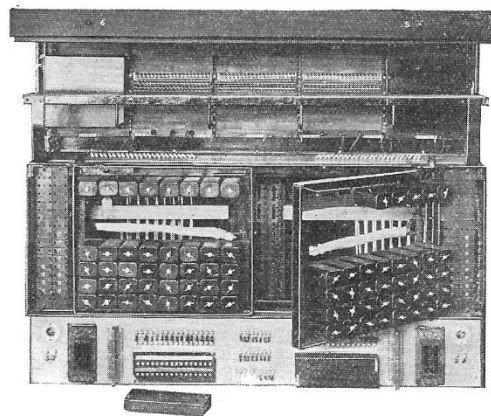
They are designed to meet the most exacting requirements of toll service.

Their outstanding features are briefly as follows:

Circuit design and apparatus design that insure not only unexcelled operating efficiency, but also unexcelled transmission efficiency.

Convenient sized units of two positions per unit.

Rigid steel self-supporting framework, covered with high grade woodwork which will be furnished in either dull golden oak or mahogany finish.



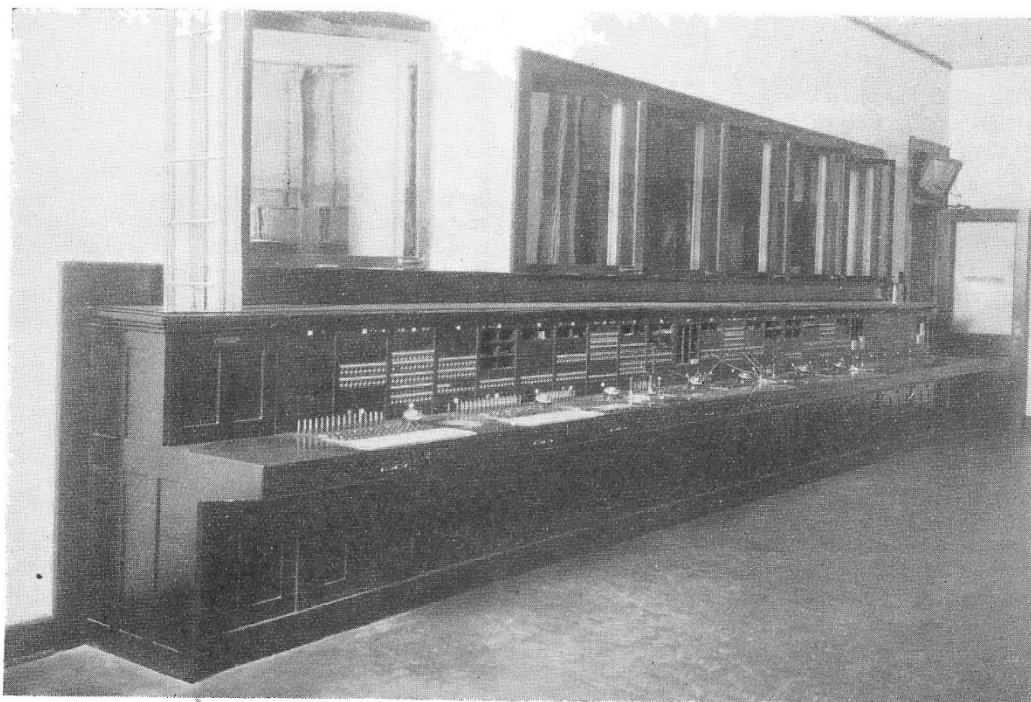
Rear Perspective of Standard Toll Section

Provision for joining adjacent sections rigidly together, bolting steel framework to steel framework, without any interposing woodwork. This forms a continuous face equipment.

Roomy keyshelves—very deep and very wide with provision for mounting a calculagraph between operators.

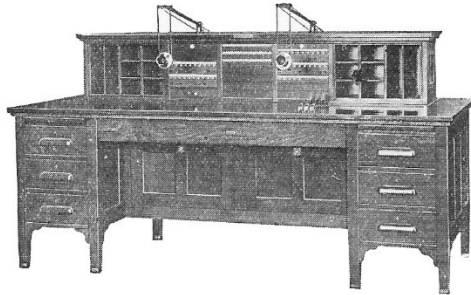
Remarkable accessibility ensured by horizontally swinging relay gates, removable front and rear panels, hinged keyshelves and ample spacing of all apparatus.

Stromberg-Carlson engineers will gladly furnish additional data regarding toll boards, upon request.

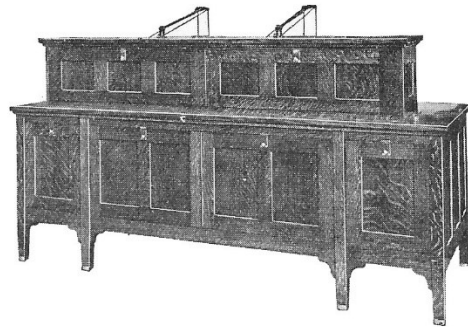


A Stromberg-Carlson Toll Switchboard

Chief Operators' Information and Monitors' Switchboards



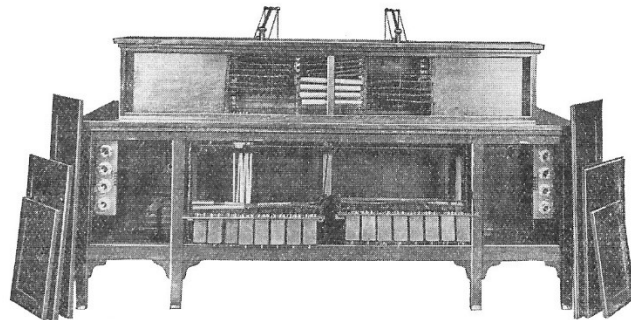
Front Perspective Two-Position Chief Operator's Desk



Rear Perspective, Two-Position Chief Operator's Desk with Panels in place



Front Perspective, Single Position Chief Operator's Desk



Rear Perspective, Two-Position, Chief Operator's Desk, with Panels removed

In central office installations means are necessary for supervising and for informing not only the operators but also the subscribers.

Stromberg-Carlson Chief Operator's, Information, and Monitor's Switchboards provide highly developed facilities for such requirements.

The operators' answering time is checked by lamps which are multiplied from the line pilots of each "A" operator's position.

The operators' disconnect time is checked by lamps which are multiplied from the supervisory pilots of each "A" operator's position.

The operators' conversations with subscribers and also the subscribers conversations with the operators are checked by means of noiseless taps to each operator's talking circuit.

Instructions are given to all the operators by means of Instruction Trunks which go directly to the operators' telephone circuits.

The service to particular subscribers is checked by means of Observation Trunks which terminate on easily-shifted plugs. These plugs are located in the terminal room where they readily are connected temporarily with any subscriber's line.

Information is given to subscribers by means of trunks called Information Trunks. These trunks are generally multiplied before the "A" operator on jacks which appear in the Outgoing Trunk Multiple Space and are terminated before the information operator on either lamp and key-ended trunks or on lamp and jack-ended trunks. These information trunks relieve the "A" operator of answering questions—in fact, they relieve the "A" operators of every duty excepting the making of regular connections in the most efficient manner.

Stromberg-Carlson Chief Operator's, Information and Monitor's Switchboards are made to meet the particular requirements of any central office. In small offices one combination chief operator's, information and monitor's switchboard may answer all requirements. In larger offices, however, conditions often require a separate information switchboard.

The wide experience of Stromberg-Carlson engineers in providing proper facilities for some of the world's largest telephone exchanges renders them capable of furnishing valuable data to any operating company that is in need of Chief Operator's, Information or Monitor's switchboards. Such data will be supplied upon request and without obligation.

Wire Chief's Switchboard



Single-Position Wire Chief's Desk

For No. 2 Wire Chief's Test Set, see Switchboard Accessories

A first-class wire chief's desk, table, or turret is indispensable to any modern telephone system. It takes the guesswork out of trouble-hunting. It makes the work of the wire chief and the maintenance forces far more effective. It not only indicates the kind of trouble but also the place of trouble. It should be a part of every central energy telephone plant.

Stromberg-Carlson Wire Chief's Switchboards are supplied in desk types, upright floor types, and wall types. They are equipped with high grade apparatus and well-designed circuits. Provision is made for all of these tests:

1. Continuity Tests.
2. Tests for Short Circuits.
3. Tests for Grounds.
4. Tests for Crosses with other telephone or current carrying lines.
5. Location of Crosses and Grounds (with Wheatstone Bridge).
6. Measuring Voltages of Batteries.
7. Measuring of Resistances.

Prices and detailed descriptive matter will be furnished upon request.

Junior Multiple Switchboard

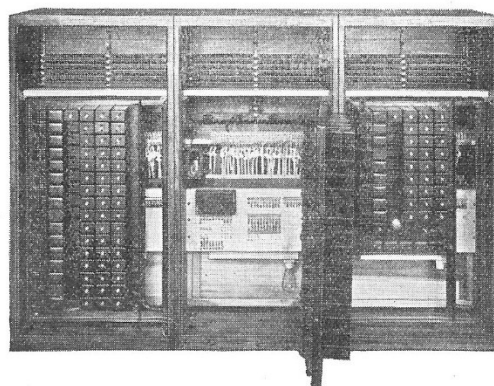


Front Perspective—Junior Multiple Switchboard

Incorporated in the design of the Junior Multiple Switchboard are found only the well-trying basic principles of the telephone art. Those features which make the larger city switchboards more intricate in operation and maintenance have been eliminated. Bearing these points in mind, the standardized Junior Multiple Switchboard, as built, offers the exchange manager a means to improve his service simply and economically.

This switchboard finds one of its greatest uses in the replacement of magneto plants or in the revision of obsolete central energy equipment. Some of the advantages derived from its use present themselves under the following headings:

- Better grade of service.
- Moderate first cost.



Rear View—Showing Center Relay Gate Open—Junior Multiple Switchboard

- Lower future operating costs.
- Easier maintenance of switchboard.
- Lowered maintenance of telephone costs.
- Faster operating.
- More accurate service.

The switchboard design is of the unit type of construction. Each section is made of kiln-dried quarter-sawed oak and is finished in durable dull golden oak. Some of the details which are featured in its design are listed below:

- Capacity, 600 lines in a three-panel associated lamp multiple arrangement.
- Short cord reach to the ultimate capacity.
- Piano hinge across the full length of the key-board.

Junior Multiple Switchboard (Cont.)

Smooth dull black formica veneer over that part of the keyboard which is not occupied by the key mountings.

Wide keyboards provide a resting place for arms during idle periods.

Extra wide keyboard on toll position for convenience in writing tickets.

Substantial relay gate for mounting both the cord circuit relay, condenser and cord equipment as well as the miscellaneous circuit equipment.

Large terminal board situated to allow outside wiring to be brought in easily.

Steel-covered fuse box to prevent fire hazard.

Accessible cord circuit terminal rack.

Removable lift out-doors provide easy access to rear or front of cabinet.

lamps before more than one operator ensures speed and teamwork in answering calls. This is particularly noticeable as the number of positions are increased.

(d) Line and cut-off relays—standard in each circuit—make it possible to eliminate contacts from the jack springs.

(e) Relay controlled subscriber's line lamps produce signals of uniform brilliancy—they are not dependent on the length of the line.

This type of line circuit can be used with safety within a zone of five miles from the exchange when No. 12 B.W.G. Iron Wire is used as the line conductor. Greater distances may be covered where copper or wire with lower resistances are employed. With this circuit the more economical central energy telephone may be used and thus eliminate the use of dry cells.

Equipment and Circuits

Line Circuits, Central Energy

Provision is made for an ultimate of 600 central energy lines on a 3-panel multiple basis. That is, in a three-position board of 6 panels the lines would have two appearances. In this manner each operator may reach any local line without trunking or transferring calls.

These circuits provide for the following features:

(a) Lamp ended lines ensure simple and instantaneous operation. Signalling is effected by the lifting of the subscriber's receiver from the hook-switch.

(b) Close association of line lamp with line jack promotes answering calls with speed and accuracy. It is unnecessary for the operator to hunt for the line jack associated with the incoming signal.

(c) Multiplying of the subscriber's line

Drop Ended Toll and Rural Line Circuit

These circuits are of the plug-restored drop signal type. The ultimate number is governed by the local conditions and requirements. The following description applies:

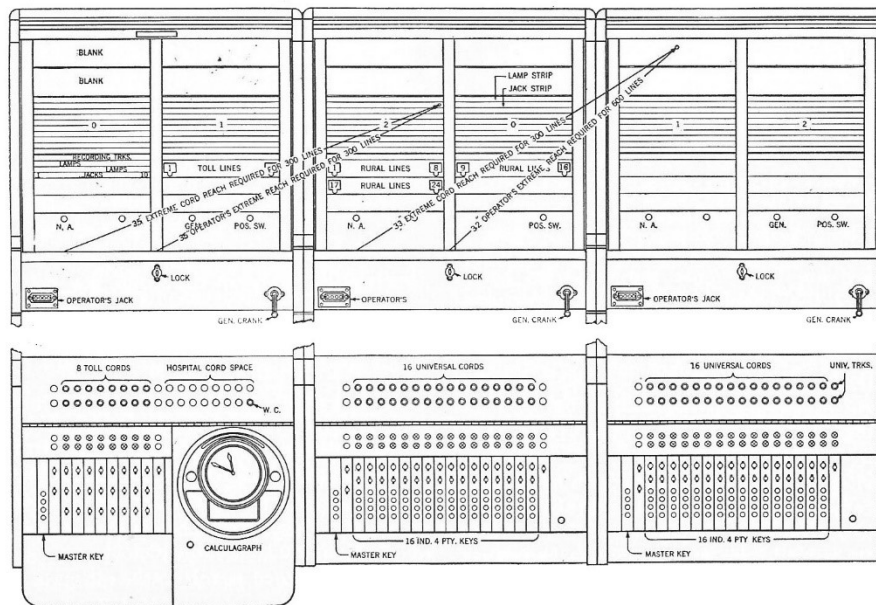
(a) Double cut-off contacts on each line jack, severing both sides of the drop coil from the line, affords a highly efficient, balanced talking circuit.

(b) Removable drop coils permit economical repairs.

(c) Toll line signals with high wound coils (1000 ohms) permit economical repairs.

(d) Rural line signals with moderately wound coils (500 ohms) insure positive action of signals, even on heavily loaded lines.

(e) Screw terminals on drop coils eliminate the use of a soldering iron when changing coils.



Face and Keyboard Layout—Junior Multiple Switchboard

Junior Multiple Switchboard (Cont.)

Lamp Ended Toll and Rural Lines

The equipment for one of these lines contains three major type relays together with the necessary lamps, lamp sockets and jacks, as required for multiplying throughout the switchboard. The features of this switchboard are as follows:

(a) **Close association of line lamp with line jack** promotes answering calls with speed and accuracy. It is unnecessary for the operator to hunt for the line jack associated with an incoming signal.

(b) **Lamp ended lines** insure simple and instantaneous operation. Signalling is effected by turning the hand generator of the subscriber's telephone.

(c) **Line and cut-off relay in each circuit** makes it possible to eliminate contacts in the spring jacks.

(d) **Line signal flashing** allows the subscriber to indicate code calls. These codes are produced by the impulses delivered from the hand generator.

(e) **Dual signalling—flashing or steady**—permits the operator to know whether her attention is required. A flashing signal indicates an exchange call.

(f) **Restoring key** provides a means for restoring the signal when central is not called.

Universal Cord Circuit

Every cord circuit in the Junior Multiple Switchboard is a universal cord circuit. With this provision an operator has no need to choose a particular cord circuit for any particular service. The first cord she selects will be the correct one.

These circuits each contain three conductor cords, three conductor plugs, supervisory lamp signals relays, condensers and a repeating coil. They are designed to accomplish the following:

(a) **Bridged Manual Listening** permits the operator to listen in on either cord separately or when both cords are up on a circuit.

(b) **Ringing provision for signalling the subscriber over either cord** removes the necessity of changing cords once the connection has been established.

(c) **Generator cut-off** prevents the operator from ringing the subscriber in the ear after the subscriber has answered.

(d) **Repeating coils in each cord circuit** insure maximum talking efficiency with minimum interference from inductive disturbances. Low transmission loss and non-ring-through features are provided.

(e) **Non-ring-through circuits** eliminate confusion because a magneto subscriber's "ring-off" does not pass through the cord circuit to which his line is connected and thus ring the distant subscriber's bell. Instead, only the operator's attention is attracted.

(f) **Double supervisory signals** increase the efficiency of operating by designating to the operator just which party in a connection has "hung-up" or "rung-off." If the subscriber wishes to regain the operator's attention before the cord connection has been released, these signals will flash in unison with the movement of the hookswitch on central energy lines or burn with a steady glow when the magneto subscriber turns the hand generator.

(g) **Automatic adaptation to the line in which the plug is inserted** precludes any necessity of particular cord selection. In this manner connection may be made between any class of service, such as Central Energy and Central Energy, Magneto and Magneto, or Magneto and Central Energy lines.

(h) **Zero-loss cord circuits** insure maximum transmission efficiency on long distance connections. These are the first two in each position. They include a key for converting a repeating coil circuit to one with a bridged high efficiency retardation coil.

Each stock switchboard provides for the service outlined above. This service fits the majority of requirements. However, these stock switchboards come fully wired and adaptable to other arrangements. For instance, ring back keys may be omitted and if the switchboard is not equipped with multiple jacks the busy test relay may be omitted. The following different types of ringing may be installed without changing the wiring.

(a) Single frequency straight line ringing ;

(b) Coded single frequency ringing ;

(c) Divided circuit ringing ;

(d) Four-party harmonic ringing ;

(e) Five-party harmonic ringing.

All repeating coils, relays and condensers for individual cord circuits are mounted on single relay mounting strips. This allows the wiring of each cord circuit to be identical with every other cord circuit. By these means the maintenance man can more readily trace the operation of the circuits or the wiring.

Operator's Circuit

The standard operator's equipment furnished with the Junior Multiple Switchboard consists of an operator's breast type telephone set with its associated plug and four-point jack. This circuit has the following provisions:

(a) **Anti-side tone qualities** prevent out-going transmission and the effect of local noises from reaching the operator's head telephone and thus interfering with good receiving.

(b) **Common monitor's key** enables the operator to listen in on a connection with practically no reduction in the quality of transmission.

(c) **Circuit cut-out** opens both the primary and secondary circuit of the induction coil when the operator removes the plug from the jack. Therefore, when two positions are switched together on one operator's set no losses will occur which may be attributed to bridging the circuits.

Trunk Circuits

It is sometimes desirable to reserve one or more positions for toll service only. In such cases it is often necessary to provide trunks for transferring local or rural calls to the toll position. Such conditions are taken care of by wiring each regular position for four cord and plug-ending trunks terminated at the rear of the section.

Junior Multiple Switchboard (Cont.)

The standard trunk for this purpose accomplishes the following:

(a) **Plug and lamp signal at the local position** provides a means whereby an operator may plug into either a magneto or central energy line when using the cord to transfer a call to the toll position.

(b) **Jack and lamp signal at the toll position** enables the toll operator to answer either the magneto or central energy transferred call.

(c) **Lamp signals at both toll and local positions** afford complete supervision, so that a subscriber is always in a position to regain an operator's attention even though calls have been improperly handled.

(d) **Clear talking circuit** prevents loss in efficiency. No apparatus is inserted in the circuit which limits or reduces high-grade transmission.

Any local conditions that may demand special trunk arrangements can be met readily, because the relays are mounted outside the sections on the same bay with the line and cut-off relays.

Position Switching Key

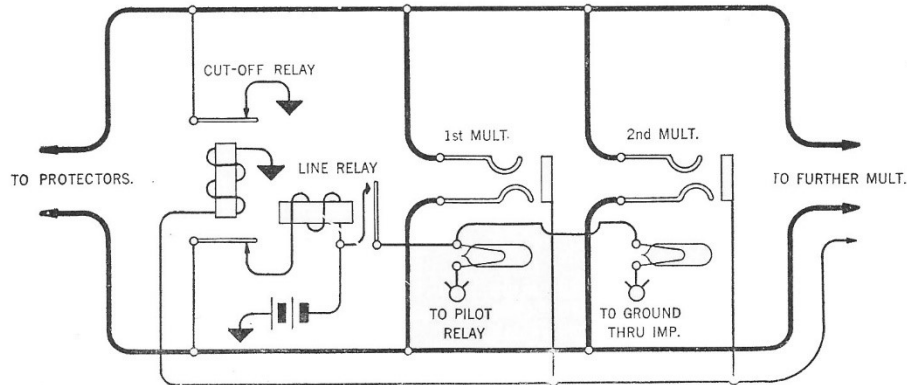
By the operation of push-button keys adjacent positions may be connected so that the cord circuits of one position are available to the operator of the other. This is convenient for night service or when one operator wishes to handle more than one position.

Master Key

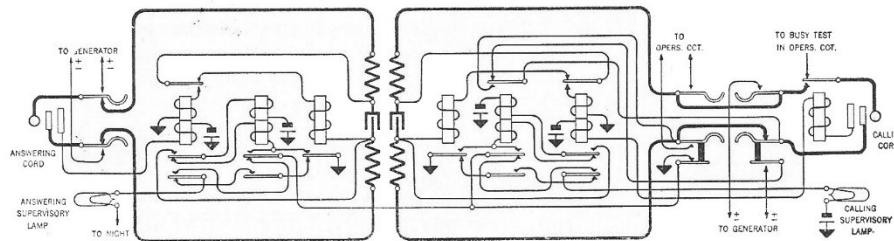
Keys to control various types of party line ringing may be installed common to a position. In this manner, four- or five-party harmonic ringing, or divided circuit ringing, may be applied. These types of ringing may be applied to either the ring-back keys or the individual calling cord ringing keys.

Night Bell Circuit

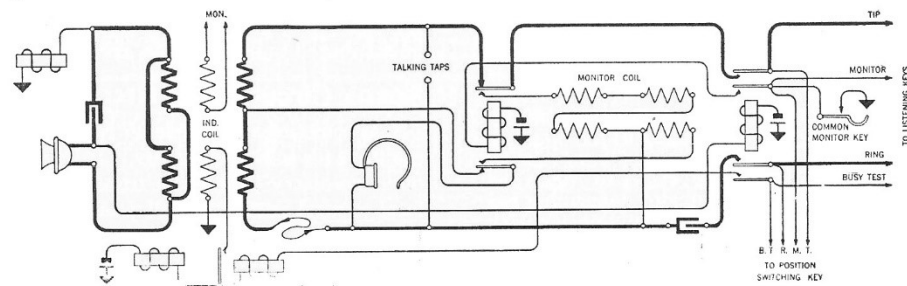
Each position is separately controlled by a push-button switch so that any position or all positions may be connected to the night bell signal. This signal operates each time an incoming call appears.



Line Circuit with lamps associated with multiple jacks, line and cut-off relays—no contacts in jacks



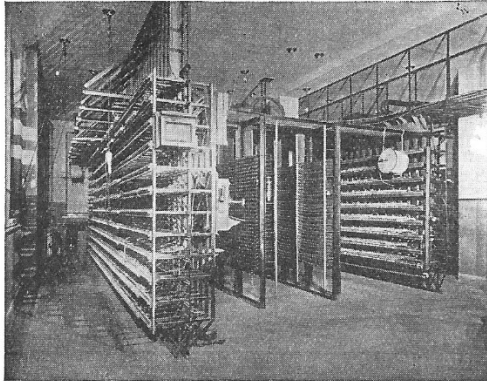
Basic Universal Cord Circuit with bridged manual listening key, ringing on answering and calling cords, non-ring-through repeating coil, and generator cut-off



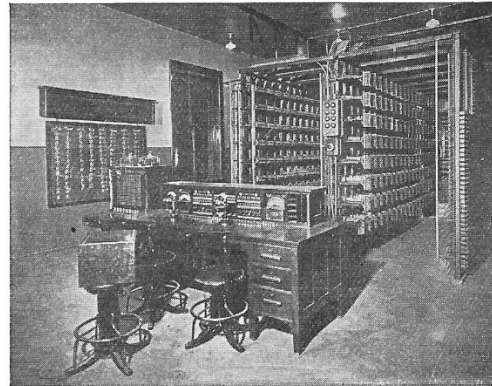
Operator's Circuit—anti-side tone, with high efficiency monitor's equipment, and positive busy test

Switchboard Accessories

Main Distributing Frames



Terminal Room, Showing Relay Rack Between the M. D. F. and the I. D. F.



Terminal Room, Showing I. D. F. Between the M. D. F. and the R. R.

Stromberg-Carlson Main Distributing Frames for central energy installations are furnished in two standard types:

In verticals of 100 line capacity on the arrester side and 125 lines capacity on the horizontal (street) side.

In verticals of 160 line capacity on the arrester side and 200 lines capacity on the horizontal (street) side.

The 100 line capacity verticals are essential for the smaller Super-Service Switchboard installations where the relay racks are not equipped with gates for the position relays and where only one operator's position of relay equipment is installed to a relay bay.

The 160 line capacity verticals are essential for the larger Super-Service installations where relay racks are equipped with gates for the position relays and where two positions of relay equipment are installed to a relay bay.

Both of the above-mentioned types of main distributing frames are rigidly constructed of bar iron and steel angles. This ironwork is thoroughly rust-proofed with a durable black paint.

Excepting upon initial installations, these main distributing frames are provided in sections of three verticals to a bay (corresponding to a bay of relay rack ironwork). The initial installation, however, always consists of at least four verticals. This is because the first vertical of the initial installation is never used for regular subscribers' lines but is reserved for miscellaneous circuits. After the initial installation, extensions are made in multiples of three verticals at a time.

Stromberg-Carlson Main Distributing Frames—unless otherwise specified—are equipped with arrester mounting bars which are arranged to take Cook's Nos. 100 and 105 Protectors in banks of 20 pairs. Mounting bars will be furnished, however, for any other standard types of protectors.

Prices and equipment sketches will be supplied, free of charge, for any main distributing installation. When asking for such data include:—the number of verticals required; whether 100 line capacity verticals or 160 line capacity verticals are wanted; the ceiling height; the number of pairs to a street cable; and the type of protector which is preferred.

Storage Batteries

Chloride Accumulators are furnished on all complete Stromberg-Carlson central energy telephone office installations.

These storage batteries are required in central energy installations for the following purposes:

Main Battery which is required to provide transmission battery current and to supply signalling battery current. This battery is usually of 11 or 20 cells.

Booster Battery which is required to increase This main battery voltage for toll transmission. the battery is necessary only on 11 cell systems and is utilized to raise the battery potential up

to approximately 48 volts so as to improve the transmission over long distance lines.

"Noise Killer" Battery which is required to absorb the sharp wave forms generated by a harmonic converter so as to eliminate the possibility of the harmonic converter making the talking circuits noisy. A ten cell battery is always used for this purpose. The size of the battery depends upon the amount of load upon the converter.

The desirable size for a main battery is dependent upon the number of lines, the calling rate, the answering time, the length of conversation period, the time

Switchboard Accessories (Cont.)—Storage Batteries

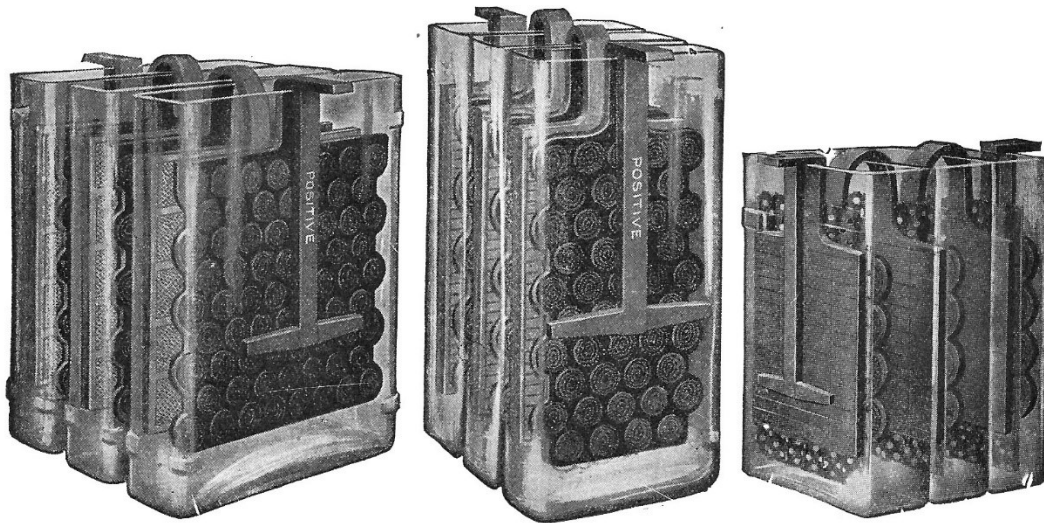
required for the operator to restore an abandoned connection, the voltage of the telephone system, and the reliability of charging facilities.

Booster batteries and "noise killer" batteries are usually small batteries, of eight to forty ampere-hour capacity for the booster battery and six to twenty-four ampere-hour capacity for the "noise killer" battery.

The voltage of individual cells—all capacities—is slightly over two volts on open circuit, when fully charged, but during the discharge period—at the eight-hour rate—drops gradually to one and seventy-five hundredth volts at the end of the discharge period.

In telephone practice an eleven cell battery is considered a twenty-four volt battery and a twenty-two cell battery a forty-eight volt battery.

Two-Plate Types



Type "ET"

Type "PT"

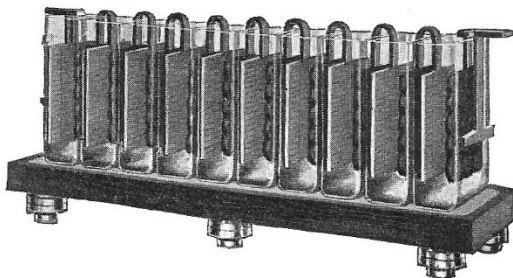
Type "BT"

Manufacturers' Type	BT	CT	PT	ET
Discharge rate in Amperes for:	8 hours	3/4	1 1/2	3
	5 hours	1	2	4 1/4
	3 hours	1 1/2	3	6
Normal Charging Rate..	3/4	1 1/2	3	4 1/2
Outside dimensions for glass jars, in inches:	Length	1 3/4	2 1/4	2 1/2
	Width	3 3/4	6 1/4	6
Height	6 3/4	8	12 1/4	11 1/2
Weight of electrolyte required for one cell, in pounds.....	3/4	2 3/4	4 1/2	6
Weight of cell complete with electrolyte in glass jar, in pounds.....	4 1/4	8 1/2	15	20 3/4

When ordering complete storage battery outfits of the two plate type as above listed the order should read as follows: One (10, 11, 20 or 22) cell type (BT, CT, PT, or ET) storage battery outfit with (without) glass covers, sand tray, insulators and thermometer.

A complete storage battery outfit includes the following requirements:

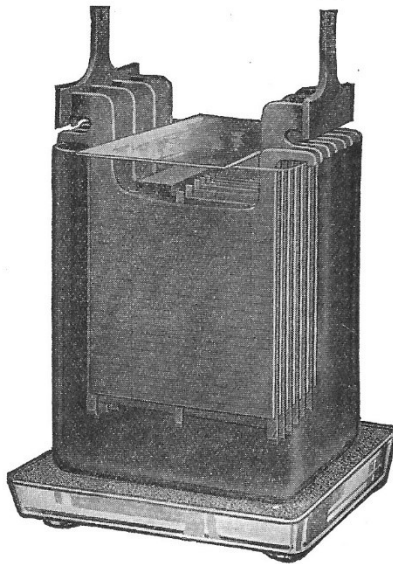
- One positive terminal plate for each set of batteries.
- One negative terminal plate for each set of batteries.
- One element (couple for each cell in a battery, omitting one cell. In other words, ten cells require but nine elements.
- One glass jar for each cell in the battery (one extra jar to take care of breakage).
- Two connectors for each set of cells.
- One floating mercury thermometer.
- One hydrometer for each set of cells.
- One wood sand tray for each set of cells.
- Six glass insulators to each multiple of 10 or 11 cells.
- Two terminal lugs for each set of cells.
- One filling of electrolyte for all the cells in the set (10% excess of electrolyte to cover evaporation).
- One set of instructions.



Ten-Cells Type CT on Sand Tray

Switchboard Accessories (Cont.)—Storage Batteries

Type "D"—Multi-Plate



Type "D-7" with Glass Sand Tray
Size of Plates 6 by 6 inches

Manufacturers Type		D-3	D-5	D-7
Discharge Rate in Amperes for:	8 hours	2½	5	7½
	5 hours	3½	7	10½
	3 hours	5	10	15
Normal Charge Rate	2½	5	7½	
Outside dimensions of glass jars, in inches:	Length	3¾	5¾	6¾
	Width	7¾	7¾	7¾
	Height	10¼	10¼	10¼
Weight of electrolyte in glass jars, in pounds	10¼	13¾	17	
Weight of cell complete with the electrolyte in glass jars, in pounds	28½	38¾	49	
Height of cell from bottom of glass jar to top of strap, in inches	17	17	17	

Manufacturers Type		D-9	D-11	D-13
Discharge Rate in Amperes for:	8 hours	10	12½	15
	5 hours	14	17½	21
	3 hours	20	25	30
Normal Charge Rate	10	12½	15	
Outside dimensions of glass jars, in inches:	Length	8¼	9½	11
	Width	7¾	7¾	7¾
	Height	10¼	10¼	10¼
Weight of electrolyte in glass jars, in pounds	20½	23¼	26¾	
Weight of cell complete with the electrolyte in glass jars, in pounds	61¾	71½	83½	
Height of cell from bottom of glass jar to top of strap, in inches	17	17	17	

When ordering complete storage battery outfits of this type the order should read as follows: One (10, 11, 20 or 22) cell type (D-3, D-5, D-7, D-9, D-11 or D-13) storage battery outfit with (without) glass covers, sand tray, insulators and thermometer.

A complete storage battery outfit when ordered as indicated in the preceding paragraph includes the following requirements:

- One element for each cell.
- One set of separators for each cell (five extra wood separators for each set of cells).
- One glass jar for each cell (one extra for each set of cells to cover breakage).
- One hydrometer for each set of cells.
- One thermometer for each set of cells.
- One glass cover for each set of cells (one extra to cover breakage).
- One glass sand tray for each cell (one extra for each set of cells to cover breakage).
- One bolt connector for each cell (one extra).
- One filling of electrolyte for all the cells in the set (10% excess of electrolyte to cover evaporation).
- One set of instructions.

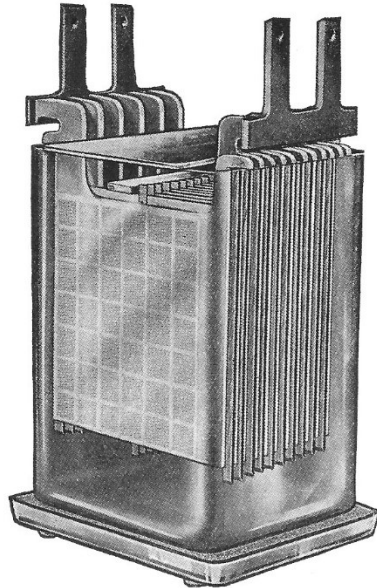
Type "E"

Manufacturers Type		E-5	E-7	E-9
Discharge Rate in Amperes for:	8 hours	10	15	20
	5 hours	14	21	28
	3 hours	20	30	40
	1 hour	40	60	80
Normal Charge Rate	10	15	20	
Outside dimensions of glass jars, in inches:	Length	5¾	6¾	8¼
	Width	9½	9½	9½
	Height	12¾	12¾	12¾
Weight of electrolyte in glass jars, in pounds	21	26	31	
Weight of cell complete with the electrolyte in glass jars, in pounds	62	81	99	
Height of cell from bottom of glass jar to top of strap, in inches	17¾	17¾	17¾	

Manufacturers Type		E-11	E-13	E-15
Discharge Rate in Amperes for:	8 hours	25	30	35
	5 hours	35	42	49
	3 hours	50	60	70
	1 hour	100	120	140
Normal Charge Rate	25	30	35	
Outside dimensions of glass jars, in inches:	Length	9½	11	12¼
	Width	9½	9½	9½
	Height	12¾	12¾	12¾
Weight of electrolyte in glass jars, in pounds	35	40	45	
Weight of cell complete with the electrolyte in glass jars, in pounds	119	137	155	
Height of cell from bottom of glass jar to top of strap, in inches	17¾	17¾	17¾	

Switchboard Accessories (Cont.)—Storage Batteries

Type "E" (Cont.)



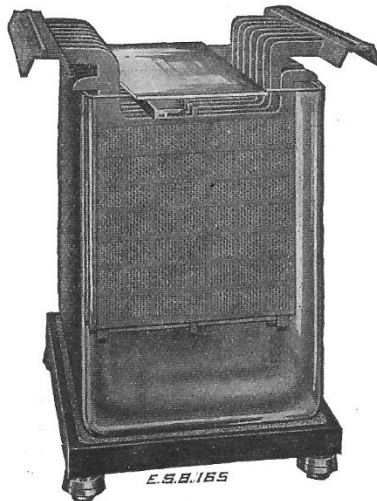
Type "E-7" with Glass Sand Tray

When ordering complete storage battery outfits of this type the order should read as follows: One (10, 11, 20 or 22) cell type (E-5, E-7, E-9, E-11, E-13 or E-15) storage battery outfit with (without) glass covers, sand tray, insulators and thermometer.

A complete storage battery outfit when ordered as indicated in the preceding paragraph includes the following requirements:

- One element for each cell.
- One set of separators for each cell (5 extra wood separators for each set of cells).
- One glass jar for each cell (one extra for each set of cells to cover breakage).
- One hydrometer for each set of cells.
- One thermometer for each set of cells.
- One glass cover for each set of cells (one extra to cover breakage).
- One glass sand tray for each cell (one extra for each set of cells to cover breakage.)
- One bolt connector for each cell (one extra).
- One filling of electrolyte for all the cells in the set (10% excess electrolyte to cover evaporation).
- One set of instructions.

Type "F"



Type "F" in Style "B" Glass Jar and with Wood Sand Tray

Manufacturers' Type		F-9	F-11	F-13
Outside dimensions of Style A glass jars, in inches:	Length	8½	9¼	11
	Width	12¾	12¾	12¾
	Height	17	17	17
Outside dimensions of lead-lined wood tanks, in inches:	Length	13¾	15½	16¾
	Width	15	15	15
	Height	20¼	20¼	20¼
Weight of electrolyte, in pounds:	In Style A glass jar..	55	62	68
	In wood tank.....	89	100	111
Weight of cell complete, with electrolyte, in pounds:	In Style A glass jar..	190	222	254
	In wood tank.....	284	325	366
Height of cell in Style A glass jar, from bottom of sand tray to top of strap, in inches.....		23¾	23¾	23¾

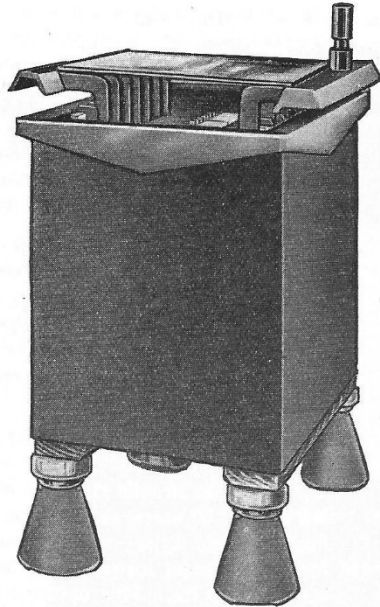
Manufacturers' Type		F-15	F-17	F-19
Discharge Rate in Amperes for:	8 hours	70	80	90
	5 hours	98	112	126
	3 hours	140	160	180
	1 hour	280	320	360
Normal Charge Rate.....	70	80	90	
Outside dimensions of Style A glass jars, in inches:	Length	12¾		
	Width	12¾		
	Height	17		
Outside dimensions of lead-lined wood tanks, in inches:	Length	18¾	20	21¾
	Width	15	15	15
	Height	20¼	20¼	20¼
Weight of electrolyte, in pounds:	In Style A glass jar..	76		
	In wood tank	133	133	145

Size of Plates 11 by 10½ inches

Manufacturers' Type	F-9	F-11	F-13	
Discharge Rate in Amperes for:	8 hours	40	50	60
	5 hours	56	70	84
	3 hours	80	100	120
	1 hour	160	200	240
Normal Charge Rate.....	40	50	60	

Switchboard Accessories (Cont.)—Storage Batteries

Type "F" (Cont.)



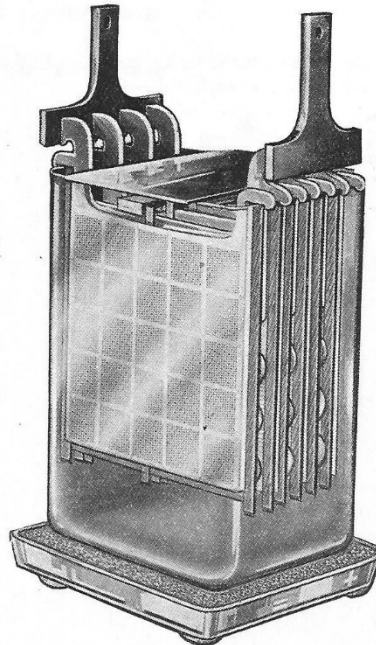
Type "F" Cell in Lead-Lined Tank

Manufacturers' Type	F-15	F-17	F-19
Weight of cell complete, with electrolyte, in pounds:	228	407	448
Height of cell in glass jar, from bottom of sand tray to top of strap, in inches.....	23 $\frac{3}{4}$		

When ordering complete storage battery outfits of this type, in style A glass jars, the order should read as follows: One (10, 11, 20 or 22) cell type (F-9, F-11, F-13, F-15, F-17 or F-19) storage battery outfit in style A glass jars with (without) glass covers, sand tray, insulators and thermometer.

A complete storage battery outfit when ordered as indicated in the preceding paragraph includes the following requirements:

- One element for each cell.
- One set of separators for each cell (5 extra)



Type "F" in Style "A" Glass Jar and with Glass Sand Tray

- wood separators for each set of cells.
- One glass jar for each cell (one extra for each set of cells to cover breakage).
- One hydrometer for each set of cells.
- One thermometer for each set of cells.
- One glass cover for each set of cells (one extra to cover breakage).
- One glass sand tray for each cell (one extra for each set of cells to cover breakage).
- One bolt connector for each cell (one extra).
- One filling of electrolyte for all the cells in the set (10% excess electrolyte to cover evaporation).
- One set of instructions.

Where lead lined tanks are required write for complete specifications. Include with your request for specifications, the number of cells required and the ampere hour capacity of the battery necessary to properly handle the load.

Battery Charging Equipment—Rectifiers

Type AT Rectifier

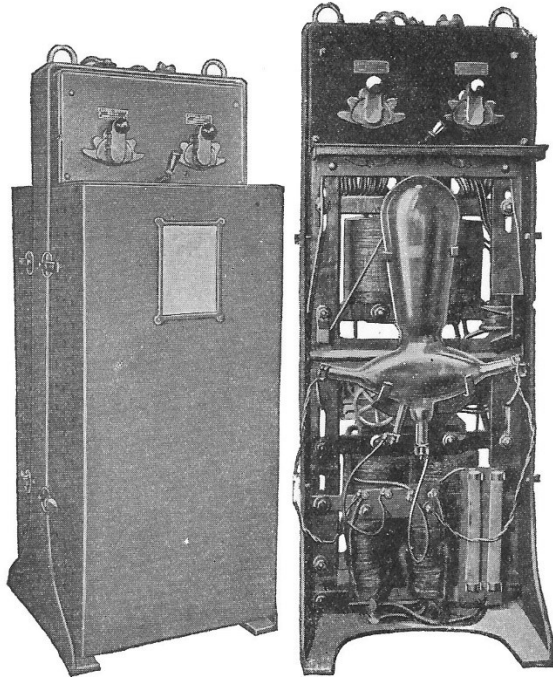
Most modern central energy telephone exchanges use some form of Mercury Arc Rectifier to charge batteries. There are many reasons for this universal employment of the mercury arc rectifier. Several of the reasons are included in the following descriptive paragraphs:

1. Rectifiers are the most efficient means of converting alternating electrical currents to the unidirectional currents (direct currents).
2. Rectifiers operate without rotating parts:— in fact, there are no moving parts in a rectifier.
3. Rectifiers require little attention. It is common practice to leave the rectifier unattended while it charges the battery.
4. Rectifiers are very flexible. The same rectifier will operate off either 110 volts or 220 volts by simply changing the connecting links.

Switchboard Accessories (Cont.)

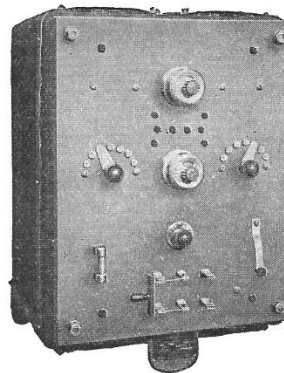
Battery Charging Equipment—Rectifiers

Type "AT" Rectifier (Cont.)

50-Ampere Type AT Rectifier
with Cover in Place50-Ampere Type AT Rectifier
with Cover Removed

Style No.	Description
220, 241	Type AT operates on 60 cycle circuit. Range of voltage 110 or 220. Charges 8 or 11 cells at a normal charging rate of 10 amperes. Mounts on the wall. Provided with wiring for measurement instruments but not equipped with measurement instruments. Shipping weight—485 lbs.
220, 246	Type AT operates on 60 cycle circuit. Range of voltage 110 or 220. Charges 11 to 17 cells at a normal charging rate of 30 amperes. Mounts on the floor—upright type—without provisions for measurement instruments. Shipping weight—550 lbs.
300, 305	Type XAT operates on 60 cycle circuit. Range of voltage 110 or 220. Charges 11 to 25 cells at a normal charging rate of 50 amperes. Mounts on the floor—upright type—without provisions for measurement instruments. Shipping weight—900 lbs. This outfit is similar in appearance to the regular AT type rectifier,—but is automatic in operation—in that it has a motor tilting device for the bulb so arranged that the rectifier is not only self-starting when alternating current is applied at the beginning of the charging period but also self-starting when alternating current is re-applied during the charging period and after an interruption in the power service. As a further convenience this rectifier is equipped with an alarm bell which rings whenever the power is interrupted during a charging period.

5. Rectifiers thoroughly insulate the telephone battery system from the lighting circuit, by means of an insulating transformer.
6. Rectifiers may be used for charging the battery simultaneously with the discharge of the battery. This is possible because each rectifier is provided with a series damping (reactance) coil, which subdues all of the noises that are made by the pulsations of the rectified charging current.
7. Rectifiers are practically self-regulating,—after the dials have been properly set, the rate of charging remains practically constant.
8. Rectifiers may be ordered of only the proper size for present charging requirements because when the growth of the battery plant necessitates additional charging facilities an additional rectifier unit may be installed and operated in parallel with the initial installation.
9. Rectifiers give their full current rating through all periods, during the charge of the battery, even up to the time when the battery is completely charged.



10 Ampere Type AT Rectifier

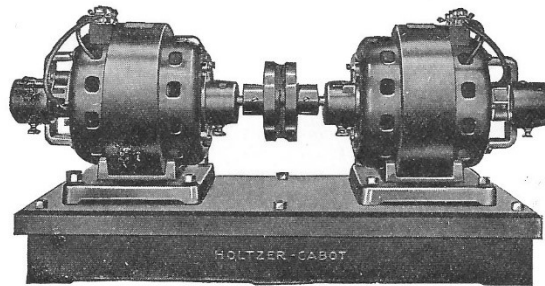
Switchboard Accessories (Cont.)

Battery Charging Equipment—Motor-Generators

Noiseless Telephone Motor-Generators

There are some localities where it is advantageous to charge telephone exchange batteries with a motor-generator set,—for instance: always in places where only direct current power supply is available and often in places where the rectifier tubes are subject to damage while in transit.

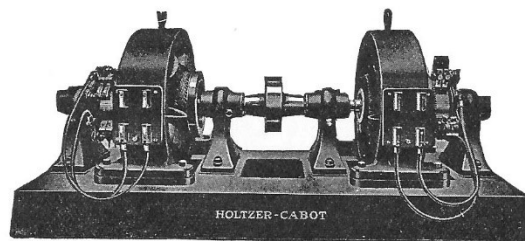
The following motor-generators are designed particularly for charging telephone batteries. With this purpose in mind the design of these motor-generators includes finely divided commutators and smooth core armatures.



Small, Direct-Current, Charging Motor-Generator

Motor, Direct Current

Type and Size Frames	Watt Output	Volts Motor	Catalog No.	Approx. Speed R. P. M.	Approx. Shipping Weight Pounds	Approx. Floor Space in Inches
K ¼	75	115	302200	1,750	160	24 x 10¼
		230	302201			
K ⅓	175	115	302202	1,750	200	24 x 10¼
		230	302203			
HD 12	275	115	302204	1,750	300	35 x 13
		230	302205			
HD 1	400	115	302206	1,750	375	35 x 13
		230	302207			
M 1	1,000	115-230	302150	1,750	800	44¼ x 17
M 2	1,750	115-230	302151	1,750	1,200	48½ x 18
M 3	3,000	115-230	302152	1,750	1,600	60¾ x 23½
M 5	4,000	115-230	302156	1,150	2,000	64½ x 27½
M 7½	7,000	115-230	302157	1,150	2,500	69½ x 26⅞
M 10	9,000	115-230	302158	1,150	3,000	75 x 28½
M 15	12,500	230	302159	1,150	4,200	82½ x 32
M 20	20,000	230	302160	1,150	6,000	89½ x 33½
M 30	35,000	230	302161	1,150	7,500	109¼ x 35

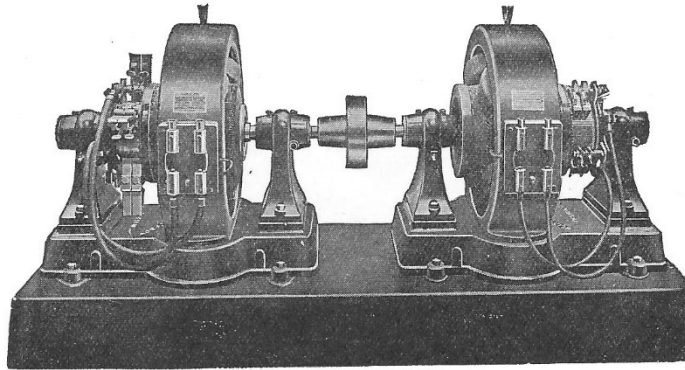


Type "M" Direct Current Motor Coupled to Noiseless Type "M" Generator

Switchboard Accessories (Cont.)

Battery Charging Equipment

Noiseless Telephone Motor-Generators



Motor, Alternating Current 60 Cycles, Single or Polyphase

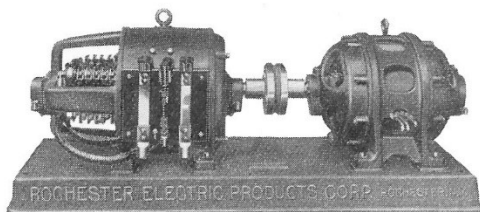
Frame Generator	Watt Output	Volts Motor	Catalog Number		Approx. Speed R.P.M.	Approx. Shipping Weight Pounds	Approx. Floor Space in Inches
			2 or 3 Phase	Single Phase			
K ¼	75	110		302400	1,750	140	24 x 10½
		220		302401			
K ½	175	110	302300	302402	1,750	170	24 x 10½
		220	302301	302403			
HD 12	275	110	302302	302404	1,750	350	30 x 12
		220	302303	302405			
HD 1	400	110	302304	302406	1,750	400	35 x 15
		220	302305	302407			
M 1	1,000	110		302350	1,700	650	47 x 20
		220*	302250	302351			
M 2	1,750	110		302352	1,700	800	47¾ x 18½
		220*	302251	302353			
M 3	3,000	110		302354	1,700	1,200	60¾ x 23½
		220*	302252	302355			
M 5	4,000	110			1,100	1,650	64¼ x 26¾
		220*	302256				
M 7	7,000	110			1,100	2,500	69½ x 26¾
		220*	302257				
[M 10	9,000	110			1,100	2,800	80½ x 29
		220*	302258				
M 15	12,500	110			1,100	3,800	88¼ x 33
		220*	302259				
M 20	20,000	110			1,100	4,500	97½ x 36
		220*	302260				

*Polyphase motors can also be furnished for either 110, 440, or 550 volts.

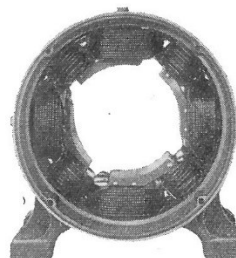
Switchboard Accessories (Cont.)

Battery Charging Equipment

Diverter Pole Generator Sets



Diverter Pole Generator



Detail of Diverter Pole Generator

The diverter pole generator operates like any other generator, differing only in that its voltage remains more nearly constant under a changing load than any other type. The generator is designed so that when the field rheostat is set at a definite voltage, it will maintain this voltage constant and automatically adapt itself to deliver sufficient current to carry the load of the exchange and, at the same time, charge the battery.

The plan that should be followed in using the diverter pole generator, is to charge the battery each day for several hours over a period which will include the peak load on the board. The duration of the charge will depend upon the amount of discharge during the evening and night when the battery is not being charged.

The saturation characteristics of iron that works to the disadvantage of standard compound wound generators, is taken advantage of in the design of Diverter Pole generators. A portion of the diverter path being saturated at no load, makes speeding up impossible if battery current flows back through the generator, as the saturated portion limits further leakage.

The diverter path being a separate magnetic circuit, it is possible to work it on the flat portion of

the magnetization curve and get the straight line voltage curve so desirable for proper and safe Constant Potential charging and so essential for floating with storage battery.

For certain classes of work a Diverter Pole generator may be connected in parallel with a storage battery and will carry practically all the load up to its rated capacity, and in case of load demands beyond generator capacity, will permit the battery to take such excess load. When the load drops below generator capacity, the generator will gradually replace the energy taken from battery. For work of this class the Diverter Pole generator has the unusual characteristic of maintaining constant voltage up to capacity load, and from then on becoming practically a constant current machine.

Thus it is seen that for battery charging the Diverter Pole generator combines not only all the inherent desirable characteristics of both the shunt and compound generator (without the undesirable drawbacks of either), but also desirable features unobtainable in either.

The machines are furnished complete with field rheostats—also motor starting boxes when required for the larger units and are included in the prices.

Type of Frame	Ampere Output	Motor H.P. Reqr'd	Kind of Current		Approx. Speed R. P. M.	Approx. Floor Space	Approx. Shipping Weight
1	15	1	Single Phase 60 Cycle	2 or 3 Phase 60 Cycle	1150	41" x 17"	375 lbs.
2	20	2	Single Phase 60 Cycle	2 or 3 Phase 60 Cycle	1150	45" x 19"	505 "
2	30	2	Single Phase 60 Cycle	2 or 3 Phase 60 Cycle	1150	45" x 19"	530 "
3	40	3	Single Phase 60 Cycle	2 or 3 Phase 60 Cycle	1150	58" x 19"	770 "
5	50	5	Single Phase 60 Cycle	2 or 3 Phase 60 Cycle	1150	59" x 22"	940 "
7	80	7½	Single Phase 60 Cycle	2 or 3 Phase 60 Cycle	1150	64" x 22"	1560 "
16R	100	10		2 or 3 Phase 60 Cycle	1150	75" x 26"	2450 "
16L	200	15		2 or 3 Phase 60 Cycle	1150	80" x 26"	2950 "
20	400	50.		2 or 3 Phase 60 Cycle	1150	96" x 32"	6250 "

Switchboard Accessories (Cont.)

Exchange Ringing Equipment

Ring current for telephone exchanges can be generated by any of the following equipments, all of which are practical. Nevertheless, care should be exercised so as to be sure to choose the particular equipment that is best fitted for the conditions under which it will operate. The three standards are—

Vibrating Converters which are provided with a tuned reed and which operate from either batteries or power circuits, depending upon the particular type of vibrating converter that is selected.

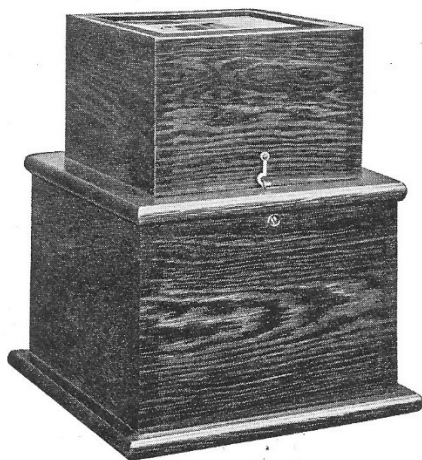
Ring Transformers which have no moving parts and which consist of nothing more

than a transformer for reducing the voltage from an alternating current power circuit.

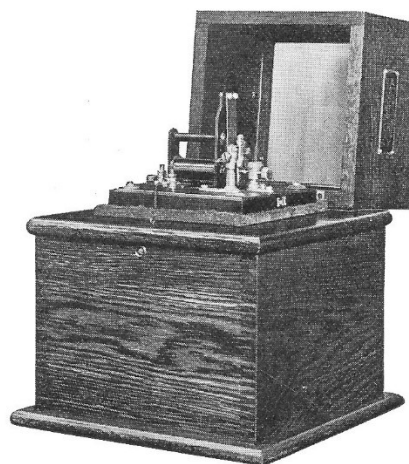
Rotating Converters which generally consist of a motor-generator set designed to convert either direct current or alternating current to ringing current of one or more frequencies.

The following paragraphs not only list Stromberg-Carlson Exchange Ringing Equipment of the Vibrating Type, the Transformer Type, and the Rotating Type but also give the prospective buyer sufficient descriptive data so that the proper Exchange Ringing Equipment readily may be selected.

Vibrating Converters—Single Frequency, Battery Type



No. 1 Pole Changer Type Converter
Closed for Operation



No. 1 Type Pole Changer Converter
with Cover Raised

This is a vibrating converter which provides a simple and an efficient ringing equipment for exchanges serving 500 to 2000 subscribers. It consists of an electrically driven vibrator which carries contact springs that are arranged to reverse a 24 volt direct current from 16 to 20 times per second thus giving a 24 volt alternating current at a frequency of 16 or 20 cycles depending upon the adjustments. The alternating current obtained in this manner is stepped up to approximately 90 volts by putting it through a transformer which also is included in the equipment. This completes the transformation and the current is delivered to the ringing current terminals of the converter at the proper voltage and frequency. The primary current for the operation of the converter can be supplied by a battery of 36 dry cells connected in multiple-series with 18 cells per series or by 11 storage cells. The battery also is used for operating the vibrating element.

The complete equipment is contained within a well-built cabinet which occupies a space 12 x 12 in. and stands 14½ ins. high. It is provided with a

hinged cover and a dust-proof, glass-topped compartment for the vibrator, as shown in the accompanying illustrations. The operation of the vibrator readily can be observed without opening the cabinet. The vibrators and transformers used in converters of this type are the same as those used in Stromberg-Carlson Harmonic Converters in which the ringing current voltages and frequencies must be very accurately defined, therefore, the same degree of constant high efficiency may be expected from this equipment. All parts of the vibrator are mounted upon a heavy slate base which maintains a high insulation between parts having different potentials and also prevents loss of adjustment due to moisture and temperature changes.

When operated with dry cells, special contacts and a starting relay are included in the equipment. These conserve the energy of the dry cells because the vibrator operates only during the ringing period, or in other words,—while the operator is actually holding a ringing key in its ringing position.

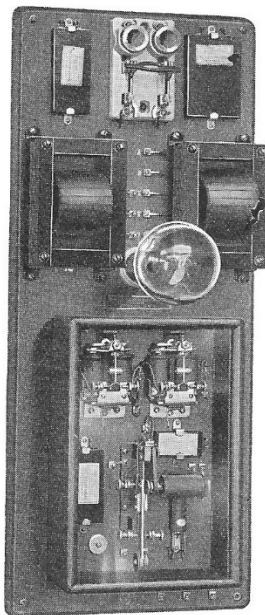
The specifications for standard Stromberg-Carlson Converter Outfits are as follows:

Switchboard Accessories (Cont.)

Vibrating Converters

Code No.	Description	Code No.	Description
1-A	Single vibrating converter, standard frequency 16 cycles. Outfit consists of 1 Vibrator, 1 Transformer and associated apparatus mounted in a cabinet. This converter is adapted for either dry battery or storage battery operation. Shipping weight approximately 50 lbs. Size of packing case 14 x 14 x 17 ins.	1-E	converter is adapted for either dry battery or storage battery operation. Shipping weight approximately 50 lbs. Size of packing case 14 x 14 x 17 ins.
1-B	Single vibrating converter, standard frequency 20 cycles. Outfit consists of 1 Vibrator, 1 Transformer and associated apparatus mounted in a cabinet. This	1-I	16-Cycle Vibrator complete. Used in Nos. 1-A, 2-A and 3-A Converters.
		1-I	20-Cycle Transformer. Used in No. 1-B Vibrating Converter.
		1-E	16-Cycle Transformer. Used in Nos. 1-A, 2-A and 3-A Vibrating Converters.
		1-I	20-Cycle Vibrator complete. Used in No. 1-B Converter.

Single Frequency Power Circuit Type

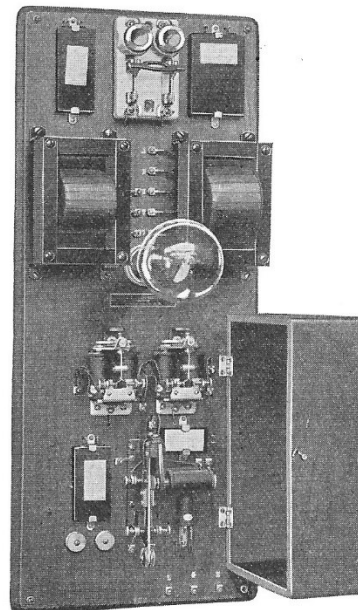


No. L 7-A Direct Converter, Closed

These converters are designed to operate directly connected to a 110 volt, 60 cycle power circuit. Each type of converter changes the frequency of the impressed circuit from 60 cycles to 16 or 20 cycles and reduces the voltage to the proper value for telephone ringers, viz: 90 or 100 volts.

The operation of the converter is quite simple. The 60 cycle alternating current is first changed to direct current by means of two vibrating rectifiers. This rectified current is, in turn, changed to a 20 cycle alternating current by a pole-changing element and sent through a transformer which delivers the alternating current at 90 volts and 20 cycles. Terminals also are furnished for the delivery of 100 volt 20 cycle current. The pole changer element is provided with extra weights for the vibrator so that the frequency can be decreased to 16 cycles per second, if desired.

All of the apparatus is mounted upon a substantial oak backboard with a glass-covered, dust-proofed



No. L 7-A Direct Converter, Open

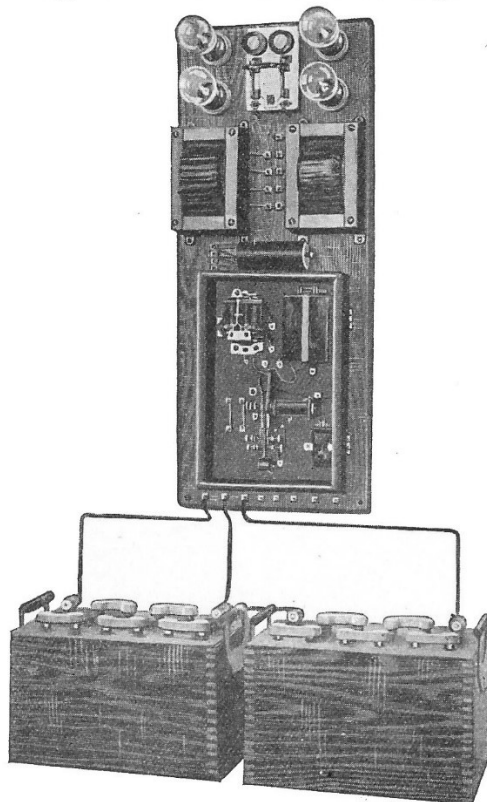
housing over the vibrators which also serves to deaden the slight humming sound when the converter is in operation. The complete converter occupies a wall space 29 x 12 inches and projects 5¼ inches from the wall, exclusive of the lamp. The control switch, the double-pole fuse block with ½ ampere plug-fuses and power circuit terminals are located at the top of the backboard. A standard 110 volt—100 watt tungsten lamp serves as resistance to protect the converter against short-circuits and overloads. When three or more operators' positions are served by the converter a lamp of higher wattage should be used in place of the standard lamp. The ringing current terminals are at the lower end of the backboard and are plainly marked to facilitate proper connections.

The contacts used in this converter are all interchangeable and are made of a very hard contact metal which wears exceedingly well and will operate a long time without even readjustment. Practically the only attention they require is occasional cleaning

Switchboard Accessories (Cont.)

Vibrating Converters—Single Frequency Power Circuit Type (Cont.)

of contact surfaces with fine emery cloth or a fine-grained file. The converter requires only 10 watts per hour for its operation—about half that required for an ordinary-sized electric lamp. The total power cost per month ranges from 18 to 86 cents depending upon the hours of service and the cost of the power. This type of converter is carried in the following codes



No. L 15-A Direct Converter

Code No.	Description
L 7-A	Furnishes 20 cycles alternating current for straight line ringing. Operates from 110 volt—60 cycle power or lighting circuit.
L 8-A	Furnishes 20 cycles alternating current for straight line ringing and positive and negative pulsating currents for biased ringer, selective party line signalling. Same as No. L 7-A but equipped with extra vibrator springs and additional terminals at the lower end of the backboard. Shipping weight, approximately 80 lbs.

Multi-Frequency Type

These converters are furnished in four types which cover the requirements for four frequency harmonic ringing, also four frequency synchronomic ringing.

All four types transform direct current at a potential of 20 volts to four separate and distinct ringing currents at the constant frequencies and the constant voltages that are required for Stromberg-Carlson Harmonic and Synchronomic Signalling Systems.

Both the voltages and the frequencies are accurately maintained with wave forms closely approximating a sine wave.

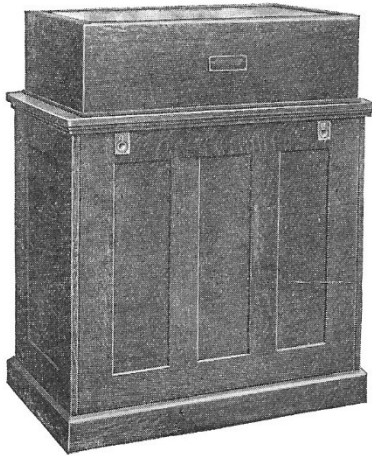
Code No.	Description
L 9-A	Furnishes 20 cycle alternating current for straight line ringing. Operates from 110 volt direct current. Can be furnished built to eliminate radio interference.
L 9-B	Same as 9-A except designed to operate from 220 volt direct current.
L 9-C	Same as 9-A except designed to operate from 40 volt direct current.
L 9-D	Same as 9-A except designed to operate from 30 volt direct current.
L 9-E	Same as 9-A except designed to operate from 10 volt direct current.
L 9-F	Same as 9-A except designed to operate from 24 volt direct current.
L 9-G	Same as 9-A except designed to operate from 20 volt direct current.
L 9-H	Same as 9-A except designed to operate from 32 volt Delco.
L 10-A	Furnishes 20 cycle alternating current for straight line ringing. Also furnishes positive and negative pulsating current for party line selective ringing. Can be furnished built to eliminate radio interference. Operates from 110 volt direct current.
L 10-B	Same as 10-A except designed to operate from 200 volt direct current.
L 10-C	Same as 10-A except designed to operate from 40 volt direct current.
L 10-D	Same as 10-A except designed to operate from 30 volt direct current.
L 10-E	Same as 10-A except designed to operate from 10 volt direct current.
L 10-F	Same as 10-A except designed to operate from 24 volt direct current.
L 10-G	Same as 10-A except designed to operate from 20 volt direct current.
L 10-H	Same as 10-A except designed to operate from 32 volt Delco.
L 21	Furnishes 20 cycle alternating current for straight line ringing. Operates from 110 volt 60 cycle power or lighting circuit. Can be furnished built to eliminate radio interference. Two sets of 12 volt storage batteries—any standard type—are necessary to operate the converter. These batteries are furnished only when specifically mentioned in the order.
L 22	Furnishes 20 cycle alternating current for straight line ringing and positive and negative pulsating current for biased ringer, selective party line signalling. Operates from 110 volt 60 cycle power or lighting circuit. Can be furnished built to eliminate radio interference. Two sets of 12 volt storage batteries—any standard type—are necessary to operate the converter. These batteries are furnished only when specifically mentioned in the order.

The operation of these converters is a development of the vibrating reed principle in that the reversing of the current at the required number of times per second is accomplished by means of an electromagnetically driven vibrator which carries the necessary contact points.

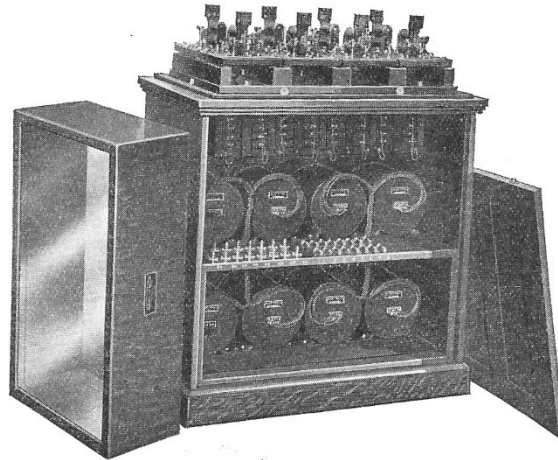
All parts of the converter vibrators are assembled upon heavy slate bases so as to be unaffected by either moisture or changes in temperature. Condensers are provided at the contact points so as to eliminate excessive sparking. Transformers also are

Switchboard Accessories (Cont.)

Vibrating Converters—Multi-Frequency Type (Cont.)



No. 3-A Harmonic Converter, Closed

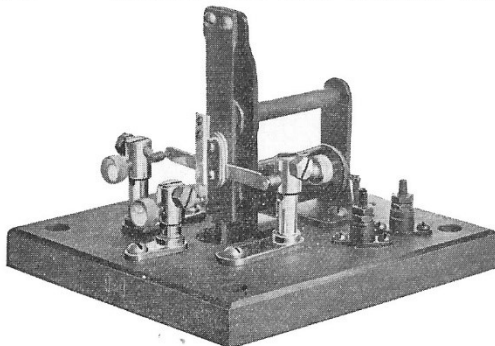


No. 3-A Harmonic Converter, Open

provided, associated with each vibrator in the converter and arranged for stepping up the interrupted primary current as required for ringing purposes. All multi-frequency converters are built to eliminate radio interference.

The equipment is mounted within a substantially-built and handsomely-finished, dull golden oak cabinet. This cabinet occupies a floor space $18\frac{1}{2}$ x $31\frac{1}{2}$ inches and stands 38 inches high. A removable front panel affords access to the transformer, condenser, and battery compartments and a removable, glass-topped cover allows convenient inspection of the working parts. All types of these converters are arranged to carry the ringing load of an exchange up to 10,000 lines capacity.

Code No.	Description
2-A	Vibrating Multi-Cycle Harmonic Converter, equipped with 4 Vibrators, 4 Transformers and associated equipment. Operates from a 20 volt storage battery. Standard harmonic frequencies $16\frac{2}{3}$, $33\frac{1}{3}$, 50, $66\frac{2}{3}$ cycles. Shipping weight 450 lbs. Packing case $23\frac{1}{2}$ x $36\frac{1}{2}$ x $40\frac{1}{2}$ ins.
2-B	Vibrating Multi-Cycle Synchronomic Converter equipped with 4 Vibrators, 4 Transformers and associated equipment. Operates from a 20 volt storage battery. Standard synchronomic frequencies 30, 42, 54, $66\frac{2}{3}$ cycles. Shipping weight 450 lbs. Packing case $23\frac{1}{2}$ x $36\frac{1}{2}$ x $40\frac{1}{2}$ ins.
3-A	Vibrating Multi-Cycle Harmonic Con-



Vibrator, Harmonic Converter

Code No.	Description
3-B	verter equipped with 8 Vibrators, 8 Transformers and associated equipment. Operates from a 20 volt storage battery. Standard harmonic frequencies $16\frac{2}{3}$, $33\frac{1}{3}$, 50, $66\frac{2}{3}$ cycles. Shipping weight 450 lbs. Packing case $23\frac{1}{2}$ x $36\frac{1}{2}$ x $40\frac{1}{2}$ ins.
1-E	Vibrating Multi-Cycle Synchronomic Converter equipped with 8 Vibrators, 8 Transformers and associated equipment. Operates from a 20 volt storage battery. Standard synchronomic frequencies 30, 42, 54, $66\frac{2}{3}$ cycles. Shipping weight 450 lbs. Packing case $23\frac{1}{2}$ x $36\frac{1}{2}$ x $40\frac{1}{2}$ ins. 16-Cycle Vibrator complete. Used in Nos. 1-A, 2-A and 3-A Converters.
1-F	33-Cycle Vibrator complete. Used in Nos. 2-A and 3-A Converters.
1-G	50-Cycle Vibrator. complete. Used in Nos. 2-A and 3-A Converters.
1-H	66-Cycle Vibrator complete. Used in Nos. 2-A and 3-A Converters.
1-J	60-Cycle Vibrator complete. Used in Nos. 2-B and 3-B Converters.
1-K	30-Cycle Vibrator complete. Used in Nos. 2-B and 3-B Converters.
1-L	42-Cycle Vibrator complete. Used in Nos. 2-B and 3-B Converters.
1-M	54-Cycle Vibrator complete. Used in Nos. 2-B and 3-B Converters.
1-E	16-Cycle Transformer. Used in Nos. 1-A, 2-A and 3-A Vibrating Converters.
1-F	30-33-42 Cycle Transformer. Used in Nos. 2-A, 2-B, 3-A and 3-B Vibrating Converters.
1-G	50-54 Cycle Transformer. Used in Nos. 2-A, 2-B, 3-A and 3-B Vibrating Converters.
1-H	60-66 Cycle Transformer. Used in Nos. 2-A, 2-B, 3-A and 3-B Vibrating Converters.

Noise Killer Equipment is required where a No. 2-A, a No. 2-B, a No. 3-A or a No. 3-B converter is operated from the same storage battery which supplies transmission current to the switchboard. This "noise killer" equipment consists of a Stromberg-Carlson No. 18 Impedance Coil in the battery leads and a set of 10 cells of storage battery bridged across the battery supply leads to the converter.

Switchboard Accessories (Cont.)

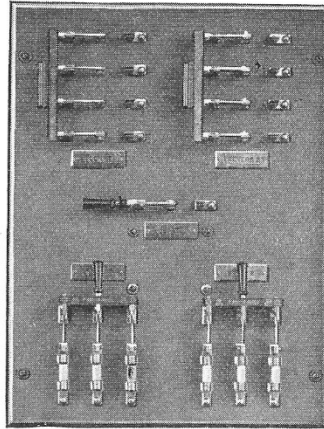
Vibrating Converters—Multi-Frequency Type (Cont.)

The standard battery used for this purpose, by plants of not over 3500 lines, consists of 10 cells of auxiliary storage battery, ranging in size from E. T. to B. T. Chloride Accumulators. Larger plants require proportionately larger batteries.

The function of the "noise killer" equipment—as the name implies—is to prevent noise being generated by the converter from getting back into the telephone system through the storage battery when the telephone system and the converter are operated simultaneously from the same battery. This "noise killer" battery is not necessary if the converter does not operate from the same battery that supplies the telephone system with talking current.

A No. 1 Type Vibrating Converter Control Panel is essential for use in connection with a No. 2-A, a No. 2-B, a No. 3-A or a No. 3-B converter. (Provided, a converter is ordered with new exchange equipment it is recommended that the apparatus, as listed for these control panels, preferably should be mounted on a panel that is built as part of the regular power switchboard.) This type of Converter Control Panel is furnished in the following codes:

Code No.	Description
1	Vibrating Converter Control Panel for use with either single or duplicate sets of multi-frequency converters when they are operated from either single or duplicate sets of 11 cells of storage battery includes the following apparatus: 2 Triple pole, single throw switches for starting one or two converters. 1 Four pole, double throw switch for connecting the ringing current of either converter to the exchange. 1 Four pole, double throw switch for



Converter Control Panel

reversing the battery on the converter vibrator contacts.

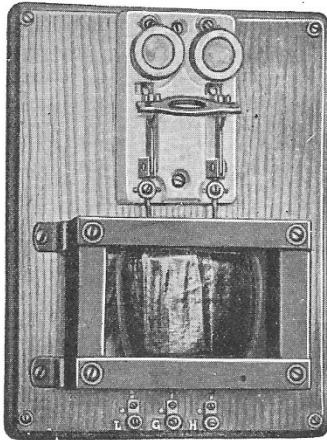
1 Battery switch for connecting the converter to either of two storage batteries.

6 Fuse mountings with enclosed tubular fuses for protecting the battery circuits of both converters.

1 Panel 18 x 24 x 1 ins. completely wired and equipped with the above mentioned switches and fuses.

1-N Vibrating Converter Control Panel same as No. 1 but including a No. 18 Impedance Coil and arranged for use with a "noise killer" battery.

Ringling Transformers



No. L 1-A Direct Ringling Transformer

Where either 110 or 220 volt, 25 cycle alternating current power service is available, this ringling transformer will answer the requirements for exchanges provided only regular alternating, single frequency, ringling equipment is installed.

This type of ringling transformer consists of an oak backboard upon which is mounted a combination fuse block, a knife switch, and a 25 cycle transformer. The transformer takes current from the power mains at its rated voltage of 110 or 220 volts and reduces

that potential to approximately 90 volts which is correct for ringling purposes. The knife switch provides a convenient means for connecting and disconnecting the source of power supply. The fuse block protects the equipment from damage due to either overloading or short circuits.

Obviously, the operating expenses of this outfit are very low. Current is consumed only when the operator is ringling on a line. The no-load current consumption is not sufficient to start a commercial electric meter. There are no moving parts to require replacement or maintenance expense. Installation is a simple matter. The transformer is placed in operation by simply connecting the power service to the fuse terminals, the ringling leads from the switchboard to the outer terminals and the ground lead to the middle terminal.

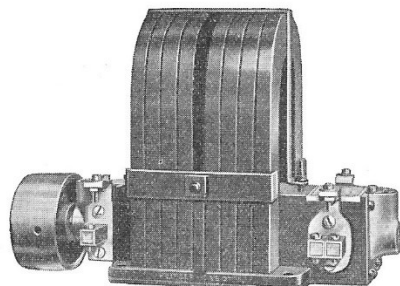
These transformers are graded in two standard designs differing only in regard to the voltage of the power circuits which they are adapted to connect.

Code No.	Description
L 1-A	Ringling Transformer operates off a 25 cycle, 110 volt power circuit, and delivers 90 volts. Mounting space 12 x 7½ inches. Shipping weight approximately 20 lbs.
L 1-B	Ringling Transformer operates off a 25 cycle 220 volt power circuit and delivers 25 cycle ringling current at a potential of 90 volts. Mounting space 12 x 7½ ins. Shipping weight approximately 20 lbs.

Ringling Transformers can only be supplied for 25 cycle circuits. Furthermore, they cannot be supplied with pulsating ringling current attachments.

Switchboard Accessories (Cont.)

Rotating Converters—Belt Driven Power Generators



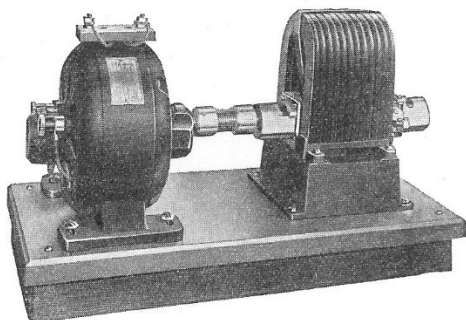
Type M.S. Generator

This belt driven power generator meets the requirements of magneto exchanges or central energy exchanges up to 1500 subscribers. It is of the magneto type provided with tungsten steel magnets,

substantially equipped bearings, and a carefully designed lubrication system. The equipment includes a 2½-inch pulley which has a 1½-inch crowned face. This type produces ringing current at a frequency of 19 cycles and a potential of 90 volts when driven at its normal rate of speed at 1150 revolutions per minute. The regular equipment does not include pulsating equipment; however, this generator can be supplied with attachments for pulsating ringing. Furthermore, it can be furnished with a belt-tightening sub-base.

Mfr's Cat. No.	Description
MS-3	Rotating Converter, belt driven type equipped with 12 bars and arranged to deliver 15 watts of ringing current at a potential of 90 volts and a frequency of 19 cycles. Shipping weight 50 lbs.

Rotating Converters—Magneto Type Motor Generators



Magneto Type Motor-Generator

These sources of ringing current are designed to operate from either direct current or alternating current power circuits, depending upon the type of outfit which is selected.

As shown in the illustration the equipment is mounted on a heavy slate base which insulates the machine from grounds. This base in turn is mounted upon a wood sub-base which not only protects the slate from cracking but also serves as an additional insulation. The motor and the generator are connected by a flexible coupling which is made up of two springs that are wound in opposite directions. This coupling steadies the load on the motor and prevents undue wearing of the bearings on either the motor or the generator. Both machines are fitted with long bearings which are lubricated by a ring-oiling system. The motor is equipped with two line terminals on top of the frame. No additional appa-

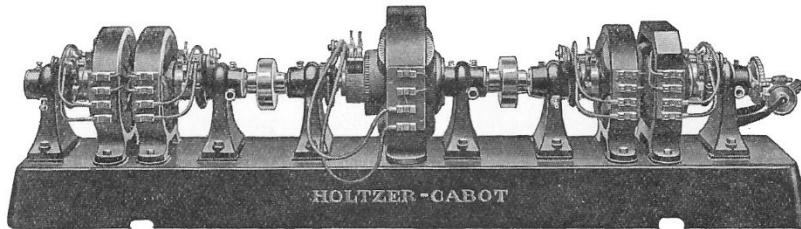
ratus is required for starting the motor with the exception of either a standard knife switch or a standard snap switch.

The generator is equipped with tungsten steel bar magnets. The normal speed of these outfits is 1150 revolutions per minute. At this speed they generate ringing current at a potential of 80 volts and a frequency of 19 cycles. The following standard motor-generators are for exchanges up to 1500 subscribers, depending upon the size of the machine selected.

Mfrs. Cat. No.	Description
310081	Motor—HD 18, 115 volt d. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—100 lbs. Floor Space—22 x 10 ins.
310082	Motor—HD 18, 230 volt d. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—100 lbs. Floor Space—22 x 10 ins.
310087	Motor—HS 18, 110 volt a. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—110 lbs. Floor Space—22 x 10 ins.
310088	Motor—HS 18, 220 volt a. c. Generator—MS 3, 80 volt, 19 cycle, 15 watt. Shipping Weight—110 lbs. Floor Space—22 x 10 ins.

Switchboard Accessories (Cont.)

Rotating Converter—Motor Generator Sets



Large Multi-Cycle Motor-Generator Set

These outfits are designed for use in connection with large central energy offices which employ harmonic selective ringing for signalling subscribers. Each motor-generator set includes one motor directly connected on a common sub-base with four ringing generators—one generator for each of the standard harmonic frequencies namely:— $16\frac{2}{3}$, $33\frac{1}{3}$, 50, $66\frac{2}{3}$ cycles per second at 75, 100, 135, 175 volts respectively.

The direct current motor-generator sets are equipped with a speed governor. The alternating current motor-generator sets require no speed governor but are geared to and equipped with a direct current exciter.

Information regarding "Busy-Back", "Howler", "Don't Answer", "Flashing Recall" and "Machine Ringing" attachments, for use in connection with all types of telephone exchange signalling equipment, are covered completely under the heading of "Interrupters."

The following types of ringing motor-generator sets are available:

Mfrs' Cat. No.	Description	Mfrs' Cat. No.	Description
302700	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 115 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—500 lbs. Approximate floor space—54 x $11\frac{1}{2}$ ins.	302703	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 220 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—675 lbs. Approximate floor space—77 x 14 ins.
302701	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 230 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—500 lbs. Approximate floor space—54 x $11\frac{1}{2}$ ins.	302705	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 115 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit—850 lbs. Approximate floor space—74 x 15 ins.
302702	Multi-Cycle Motor-Generator Set, consists of four M. R. 50-watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 110 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—50. Approximate shipping weight of complete outfit—675 lbs. Approximate floor space—77 x 14 ins.	302706	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, constant speed, direct current motor. Designed to operate off 220 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit 850 lbs. Approximate floor space—74 x 15 ins.
		302707	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 110 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit—1,200 lbs. Approximate floor space—72 x 14 ins.
		302708	Multi-Cycle Motor-Generator Set, consists of four M. R. 150 watt generators, directly connected to one, single phase, constant speed, alternating current motor with exciter. Designed to operate off 220 volt power circuit and to deliver ringing current at $16\frac{2}{3}$, $33\frac{1}{3}$, 50 and $66\frac{2}{3}$ cycles per second. Watt output of each generator—150. Approximate shipping weight of complete outfit—1,200 lbs. Approximate floor space—74 x 15 ins.

Switchboard Accessories (Cont.)

Ringling Machine Telering



Phantom View of Telering

A dependable and economical device embodying the necessary characteristics for satisfactory telephone signaling has always been in demand, and since the advent of alternating current in commercial power lines, the desire has been to derive this signaling current directly from the lighting circuit, preserving the true sine wave form and reducing maintenance to a negligible factor.

This is the accomplishment of Telering, made possible by means of a principle not heretofore used. It is an impulse selector and should not be confused with pole-changers nor other vibratory devices.

Telering is the best, cheapest and most simple machine available for telephone ringing and will successfully handle the ringing requirements of the largest as well as the smallest office. Its first cost is low and its operating and maintenance expense is practically negligible.

In the private branch exchange field it is the only machine with the necessary qualifications for that type of service, and offers telephone companies the first real chance to eliminate P. B. X. ringing leads from cables and relieve cable-pair congestion due to this cause. Every telephone company should seriously investigate the savings and economies made possible by the use of Telerings in this class of service.

The current consumption is less than 5 watts and the maximum current on any load cannot exceed the rating of the compensating lamps embodied in the machine. Because of the small current consumption, continuous operation is most practicable.

The simplicity of the device is such that its maintenance, both in respect to materials and labor, is extremely small, attention being required only at long intervals.

Telering is an impulse selector, no alteration in the generator sine wave occurring in the device itself, and there being a no-voltage time interval between impulses, results in an output wave form especially

ideal for ringing through long cables or other circuits of high electro-static or inductive capacity.

Where the demand may occasionally exceed the output of one Telering the load can be divided, or, any number of Telerings may be connected in multiple to carry the entire load.

The only moving part is the reed, which, due to its form, slight weight and great flexibility has an extremely long operating life.

The contact depreciation is practically nothing and what little there may be over long periods will be due to mechanical wear and is readily taken up with the adjustment screw. This contact is composed of pure platinum and 15% iridium.

Short-circuiting any leads or terminals, except those of power supply, does absolutely no harm and in this state it consumes only the amount of current taken by the lamps in the circuits.

The construction is such that the integral parts are self-contained units assembled upon a mounting plate which becomes the back wall of the containing cabinet, both of which are steel.

In the manufacture of this device the very best materials procurable are used.

The finish is pleasing in appearance and conforms to that of central office equipment in general.

The machine, as a whole, is very compact, being 12" x 9" x 5", requiring little space for installation. The shipping weight is 13 pounds.

Telering will not disturb radio reception due to radiation, but in some few instances where there are radio sets and Telerings connected to the same power circuit secondaries, the use of our special filter in the power supply leads or an A. X. type Telering which is equipped with a filter is recommended to prevent possible disturbances such as would occur with vacuum cleaners and like devices in the same situation.

The filter has been carefully designed and is contained in a neat, compact cast aluminum housing, overall dimensions being 6" x 3½" x 1¼". The shipping weight is 1 pound.

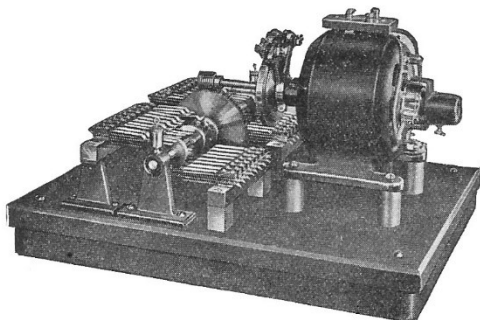
Model Voltage

	Central Office	Frequency in Heavy Duty Cycles
*E	110	60
*EB	110	50
*EC	220	60
*ED	220	50
-EX	110	60
-EXB	110	50
-EXC	220	60
-EXD	220	50
P. B. X.		
-A	110	60
-AB	110	50
-AC	220	60
-AD	220	50
-AX	110	60
-AXB	110	50
-AXC	220	60
-AXD	220	50

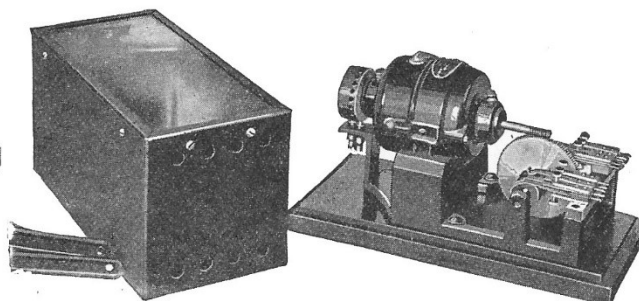
* Cannot be furnished with radio interference filter.
 - Equipped with radio interference filter.

Switchboard Accessories (Cont.)

Interrupters



Large Interrupter



Small Interrupter

In modern telephone exchanges—especially common battery—interrupting devices are required to produce various tones such as:—“Howler”, “Busy Back”, and “Don’t Answer.” Furthermore, an interrupting device is essential for association with “Machine Ringing” and “Flashing Recall” installations.

The best practice is to combine all of these interrupters on one frame, then, one direct-connected electric motor will operate not only the tone wheels but also the interrupter contacts.

Stromberg-Carlson central office installations regularly are furnished with one of the following two types of interrupters,—either the small type N-C Interrupter or the large type N-C Interrupter. Obviously, the larger machine is essential where the size of the exchange requires more than a duplicate set of interrupter springs. As a general rule the smaller machine answers all the requirements of exchanges which have equipped fewer than ten operators’ positions.

On both types of interrupters the “Howler” tone current is taken directly from a high speed ring which is divided into sectors. The “Busy Back” and the “Don’t Answer” tones are derived by passing the tone from this high speed ring through properly-timed, slow speed, contact springs.

The intermittent current which is required for “Machine Ringing” service is derived by passing

each frequency of ringing current through sets of make and break contacts. Two sets of these make and break contacts are provided for each ringing frequency. One set operates 180 degrees behind the other set. This arrangement divides the current load on the ringing converter.

The intermittent current for “Flashing Recall” likewise is controlled by two sets of “make contact” springs which are controlled by cams operating 180 degrees apart.

Stromberg-Carlson Exchange Equipment Engineers gladly will give additional information regarding interrupters for any size of telephone exchange. When writing for such data be sure to state: The Voltage of Power Supply, the Frequency of Power Supply, the Number of Ringing Frequencies to be interrupted, and the Number of Ringing Lead Sets that are run to the operators’ positions, also include Complete Data regarding the features that are installed on the switchboard.

Provided the source of power supply is not reliable, emergency ringing interrupters designed to operate from the main battery of the exchange will be necessary. Therefore, include with your data a description of the exchange battery, for instance:—state, the number of cells, the ampere hours capacity, also whether the battery is divided into two sets or operates in one set.

Bell Test Sets

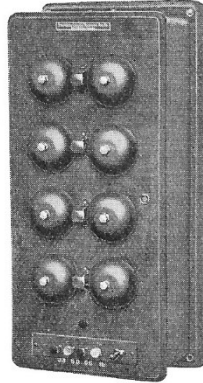
These outfits are very handy where multi-cycle ringing—either harmonic or synchronic—is installed.

The function of a Test Bell Set is to check the accuracy of the ringing frequencies as delivered by any multi-cycle ringing converter. The bells of these Test Sets are arranged to respond only to the proper frequency or ringing current. Two types are available—one for harmonic ringing and one for synchronic ringing.

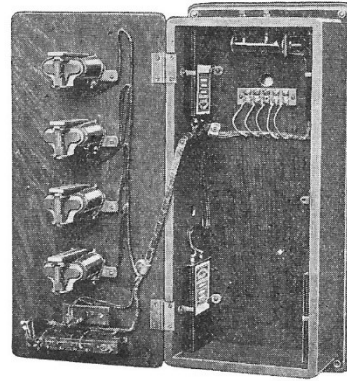
Code No.	Description
1-A	Harmonic Ringing Test Bell Set includes: 4 Harmonic Ringers accurately tuned to $16\frac{2}{3}$, $33\frac{1}{3}$, 50, $66\frac{2}{3}$ cycles. 1 Non-Inductive test resistance 1 Resistance shunt key. 1 Frequency key to switch any one of the four frequencies from the converter to the Test Bell Set’s circuit.

Switchboard Accessories (Cont.)

Bell Test Sets (Cont.)



No. 1 Type Bell Test Set, Closed View



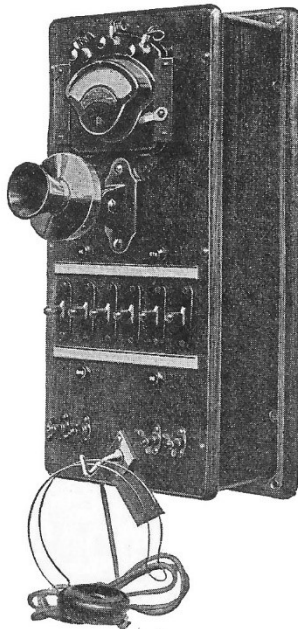
No. 1 Type Bell Test Set, Open View

Code No.	Description
	The above mentioned apparatus is assembled in a neat cabinet finished in dull golden-oak. Shipping weight of complete outfit approximately—60 lbs.

Code No.	Description
1-B	Synchromonic Test Bell Set similar to No. 1-A Harmonic Test Bell Set but provided with ringers accurately tuned to synchromonic frequencies of 30, 42, 54, and 66 $\frac{2}{3}$ cycles.

No. 2 Wire Chief's Test Set

In exchanges where the volume of routine testing and supervision of maintenance crews does not require the constant attention of the wire chief nor warrant the installation of a desk type wire chief's switchboard, this equipment will give excellent results and entire satisfaction.



No. 2 Wire Chief's Test Set

It is designed to mount upon the side of a switchboard section, a wall of the terminal room or the end of the M. D. F. where there is convenient access to the terminals of the various incoming lines. The equipment is assembled within a quarter-sawed oak cabinet which occupies the same amount of wall space as our standard Magneto wall telephone—9 x 19 inches.

The equipment includes a complete wire chief's telephone set with head-band receiver, the necessary switching keys for setting up the various testing circuits and a standard Weston Voltmeter having two separate scales reading 0—5 and 0—50 volts. The various terminals for the attachment of test leads, battery leads, ringing leads, etc., are arranged in two horizontal rows on the lower end of the backboard—all labeled to facilitate identification of the separate circuits.

Two sets of batteries are required for testing—a sufficient number of dry cells, all connected in series to give 50 volts in one set and 5 volts in the other. Five dry cells are also required in connection with the No. 2-A Wire Chief's Test Set for operating the telephone transmitter.

Facilities are provided in test sets of this type for making the following tests on either central energy or magneto lines:

- (a) Continuity Test (Opens or bad splices).
- (b) Tests for Short Circuits.
- (c) Tests for Grounds.

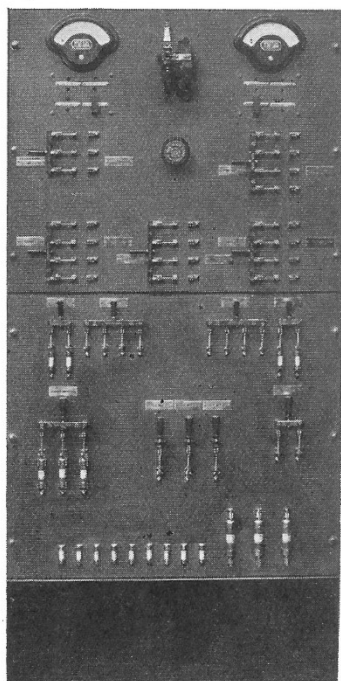
Switchboard Accessories (Cont.)

No. 2 Wire Chief's Test Set (Cont.)

(d) Tests for Crosses with lines carrying current.	Code No.	Description
(e) Tests for Crosses with other telephone lines.	2-B	For use with Central Energy systems.
(f) Location of Crosses or Grounds by means of Wheatstone Bridge.		4-party master ringing key may be added in either set.
(g) Measurement of voltage of batteries.		Full instructions for setting up the wire chief's test sets, and for making all tests, are packed with each shipment. Approximate shipping weight, 75 pounds.
Code No.	Description	
2-A	For use with Magneto systems.	

Power Switchboards

Completely equipped Central Energy Exchanges where various machines, batteries and electric circuits are employed, require suitable equipment for controlling the input and output of this apparatus.



Power Switchboard

The Stromberg-Carlson Power Switchboard provides ample facilities for taking care of the various units conveniently and safely. Ringing machine, converter, battery, charging machine, and other circuits are controlled at the power switchboard. Meters, switches and fuses are all of the highest quality, and carefully tested to assure the operating company of their ability to perform the functions

for which they are intended. Each piece of apparatus on the board is plainly marked with an engraved and polished name plate in order to avoid any possibility of mistakes in its operation.

The importance of this unit of Central Energy Telephone Exchange Equipment is recognized as so great that no pains have been spared to make it as convenient and serviceable as the best engineering skill can make it.

The panel on which the equipment is mounted is of the best quality, heavy slate, carefully selected for its freedom from any imperfections that might impair its insulation qualities. The panel is accurately machined, drilled, polished and finished so as to present a workmanlike appearance in keeping with the rest of the exchange equipment.

The panel is then mounted on a heavy iron framework. The ironwork is sufficiently strong to sustain the panel and its equipment rigidly, and prevent any possibility of its cracking.

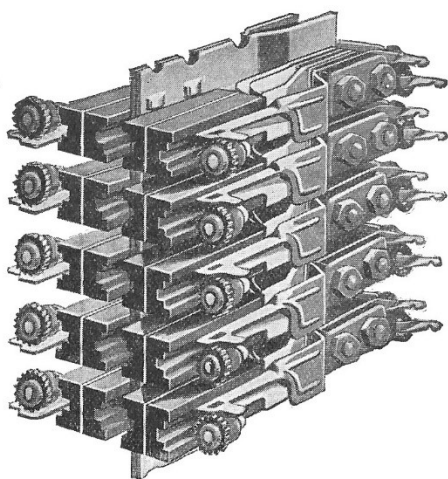
All wiring is carried to the rear of the switchboard and is installed in accordance with the requirements of the National Board of Fire Underwriters. All equipment mounted on the board has also been passed by the Underwriters.

Stromberg-Carlson Exchange Equipment Engineers are always available to advise and assist in plans for new or additional power switchboards. They will furnish preliminary drawings, specifications and estimates on power switchboard equipment for any exchange.

When asking for information it will assist the engineers if you will accompany your request, not only with a sketch of your present power switchboard layout, but also with any contemplated changes in the exchange equipment. Often times material savings may be made by taking into consideration conditions, that while not immediately present, will inevitably arise in the near future.

Switchboard Accessories (Cont.)

Protectors



No. 100 Protector

Mfr's
Cat. No.

Description

100

Equipped with wire-wound, self-soldering heat coils that operate accurately, and with carbon block arresters treated with the Cook anti-dust process and spaced with celluloid dielectrics. Heat coils are mounted in a horizontal position and are very easily removed or replaced.

When operated, this protector opens the circuit, grounds the line, and operates an alarm signal. To reset, simply push the switchboard spring back over the heat coil. No coil to change, turn or resolder. The installation is very easy as the switchboard solder lugs are brought out on one side and the line lugs on the other. Ample clearance is allowed to facilitate soldering.

Retaining springs are unusually heavy, which insures a positive and permanent tension between lightning arrester carbons and ground plate. To permit toothpicking, a special ground carbon is used. Tooth-picks, run into this groove, keep the ground and the alarm spring open when the heat coil operating spring is released. Ease of testing is an important feature of this protector. The test plug is slipped over the protector permitting testing through or around the heat coils. When the test plug is removed the protector is reset. This pro-

Mfr's
Cat. No.

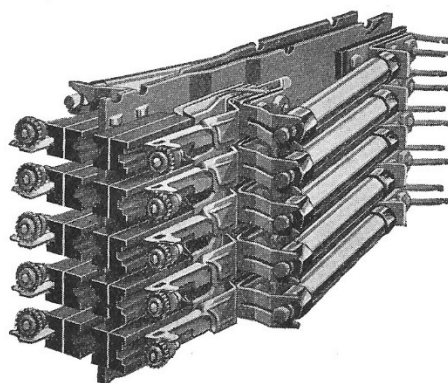
Description

ector is furnished with wire wound heat coils not exceeding 4 ohms. These coils operate in less than 210 seconds on .5 ampere and will carry .35 ampere for 3 hours when tested at a temperature of 68° F. Heat coils with different operating characteristics may be furnished on special order.

10

This protector has the same characteristics as to operation, resistance, installation, testing, etc., as No. 100. It differs in that the spring is held in place by low-melting point solder which is melted by the generation of heat in the heat coil when any abnormal current passes through.

To reset protector after operation the spring must be resoldered, which is done by means of a clamp and soldering iron.



No. 105 Protector

Mfr's
Cat. No.

Description

105

Combination of No. 100 Protector with line fuses. The design and insulation afford excellent protection between line and switchboard circuits. The switchboard circuits are returned from the protector between the ground plates. Fuses are of composition type, 4¾ ins. long and are furnished in 3 ampere capacity unless otherwise specified.

10-W

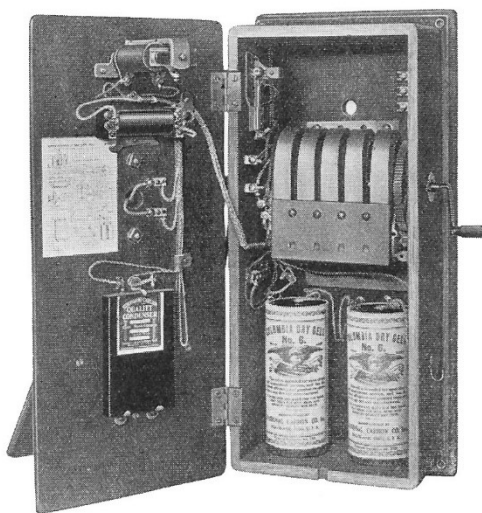
A combination of No. 10 Protector with fuses. Fuses are composition type 4¾ ins. long, of 3 ampere capacity.

Magneto Telephones

No. 896 Wall Type



Left Perspective View of No. 896 Telephone



Open View of No. 896 Telephone

The Stromberg-Carlson No. 896 Magneto Wall Telephone is adapted to any magneto service requirements—long lines, short lines, town lines, or heavily loaded rural lines. Every part of this telephone is built for efficiency, durability and convenience.

The Transmitter is of the solid back long distance, granular carbon cup type; equipped with bakelite mouthpiece.

The Receiver is of the bi-polar, long distance, magnetic type; provided with bakelite ear cap and bakelite shell.

The Induction Coil is double wound over a laminated soft iron core and is highly efficient on low battery voltage.

The Ringer is built for sensitive operation; provided with clear toned black enamelled gongs and a quick "one screw" adjustment.

The Generator is furnished in powerful 3 and 5 bar types.

The Wiring is of the universal type. This permits the telephone being carried as stock connected for regular bridging service but readily convertible to any of the following five additional kinds of service without either adding or splicing conductors.

"Bridging Service with Sure-Ring Condenser"

"Bridging Service with Non-Interfering Push Button"

"Bridging Service with Silent Ringer"

"Bridging Service with Divided Circuit Ringing"

"Bridging Service with Harmonic Ringing"

All wiring is contained in a single cable. Every conductor is accessible, readily traceable by means of color code and in plain view. Hinged joints and "back board" groove wiring are entirely eliminated. The conductors all are covered with braided insulation.

The Cabinet is built of quarter-sawed oak, finished in dull golden oak, easy of access and provided with:—door hinged on the left—writing shelf inclined at a convenient angle—bushed holes for wall mounting screws and a handy screw lock.

The Shipping Weight is only 25 pounds (less batteries) packed in corrugated cartons,—Shipping weight with two dry cells 29 pounds.

Magneto Telephones (Cont.)

Bridging Type

Code No.	Description	F. O. B. Shipping Points			
		Roch. Chicago	Kan. City	San Fran. Seattle	Toronto
896-R	Three bar generator with 1000 ohm ringer used for town lines.	\$17.50	\$17.90	\$18.50	\$23.00
896-I	Five bar generator with 1600 ohm ringer used for rural lines.	18.10	18.50	19.10	23.80
896-L	Five bar generator with 2500 ohm ringer used for rural lines.	18.35	18.75	19.35	24.15

Harmonic Type

A No. 896 Type Magneto Telephone, equipped with a three bar harmonic generator will be furnished equipped for any harmonic frequency such as: 16, 33, 50 and 66 cycles. **When ordering be sure to state frequency desired.** Price F. O. B. Rochester or Chicago, \$18.50; F. O. B. Kansas City or Atlanta, \$18.90; F. O. B. San Francisco or Seattle, \$19.50; F. O. B. Toronto, \$24.35.

Additions

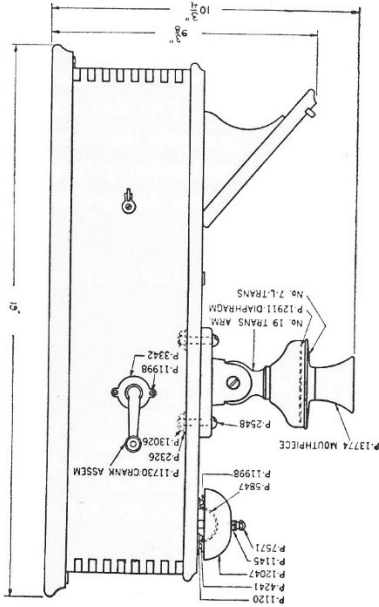
For Sure-Ring Condenser (on 5 bar telephone only) order by adding the letter "K" to code number.

For Non-Interfering Push Button add letter "P" to code numbers (on 5 bar telephones and on metallic (two wire) circuits only).

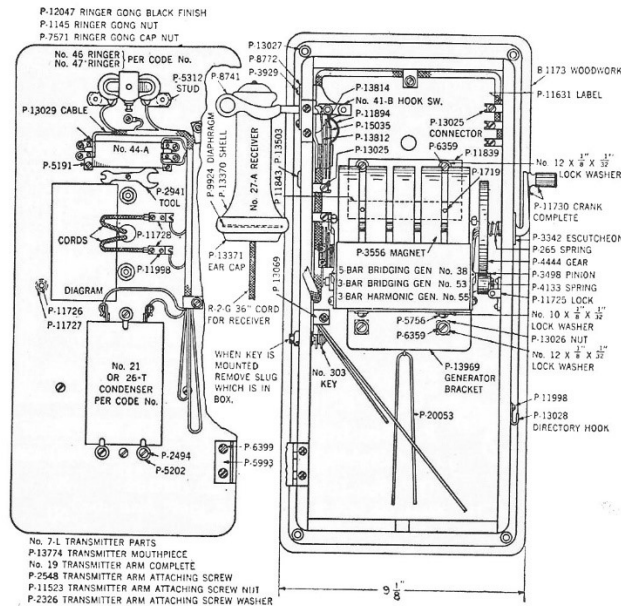
"K"	No. 26 T. Sure Ring Condenser.	.50	.50	.50	.65
"P"	Non-Interfering Push Button.	.35	.35	.35	.45

Batteries are not included in the price of the telephones as above mentioned,—but if ordered with the telephones will be supplied at the following prices:

List No. 531 Dry Batteries—per cell	.30	.30	.35	.35
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Code and Piece Numbers of Parts for No. 896 Wall Telephone



Code and Piece Numbers of Parts for No. 896 Wall Telephone

Magneto Telephones (Cont.)

No. 1000 Desk Telephone

A popular Magneto Desk Telephone for either business or residence service. Consists of the No. 992 Desk Stand and the No. 327 Desk Set Box, connected by a 6 ft. Duratex three conductor cord.

The Desk Stand is of rugged all metal construction; finished in durable dull black enamel with nickel trim; and includes the No. 7-L Transmitter, the No. 27-A Receiver, and the No. 39-A Induction Coil. The mouthpiece, receiver shell and the ear cap are made of bakelite. A quickly removed plate mounts the induction coil, hook-switch and cord terminals as a single unit inside the base of the desk

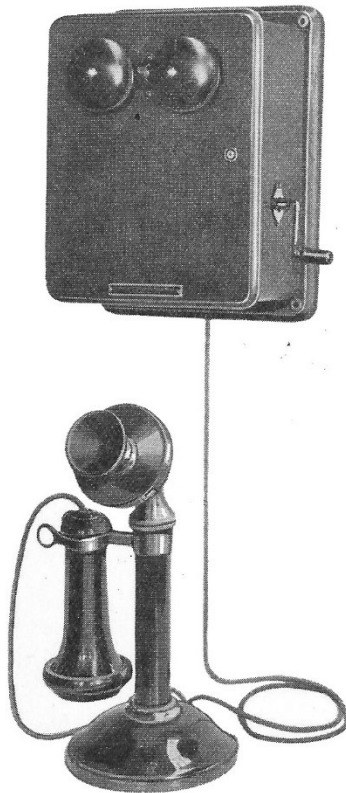
stand and in a readily accessible position. The base is covered with felt to prevent scratching.

The Desk Set Box is made of quarter-sawed oak with golden finish, contains the generator, ringer, line terminals and cord terminals. Provision also is made in this desk set box to contain the "Sure-Ring" Condenser and the "Non-Interfering Ringing Push Button" key when these features are ordered.

Shipping weight without dry batteries, 31 lbs
With two dry batteries, 35 lbs.

Bridging Type

Code No.	Description	F. O. B. Shipping Points			
		Chicago Roch.	Atlanta Kans. City	Seattle San Fran.	Toronto
1000-R	Three bar generator with 1000 ohm ringers, used for town lines.	\$18.30	\$18.70	\$19.30	\$24.05
1000-I	Five bar generator with 1600 ohm ringers, used for rural lines.	18.90	19.30	19.90	24.85
1000-L	Five bar generator with 2500 ohm ringers, used for rural lines.	19.15	19.55	20.15	25.20



No. 1000 Desk Telephone

Harmonic Type

The No. 1000 Desk Type Magneto Telephone is furnished with a three bar harmonic generator and a ringer of any harmonic frequency such as: 16, 33, 50 and 66 cycles. **When ordering be sure to state the frequency desired.** Price, F. O. B. Rochester or Chicago, \$19.30; F. O. B. Kansas City or Atlanta, \$19.70; F. O. B. San Francisco or Seattle, \$20.30; F. O. B. Toronto, \$25.40.

Additions

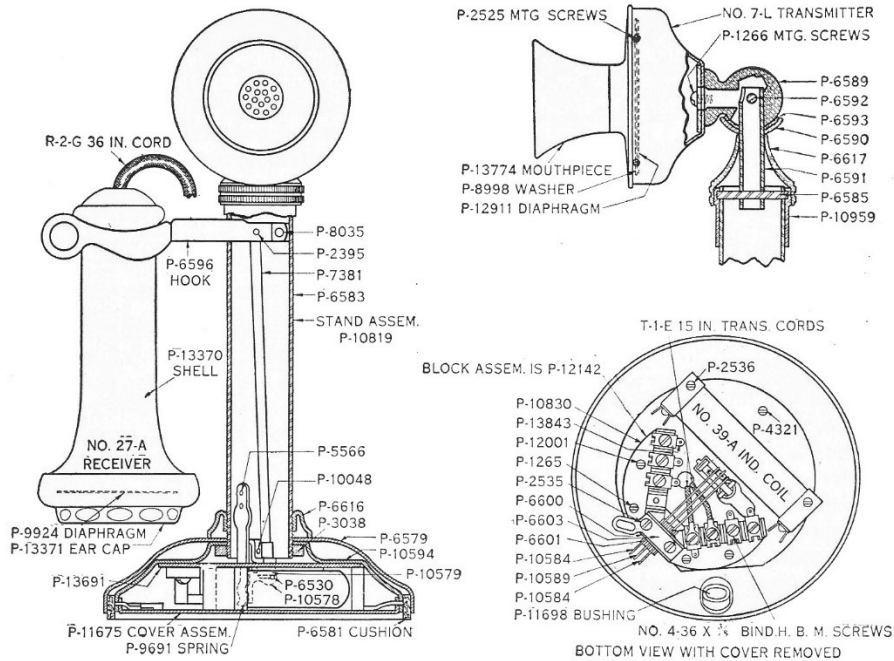
For Sure-Ring Condenser (on 5 bar telephones only) order by adding the letter "K" to code number.

For Non-Interfering Push Button add Letter "P" to code number (on 5 bar telephones and on metallic (two wire) circuits only).

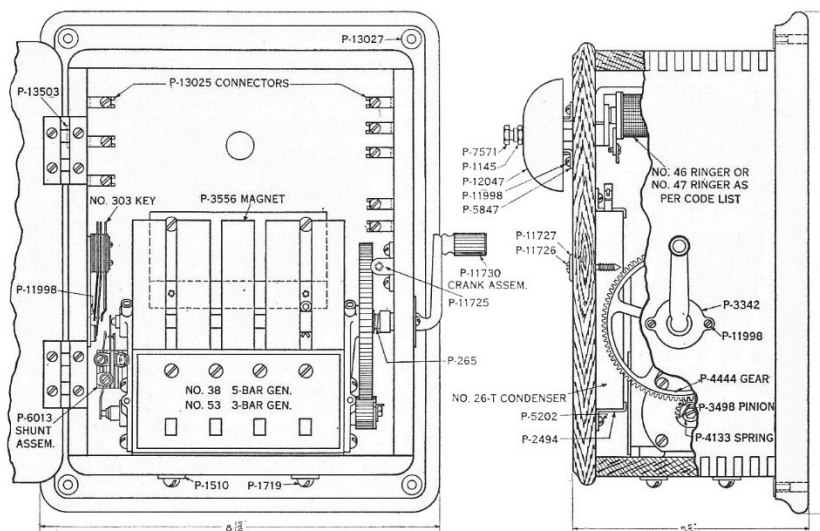
"P" Non-Interfering Push Button	.35	.35	.35	.45
"K" Sure Ring Condenser	.50	.50	.50	.65

Batteries are not included in the price of the telephones as above mentioned, but if ordered with the telephones, the batteries will be supplied at the following prices:

List No. 531 Dry Batteries	.30	.30	.35	.35
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Code and Piece Numbers of Parts for No. 992 Desk Stand



Code and Piece Numbers for No. 327 Desk Set Box

Magneto Telephones (Cont.)

Hand Set Telephone

The Magneto Hand Set Telephone is a light, convenient instrument for either residence or office service. It is comprised of the No. 1177 Hand Set, with 4 foot 3 conductor Duratex Cord and No. 1180-R Desk Set Box.

The Stromberg-Carlson No. 1177 Hand Set is entirely new in design, new in construction, and new in materials.

It is the lightest standard subscriber instrument of this type now on the market. Its shape is correctly designed so that when held naturally the transmitter and receiver are in a position of greatest efficiency.

The receiver is of entirely new design, using silicon steel coil cores to give increased efficiency, and chrome alloy steel magnet to insure a definite and permanent magnetic field. The magnet and cores are held firmly in place by means of two clamps so that there is no chance for any changing of distances between pole pieces and diaphragm clamping

pieces. The complete unit may be removed from the case by unscrewing the ear cap.

The transmitter uses the standard Stromberg-Carlson button, but otherwise is of new design. The diaphragm is duralumin, a material especially adapted to this kind of work. The thickness of both diaphragm and dampering springs are selected for tone quality, as well as transmission efficiency. Like the receiver, the transmitter is easily removed by unscrewing the ring holding the mouthpiece.

The Desk Set Box which is a quarter-sawed oak cabinet finished in dull golden oak, mounts the ringing equipment, the line terminals and the ground terminal. It is furnished with complete wiring diagram for either regular station or extension telephone service.

Dimensions of Desk Set Box 11 x 9 x 6 inches. Shipping weight complete without dry batteries, 24 lbs.; with three dry batteries, 30 lbs.



No. 1138 Hand Set Telephone

Bridging Type

Code No.	Description	F. O. B. Shipping Points			
		Roch. Chicago	Kan. City Atlanta	San Fran. Seattle	Toronto
1177	Hand Set Telephone	\$11.00	\$11.15	\$11.30	\$14.45
1180-R	Desk Set Box with three bar generator with 1000 ohm ringers, and No. 44-A Induction Coil used for rural lines.	10.95	11.20	11.60	14.40

Additions

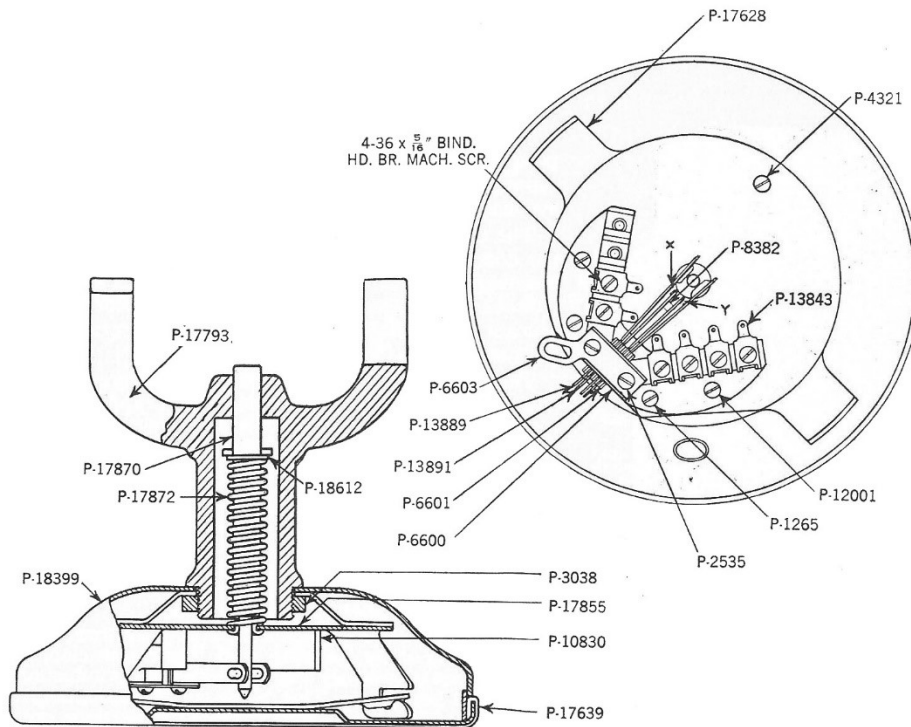
For Sure Ring Condenser, order by adding the letter "K" to code number.

For Non-Interfering Push Button add letter "P" to code number on metallic (two wire) circuits only.

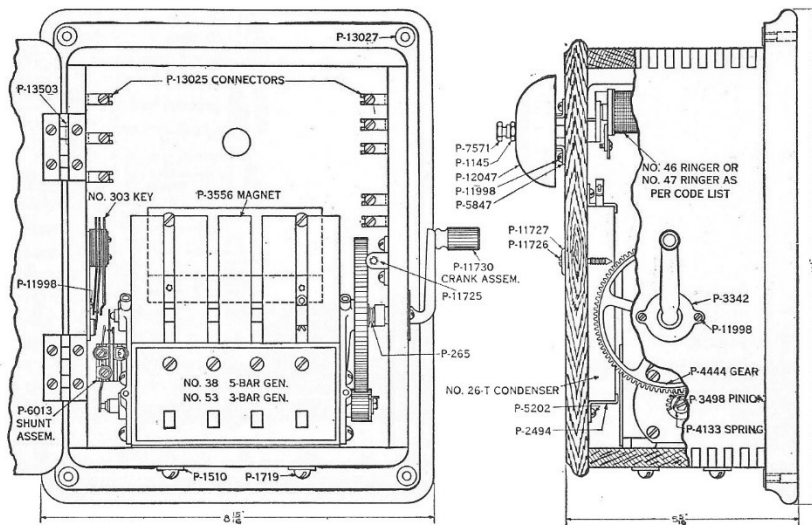
"K" No. 26 T Sure Ring Condenser	.50	.50	.50	.65
"P" Non-Interfering Push Button	.35	.35	.35	.35

Batteries are not included in the price of the telephones as above mentioned, but if ordered with the telephones the batteries will be supplied at the following prices:

List No. 531 Dry Batteries.	.30	.30	.35	.35
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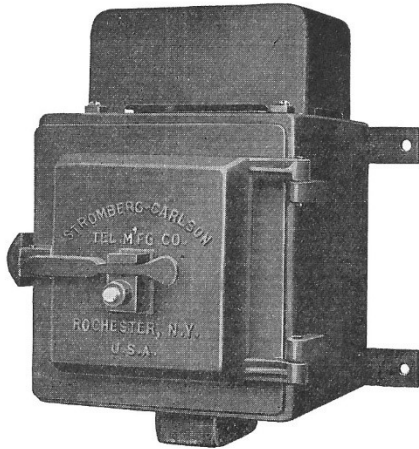
Code and Piece Numbers of Parts for 1177 Hand Set



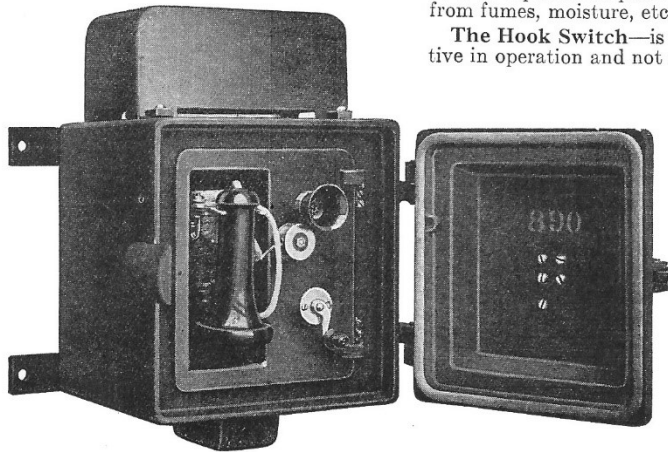
Code and Piece Numbers of Parts for No. 1180-R Desk Set Box

Magneto Telephones—Ironclad

No. 890 Mine-A-Phone



No. 890 Mine-A-Phone
Showing Plunger Lock



No. 890 Mine-A-Phone Showing Outer Door Open

Mounting space—14 x 17 inches.
Net weight—80 pounds. Packed for domestic shipment in individual boxes 22 x 16 x 14 inches. Gross weight—125 pounds. Packed for export two instruments in a box—31 x 20 x 14 inches. Gross weight for export per box of two instruments—225 pounds.

Mine-A-Phones are designed to satisfy the laws of any state that requires a telephone system in every mine.

The Mine-A-Phone is a moisture-proof, gas-proof, concussion-proof, fire-proof and water-proof magneto telephone which is built especially for mine-service, but which is adapted to all telephone systems in either underground or exposed surface localities.

The Case—is of heavy cast-iron provided with outer door, inner door and gong hood. All parts are heavily coated with rust resisting paint. The outer door is equipped with a gas-tight rubber gasket and compression lever catch, arranged for either a key or a plunger type lock. Opening this outer door permits use of the instrument for either signalling or talking.

The inner door is hinged for opening during repairs, but is otherwise held securely closed by machine screws and a felt gasket. This inner door mounts the transmitter, receiver and generator crank.

The Generator—is of powerful five bar construction mounted in a fully protected position behind the inner door.

The Transmitter—is of the solid back long distance carbon cup type, provided with bakelite mouthpiece.

The Receiver—is of the bi-polar, magnetic long distance type, provided with bakelite ear cap and bakelite shell. An automatic cord take-up device prevents the receiver cord being caught when the outer door is closed after conversation.

The Ringer—is equipped with loud, clear toned gongs which are concealed under the gong hood. The ringer, clapper rod and armature are ingeniously operated by magnetic induction through a gas-tight brass plate. This design permits mounting the ringer coils in a protected position behind the inner door, entirely free from fumes, moisture, etc.

The Hook Switch—is of pressure, plunger construction, positive in operation and not dependent upon gravity.

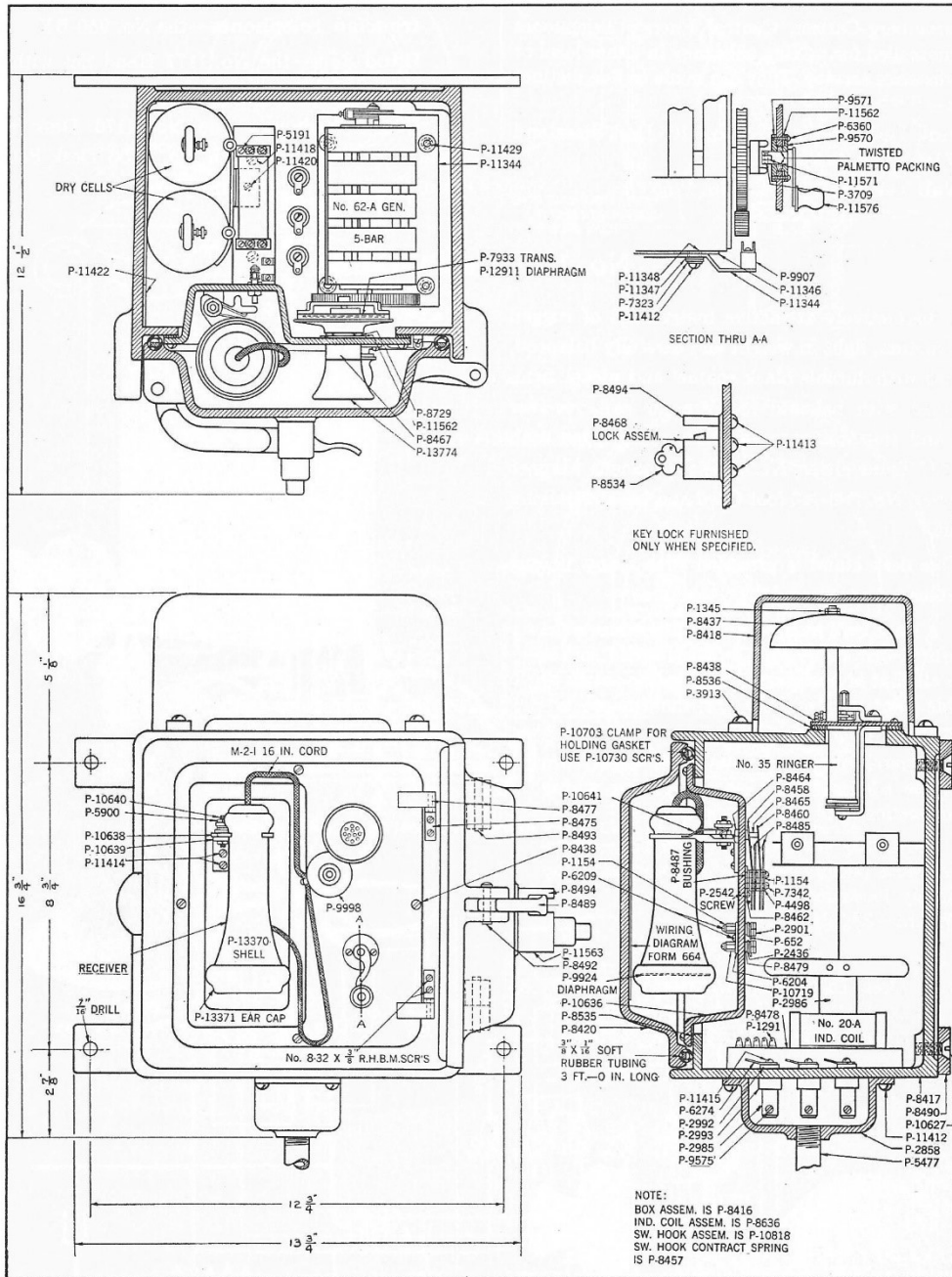
The Terminal Box—is mounted on the underside of the telephone. This box contains two line terminals and a ground terminal. These terminals pass through water-tight bushings to the interior of the telephone so that it is unnecessary to open the instrument when making connections. The entrance hole to the terminal box is threaded for $\frac{1}{2}$ " conduit.

The Wiring—is of the regular bridging type arranged so that more than one telephone may be placed on a line when required. A condenser is installed in the receiver circuit, so that leaving a receiver down will not interfere with the ringing of other telephones on the same line.

The Battery Space—is of ample size to accommodate two standard dry cells which supply the talking current for the transmitter.

Prices Less Batteries

Code No.	Description	Quantity	F. O. B. Shipping Point			
			Roch. Chicago	Kan. City	San F. Seattle	Toronto
890-I	5 Bar	} 1 to 4	\$46.00	\$47.75	\$49.25	\$60.75
			41.50	43.25	44.75	54.80
890-L	2500 ohms	} 1 to 4	46.25	48.00	49.50	61.00
			41.75	43.50	45.00	55.10



Code and Piece Numbers of Parts for No. 890 Mine-A-Phone

Central Energy Telephones

Stromberg-Carlson Central Energy Telephones are unexcelled for talking efficiency in either local or long distance service. They are made in five distinct types—

Desk Telephones—the No. 1168 Desk Stand and No. 1156 Desk Set Box.

Wall Telephones—the No. 1155

Ironclad Telephones—the No. 950-BY

Hand Sets—the No. 1177 Hand Set with No. 1156 Desk Set Box.

Dial Telephones—the No. 1176 Desk Stand and 1178 Hand Set with No. 1156 Desk Set Box and the No. 1157 Wall Telephone.

No. 1168 Desk Stand

A distinctively attractive instrument of rugged construction, light in weight and carefully balanced, finished with durable black enamel and nickel trim. Provided with bakelite receiver ear cap, receiver shell and transmitter mouthpiece. Equipped with No. 7-C Transmitter, No. 27-A Permanent Magnet Receiver, No. D-3-A 6 foot Cord and booster talking circuit.

This desk stand is provided with many unique maintenance economy features such as:—

A neat ball and socket transmitter arm joint—one slight turn to the knurled socket is all that is necessary to stiffen the action of this joint and to hold the mouthpiece adjusted at the right angle.

An easily inspected base—a slight turn to the left opens the base, exposing wiring connections and hookswitch contacts.

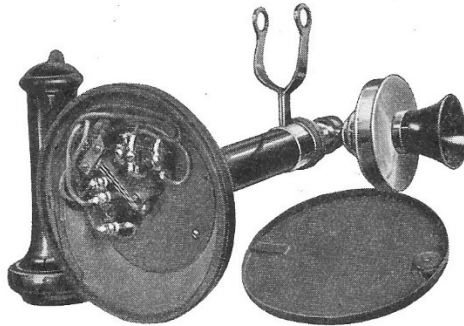
A quickly removed transmitter—bayonet slots permit removal of transmitter by simply loosening three screws.

Weight—3¾ lbs.

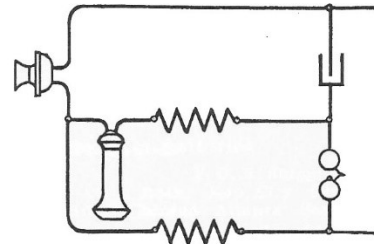
Code No.	Description	Price Each
1168	Desk Telephone, less Desk Set Box (Induction coil, condenser, and ringer furnished with Desk Set Box).	\$7.35



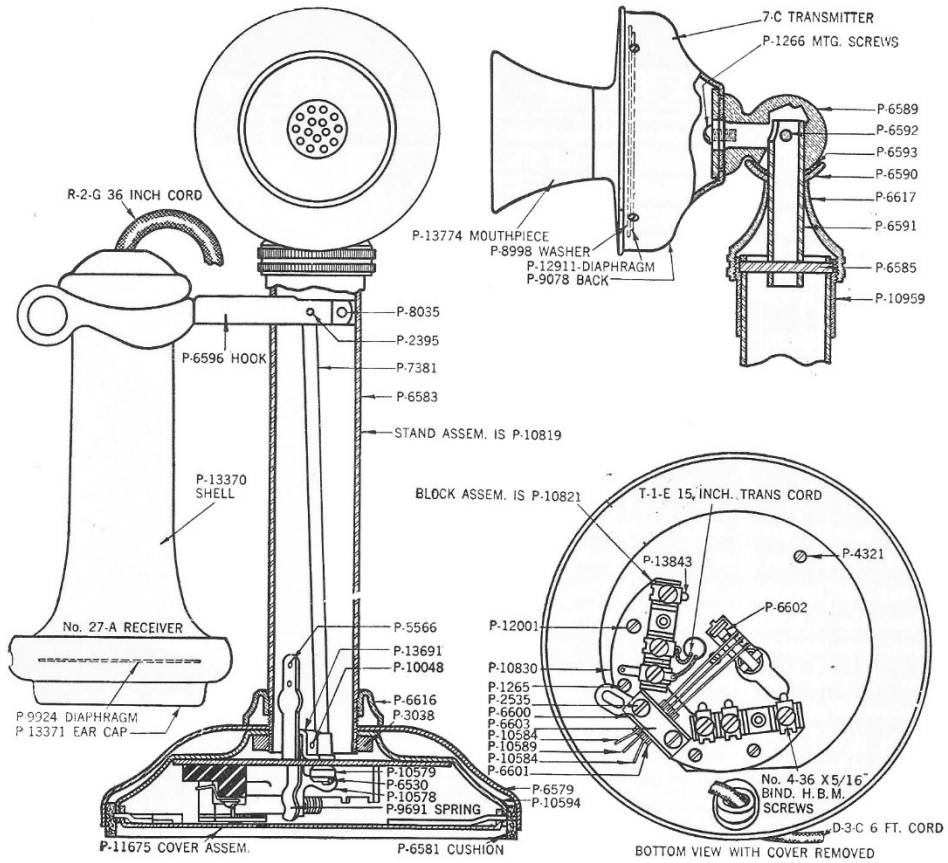
No. 1168 Desk Stand
With No. 1156 Type Desk Set Box



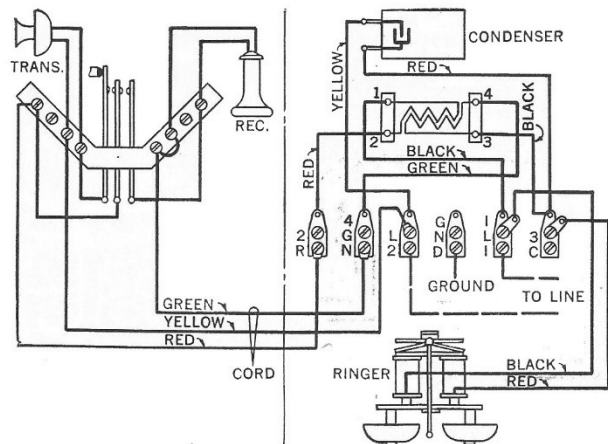
No. 1168 Desk Stand
With Base Plate Removed



Booster Talking Circuit



Line Diagram Showing Piece Numbers of Parts Used in No. 1168 Desk Stands



Wiring Diagram of No. 1168 Desk Stand as Used with No. 1156 Type Desk Set Box

Desk Set Boxes

No. 1156 Type Desk Set Box

Case is made of pressed steel with a black enamel finish. Gongs are mounted inside the box leaving a very neat and sanitary exterior. Equipment consists of either the No. 46 Straight Line Ringer or the No. 47 Harmonic Type Ringer, together with No. 21 Condenser and No. 44-B Induction Coil. Weight—5 lbs.

Code No.	Ringer	Condenser	Price Each
1156 BY	1000 ohms	1 M.F.	\$6.05
1156 EY	16 Cycle Harmonic	"	6.55
1156 FY	33 " "	"	6.55
1156 GY	50 " "	"	6.55
1156 HY	66 " "	"	6.55
1156 NY	25 " "	"	6.55

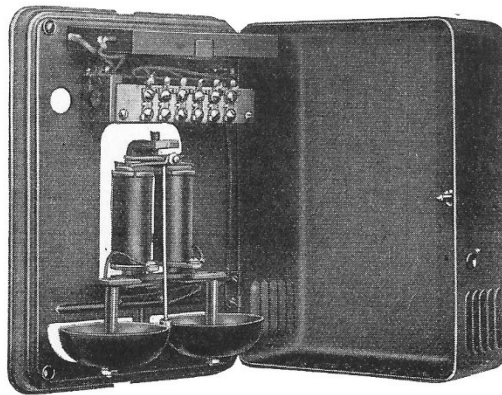
Enclosed gongs—give a neat appearance; have no inaccessible place for dust to accumulate.

A convenient retaining screw—loosened a few turns, opens the box, exposing all the working parts for inspection or repairs.

Ringer—is accurately adjusted and equipped with clear-toned gongs.

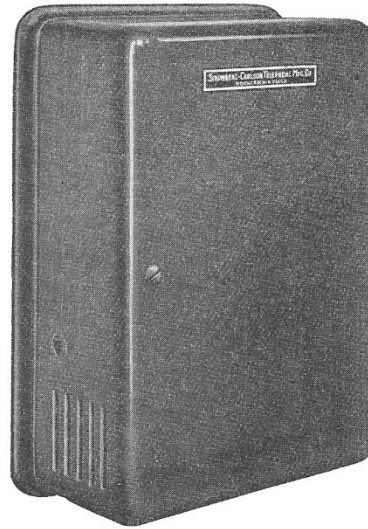
Specially tuned ringers to be used either with High and Low frequency systems or with Synchronic ringing systems can be furnished when specified, at no additional cost. When ordering specify the Code No. of Desk Set Box and the frequency desired as:—for High and Low frequency systems,—20 and 60 cycles; for Synchronic frequency systems,—30, 42, and 54 cycles.

Biased ringer (No. 49 Type) can be furnished with straight line ringer equipment if specified. When biased ringer is desired add "Z" to the code number. There is an additional charge of \$.10 each.



Open View of No. 1156 Type Desk Set Box

No. 1158 Type Desk Set Box



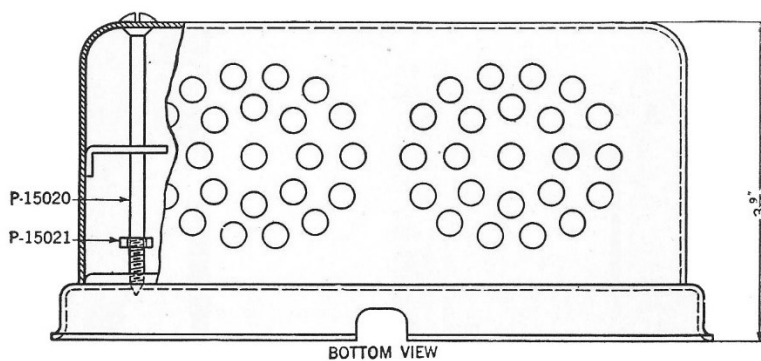
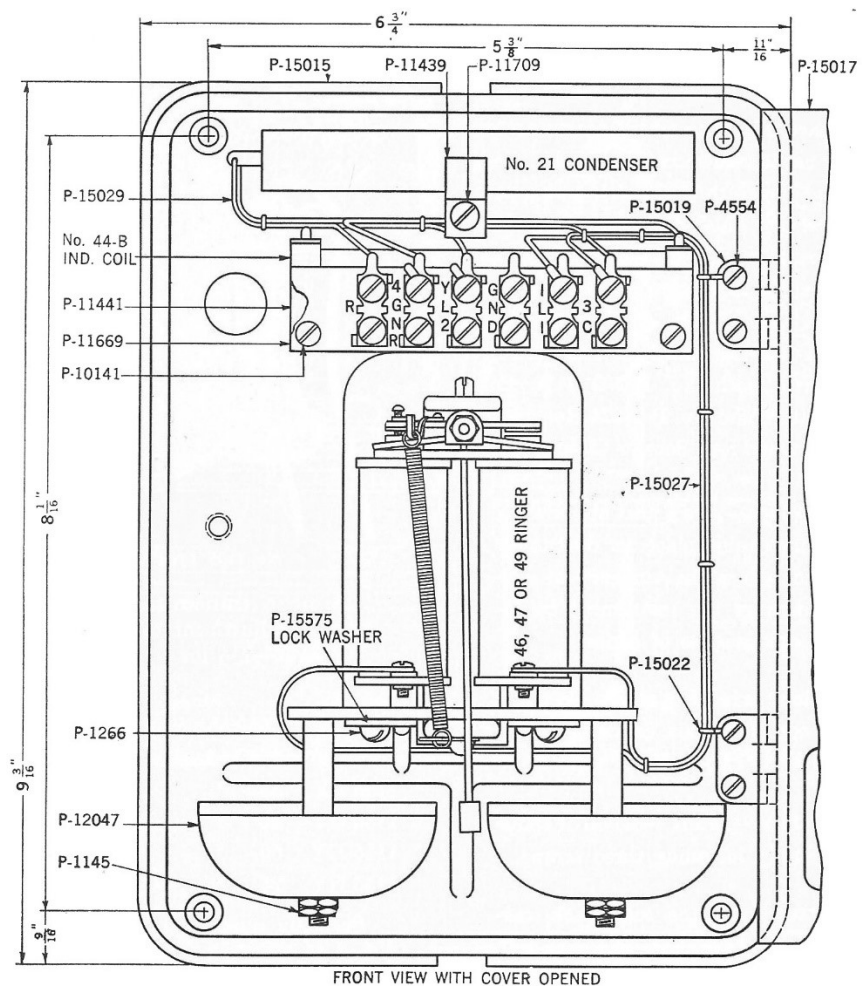
No. 1158 Type Desk Set Box

Wired for operating the receiver on a local circuit tapped to the secondary winding of the induction coil. The box and external appearance is the same as the No. 1156 Type. Equipped with either the No. 46 Straight Line Ringer or the No. 47 Harmonic Type Ringer and No. 21 Condenser. This Desk Set Box differs from No. 1156 Type only in the omission of No. 44-B Induction Coil.

Weight—4½ lbs.

Code No.	Ringer	Condenser	Price Each
1158-B	1000 ohms	1 M.F.	\$5.55
1158-BZ	1000 ohms—biased	"	5.65
1158-E	16 Cycle Harmonic	"	6.05
1158-F	33 " "	"	6.05
1158-G	50 " "	"	6.05
1158-H	66 " "	"	6.05

For information regarding specially tuned and biased ringers see No. 1156 Type.



Line Diagram Showing Piece Numbers of Parts Used in No. 1156 Type Desk Set Boxes

Wall Telephones

No. 1155 Type Wall Telephone

A very compact telephone which presents a neat appearance for use in residences and hotels. Gongs are enclosed, together with the other working parts, in a pressed steel box, finished in black enamel and nickel trim. Box is so designed that all the parts are easily accessible. Equipment consists of either No. 46 Straight Line or No. 47 Harmonic Type Ringer, No. 21 Condenser, No. 44-B Induction Coil, No. 27-A Receiver with No. R-2-G 3 ft. Cord, No. 7-C Transmitter and No. P-13824 Hookswitch. The telephone is wired for 'Booster Circuit.'

Enclosed gongs—give a neat appearance, —have no inaccessible place for dust to accumulate and reduce the tendency of subscribers to damage the instrument by attempting to change tone of gongs.

A convenient retaining screw—loosened a few turns, opens the box, exposing all the working parts for inspection or repairs.

Bayonet slots—permit removal of transmitter by simply loosening three screws.

Transmitter—is of the solid back, carbon cup, long distance type, provided with bakelite mouthpiece.



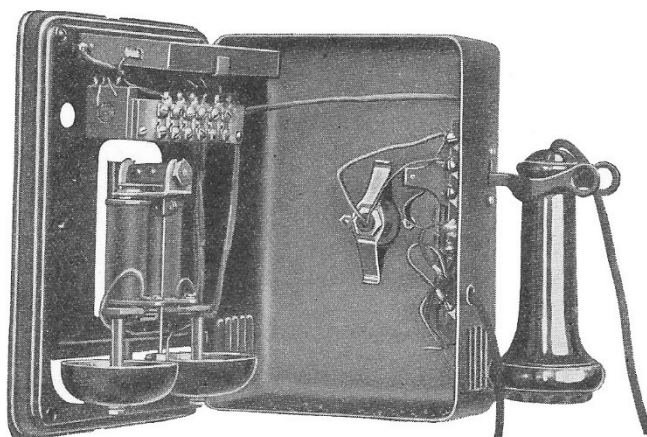
No. 1155 Type Wall Telephone

A neat transmitter arm—gives a handy vertical adjustment to the transmitter.

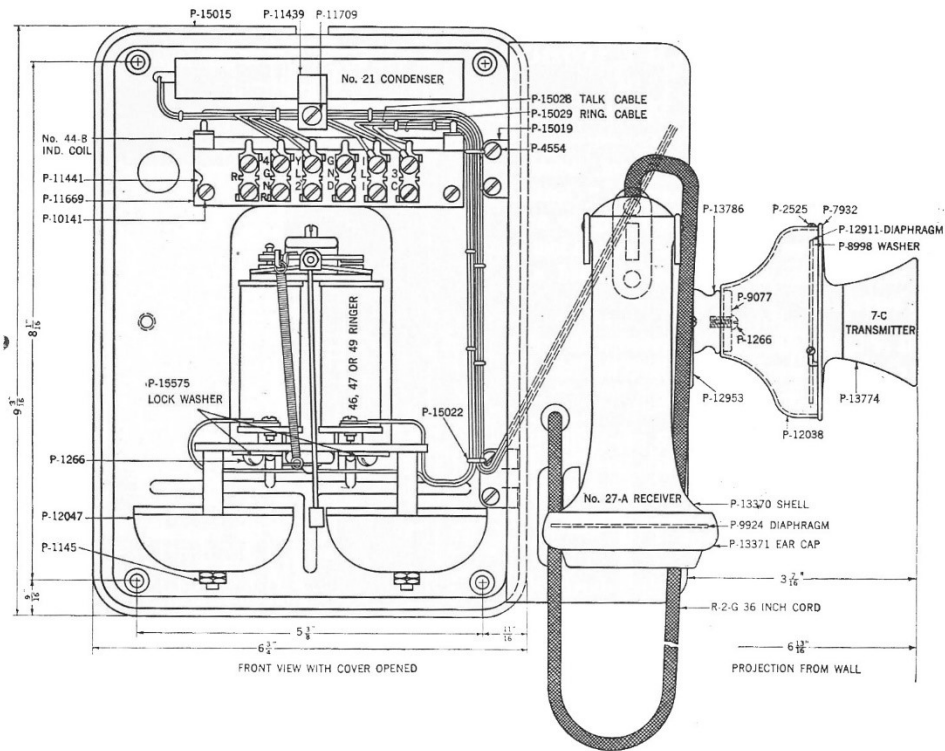
Weight—7½ lbs.

Code No.	Ringer	Condenser	Price Each
1155 BY	1000 ohms	1 M.F.	\$10.95
1155 EY	16 Cycle Harmonic	"	11.45
1155 FY	33 " "	"	11.45
1155 GY	50 " "	"	11.45
1155 HY	66 " "	"	11.45
1155 NY	25 " "	"	11.45

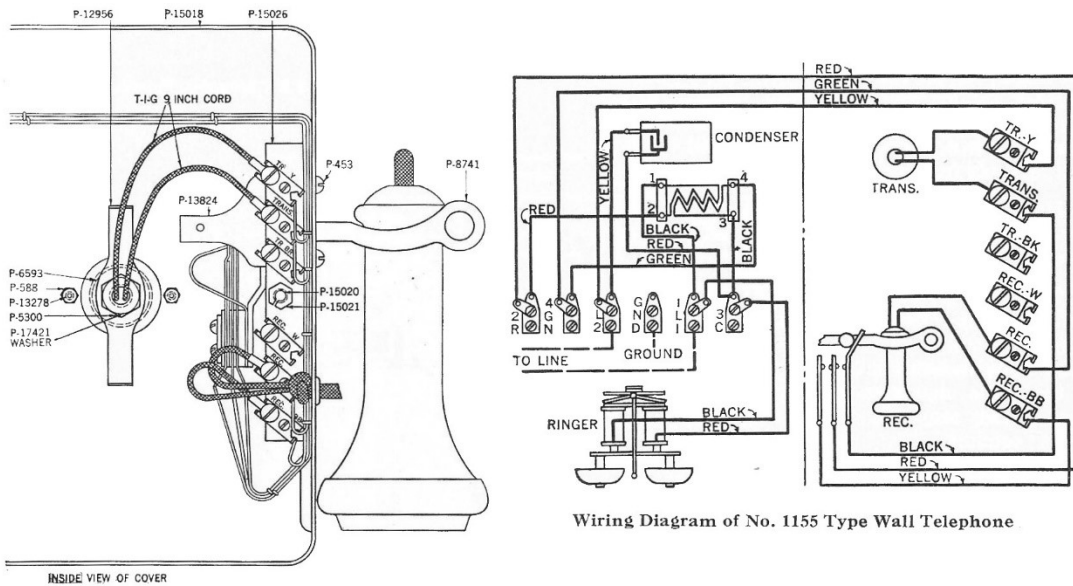
Specially tuned and biased ringers can be furnished as specified under No. 1156 Type Desk Set Box.



Open View No. 1155 Type Wall Telephone



Line Diagram Showing Piece Numbers of Parts Used in No. 1155 Type Wall Telephone



Wiring Diagram of No. 1155 Type Wall Telephone

Ironclad Telephones

No. 950 BY Ironclad "Central Energy"

Weatherproof Telephone

An ironclad, moisture-proof, gas-proof, concussion-proof, fire-proof and water-proof "Central Energy" telephone which is built especially for systems in either underground or exposed surface localities which require extra strong, well-insulated and dependable service.

Case—is of heavy cast-iron, provided with outer door, inner door and gong hood. All parts are heavily coated with rust-resisting paint.

Outer-Door—is equipped with a gas-tight rubber gasket and compression lever catch, arranged for either key or plunger type lock. Opening outer door permits use of the instrument for either signalling or talking.

Inner-Door—is hinged for opening during repairs, but is otherwise held securely closed by machine screws and a felt gasket. Inner door mounts the transmitter and receiver.

Transmitter—is of the solid back long distance carbon cup type, provided with bakelite mouthpiece.

Receiver—is of the bi-polar, magnetic long distance type, provided with bakelite ear cap and bakelite shell. An automatic cord take-up device prevents the receiver cord being caught when the outer door is closed after conversation.

Ringer—is equipped with loud, clear-toned gongs which are concealed under the gong hood. The ringer, clapper rod and armature are ingeniously operated by magnetic induction through a gas-tight brass plate. This design permits mounting the ringer coils in a protected position behind the inner door, entirely free from fumes, moisture, etc.

Hookswitch—is of pressure, plunger construction, positive in operation and not dependent upon gravity.

Terminal Box—is mounted on the underside of the telephone. Contains two line terminals and a ground terminal. These terminals pass through water-tight bushings to the interior of the telephone so that it is unnecessary to open the instrument when making connections. Entrance hole is threaded for $\frac{1}{2}$ " conduit.

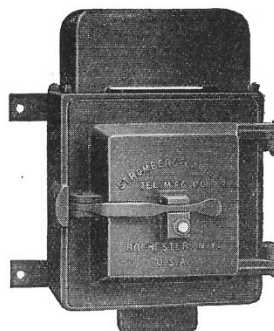
Wiring—is the regular "Booster Circuit".

Weight—62 lbs.

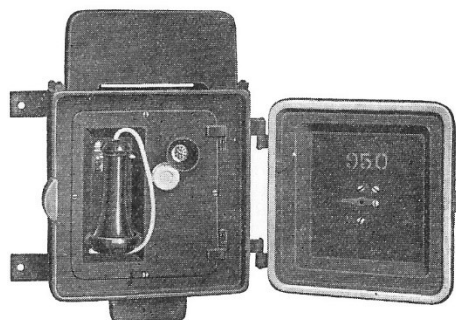
Code No.	Ringer	Condenser	Price Each (One Delivery)	
			1-4	5 and Over
950-BY	1000 ohms	1 M.F.	\$42.75	\$38.50

Additional Features

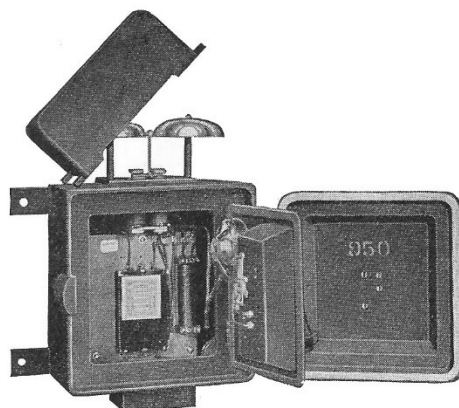
Additional for Key Snap Lock (Pc. 8468) each \$1.50
 Additional for Extra Keys (Pc. 8534) each35



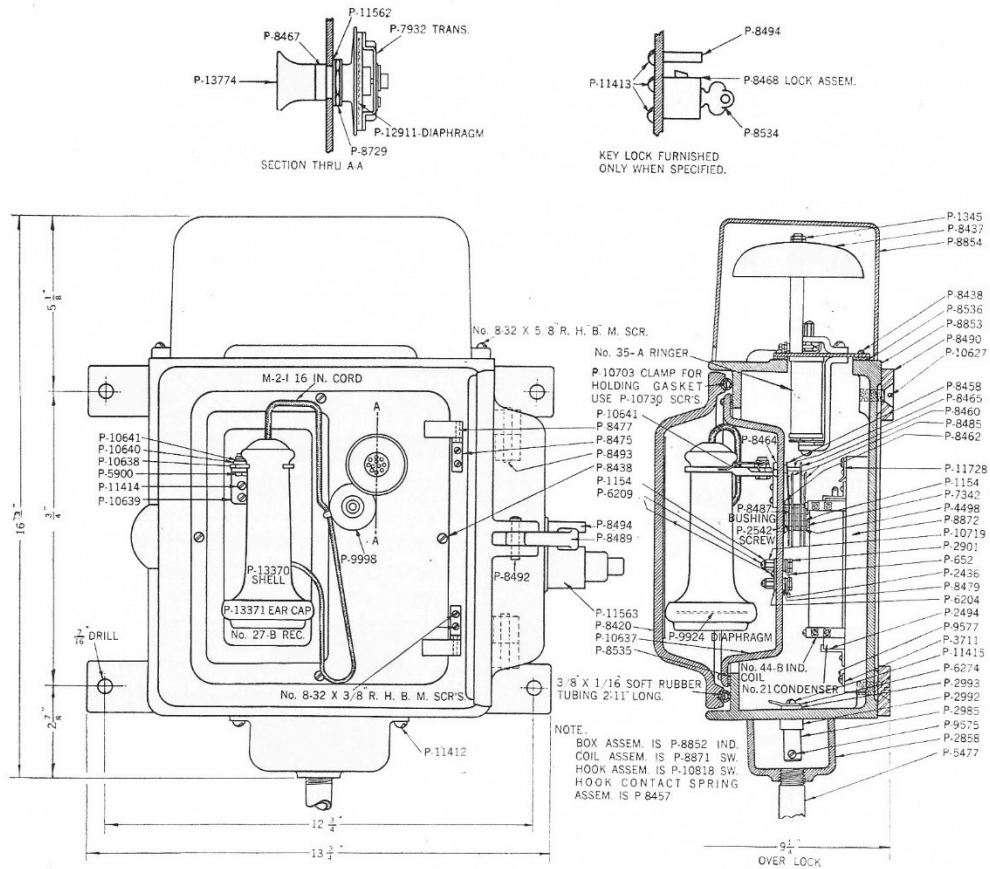
No. 950 BY Ironclad Telephone



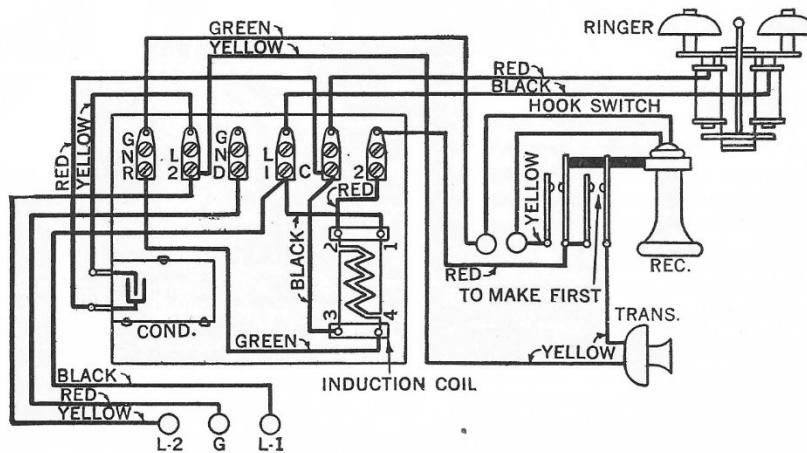
Open View No. 950 BY Ironclad Telephone



Showing Inner Compartment No. 950-BY Ironclad Telephone



Line Drawing Showing Piece Numbers of Parts Used in No. 950-BY Telephone



Wiring Diagram of No. 950-BY Telephone

Hand Set Telephones

No. 1177 Hand Set Telephone

The Stromberg-Carlson No. 1177 Hand Set is entirely new in design, new in construction and new in materials.

It is the lightest standard subscriber instrument of this type now on the market. Its shape is correctly designed so that when held naturally the transmitter and receiver are in position of greatest efficiency.



No. 1177 Hand Set Telephone

The Receiver—is of entirely new design, using silicon steel coil cores to give increased efficiency and a chrome alloy steel magnet to insure a definite and permanent magnetic field. The magnet and cores are held firmly in place by means of two clamps so that there is no chance for any changing of distances between pole pieces and diaphragm clamping pieces. The complete unit may be removed from the case by unscrewing the ear cap.

The Coils—are of the layer built type, wound with enamel wire and impregnated with wax to meet all climatic conditions.

The Transmitter—uses the standard Stromberg-Carlson button but otherwise is of new design. The diaphragm is duralumin, a material especially adapted for this kind of work. The thickness of both diaphragm and dampening springs are selected for tone quality as well as transmission efficiency. Like the receiver, the transmitter is easily removed by unscrewing the ring holding the mouthpiece.

The Mouthpiece—is of special construction designed to reflect the greatest amount of speech energy to the diaphragm.

The Handle—is designed and made of selected material especially to avoid having vibration in the receiver transmitted to the transmitter. With this accomplished the tendency to howl, due to acoustic coupling, is overcome, which makes it possible to use the "Booster Circuit".

The Cradle—and stem are a single aluminum die casting. The shape of the cradle is such as to

make it impossible to replace the hand set without actuating the plunger.

The Plunger—has a three-eighths inch movement which gives ample opportunity to avoid trouble that might occur by accidental making or breaking the circuit when removing the hand set or setting down the stand with a jar. The plunger is of phenol compound, light and, therefore, of little momentum.

The Cords—are a No. 3-CB 4 foot Brown Duratex Hand Set Cord and a No. D-3-C 6 foot Brown Duratex Desk Set Cord.

The Weight—of the hand set is 15 ounces.

The Stromberg-Carlson No. 1177 Hand Set may be connected to any desk set box designed for use with a desk stand wired for the booster circuit. For extension service where additional bells are not necessary a three wire circuit connected to the present desk set box is all that is required for installation.

Code No.	Description	Price
1177	Hand Set Telephone (for manual service)	\$11.00

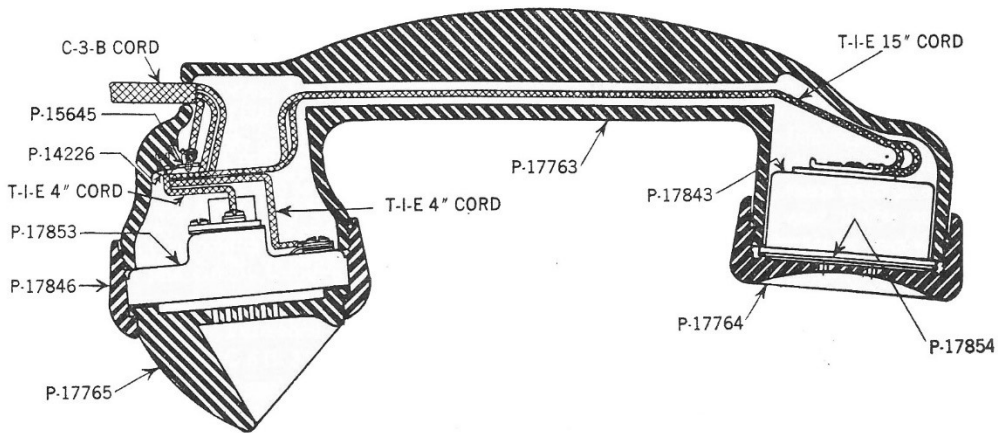
No. 1178 Hand Set Telephone



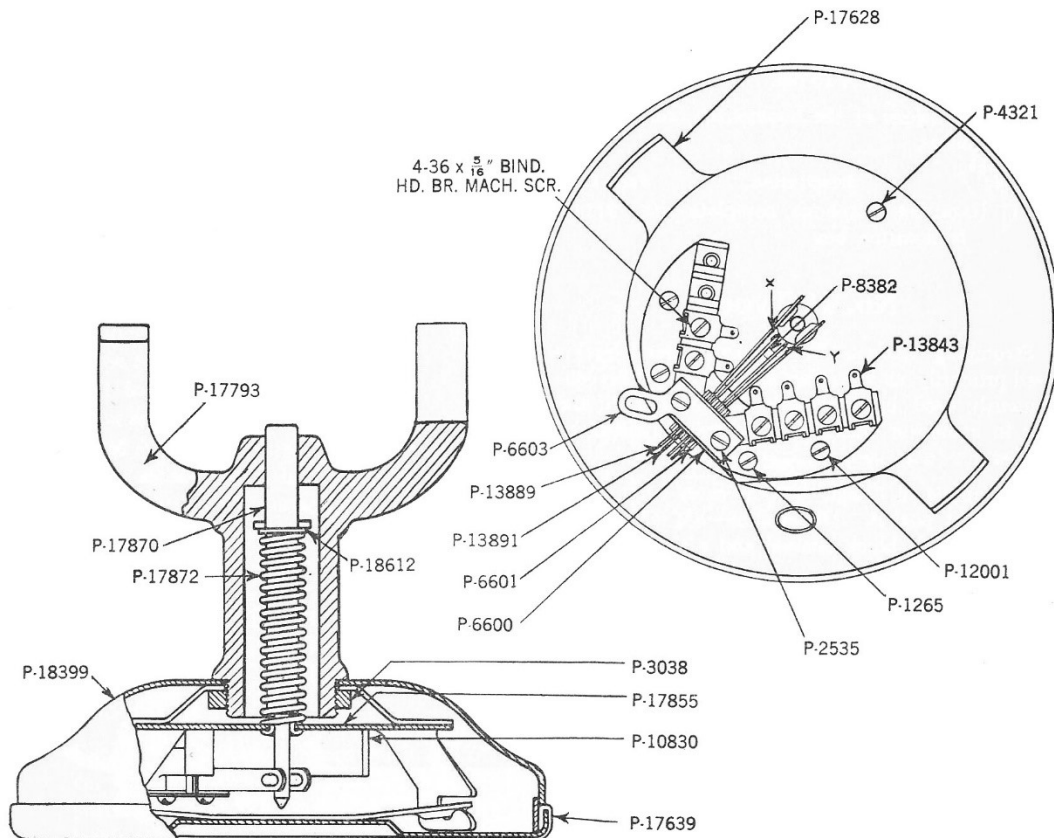
No. 1178 Hand Set Telephone

The No. 1178 Hand Set Telephone is identical to the No. 1177 except that it is designed for use with dial type equipment. The cradle stem is set off center on the base to provide space for the dial. The base is punched for the reception of the dial and if so desired may be covered with a blank and used for regular central energy service.

Code No.	Description	Price
1178	Hand Set Telephone (for dial service, but less dial)	\$11.00



Line Diagram Showing Piece Numbers of Parts Used in No. 1177 Hand Set



Line Diagram Showing Piece Numbers of Parts Used in Cradle and Base of No. 1177 Hand Set

Hand Set Telephones

No. 1181 Hand Set

Used With No. 1156 Type Desk Set Box

For convenience and practical design, the No. 1181 Hand Set is unequalled. When not in use it requires no desk space as it hangs from the hookswitch box which may be mounted on the wall, side of desk or any vertical surface. The instrument is light in weight and so constructed that when the receiver is held to the ear the transmitter mouthpiece naturally comes in the correct position for conversation. The convenience of always having one hand free and still be at liberty to move from one side of the desk to the other cannot be overestimated. Handle, mouthpiece and ear cap are made of bakelite. The hookswitch box is finished in black enamel.

The equipment includes :—a Hookswitch Box, a No. C-3-B Hand Set Cord, a No. D-3-C 6 foot Desk Set Cord, an unusually efficient long distance transmitter and receiver.

Weight of Hand Set 15 ozs.

The dimensions of the hookswitch box are $2\frac{3}{4} \times 2\frac{1}{8} \times 4$ inches.

Code No.	Description	Price Each
1181	Hand Set Telephone, complete with hookswitch box.	\$11.00

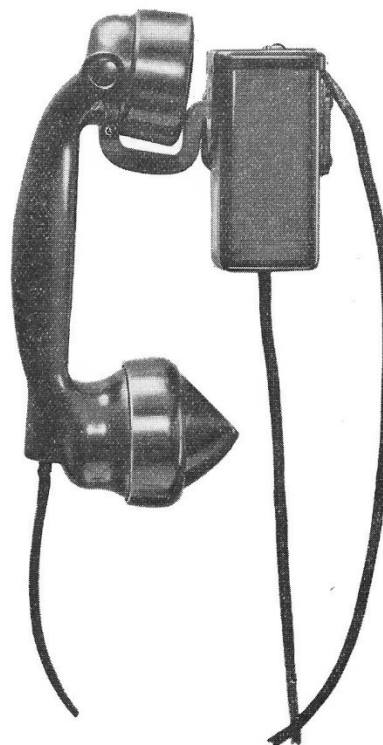
No. 11 Type

Stromberg-Carlson No. 11 Type Hand Set is used primarily as a testing set, but it may be conveniently used in apartment house service, and also in extension station equipment for office or residence.

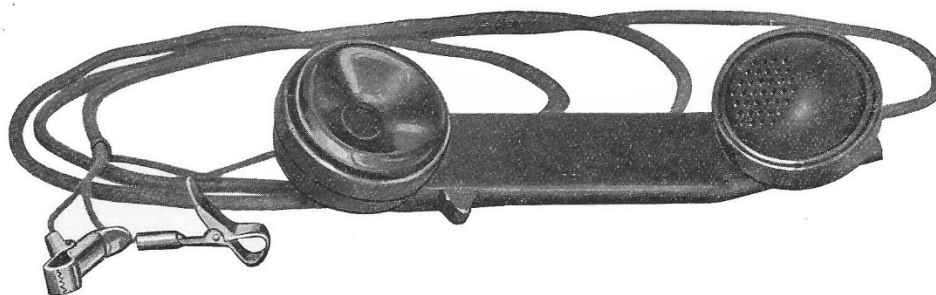
It is simple in design—easy to carry—fits nicely in the coat pocket. Dimensions— $8\frac{3}{4} \times 2\frac{3}{8} \times 2\frac{1}{8}$ inches. Finish, black enamel and nickel.

Equipped with long distance transmitter and

bipolar receiver, mounted upon a flat steel tubing handle. The finger switch placed within the handle requires but slight pressure, either way, for positive operation. Detachable plates are provided at both ends of the handle so that the transmitter, receiver, and cord connections may be easily examined, and conveniently changed when necessary. All exposed parts, except the bakelite ear cap, and finger switch are made of metal so that the instrument will withstand hard usage.



No. 1181 Hand Set

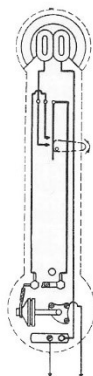


No. 11 Type Hand Set Equipped with Test Clips

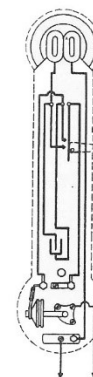
Hand Set Telephones (Cont.)

No. 11 Type (Cont.)

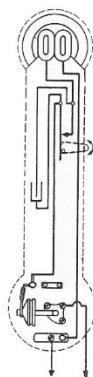
Code No.	Description	Price Each
11-C	Used with Central Energy tele- phone systems not only as an ex- tension telephone but also as a pock- et test set for inspectors and for linemen. A non-locking finger switch closes the line circuit through the transmitter and the receiver con- nected in series. Furnished com- plete with No. C-2-C 6 ft. Moisture- proofed Cord. Cord ends are pro- vided with test clips (No. 34 Cord Tips).	\$8.50
11-D	Used with Central Energy and machine switching systems for testing and for service observation. Transmitter and receiver are wired in series with a $\frac{1}{10}$ M.F. condenser which is enclosed within the handle. A non-locking finger switch when operated to call central shunts out the condenser. Furnished complete with No. C-2-C, 6 ft. Moisture-proofed Cord. The free cord ends are provided with test clips (No. 34 Cord Tips).	9.25
11-E	Used with Central Energy and machine switching systems for testing and for service observation. The transmitter and the receiver are wired in series with a non-locking finger switch which has a pair of contacts that are normally closed so as to shunt out a $\frac{1}{10}$ M.F. condenser which is located in the handle. Furnished complete with No. C-2-C, 6 ft. Moisture-proofed Cord. The free cord ends are provided with test clips (No. 34 Cord Tips).	9.25
11-L	Used with magneto equipment such as: the No. 843 Test Set and the portable field telephones. A non-locking finger switch is wired so that when operated it will close the contacts which control the flow of battery current through the transmitter. Furnished complete with No. C-3-B, 6 ft. Moisture-proofed Cord.	8.50



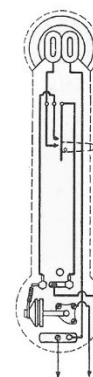
Wiring Diagram of No. 11-C Hand Set



Wiring Diagram of No. 11-D Hand Set



Wiring Diagram of No. 11-E Hand Set



Wiring Diagram of No. 11-L Hand Set

Dial Type Telephones

Code No. 1176 Type

Dial Type Desk Telephone

A dial desk stand, well constructed and finished in dull black enamel with nickel trim. Column is placed off center on base so as not only to allow ample space for the dial, but also to protect the dial from damage. Telephone is wired for Booster Circuit and is equipped with a three spring type (make and break contacts) dial connection. Furnished with No. 7-C Transmitter, No. 27-A Receiver with No. R-2-G 3 ft. cord, and No. D-3-C 6 ft. Cord. *Used in connection with the No. 1156 Type Desk Set Box to make a complete unit.*

A neat ball and socket transmitter arm joint—one slight turn to the knurled socket is all that is necessary to stiffen the action of this joint and to hold the mouthpiece adjusted at the right angle.

An easily inspected base—a slight turn to the left opens the base, exposing wiring connections and hookswitch contacts.

A quickly removed transmitter—bayonet slots permit removal of transmitter by simply loosening three screws.

Weight—3½ lbs.

Code No.	Description	Price Each
1176-A	Desk Stand (less dial)	\$7.35
1176-M	Desk Stand (dial opening covered with blank)	7.35

Opening for dial is adapted for mounting the Automatic, Western Electric, Kellogg or North Electric dials. Prices for telephones equipped with dials on application.

The No. 1176-M Desk Stand is designed for temporary manual service. The wiring is connected for regular "Central Energy" system and dial opening covered with blank. It is a simple matter, however, to install the dial and transfer to a subscriber operated system at any time.

Code No. 1157 Type

Dial Type Wall Telephone

This dial type wall telephone is constructed the same as the No. 1155 Type except that there is an opening in the front of the case for mounting the dial.

Weight—7½ lbs.

Code No.	Ringer	Condenser	Price Each without dial
1157 BYZ	1000 ohms	1 M.F.	\$11.05
1157 EY	16 Cycle Harmonic	"	11.45
1157 FY	33 " "	"	11.45
1157 GY	50 " "	"	11.45
1157 HY	66 " "	"	11.45
1157 NY	25 " "	"	11.45

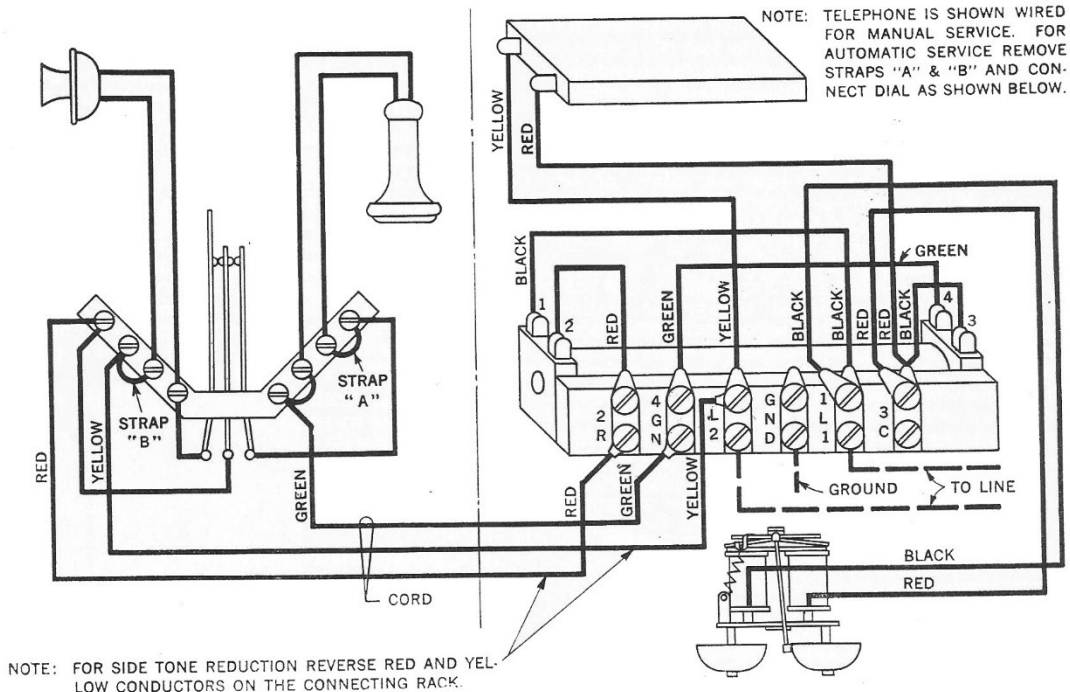
For information regarding dials see the No. 1176 A & M Desk Stand.



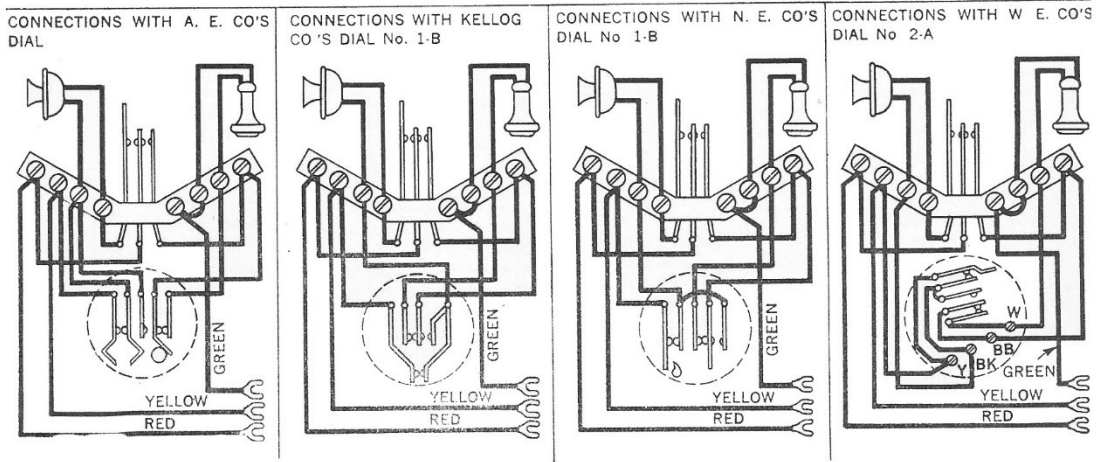
No. 1176-A Desk Stand With Dial



No. 1157 Type Wall Telephone With Dial



Wiring Diagram of No. 1176-A Desk Stand Connected to No. 1156 BYZ Desk Set Box Booster Circuit



Wiring Diagrams Showing No. 1176-A Telephone Wired to Various Types of Dials

Inter-Comm-Phone System No. 1

Selective Ringing—Selective Talking

12 and 22 Stations Capacity

This type of system will satisfy the telephone service requirements for the majority of offices, factories, public buildings and large residences where the volume of traffic necessitates simultaneous conversations, yet is not large enough to justify the use of a switchboard system and the salary of an operator. With this type of apparatus each telephone station may select, ring and talk with any of the other stations without interfering in the least with any of the remaining stations which may be using the system at the same time. For example, it is possible with a fully equipped twenty-two station system to carry on eleven separate conversations without cross-talking, cross-ringing or other interference. The system is ready for instant service during any period of the day, and is particularly adapted to systems which require neither the services of an attendant nor the privilege of connections with a public telephone exchange.

Stromberg-Carlson Inter-Comm-Phone Systems are furnished either with or without facilities for connecting to a public telephone exchange. Provided that connections with a public telephone exchange are desired, the telephone company should be consulted before planning on a privately owned telephone system. This precaution is urged because most operating companies will not connect their wires to apparatus such as switchboards or telephones which they do not own and maintain.

Kind of Service

The service rendered by the Stromberg-Carlson Inter-Comm-Phone System No. 1 is divided under four distinct classifications as follows:

Local service which provides private communication facilities between a certain group of stations including provision for connecting with the public telephone service.

Local private service between a certain group of stations including provision for connecting with a central energy public service exchange. In this instance, one of the stations acts as an answering station and handles the incoming calls. The outgoing calls are controlled directly by the local stations.

Local private service between a certain group of stations including provision for connecting with a magneto public service exchange. In such systems, not only the incoming calls, but also the outgoing calls are handled and transferred at the answering station.

Local private service between a certain group of stations including provision for connecting with an automatic public service exchange. In this type of system, the outgoing calls are controlled from the local stations. Each of the station instruments may be equipped with a dial for such service and connected to the trunk line by means of the trunk button in the key-box. All incoming calls are handled and transferred by the answering station.

Operation

To establish a connection with another local station it is only necessary to *press one button once*, a distinct advantage over many other types of inter-communicating telephone systems. In this system

the same button is used for selecting and ringing the desired telephone. The push button switching keys used in all Stromberg-Carlson Inter-Comm-Phone instruments have three operating positions, normal, talking and ringing. When the button is pushed all the way down a circuit is closed which rings the bell of the distant telephone. When the button is released it snaps back half way to the talking position and completes the talking circuit with the telephone called. The receiver is then removed and the conversation opened in the usual way. The switching keys interlock by means of a tumbler plate so that when a call is made any key button remaining in the talking position is restored to the normal position when any other key button is pressed.

To answer a call the connection is made with the party calling by pressing the white "Home" button and by taking the receiver from the hook. It is unnecessary to restore the "Home" button after a call is answered because this operation is performed automatically when the next call is made.

Standard Equipment

Stromberg-Carlson telephone apparatus and accessories for Inter-Comm-Phone System No. 1 are furnished in two standard sizes, viz., 12 and 22 station capacities. These sizes will meet practically all operating conditions and requirements. It is unnecessary to purchase a complete system of 22 stations capacity when only 16 stations are needed for present use, simply install 16 telephones of 22 stations capacity with their accessories. Additional telephones may be conveniently added at any time without disturbing either wiring or operation of the telephones originally installed. The use of exchange line service decreases the total capacity of the telephone instruments for local service by the number of exchange lines equipped. Telephones in system No. 1 are furnished in two styles, the Central Energy Wall Telephone, and the Central Energy Combination Telephone. Description and illustrations of both these types of telephones will be found on the following pages.

The equipment of each telephone instrument includes a standard long distance transmitter, a standard long distance receiver, a three position type switching key mechanism and a complete complement of associated minor apparatus. All parts are of the same high quality as those used in Stromberg-Carlson regular city exchange apparatus and give uniformly excellent service.

Cabling of System

System No. 1 employs full metallic circuit wiring between all stations. Stromberg-Carlson cables are furnished of proper capacity and contain all wires essential to the operation of the system. These cables are made up so that any pair of wires may be identified by their coloring which makes the installation work and testing a comparatively simple task. Two types of these cables can be had, viz., the braided sheath type and the leaded type. The cable with painted braid sheath is recommended for interior use in places where certain that the cable will not be subject to dampness, acid fumes or mechanical injury. The leaded cable should be specified for all out-

Inter-Comm-Phone System No. 1 (Cont.)

door use or places where it may be subject to either moisture or corrosive fumes. If iron conduit is used for cable runs the leaded cable should be installed to avoid the effects of condensation in the pipes.

Splices or junctions in the cable should be made with Stromberg-Carlson terminal boxes which are made for all sizes of the standard cable.

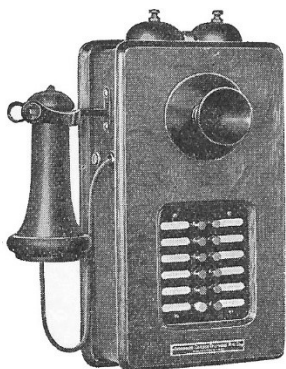
Battery

Two separate sets of dry cells are required for the

operation of this system, one set of 7 cells to supply current for talking purposes and the other from 7 to 10 cells for ringing the telephone bells. The exact number of cells in the ringing battery depends upon the length of the lines. For systems including less than 1000 feet of cable 7 cells will be plenty—the battery for longer systems should be proportionately increased to compensate for the drop in voltage due to the added resistance of the circuits.

Telephones for Inter-Comm-Phone System No. 1

No. 1163 Type Central Energy Wall Telephone



No. 1163-A-12 Telephone

Wall telephones of this type are often preferred for Inter-Comm-Phone Stations. The reason no doubt is because each telephone, is in itself, a complete station unit mounted in a neat box and including, not only the key box, but also the talking and signalling apparatus. This combination cuts both installation and maintenance charges to a minimum.

All parts are readily accessible when the hinged front section is opened. As a further convenience, the line cable terminates directly upon screw type key terminals, which remain stationary when the front section of the box is swung open.

Furnished in two standard sizes as follows:

Code No.	Description	List Price Each
1163-A-12	Capacity—12 Stations Includes—complete talking, signalling and switching key apparatus for one station in quartered oak cabinet, finished in dull golden oak. Cord—No. R-2-G Receiver Cord 36 inches long. Mounting space—12 $\frac{5}{8}$ x 9 $\frac{5}{8}$ x 4 $\frac{7}{8}$ ins.	\$66.00
1163-A-22	Capacity—22 Stations. Includes—complete talking, signalling and switching key apparatus for one station in quartered oak cabinet, finished in golden oak. Cord—No. R-2-G. Receiver Cord 36 inches long. Mounting space—12 $\frac{5}{8}$ x 9 $\frac{5}{8}$ x 4 $\frac{7}{8}$ ins.	99.00



No. 1128-B Telephone

No. 1128 Type Combination Telephone

This combination telephone is very convenient both for office and for residence use. It has the further advantage that it may be installed as either a wall or desk telephone outfit.

The switching key, the vibrating ringer, the impedance coil, the line terminals, and the battery terminals are all contained in the key box. Furnished in two standard sizes as follows:

Code No.	Description	List Price Each
1128-B	Capacity—12 Stations Includes—No. 1179-I Hand Set Telephone, with No. 12-R-12 Metal Key Box, finished in durable dull black enamel. Cords—No. C-4-B 4 ft. Telephone Cord and No. D-5-C 6 ft. Key Box Cord. Mounting space of key box—5 $\frac{3}{4}$ x 6 $\frac{9}{16}$ ins.	\$ 90.00
1128-C	Capacity—22 Stations. Includes—No. 1179-I Hand Set Telephone, with No. 12-R-22 Metal Key Box, finished in durable dull black enamel. Cords—No. C-4-B 4 ft. Telephone Cord and No. D-5-C 6 ft. Key Box Cord. Mounting space of key box—5 $\frac{3}{4}$ x 9 $\frac{3}{8}$ ins.	120.00

With—

Stromberg-Carlson Inter-Comm-Phone System No. 1 you press one button once to call and talk with your party.

Telephones for Inter-Comm-Phone System No. 1 (Cont.)

No. 905 Type Desk Telephone



No. 905-B Desk Telephone

This desk type of instrument consists of a standard desk stand and a key box.

The key box, like the No. 1128 type, has the vibrating ringer, the impedance coil, the line terminals and battery terminals self contained.

Code No.	Description	List Price Each
905-B	Capacity—12 Stations. Includes—No. 1169 Desk Stand with No. 12-R-12 Key Box, finished in durable dull black enamel. Cords—No. D-5-C 6 ft. Key Box Cord and No. R-2-G 36 in. Receiver Cord. Mounting space of key box— $5\frac{3}{4} \times 6\frac{9}{16}$ inches.	\$78.00
905-C	Capacity—22 Stations. Includes—No. 1169 Desk Stand with No. 12-R-22 Key Box, finished in durable dull black enamel. Cords—No. D-5-C 6 ft. Key Box Cord and No. R-2-G 36 in. Receiver Cord. Mounting space of key box— $5\frac{3}{4} \times 9\frac{3}{8}$ inches.	\$108.00

Automatic Types of Instruments

When System No. 1 connects with an automatic public telephone exchange it is necessary to equip both the answering and regular stations with dial type instruments. Stromberg-Carlson dial type Desk Stands and Wall Telephones are available for that purpose. Complete information will be furnished upon request.

Trunk Line Equipments

Where connections are made with a public telephone exchange in addition to the local service given by the Inter-Comm-Phone System, it is necessary to equip each exchange trunk line at the answering station with one of the following extension bells. These extension bells contain, in a neat oak box, all the equipment that is required for the proper reception and transfer of the calls between the Inter-Comm-Phone System and the public telephone exchange.

Before planning on a privately owned telephone system which is to be arranged for connecting with a public telephone exchange, consult the proper officials of the telephone company. This precaution is urged because most operating companies will not connect their wires to apparatus such as switchboards or telephones which they do not own and maintain.



No. 907 Trunk Type Extension Bell

Code No.	Description	List Price Each
907-A	Automatic Type —Connects with Automatic main exchange, equipped with bell, condensers, impedance coil and relay. Mounting space $9 \times 11\frac{1}{4} \times 7$ ins.	\$45.00
907-B	Magneto Type —Connects with Magneto main exchange which is arranged for battery calling. Equipped with bell, condensers, impedance coil and relay. Mounting space $9 \times 11\frac{1}{4} \times 7$ ins.	45.00
907-C	Central Energy Type —Connects with Central Energy main exchange. Equipped with bell, condensers, impedance coil and relay. Mounting space $9 \times 11\frac{1}{4} \times 7$ ins.	42.00
907-L	Magneto Type —Connects with Magneto main exchange which is arranged for Magneto calling. Equipped with bell, condensers, impedance coil and hand generator. Mounting space $9 \times 11\frac{1}{4} \times 7$ ins.	57.00

When two trunk line extension bells are installed at the answering station, they should be ordered with gongs of different tones, so that the attendant may readily identify the line that is called.

Accessories for System No. 1

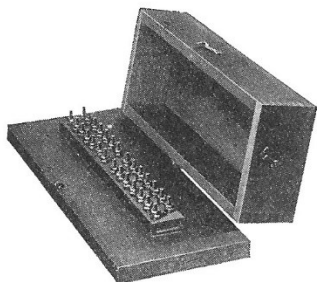
Inter-Comm-Phone Cable

As stated on the preceding page, the connections between the various telephone instruments are formed by means of Stromberg-Carlson standard cables which are designed especially for this purpose. These are cables furnished in two types;—one with a tightly woven exterior braid for exposed cabling in dry buildings and the other with a lead

Accessories for Inter-Comm-Phone System No. 1 (Cont.)



No. 60-L Cable



No. 62 Terminal Box

sheath for cable runs out-of-door—also for cable runs in buildings which will not always be kept entirely free from dampness or for cable runs which are protected by conduits.

All wires in standard intercommunicating cables are tinned copper, with single silk and single cotton insulation, and are colored in accordance with a standard color code. These wires are twisted in cores and are saturated with beeswax compound to facilitate installation work, and to protect the cable from moisture.

The cables used with System No. 1 are made up entirely of wires in pairs. All wires in each cable are No. 22 B. & S. Gauge, except the two pairs used for talking and signalling battery which are No. 18 B. & S. Gauge. Cables with braided covering are indicated by the suffix "B" to the Code Number; likewise cables with a lead sheath are indicated by the suffix "L" to the Code Number—for instance: Code Number 60-B indicates a braided covering, and Code Number 60-L indicates a lead covering.

Code No.	No. of Pairs	No. of Stations	Approximate Diameter		Approx. Weight Per 1000 ft.	List Price 100 feet
			Braided	Leaded		
60-B	14	12	$\frac{27}{64}$ in.		130 lbs.	\$ 18.15
60-L	14	12		$\frac{1}{2}$ in.	535 "	29.70
61-B	24	22	$\frac{33}{64}$ in.		195 "	27.30
61-L	24	22		$\frac{19}{32}$ in.	680 "	41.25

Terminal Boxes

Stromberg-Carlson standard terminal boxes should be used for making all terminals, branches and splices in the cabling system. These terminals consist of a white wood box with a removable cover in which are mounted the required number of composition base locknut terminals. The use of these terminal boxes greatly facilitates installation work and subsequent testing of the system. Standard terminal boxes for use with the Inter-Comm-Phone System No. 1 are as follows:

Code No.	For Cable No.	Mounting Space	No. of Pairs	Approx. Weight	List Price
62	60	6" x 8"	14	3 lbs.	\$12.00
63	61	6" x 12"	24	3 "	18.00

Bell Ringing Transformer

Where 110 volt 60 cycle alternating current power or lighting circuits are available a Stromberg-Carlson Type "B" Bell Ringing Transformer can be used instead of a ringing battery for furnishing the ringing current used for signalling purposes. This type of transformer is provided with secondary taps which generate three different voltages—6, 14 and 20 volts, and which adapt it for use in systems of varying sizes. It consumes no current except during the ringing period. It is fire-proof and may be short-circuited without injury or impairing its efficiency.

Code No.	Description	List Price
Type "B", 110 volt, 60 Cycle Bell Ringing Transformer	Dimensions— $7\frac{1}{2}$ x $4\frac{1}{4}$ x $3\frac{3}{4}$ ins. Approximate shipping weight—11 lbs.	\$22.00

Inter-Comm-Phone System No. 2

Selective Ringing—Common Talking

6 and 11 Stations Capacity

This system furnishes service equivalent in all respects to the No. 1 System, except that it cannot transmit more than one conversation at a time and that it is not arranged for connections with a public service telephone exchange. It is recommended for small local service systems in which there is seldom a necessity for simultaneous conversations, as in small commercial establishments, factories, clubs and residences. The circuits of this system are more simple and do not require the three position switching key, and as a consequence the apparatus is less expensive although equal in talking and ringing efficiency to the No. 1 System.

Kinds of Service

The wiring and equipment of this system are arranged for local service between all stations. Each station may call any other station without interfering with the remaining stations—however, as above mentioned, only one conversation can be carried on at a time.

Any or all stations may be called in rapid succession for the purpose of giving general instructions or general conversations.

This system also can be arranged so that any station can be denied the means of calling certain other stations.

Inter-Comm-Phone System No. 2 (Cont.)

All conversations are carried on by means of a single pair of talking circuit wires, which are common to all stations.

Operation

To call a station it is only necessary to push the button on the calling telephone corresponding to the station wanted and to remove the receiver from the hook and place it to the ear in the usual way. Calls are answered as with city or town telephones by simply taking the receiver from the hook and responding. Before calling, the user should determine whether or not the system is in use, by "listening-in" for a moment.

Standard Equipment

The instruments and accessories for this Inter-Comm-Phone System are furnished in two standard sizes, viz., 6 and 11 station capacities. If a smaller number of stations is required a partial equipment may be purchased for immediate operation and additional apparatus installed at any future time as required. The instruments are termed 6 and 11 station instruments, because a push button is not included for the "home" station. For example, six telephones each equipped with 5 push buttons, constitute a full capacity six station system. The various types of telephones, equipped for use with this system, are illustrated and described on the following page.

Telephones for Inter-Comm-Phone System No. 2

Telephones for this type of system are made in two standard sizes for 6 and 11 stations capacity and in two types, viz., Wall and Hand Set Telephone outfits. Each instrument includes in its equipment a Stromberg-Carlson standard transmitter, a Stromberg-Carlson direct current receiver and all associated minor apparatus. Five or ten single contact

Cabling of System

The talking circuit for this system consists of only one pair of wires common to all the stations.

The ringing circuit, however, requires more elaborate wiring. An individual conductor is necessary to each station. In addition to this; another wire, common to all stations; is essential to complete the return circuit of the ringing current.

Splices, branches and terminals should be made with Stromberg-Carlson standard terminal boxes.

Battery

One centrally located set of dry cells is required to supply both talking and ringing current for this type of system. The exact number of cells required depends upon the length of the lines. For systems including less than 1,000 feet of cable, 7 cells are generally sufficient. The number of cells should be proportionately increased to compensate for the drop in voltage due to the added resistance of the circuits.

Impedance Coil

One No. 13-A Impedance Coil is required for each Inter-Comm-Phone System No. 2.

This Impedance Coil is placed in the battery leads to the common talking feed circuit so as to prevent cross talk.

push buttons, as required by the size of the system, are mounted in the telephone or on separate push button block, for ringing the other telephones connected to the system. The complete telephone set consists of the number of pieces shown in the corresponding illustration.



No. 1122-B Telephone

No. 1122 Type Wall Telephone

A wall mounted station instrument in a wooden cabinet, which is provided with a hinged front section. This construction affords convenient access to the interior apparatus.

In the 6 station wall telephones of this type, the push buttons are mounted in a single vertical row. But in the 11 station wall telephones of this type, the push buttons are mounted in a double row.

Furnished in two standard sizes as follows:

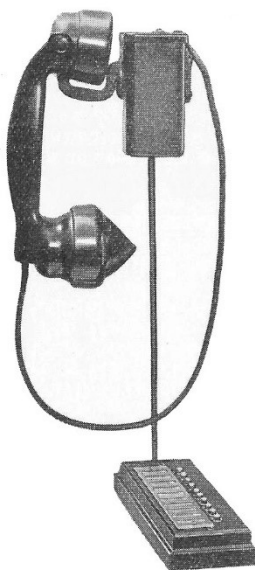
Code No.	Description	List Price
1122-A	Capacity—6 Stations Includes—complete talking, signalling and push button apparatus for one station, in a quartered oak cabinet, finished in dull golden oak. Cord—No. R-2-G. Receiver Cord 36 inches long. Mounting space— $10\frac{1}{2}$ x 5 x $8\frac{3}{4}$ ins. Approximate shipping weight— $7\frac{1}{2}$ lbs.	\$37.80
1122-B	Capacity—11 Stations Includes—complete talking, signalling and push button apparatus for one station, in a quartered oak cabinet, finished in dull golden oak. Cord—No. R-2-G. Receiver Cord 36 inches long. Mounting space— $10\frac{1}{2}$ x 5 x $8\frac{3}{4}$ ins. Approximate shipping weight— $7\frac{1}{2}$ lbs.	42.00

No. 1139 Type Hand Set Telephone

Users find this telephone very handy, because it mounts without desk room on either the wall or the side of the desk, and because it is convenient in conversation,—one hand is always free, for writing purposes while the other hand is engaged in holding the telephone.

Inter-Comm-Phone System No. 2 (Cont.)

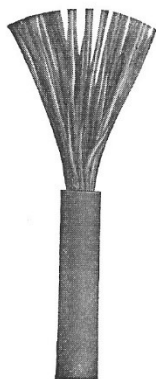
No. 1139 Type Hand Set Telephone (Cont.)



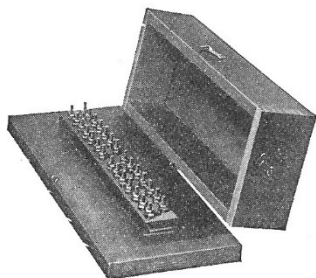
No. 1139-A Telephone



No. 13-A Impedance Coil



No. 60-L Cable



No. 62 Terminal Box

The hookswitch box contains not only the hookswitch, but also a concealed, 20 ohm, vibrating buzzer.

Furnished in two standard sizes as follows:

Code No.	Description	List Price
1139-A	Capacity—6 Stations Includes—No. 1181-E Hand Set, and No. 5 Push Button Block Cord—No. D-2-C 6 ft. Telephone Cord. Mounting space of push button block—4¼ x 3 x 1¼ ins. Approximate shipping weight of complete telephone—6 lbs.	\$58.50
1139-B	Capacity—11 Stations Includes—No. 1181-E Hand Set, and No. 10 Push Button Block. Cord—No. D-2-C 6 ft. Telephone Cord. Mounting space of push button block—6¾ x 3 x 1¼ ins. Approximate shipping weight of complete telephone—6 lbs.	61.50

Accessories for System No. 2

No. 13 Impedance Coil

One No. 13-A Impedance Coil is required for each No. 2 Inter-Comm-Phone System, regardless as to whether the system is partially or fully equipped. This impedance coil is required to regulate the supply of current to the transmitters of the various telephones.

Code No.	Description	List Price
13-A	Each No. 13-A Impedance Coil includes a wooden mounting block and Fahnestock spring clip binding posts. Mounting space—3 x 7¼ ins. Shipping weight—1 lb.	\$ 6.00

Cable

The connections between the various stations of a No. 2 Inter-Comm-Phone System are made by Stromberg-Carlson Inter-Comm-Phone cables. These cables are made in two standard sizes with either braided or leaded sheath. Use the cable with the exterior braid for exposed cabling in dry buildings and the leaded cable for installations out-of-doors in damp buildings and in conduit work.

Both types of cable are made up of the required number of wires which are twisted into cores and waxed. Two pairs of the wires are No. 18 B. & S. Gauge for the common talking and common return ringing circuits and the balance No. 22 B. & S. Gauge single conductors. Each wire is tinned and insulated with one serving of silk and one serving of cotton applied in opposite directions. The outer servings of the wires are dyed a distinctive color or combination of colors for identification purposes.

Cables with braided coverings are indicated by the suffix "B" added to the code number; likewise cables with a lead sheath are indicated by the suffix "L" added to the code number—for instance: Code No. 77-B Cable indicates a braided covering and Code No. 77-L Cable indicates a lead covering.

Code	No. of Conductors	No. of Stations	Approximate Braided	Diameters Leaded	Approx. Weight Per 100 ft.	List Price Per 100 ft.
77-B	10	6	19/64 in.	11/32 in.	6½ lbs.	\$ 9.90
77-L	10	6		11/32 in.	27 lbs.	19.05
78-B	15	11	11/32 in.		8½ lbs.	12.00
78-L	15	11		25/64 in.	32 lbs.	19.80

Terminal Boxes

Stromberg-Carlson standard terminal boxes should be used for making all terminals, branches and splices in the cabling system. These terminals consist of a white wood box with a removable cover in which are mounted the required number of composition base locknut terminals. The use of these terminal boxes greatly facilitates installation work and subsequent testing of the system. Standard terminal boxes for use with the No. 2 Inter-Comm-Phone system are as follows:

Code No.	For Cable No.	Space	Mounting No. of Pairs	Approx. Weight	List Price
62	78	6" x 8"	14	3 lbs.	\$12.00
67	77	6" x 8"	7	3 "	9.00

Inter-Comm-Phone System No. 3

Central Station System—10-30 Stations Capacity

In many cases the telephone service requirements are for communication between one master station and a number of outlying stations as in schools, small hotels and public institutions. To meet such requirements the Stromberg-Carlson Inter-Comm-Phone System No. 3 has been developed. This system performs the desired functions in an entirely satisfactory manner and at a comparatively low price. The equipment is highly efficient and requires no more attention than an ordinary system of call bells.

Kind of Service

The arrangement of this system provides for talking and ringing between the master station and all outlying stations over a three wire circuit consisting of a pair of common talking circuit wires and an individual signalling wire to each station. The outlying stations cannot call each other direct but must first call the master station which in turn calls the desired station. In this way there is a constant check on all calls between outlying stations through the master station. Only one conversation can be maintained at a time.

Operation

To call the master station from an outlying station the user presses the ringing button and then places the receiver to the ear in the usual manner. To call an outlying station from the master station the user presses the ringing button opposite the name or number of the desired outlying station and then removes the receiver from the hook. Calls from one outlying station to another are made by calling the master station and requesting the attendant to call the other station as described above.

Standard Equipment

Telephone instruments and accessories for Inter-Comm-Phone System No. 3 are furnished in two sizes viz., 5 and 10 stations. It is unnecessary to purchase a fully equipped system unless the com-

plete equipment is actually required, as additional outlying stations can be installed at any time provided that the master station capacity is of sufficient size. The various types of telephone instruments for this system are illustrated and listed on the following page.

Wiring System

As stated in the preceding paragraph three wires are required between each outlying station and master station. Two of these wires are common talking wires and may extend from station to station if local conditions permit.

Stromberg-Carlson three conductor No. 18 B. & S. Gauge rubber covered and braided interior telephone wire is recommended. Office wire and annunciator wires are unsuitable for telephone installations as their insulating qualities are inferior.

Battery

One centrally located set of dry cells is required to supply both talking and ringing current for this type of system. The exact number of cells required depends upon the length of the lines. For systems including less than 1,000 feet of cable 7 cells are generally sufficient. The number of cells should be proportionately increased to compensate for the drop in voltage due to the added resistance of the circuits.

Bell Ringing Transformer

Bell Ringing Transformers are unnecessary with this system, because the same battery that supplies the talking current also supplies the ringing current.

No. 13-A Impedance Coil

One No. 13-A Impedance Coil is required for each Inter-Comm-Phone System No. 3.

This Impedance Coil is placed in the battery leads to the common talking feed circuit so as to regulate the supply of current to the various telephone transmitters, and is included as part of the No. 1118 Desk Telephone.

Telephones for Inter-Comm-Phone System No. 3

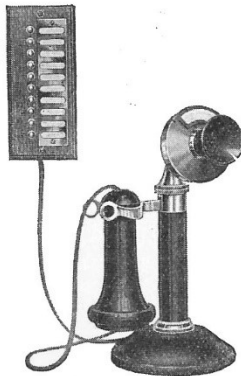
Master Station Equipment—No. 1118 Type Desk Telephone

There is no handier Master Station Equipment than this Desk Telephone—it can always be located on a desk or table within arm's reach of the attendant.

Stromberg-Carlson No. 1118 Desk Telephones are arranged so that the buzzer is mounted, concealed from view in the base of the No. 1146 Desk Stand.

Furnished in two standard sizes as follows:

Code No.	Description	List Price
1118-A	Capacity—5 Stations Includes—the No. 1146 Desk Stand, one No. 5 Push Button Block, one No. 13-A Impedance Coil, one No. 4-A Terminal Block and one 20 ohm Vibrating Buzzer. Cords—No. R-2-G Receiver Cord 36 inches long. No. D-4-C Desk Stand Cord 6 ft. long. Mounting space of push button blocks each 4¼ x 3 x 1¼ ins. Approximate shipping weight of complete telephone 7 lbs.	\$51.00



No. 1118-B Telephone

Inter-Comm-Phone System No. 3 (Cont.)

Master Station Equipment (Cont.)

Code No.	Description	List Price
1118-B	Capacity—10 Stations Includes—the No. 1146 Desk Stand, one No. 10 Push Button Block, one No. 13-A Impedance Coil, one No. 4-A Terminal Block and one 20 ohm vibrating buzzer. Cords—No. R-2-G Receiver Cord 36 inches long. No. D-4-C Desk Stand Cord 6 ft. long. Mounting space of push button blocks each— $6\frac{3}{4} \times 3 \times 1\frac{1}{4}$ ins. Approximate shipping weight of complete telephone— $7\frac{1}{2}$ lbs.	\$54.00



No. 965-B Telephone

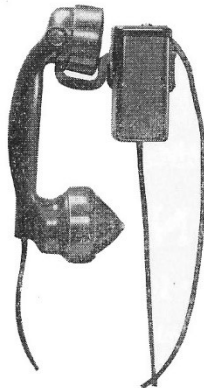
Outlying Station Equipment—No. 965-B Telephone

This telephone is unexcelled as a substantially-built, neat-appearing wall instrument for Outlying Stations.

The box is of pressed steel construction with hinged door which provides convenient means for inspection.

High grade talking qualities are ensured by the Stromberg-Carlson standard solid back, carbon cup transmitter and the Stromberg-Carlson standard receiver.

Code No.	Description	List Price
965-B	Includes—complete talking and signalling apparatus for one outlying station, in metal box finished in durable dull black enamel. Cord—No. R-2-G Receiver Cord 36 inches long. Mounting space— $9\frac{3}{8} \times 7\frac{3}{4} \times 6\frac{7}{8}$ ins. Approximate shipping weight—9 lbs.	\$27.00



No. 1181-B Telephone

Outlying Station Equipment—No. 1181-B

A very convenient, single piece, outlying station equipment for either wall or desk use.

The hookswitch box, from which the telephone is suspended when not in use, contains the push button and the 20 ohm vibrating buzzer.

Both the transmitter and the receiver are of Stromberg-Carlson standard design.

Line connections are made to terminals which are on top of the hookswitch box.

Code No.	Description	List Price
1181-B	Includes—telephone instrument and hookswitch box with 20 ohm buzzer and push button. Cord—No. D-2-C. 6 ft. Telephone Cord. Mounting space— $8\frac{1}{2} \times 4\frac{1}{4}$ ins. Approximate shipping weight—4 lbs.	\$48.00

Inter-Comm-Phone System No. 4

Private Line Telephones—2 Station Capacity

This system provides a dependable means of communication between any two points not farther than 2000 feet apart. It is an ideal equipment for a private line between two offices, two departments in a factory, and for house to garage lines, etc. To call the distant station it is only necessary to push the ringing button at the calling telephone. Calls are answered in the usual manner by simply placing the receiver to the ear.

The telephones for this system are furnished in two types—a wall telephone, and a combination telephone. From 4 to 6 dry cells are required for operating the system. These batteries can be installed at either end of the line, or any other intermediate point. Three wires are required between stations. Complete instructions for setting up and installing the system are packed with each shipment.

Telephones for Inter-Comm-Phone System No. 4

No. 965-A Wall Telephone



No. 965-A
Wall
Telephone

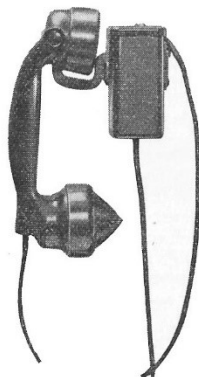
A compact, substantially built, neat appearing wall telephone, admirably adapted to the requirements of private line service.

This telephone is provided with a pressed steel box, which has a hinged cover. The opening of this cover exposes all interior apparatus for quick inspection.

Both the transmitter and the receiver are the same as those used on Stromberg-Carlson Telephones regularly furnished for city telephone exchange service.

Code No.	Description	List Price
965-A	Includes—complete talking and signalling apparatus for one station in metal box, finished in durable dull black enamel. Cord—No. R-2-G Receiver Cord 36 inches long. Mounting space— $9\frac{3}{8}$ x $7\frac{3}{4}$ x $6\frac{1}{8}$ ins. Approximate shipping weight—9 lbs.	\$27.00

No. 1181-A Hand Set



No. 1181-A Hand Set

An instrument of this type is often desired as either an office or a residence telephone. Its popularity is due, no doubt, to the fact that it requires neither desk nor table space, but mounts handily on either the side of the desk or on the wall.

The hookswitch box, from which the telephone suspends, when not in use, contains the push button and the 20 ohm vibrating buzzer.

Both the transmitter and the receiver are of Stromberg-Carlson standard design.

Line connections are made to the terminals which are mounted on top of the hookswitch box.

Code No.	Description	List Price
1181-A	Includes—telephone instrument and hookswitch box with 20 ohm buzzer and push button. Cord—No. D-3-C 6 ft. Telephone Cord. Mounting space— $8\frac{1}{2}$ x $4\frac{1}{4}$ ins. Approximate shipping weight—4 lbs.	\$48.00

Inter-Comm-Phone System No. 6

Private Exchange Switchboard—Capacity 10, 50 or 100 Stations

This system is designed to meet the requirements of factories, offices, schools, hospitals, clubs, hotels, etc., where the volume of traffic necessitates simultaneous conversations and where the services of an attendant are required. With this type of apparatus each telephone station may call and may converse with any telephone station in the system. This is accomplished by first calling the operator who completes the connection with the desired station and also takes down the connection after the conversation is completed.

Kinds of Service

Stromberg-Carlson Switchboards for System No. 6 are equipped for local service in private telephone exchanges where it is desired to effect economy by omitting all the apparatus which would be required for connecting with a city telephone exchange. However, the switchboards are provided with the space and the wiring so that trunking equipment may be installed at any future date. These trunk circuits are designed for connecting with Central Energy City Telephone Exchanges, Automatic City Telephone Exchanges or Magneto City Telephone Exchanges.

The omission of the trunk equipment has been found advisable, on account of the fact that most telephone operating companies rent their telephone apparatus to subscribers and connect with only the branch exchanges which they install and operate on this rental basis.

Operation

To establish a connection with another station, it is only necessary for the calling station to signal the attendant which is done automatically when the calling party removes the receiver from his telephone's hookswitch. The signal appears before the attendant who answers and completes the connection with a regular cord circuit and when the parties are through conversing, the attendant is automatically signalled as the receivers are replaced to their hooks. At that time, the attendant restores the cord circuits to normal, so that either party may promptly initiate other calls.

Provided that trunk connections are desired with an automatic city exchange, the telephones for the stations, which are to be given the privilege of such city exchange connections, must be equipped with calling devices. These calling devices are used only

Inter-Comm-Phone System No. 6 (Cont.)

when calls are made through the city exchange and are not utilized for calls in the local system.

Standard Equipment

Stromberg-Carlson station telephones which are used for Inter-Comm-Phone System No. 6 are the same reliable and substantially built instruments that are so well known throughout the world and used in large city exchanges for both local and long distance service.

The switchboards are made in three sizes as follows:

The No. 104-CX Cordless Type 10 lines capacity.

The No. 101 Cord Type 50 lines capacity.

The No. 102 Cord Type 100 lines capacity.

The No. 104-CX Cordless Switchboard comes fully equipped with 10 lines and 5 connecting circuits, but the No. 101 and the No. 102 types of switchboards although wired to capacity in all instances may be purchased with as low as 10 lines and 4 connecting circuits equipped.

Cabling of System

The cabling of this system is of the full metallic circuit type between all stations. Two wires only are required for connecting each station with the switchboard. Stromberg-Carlson Standard Switchboard Cables are furnished in the proper capacities for containing all the wires essential to fulfill the requirements for any size of exchange. These cables are made up so that any pair of wires may be identified by their coloring which makes the installation and testing a comparatively simple task. Two types of cables are available—the braided type and the leaded sheath type. The cable with painted and braided

sheathing is recommended for interior use where the cable will not be subject to dampness, acid fumes or mechanical injury. The leaded cable should be specified for all outdoor use or places which are subject to excessive moisture, or corrosive fumes. Provided that iron conduit is used for cable runs the leaded type cable should be installed because it is unaffected by the condensation which takes place in the pipes.

Battery

The batteries required to operate this system should be of the secondary type—this is due to the fact that primary batteries do not have sufficient capacity to handle the load caused by the introduction of lamp signals and relays in the circuits of the system.

The battery recommended for any installation of not over 100 stations consists of 11 cells of Electric Storage Battery Companies, Type CT chloride accumulators.

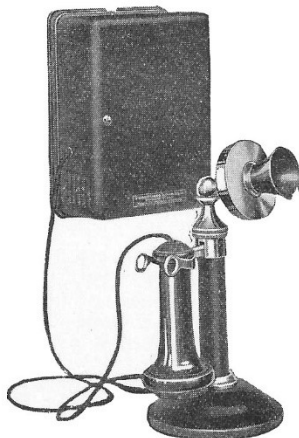
The charging apparatus, which has been found most satisfactory, is a General Electric Company's Catalogue No. 244,708 Tungar Rectifier. This rectifier needs practically no attention after it is once connected with the battery. In fact, it is the usual practice to float the battery continuously across the rectifier and to connect the rectifier with the 60 cycle 110 volt lighting circuit, by means of an ordinary attachment plug, which may be fitted into either a lamp socket or a wall outlet.

The overall dimensions of the rectifier are $6\frac{3}{8} \times 9\frac{1}{8} \times 7\frac{1}{8}$ inches.

Provided that an alternating current source of power supply is not available, quotations will be made on battery charging apparatus suited to the facilities at hand.

Telephones for Inter-Comm-Phone System No. 6

No. 1168 Desk Stand and No. 1156-BY Desk Set Box



No. 1168 Desk Stand with
1156-BY Desk Set Box

The No. 1168 Desk Stand when associated with the No. 1156-BY Desk Set Box provides a very neat and light weight type of station instrument.

This desk stand is equipped with the Stromberg-Carlson standard transmitter and the Stromberg-Carlson standard magnetic receiver.

The 1000 ohm ringer, the induction coil and the I. M. F. condenser are mounted in the No. 1156-BY Desk Set Box.

Code No.	Description	List Price
1168 Desk Stand with 1156-BY Desk Set Box.	Includes—complete talking and signalling apparatus for one station. Consists of pedestal type desk stand and pressed metal desk set box; both finished in durable dull black enamel with nickel trim. Cords—No. D-3-C, 6 ft. Desk Stand Cord and No. R-2-G, 36 inch Receiver Cord. Mounting space of Desk Set Box— $9\frac{3}{8} \times 6\frac{3}{4} \times 3\frac{5}{8}$ ins. Approximate shipping weight—10 lbs.	\$35.80

No. 1155-BY Wall Telephone

Telephones of this type are recommended as adapted particularly for use in hotels, clubs, schools, etc.,—where desk apparatus is not essential.

The box is of pressed steel construction with a hinged door which provides convenient means for inspection.

High grade talking qualities are insured by the Stromberg-Carlson

Telephones for Inter-Comm-Phone System No. 6 (Cont.)

No. 1155-BY Wall Telephone (Cont.)

No. 1155-BY
Wall Telephone

standard, solid back, carbon cup transmitter and the Stromberg-Carlson standard direct current receiver.

The signalling equipment consists of a 1000 ohm ringer and a 1 M. F. condenser.

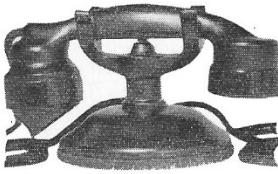
Code No.	Description	List Price
1155-BY	Includes—complete talking and signalling apparatus for one station in a pressed metal box finished in durable dull black enamel with nickel trim. Cord—No. R-2-G, 36 inch Receiver Cord. Mounting space— $9\frac{3}{8}$ x $7\frac{3}{4}$ x $6\frac{7}{8}$ ins. Approximate shipping weight—10 lbs.	\$29.04

No. 1177 Hand Set and No. 1156-BY Desk Set Box

This telephone is unexcelled for convenience in an office,—it may be installed as either a wall or desk instrument.

When not in use, the telephone hangs from the hookswitch box. This hookswitch box includes the induction coil, the line terminals, and the terminals for connecting the telephone with the desk set box.

The 1000 ohm ringer and the 1 M. F. condenser are mounted in the No. 1156-BY Desk Set Box.



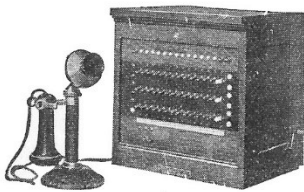
No. 10-C Hand Set

Code No.	Description	List Price
1177 Hand Set with 1156-BY Desk Set Box.	Includes—complete talking and signalling apparatus for one station. Consists of a rugged hand set and a pressed metal desk setbox both finished in dull black. Cord—No. D-3-C 6 ft. Hand Set Cord. Mounting space of Desk Set Box— $5\frac{1}{2}$ x 8 x $3\frac{1}{2}$ ins. Approximate shipping weight—15 lbs.	\$47.38

Switchboards for Inter-Comm-Phone System No. 6

(22 Volt Types)

No. 104-CX Cordless Switchboard

Front Perspective
No. 104-CX Cordless P. X. Switchboard

This switchboard is recommended for private exchange systems where the ultimate requirements will be for not more than 10 local lines. It is particularly recommended for use where it is desired to make all connections by means of keys, entirely dispensing with the use of both plugs and cords.

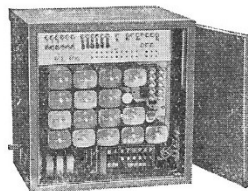
The apparatus is contained in a neat cabinet finished in dull golden oak. Each station line terminates at the switchboard on a lamp signal, a high wound relay and a key. This key not only serves for disconnecting the signalling apparatus but also serves for switching the line to the connecting circuits. These connecting circuits are of the single lamp signal type associated with a tandem wound battery feed relay.

Each No. 104-CX Cordless Switchboard is also furnished with a desk stand type operator's set, a night alarm with controlling switch and a hand generator with switch and terminals for cutting in power ringing current when desired.

The overall dimensions of the switchboard are as follows:

Height 16 ins. Width 16 ins. Depth $13\frac{1}{8}$ ins.

The No. 104-CX Cordless Switchboard not only is remarkably easy to install on account of its simplicity but is very convenient to operate because it is designed to fit on any desk or table close to an attendant who as a general rule has other duties to perform.

Rear Perspective
No. 104-CX Cordless P. X. Switchboard

Wired For	Code No.	Lines Equipped	Cords Equipped	Approximate Shipping Weight	List Price
10 Lines 5 Connecting Circuits 3 Trunks	104-CX	10	5	100 lbs.	\$690.00

Switchboard for Inter-Comm-Phone System No. 6 (Cont.)

No. 101 Type Private Exchange Switchboard

One section of the No. 101 Private Exchange Switchboard meets the requirements for service where the ultimate capacity of the system will be 50 or under 50 stations. All apparatus is contained in a neat oak cabinet, finished in dull golden oak. The overall dimensions of the switchboard are as follows:

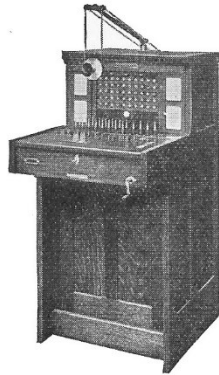
Height 42 $\frac{3}{4}$ ins. Width 20 $\frac{3}{4}$ ins. Depth 29 $\frac{5}{8}$ ins.

A particular advantage of this switchboard is, that should the exchange requirements grow beyond the capacity of 50 lines, an additional section may be matched to the original section. Such a combination of sections would give an ultimate capacity of 100 stations.

The station lines terminate at the switchboard on lamp signals with associated line jacks and high wound relays.

The connecting circuits each consist of three conductor plugs, three conductor cords, double lamp supervisory signals, a listening key, a ringing key, condensers and controlling relays. The operator's telephone set as regularly furnished includes a suspended transmitter, a head band receiver, a hand generator, a switch and terminals for power generator, and a night alarm with controlling switch. When specified, a breast plate type transmitter will be furnished in place of the suspended transmitter.

The line relays, the cord relays, the impedance coils and the condensers are all mounted on a horizontally swinging relay gate.



Front Perspective
No. 101 Type P. X. Switchboard

Wired For	Code No.	Lines Equipped	Connecting Circuits Equipped	Approximate Shipping Weight	List Price
50 lines 8 Cord Prs. 5 Trunks	101-AX	10	4	280 lbs.	\$879.14
	101-BX	20	4	290 "	908.32
	101-CX	30	5	300 "	1076.96
	101-DX	40	6	310 "	1194.40
	101-EX	50	8	320 "	1348.04

No. 102 Type Private Exchange Switchboard

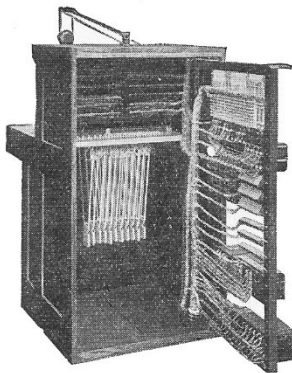
This switchboard has an ultimate capacity of 100 station lines per section. An additional section may be matched at any time to the original section. The combination of sections formed in this manner will raise the ultimate capacity of the switchboard to accommodate 200 stations.

All apparatus is contained in a neat oak cabinet, finished in dull golden oak. The overall dimensions of the switchboard are as follows:

Height 45 $\frac{1}{2}$ ins. Width 25 $\frac{1}{4}$ ins. Depth 35 ins.

The station lines terminate at the switchboard on lamp signals with associated line jacks and high wound relays.

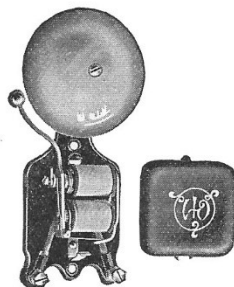
The connecting circuits each consist of three conductor plugs, three conductor cords, double lamp supervisory signals, a listening key, a ringing key, condensers and controlling relays. The operator's telephone set as regularly furnished includes a suspended transmitter, a head band receiver, a hand generator, a switch and terminals for power generator, and a night alarm with controlling switch. When specified, a breast plate type transmitter will be furnished in place of the suspended transmitter.



Rear Perspective
No. 102 Type P. X. Switchboard

Wired For	Code No.	Lines Equipped	Cords Equipped	Approximate Shipping Weight	List Price
100 Lines 10 Cord Prs. 5 Trunks	102-AX	10	4	370	\$1030.00
	102-BX	20	4	370	1114.40
	102-CX	30	5	380	1239.40
	102-DX	40	6	390	1378.30
	102-EX	50	8	400	1558.85
	102-FX	60	8	410	1656.10
	102-GX	70	8	410	1740.50
	102-HX	80	10	420	1921.10
	102-IX	90	10	430	2018.30
	102-JX	100	10	430	2047.20

Miscellaneous Inter-Comm-Phone Accessories



Iron Box Bell

Iron Box Bells

List No.	Description	List Price
1239	2½ inch gong, coils wound to 2 ohms	\$.60
1240	3 " " " " " 2 "	.65
1241	4 " " " " " 2 "	.84
1746	2½ " " " " " 5 "	.90
1747	3 " " " " " 5 "	.95
1748	4 " " " " " 5 "	1.14
1749	2½ " " " " " 20 "	1.06
1750	3 " " " " " 20 "	1.11
1751	4 " " " " " 20 "	1.30



No. 531 Dry Battery

Talking and Ringing Batteries

List No.	Description	List Price
531	A low current dry cell especially designed for Inter-Comm-Phone Systems. Furnished with,—round jackets, flush top carbon, and Fahnestock spring binding posts. Initial shipping amperage,—18 to 22 amperes. Dimensions of cell—2½ x 6 ins. Weight per barrel—300 lbs.	\$.35

Blake Insulated Staples

List No.	Description	List Price Per 1000
1085	No. 1—for securing either single wire or twisted pair wire to hardwood.	\$1.75
1086	No. 3—for securing either single wire or twisted pair wire to softwood.	1.75
1087	No. 5—for securing either twisted triplet wire or twisted pair wire to hardwood.	2.00
2504	No. 6—for securing either twisted triplet wire or twisted pair wire to softwood.	2.00



Blake Insulated Staple

Milonite Perfection Nails

List No.	Description	List Price Per 1000
1697	A nail with an insulated head and a shank covered with insulating paint, so as to adapt it for use installing twisted pair wire. Colored either dark green or dark brown as specified. Furnished in two lengths of shanks,—½ inch or ⅞ inch. Unless otherwise specified, a ⅞ inch shank and a dark brown color will be supplied.	\$1.25



Milonite Perfection Nail

Tools



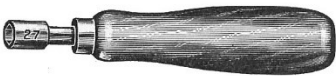







For Switchboards, Telephones and Miscellaneous Uses








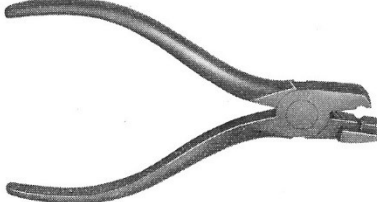
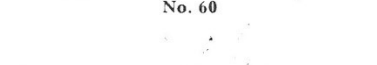





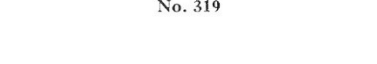
No. 2

Code No.	Description	Price Each
2	Socket Wrench fits the ⅜ in. hexagonal mounting nut of all Stromberg-Carlson visual signals, impedance coils and relays (except the No. 190 type relay). Length overall—12 ins. Weight—8 oz.	\$.75

Tools (Cont.)

Code No.	Description	Price Each
 No. 7	7 Spring Adjuster used for adjusting springs up to .03 in. thick, on Stromberg-Carlson relays, keys, jacks, etc. Length overall— $7\frac{3}{4}$ ins. Weight— $1\frac{1}{2}$ oz.	\$.60
 No. 14	14 Flat Telephone Wrench fits the $\frac{3}{16}$ in. and the $\frac{3}{8}$ in. hexagonal nuts on straight line ringers of both central energy and magneto telephones. Length overall— $2\frac{1}{8}$ ins. Weight—1 oz.	.02
 No. 27	27 Socket Wrench used with $\frac{5}{16}$ in. hexagonal nuts for miscellaneous uses. Length overall—6 ins. Weight—2 oz.	1.00
 No. 39	39 Flat Wrench used with $\frac{3}{8}$ and $\frac{1}{4}$ in. hexagonal nuts for adjusting the sleeve nuts on the No. 11 Drop. Length overall— $2\frac{1}{8}$ ins. Weight— $\frac{1}{2}$ oz.	.15
 No. 40	40 Receiver Shell Wrench used for removing the shell from the Nos. 27 and 28 Receivers. Length overall— $4\frac{3}{4}$ ins. Weight— $\frac{3}{4}$ oz.	.03
 No. 42	42 Screw Driver for removing both shell and terminal screws from standard Stromberg-Carlson Plugs. One end is pointed and fits in a hole drilled in top of screw, to facilitate starting of screw. Length overall— $3\frac{7}{8}$ ins. Weight— $\frac{1}{2}$ oz.	.85
 No. 44	44 Jack Fastener Wrench and Screw Driver used with the No. 17 Jack Fastener (Butterfly type). Consists of a thick metal tubing, the end of which is notched to fit cut-out portion of butterfly Jack fastener, and a screw driver which passes through the tubing. The screw driver tightens the screw while the tubing holds the fastener in place. Length overall—19 ins. Weight—14 oz.	2.50
 No. 45	45 Socket Screw Driver used for removing the Nos. 200 and 300 Type Relays from the bridge plate. Length overall—9 ins. Weight—4 oz.	1.50
 No. 47	47 Flat Wrench used for adjusting No. 47 Type Harmonic Ringers. Made from special saw blade steel. Length overall— $3\frac{3}{4}$ ins. Weight— $\frac{1}{2}$ oz.	.50
 No. 48	48 Number Plate Extractor used for removing ring on the inside of Nos. 28, 29 and 30 Lamp Caps. Length overall— $3\frac{7}{8}$ ins. Weight— $\frac{1}{4}$ oz.	1.50

Tools (Cont.)

	Code No.	Description	Price Each
	52	Screw Driver used for removing screw terminals on the No. 11 Drop. May also be used for any small screws. Length overall— $6\frac{1}{8}$ ins. Weight— $\frac{1}{2}$ oz.	\$.40
No. 52			
	53	Spring Adjuster used for adjusting contact springs on the No. 360 Type Relays. Length overall— $3\frac{7}{8}$ ins. Weight— $\frac{1}{2}$ oz.	1.50
No. 53			
	54	Spring Adjuster used for adjusting No. 24 Gauge springs on the No. 200 Type Relay. Length overall— $7\frac{3}{4}$ ins. Weight— $1\frac{1}{2}$ oz.	1.50
No. 54			
	55	Wrench used for holding the armature, while tightening yoke nut on the No. 47 Harmonic Ringer. Length overall—4 ins. Weight— $4\frac{1}{2}$ oz.	.10
No. 55			
	56	Small Screw Driver used for miscellaneous small screws. Length overall— $4\frac{3}{4}$ ins. Weight $\frac{1}{2}$ oz.	.15
No. 56			
	57	Assorted tools mounted on $8\frac{1}{2}$ x 11 in. card designed for use with the No. 105 Magneto Switchboard. The assortment consists of the No. 39 Wrench, No. 42 Plug Screw Driver, No. 56 Screw Driver, No. 52 Screw Driver, and No. 7 Relay Spring Adjuster. Total weight—6 ozs.	1.95
No. 60			
	58	Lamp Cap Extractor used for removing the No. 31 Lamp Cap. Length overall— $2\frac{1}{2}$ ins. Weight— $\frac{1}{2}$ oz.	.50
No. 60			
	59	Gauge used for adjusting No. 49 Type Relay. Length overall—4 ins.	.25
No. 61			
	60	Cord Tip Clinchers. Used for attaching No. 9 and No. 14 Cord Tips to cords. Length overall— $5\frac{1}{2}$ ins.	2.00
No. 116			
	61	Burnisher for cleaning relay contacts. Length overall— $2\frac{1}{4}$ ins.	.35
No. 116			
	116	Lamp Extractor used to remove switchboard lamps having a diameter of one-quarter inch. Length $3\frac{7}{8}$ ins. Weight $\frac{1}{2}$ oz.	.60
No. 268			
	268	Spring Adjuster for use on relays having springs up to .020 inch thick. Length $5\frac{1}{2}$ ins. Weight 1 oz.	2.15
No. 319			
	319	Lamp Cap Extractor for use where the cap sets out on the surface of the lamp socket. Length $4\frac{3}{4}$ ins. Weight 2 ozs.	1.45

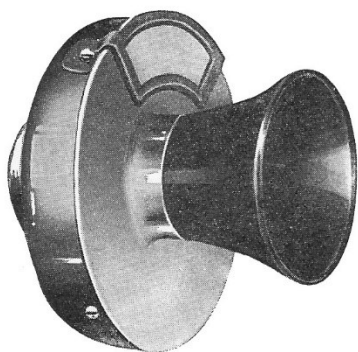
Transmitters

The transmitters on Stromberg-Carlson telephones are recognized throughout the World as standards of the highest efficiency in service. Some of the principal reasons why Stromberg-Carlson transmitters occupy this enviable position are as follows:

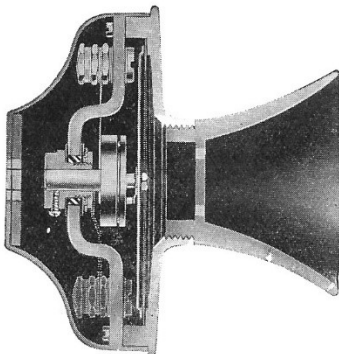
Low inertia of vibrating parts. The diaphragm vibrates without moving the entire weight of the carbon cup. A feature which prevents unnecessary distortion of speech.

Perfectly flat diaphragm with crimped edges. This design has been found the best for accurately responding to the pressure of the impressed voice waves.

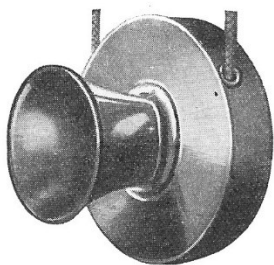
Three distinctive types of carbon cups. One type for low voltage magneto service, a second type for low voltage heavy current central energy service such as is encountered with Bell circuits and a third type—the famous Split Electrode—for high voltage central energy systems where condenser type cord circuits are employed. This subdivision of carbon cups is supplemented by grading the size of the carbon granules. In other words the right size of carbon cup is combined with the right size of carbon granule to make the correct transmitter for a particular service requirement.



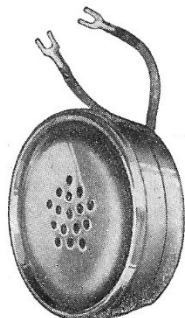
No. 7 Type Transmitter with No. 2 Card Frame



Cross Section, No. 7-L Transmitter



No. 8-C Transmitter

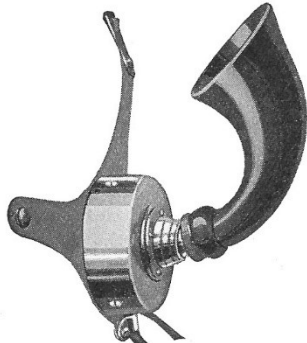


No. 12-L Transmitter

Code No.	Description	Price Each
7-C	"Split Electrode Type." Built especially for the condenser type of cord circuits, which are used so successfully by Independent operating companies. Has nickel-plated front and bakelite mouthpiece. This transmitter—unless otherwise specified on the order—comes complete with back for mounting on any of the following modern desk stands and modern wall telephones:—Stromberg-Carlson, Kellogg, Garford, Dean, Monarch, Leich, American-Electric, Sumter, Swedish-American, Chicago, Vote-Berger, Century, North. Price less back \$1.85	\$2.00
7-CW	A central energy transmitter which is unexcelled for service on either Desk Stands or Wall telephones that connect with low voltage high current circuits such as are employed by the Bell operating companies. Fits the same telephones as the above mentioned No. 7-C Transmitter. Has nickel-plated front and bakelite mouthpiece. Price less back \$1.85.	2.00
7-L	A local battery transmitter for any magneto system. This transmitter is remarkable, not only from a talking efficiency point of view, but also from a battery economy point of view. It is a genuine "two dry cell" transmitter. Fits the same telephones as the above mentioned No. 7-C Transmitter. Has nickel-plated front and bakelite mouthpiece. Price less back \$1.85.	2.00
8-CW	Suspended type switchboard transmitter, used on P. B. X. switchboards and on other central energy telephone switchboards where a suspended transmitter is desired. Has nickel-plated front and bakelite mouthpiece.	2.75
8-L	Suspended type switchboard transmitter, used on all Stromberg-Carlson Magneto Switchboards which are equipped with suspended transmitters. Has nickel-plated front and bakelite mouthpiece.	2.75
12-L	A local battery transmitter. Used on the No. 844 Magneto Test Set. Has a nickel-plated and perforated metal mouthpiece which is flush with the surface of the test set.	3.00

Transmitters (Cont.)

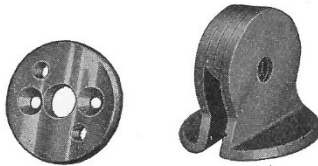
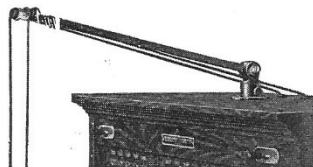
Code No.	Description	Price Each
18-CW	A Central Energy Switchboard Transmitter of the breast plate Type. Used on the No. 2-C Operators Telephone Set. Has nickel-plated front and semi-vulcanized mouthpiece.	\$3.70
18-L	A breast plate switchboard transmitter for magneto service. Used on the No. 2-L Operator's Telephone Set. Has nickel-plated front and semi-vulcanized mouthpiece.	3.70



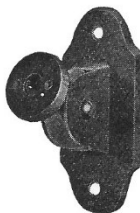
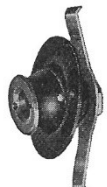
No. 18-C Operator's Transmitter



No. P-12192 Adapter Being Assembled to a Kellogg Desk Stand

No. P-9073
AdapterNo. P-13073
Adapter

No. 15 Transmitter Arm

No. 19
Transmitter
ArmNo. 20-B
Transmitter
Arm

Transmitter Adapters

Stromberg-Carlson transmitters can be mounted on any of the well-known makes of telephones. This is easily accomplished in practically every instance because Stromberg-Carlson transmitters are slightly smaller in diameter than most transmitters. Therefore, by employing a very simple adapter the advantage of a Stromberg-Carlson transmitter is gained readily.

This adapter not only gives the opportunity of improving transmission by installing Stromberg-Carlson transmitters on telephones now in service but also gives the opportunity of reducing transmitter stock to where it is necessary to carry only Stromberg-Carlson transmitters for all maintenance requirements.

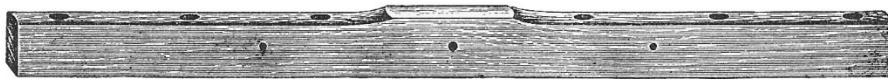
Stromberg-Carlson Transmitter Adapters are furnished in several types. Select from the following table the proper Transmitter Adapter.

Number	Description	Price Each
P-12192	Mounts the No. 7-C or the No. 7-L Transmitter—less back—on any of the following makes of telephones: Automatic (new design), Canadian Independent, Dean, Garford, Kellogg, Western Electric, Vote-Berger and Monarch. This transmitter adapter is made of brass, nickel-plated.	\$.05
P-9073	Mounts the No. 7-C or the No. 7-L Transmitter—with back—on a "Sterling" transmitter arm. Made of brass nickel-plated. Includes—2 No. P-8926 Mounting Screws.	.15
P-9074	Similar to No. P-9073 but mounts the No. 7-C or the No. 7-L Transmitter—with back—on an "International" arm. Made of brass, nickel-plated. Includes 2 No. P-5136 Mounting Screws.	.15
P-13073	Mounts the Nos. 7-C and 7-L Transmitters—with back—to modern Western Electric desk stands and metal wall telephones. Made of brass, nickel-plated.	.40

Transmitter Arms

Code No.	Description	Price Each
15	Switchboard Transmitter Arm. Mounts on roof of switchboard. Standard equipment for the Nos. 101, 102 and 105 Switchboards. Adjusts to any desired position, swings horizontally, swings vertically and telescopes from a fully extended length of 23 ins. to a fully contracted length of 14 ins. Suspends the transmitter on flexible cords. Made of brass with nickel-plated finish.	\$7.50
19	Telephone Transmitter Arm. Used on No. 896 Magneto Telephones. Mounts on wood. Made of iron, finished in black enamel. Has vertical adjustment. Mounts Nos. 7-L, 7-C and 7-CW Transmitters.	.50
20-A	Telephone Transmitter Arm. Used on No. 1126 Wall Telephone. Mounts on wood. Made of brass and iron, finished in black enamel. Has vertical adjustment. Mounts Nos. 7-C and 7-CW Transmitters.	.60
20-B	Telephone Transmitter Arm. Used on Nos. 1130, 1155 and 1157 Wall Telephones. Mounts on metal. Made of brass and iron, finished in black enamel. Has vertical adjustment. Mounts Nos. 7-C and 7-CW Transmitters.	.60

Cross-Arms



The following tables show the standard specifications of telephone and electric light crossarms which are available in Washington Fir.

"Telephone" (2 3/4" x 3 3/4") crossarms are recommended for local exchanges and for rural lines,—but for long-distance lines and heavy rural leads the heavier "Electric Light" (3 1/4" x 4 1/4") crossarms are recommended.

All cross-arms listed below are drilled for 5/8" center bolt, 3/8" brace bolts. The 2 3/4" x 3 3/4" crossarms are bored for 1 1/4" pins, and the 3 1/4" x 4 1/4" crossarms are bored for 1 1/2" pins as standard, but when shipped from Chicago may be drilled for 1 1/4" pins.

Cross-Arm Specification

McCormick Fir: Yellow Douglas Fir; straight grained; 75 per cent heart, free from shakes, rot, rotten or unsound knots.

loose heart, worm holes, large pitch pockets, excessive wane, or sound knots larger than one inch in diameter.

Standard Grade: Free from loose or unsound knots, or other defects which would injure the arm. Painted red.

Minimum Carload Weight: Fir, 42,500 pounds.

Special arms can be furnished from warehouses in the following sizes:

From Chicago, Fir: 2 3/4" x 3 3/4", 3 x 4 1/4", 3 1/4" x 4 1/4", 3 1/2" x 4 1/2", 3 3/4" x 4 3/4" and 4 x 5.

From Kansas City, Fir: 2 3/4" x 3 3/4" x 4 1/4".

From Minnesota Transfer, Fir: 2 3/4" x 3 3/4", 3x4 1/4", 3 1/2" x 4 1/2", 3 3/4" x 4 3/4" and 4 x 5.

Arms of other sizes can be shipped from factories in carloads with other material to warehouses and reshipped to destination.

Net Prices Per 100 on McCormick Fir Cross-Arms

List No.	Size and Length	Weight Per 100	F. O. B. Chicago		F. O. B. Kansas City or Minnesota Tr.		F. O. B. Cincinnati or New Orleans, La.		
			Carload Only f.o.b. Mill	Less than 1000 Linear Ft.	Less than 1000 Linear Feet and Over	Less than 1000 Linear Feet and Over	Less than 1000 Linear Feet and Over	Less than 1000 Linear Feet and Over	
1 F	24 inches 2 pin	500 lbs.	\$11.80	\$ 23.85	\$ 21.20	\$ 23.25	\$ 20.67	\$ 24.75	\$ 22.00
2 F	30 inches 2 pin	625 "	17.70	35.78	31.80	34.88	31.00	37.13	33.00
2333 F	36 inches 2 pin	750 "	17.70	35.78	31.80	34.88	31.00	37.13	33.00
3 F	42 inches 4 pin	875 "	23.60	47.70	42.40	46.50	41.33	49.50	44.00
4 F	62 inches 6 pin	1300 "	35.40	71.55	63.60	69.75	62.00	74.25	66.00
5 F	82 inches 8 pin	1700 "	41.30	83.48	74.20	81.38	72.33	86.63	77.00
6 F	102 inches 10 pin	2125 "	53.10	107.33	95.40	104.62	93.00	111.38	99.00
1507 F	3 feet 2 pin	1020 "	23.23	46.95	41.74	45.77	40.69	48.73	43.31
1508 F	4 feet 4 pin	1360 "	30.98	62.61	55.65	61.03	54.25	64.97	57.75
1509 F	5 feet 4 pin	1700 "	38.72	78.26	69.56	76.29	67.81	81.21	72.19
2334 F	6 feet 4 pin	2040 "	46.46	93.91	83.48	91.55	81.38	97.45	86.63
1510 F	6 feet 6 pin	2040 "	46.46	93.91	83.48	91.55	81.38	97.45	86.63
1511 F	8 feet 6 pin	2720 "	61.95	125.21	111.30	122.06	108.50	129.94	115.50
1512 F	8 feet 8 pin	2720 "	61.95	125.21	111.30	122.06	108.50	129.94	115.50
2335 F	8 1/2 feet 10 pin	2890 "	69.69	140.86	125.21	137.32	122.06	146.18	129.94
1513 F	10 feet 8 pin	3400 "	77.44	156.52	139.13	152.58	135.63	162.42	144.38
1514 F	10 feet 10 pin	3400 "	77.44	156.52	139.13	152.58	135.63	162.42	144.38

On carloads from the warehouses is 5% less than 1000 Linear Foot price.

On shipments from warehouses add 20% to net prices above for painting two coats red paint or for immersing for five

minutes in carbolineum heated to 200 degrees Fahr. On shipments from factories special prices on carloads of treated Arms will be quoted on request.

Prices on sizes not shown above will be quoted on application.

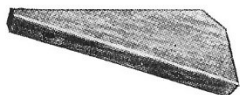
NOTE:—All cross arms are bored for 5/8" center bolt and two 3/8" brace bolt holes unless otherwise specified. Pin holes, unless otherwise specified, will be bored as follows: 2 3/4" x 3 3/4" telephone arms, 1 1/2"; 3 1/4" x 4 1/4" electric light arms, 1 1/2".

Net Prices Per 100 On McCormick Fir Cross-Arms

F. O. B. Rutherford, N. J.

List No.	Size and Length	Weight per 100	Less than	500 to	Over
			500 Lineal Feet	3000 Lineal Feet	3000 Lineal Feet
1507 F	3 feet 2 pin	1020 lbs.	\$ 48.10	\$ 45.65	\$ 39.00
1508 F	4 feet 4 pin	1360 "	64.15	60.85	52.00
1509 F	5 feet 4 pin	1700 "	80.15	76.05	65.00
2334 F	6 feet 4 pin	2040 "	96.20	91.30	78.00
1510 F	6 feet 6 pin	2040 "	96.20	91.30	78.00
1511 F	8 feet 6 pin	2720 "	128.25	121.70	104.00
1512 F	8 feet 8 pin	2720 "	128.25	121.70	104.00
1513 F	10 feet 8 pin	3400 "	160.30	152.10	130.00
1214 F	10 feet 10 pin	3400 "	160.30	152.10	130.00

Wood Pole Step

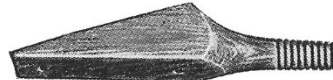


Owing to liability of injury to pedestrians it is customary to use wooden pole steps instead of iron steps for the lower three or four steps on stepped poles. Made of oak, painted and bored for two spikes. Standard package 100 per bag.

List No.	Size	Per 1000	
		F. O. B. R. & C.	F. O. B. K. C.
1924	1 1/2 inches x 2 inches x 7 inches	\$ 16.50	\$16.75
	Less than 100	18.00	16.25
	100 to 500	15.50	15.75
	500 to 1000	15.00	15.25
	1000 to 5000	15.00	15.25

Weight 500 lbs. per 1000

Wood Brackets—Single



Used for supporting glass insulators on rural lines. It is always best to use the heavy List No. 796 Oak Bracket, as the lighter types are apt to split when subject to the combined strains of long spans, high winds and ice loading. Standard package 250 per bag.

List No.	Oak Brackets	F. O. B. Rochester, Chicago and Kansas City, Per 1000			
		Less than 100	100 to 500	500 to 1000	1000 to 5000
13	1 1/2 x 2 x 12 painted	\$27.10	\$25.50	\$24.00	\$23.20
796	2 x 2 1/2 x 12 unpainted	39.20	37.25	35.00	33.75
797	1 1/2 x 2 1/4 x 12 painted	30.80	29.30	27.50	26.20
1563	1 1/2 x 2 x 10 painted	24.50	23.20	21.90	21.00

Wood Pins



Standard Pin



Transposition Pin

Used for attaching glass insulators to crossarms. Locust pins should be used in preference to oak,—they last longer. Transposition pins are designed for use with transposition insulators but are gradually becoming obsolete, being replaced by galvanized drop brackets. Wood pins packed 250 per bag.

F. O. B. Rochester, Chicago and Kansas City, Per 1000

List No.	Description	Lbs. Wgt. per 1000	Less than 250	250 to 1000	1000 to 2500	2500 to 5000
7	1 1/4 x 8" oak	300	\$17.90	\$17.50	\$16.80	\$16.50
8	1 1/4 x 8" No. 1 Grade locust	325	19.20	18.75	18.00	17.70
789	1 1/2 x 9" oak	400	35.00	33.25	31.25	30.00
791	1 1/2 x 9" No. 1 Grade locust	450	42.00	40.00	37.50	36.60

Western Union Patent Steel Pin



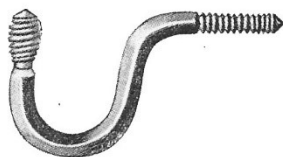
Made of steel with nut and washer. Paraffined wood top. F.O.B. Rochester and Chicago. Galvanized, Per 100

List No.	Description	Lbs. Wgt. per 1000	Std. Pkg.	Less than Std. Pkg.	St. Pkg. and over
9	1/2 x 9 1/4 in.	720	300	\$11.05	\$ 9.20
11	5/8 x 9 1/4 in.	1100	225	13.90	11.65
F.O.B. Kansas City, Galvanized, Per 100					
9	1/2 x 9 1/4 in.	750	300	\$11.75	\$ 9.80
11	5/8 x 9 1/4 in.	1100	225	15.40	12.75

Lag Screw Brackets



No. 2069



No. 2068

Used for supporting wire on poles trees, houses, mine timbers, etc. Made of galvanized steel and spring thread, for insulators.

List No.	Description	Lbs. Wgt. per 1000	Std. Pkg.	Less than Std. Pkg.	Std. Pkg. and over
2069	7/8 x 1/2 in.	650	100	\$17.23	\$13.73
2068	1/2 square x 6 1/2 long, threaded end 3" long.	1050	150	16.34	14.73

Paraffined Wood W. U. Cob Tops for Western Union Steel Pins

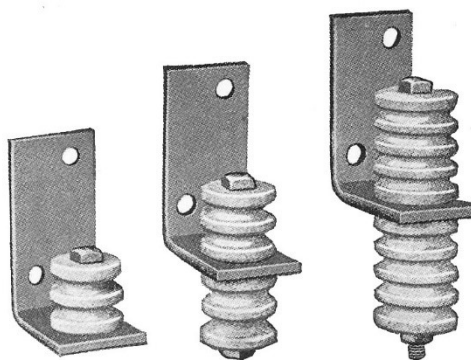
F.O.B. Rochester and Chicago, Per 100

List No.	Description	Lbs. Wgt. Per 1000	Less than 500	500 and over
2354	For 1/2 inch pin	600	\$2.20	\$1.85
2355	For 5/8 inch pin	600	2.48	2.07

F. O. B. Kansas City, Per 100

2354	For 1/2 inch pin	600	2.28	1.90
2355	For 5/8 inch pin	600	2.54	2.12

Telephone House and Pole Brackets



This cut illustrates the manner in which these brackets are usually assembled, although Brackets, Bolts and Porcelain Knobs are always shipped unassembled.

House Brackets are made from 1/2 x 1 1/4 inch steel with three holes 1/8 inch diameter provided for mounting to wall. A 1/2 x 2 inch machine or stove bolt is used for mounting one Double Groove Knob or a 1/2 x 3 1/2 inch for mounting two Double Groove Knobs.

Pole Brackets are made from 1/2 x 2 inch steel with two holes 1/8 inch diameter provided for mounting to pole. A 3/8 x 3 inch machine or stove bolt is used for mounting one Four Groove Knob or a 3/8 x 5 1/2 inch for mounting two Four Groove Knobs.

Bolts and Brackets are always furnished hot galvanized.

F.O.B. Rochester and Chicago, per 100

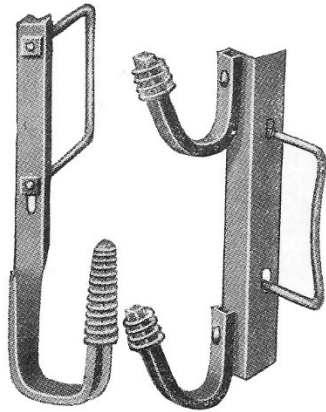
List No.	Description	Lbs. Wgt. per 1000	Std. Pkg.	Less than Std. Pkg.	Std. Pkg. and over
2338	1/2 x 1 1/4 House Bracket.....	57	200	\$ 6.70	\$5.57
2339	1/2 x 2 Pole Bracket.....	100	125	9.93	8.28
2343	3/16x2 Machine Bolt Galv. for use with one No. 2120 knob and one No. 2338 Bracket...	70	3500	1.38	1.15
2342	5/16x3 1/2 Machine Bolt Galv. for use with two No. 2120 knobs and one No. 2338 Bracket...	100	1500	1.75	1.46
2344	3/8 x 3 Machine Bolt Galv. for use with one No. 2341 Knob and one No. 2339 Bracket...	120	1500	2.08	1.74
2345	3/8 x 5 1/2 Machine Bolt Galv. for use with two No. 2341 Knobs and one No. 2339 Bracket...	220	750	3.10	2.60

Knobs and Bolts not included in price on brackets.

F.O.B. Kansas City, per 100

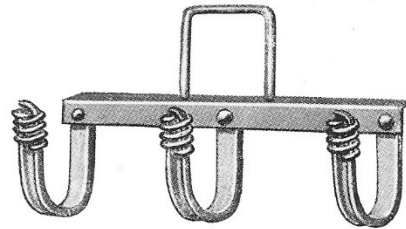
List No.	Description	Lbs. Wgt. per 1000	Std. Pkg.	Less than Std. Pkg.	Std. Pkg. and over
2338	1/2 x 1 1/4 House Bracket...	57	200	\$ 7.34	\$6.14
2339	1/2 x 2 Pole Bracket.....	100	125	10.83	9.05
2343	3/16 x 2 Machine Bolt Galv...	70	3500	1.45	1.22
2342	5/16 x 3 1/2 Machine Bolt Galv...	100	1500	1.85	1.55
2344	3/8 x 3 Machine Bolt Galv...	120	1500	2.22	1.35
2345	3/8 x 5 1/2 Machine Bolt Galv...	220	750	3.32	2.78

Galvanized All-Steel Cross-Arm
Brackets



No. 1577

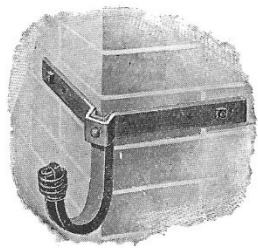
No. 1578



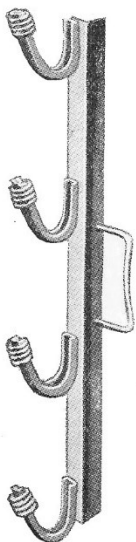
No. 1581

Steel brackets are used principally for wiring about buildings and are furnished in many shapes and sizes to meet all construction needs. Made of galvanized steel channel sections and provided with spring threads which will not crack insulators due to temperature changes or permit insulators to work loose in service. Standard threads fits all glass insulators that can be used on standard wood pins or brackets.

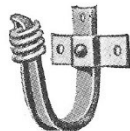
List No.	Description	Lbs. Weight Per 100	Std. Pkg	Less than Std. Pkg	Std. Pkg and over
1577	1-Point Trans. (long thread)...	166	25	40.62	36.57
1578	2-Point Trans. Bracket.....	201	20	33.97	30.59
1579	4-Point Trans. Bracket.....	453	10	80.25	72.25
1581	3-Point Service Bracket.....	241	10	49.40	44.46
1565	1-Point House Bracket.....	56	25	11.21	10.07
1566	Heavy 1-Point House.....	100	25	19.05	19.15
1567	1-Point Corner Bracket.....	74	25	14.44	13.02



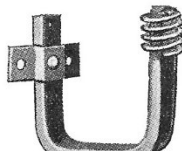
No. 1567



No. 1579



No. 1578



No. 1565

Glass Insulators



No. 12



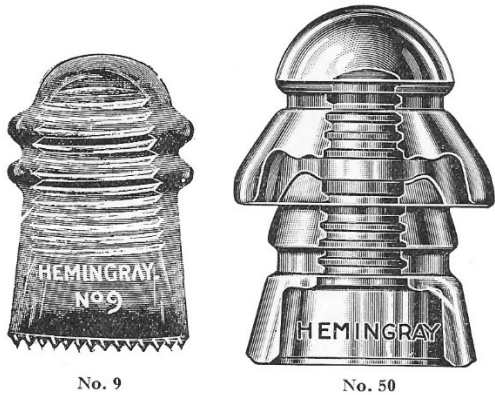
No. 16

The No. 9 Pony Glass Insulator is recommended for mag-neto line construction. This insulator is very popular for such construction on account of its long, high resistance leakage path. Weight of each insulator—9 oz. Weight per standard barrel of 400 insulators 258 lbs.

The No. 12 Pony Glass Insulator is provided with two grooves for wires. The extra groove not only assists in preventing surface leakage, but also affords means for dead-ending open wires, taking off drop wires, etc. Weight of each insulator—10½ oz. Weight per standard barrel of 400 insulators 285 lbs.

The No. 16 Regular Long-Distance Glass Insulator is much heavier than the Pony Insulators. In fact, it is designed especially for long distance toll lines where the highest possible insulation must be maintained. Weight of each insulator—14 oz. Weight per standard barrel of 400 insulators 375 lbs.

Glass Insulators (Cont.)

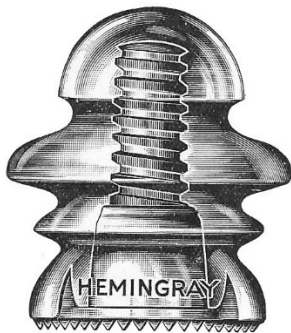


No. 9

No. 50

The No. 50 Two-Piece Transposition Glass Insulator is preferred by some users because breakage of either part will not affect the holding qualities of the other part. Each insulator consists of one top and one bottom piece. Weight of each insulator—25½ oz. Weight per standard barrel of 125 insulators 234 lbs.

The No. 53 One-Piece Transposition Glass Insulator replaces former No. 51 and No. 52 types of Hemingray Insulators. This insulator is used for making transpositions on open wire lines. Furthermore, on account of its being of heavy design, it is desirable for phantom circuit construction. Weight of each insulator 33½ oz. Weight per standard barrel of 100 insulators 235 lbs.



No. 53

Glass Insulators. F. O. B. Rochester

Per 1000

List No.	Description	Std. Pkg.	Less than Std. Pkg.	Std. 1 to 5 box	5 Std. Pkgs. and over
15	No. 9 Pony	250 400	\$65.36	\$48.81	\$46.11
16	No. 12 Pony	250 400	67.40	52.40	47.65
97	No. 16 Long distance	175 275	81.30	63.55	57.80
19	No. 50 Two piece trans.	75 125	212.80	165.80	149.80
2793	No. 53 One piece trans.	50 100	225.00	175.00	159.00

Glass Insulators. F. O. B. Chicago

Per 1000

15	No. 9 Pony	250 400	\$64.37	\$47.82	\$45.12
16	No. 12 Pony	250 400	66.40	51.40	46.65
97	No. 16 Long distance	175 275	79.80	62.05	56.30
19	No. 50 Two piece trans.	75 125	209.60	162.10	146.60
2793	No. 53 One piece trans.	50 100	221.30	171.30	155.30

Glass Insulators. F. O. B. Kansas City

Per 1000

15	No. 9 Pony	250 400	\$68.40	\$51.85	\$49.15
16	No. 12 Pony	250 400	70.75	55.75	51.00
97	No. 16 Long distance	175 275	85.50	67.75	62.00
19	No. 50 Two piece trans.	75 125	221.10	173.60	159.10
2793	No. 53 One piece trans.	50 100	236.00	186.00	170.00

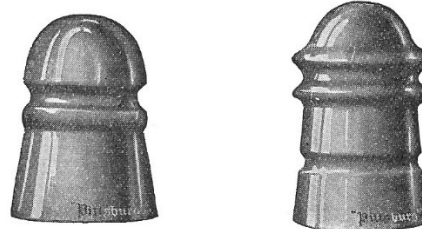
Glass Insulators. F. O. B. Factory

Per 1000

List No.	Description	Less than Std. Pkg.	Std. Pkg. and less than 5000	5000 and less than C. L.	C. L. and over
15	No. 9 Pony	\$ 61.25	\$ 41.15	\$ 39.05	\$ 36.95
16	No. 12 Pony	63.00	42.30	40.15	38.00
97	No. 16 Long dist.	75.00	50.35	47.80	45.20
19	No. 50 Two pc. trans.	201.00	135.15	128.25	121.35
2793	No. 53 One pc. trans.	210.00	141.00	133.80	126.60

Prices covering shipments made from factory are based on full barrels only. When a barrel is broken, there will be an additional charge of approximately \$1.00 for packing.

Porcelain Insulators



No. 109

No. 112

Porcelain insulators are superior to glass insulators both in strength and in insulating qualities. Insulators of this kind are less liable to breakage due to the impact of shotgun loads, bullets from target rifles, etc. In fact, porcelain insulators under all circumstances are far less liable to breakage than glass insulators. Furthermore, their insulating properties, especially during damp weather, are much superior to those of glass insulators.

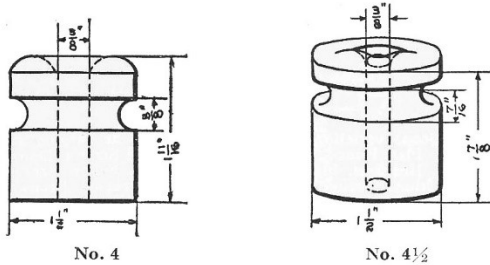
Owing to their high resistance properties porcelain insulators are generally preferred not only for phantom line construction but also for construction which parallels high-tension power circuits where leakage must be kept at an absolute minimum.

The No. 109 Pony Insulator is recommended for either city or rural work in preference to glass insulators. This insulator is made of tough white glazed porcelain. Weight of each insulator 10 ounces. Weight per barrel of 500 insulators 360 pounds.

The No. 112 Double Groove Pony Insulator is used in line construction where the 109 Pony Insulator is employed for regular work. This insulator, on account of its extra groove is used for the dead-ending of lines and for taking up drop wires. It is made of tough white glazed porcelain. Each insulator weighs 14 ounces. Weight per standard barrel of 500 insulators 350 pounds.

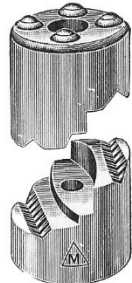
List No.	Description	Standard Package	Lots of 100 and less than bbl. lots.	Bbl. lots & less than 1000	1000 to 10,000 in bbl. lots.
F.O.B. Rochester, per 1000					
1587	No. 109 Pony	500	\$103.40	\$97.40	\$93.40
1588	No. 112 Dbl. Groove.	500	103.40	97.40	93.40
F.O.B. Chicago, per 1000					
1587	No. 109 Pony	500	100.56	94.56	90.56
1588	No. 112 Dbl. Groove.	500	100.56	94.56	90.56
F.O.B. Kansas City, per 1000					
1587	No. 109 Pony	500	104.85	98.85	94.85
1588	No. 112 Dbl. Groove.	500	104.85	98.85	94.85
F.O.B. Factory, per 1000					
1587	No. 109 Pony	500	97.50	91.50	87.50
1588	No. 112 Dbl. Groove.	500	97.50	91.50	87.50

Porcelain Knobs



The **No. 4 Porcelain Knob** is used for connecting drop wires to poles and to buildings. It is made of a tough white porcelain. Weight per barrel of 2000 knobs 400 pounds.

The **No. 4 1/2 Porcelain Knob** is slightly heavier and proportionately stronger than the No. 4 Porcelain Knob. Therefore, it is adapted to use not only with heavier wires but longer spans. This knob is made of tough white porcelain. Weight per barrel of 2000 knobs, 480 pounds.



No. 61
List No. 2123

The **No. 61 Split Porcelain Knob** is generally used for insulating and for fastening twisted pair drop wires. Its construction eliminates the necessity of tie wires. Any two pieces make up a complete knob. The material is of tough white porcelain with corrugated wire groove construction. Projections also are furnished on the flat side so that the knob may be used either side up without the possibility of either loosening or turning. Height 1 3/4 inches. Diameter 1 1/8 inches. Weight per barrel of 3200 knobs 460 pounds.

The **Special Telephone Knobs known as 2 GR., Tel., No. 4 2-Gr., and No. 4-Gr., Tel.** are porcelain knobs which are used with distributing racks and fixtures for distributing twisted pair drop wires in cable turning systems. These insulators are made of tough white porcelain and are particularly adapted for their work on account of their high tensile strength.

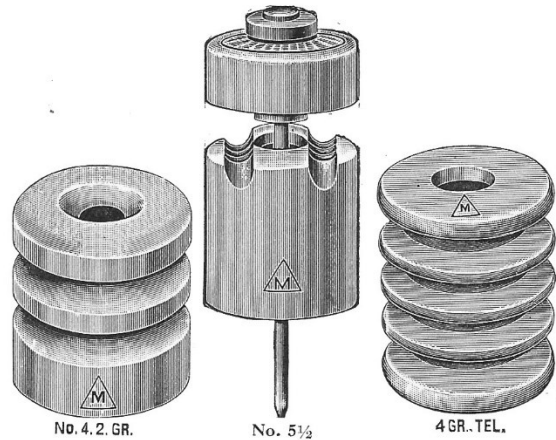
The **2-Gr., Tel. Knob** (Stromberg-Carlson List No. 2120) has a height of 1 1/2 inches, a diameter of 1 1/8 inches, a 3/8 inch hole and two 1/8 inch grooves. Weight per barrel of 1900 knobs 420 pounds.

The **No. 4 2-Gr. Knob** (Stromberg-Carlson List No. 2340) has a height of 1 1/8 inches, a diameter of 1 1/2 inches, a 3/8 inch hole and two 1/8 inch grooves. Weight per barrel of 2000 insulators 450 pounds.

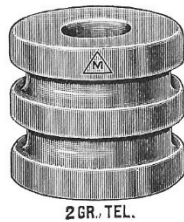
The **No. 4 Gr., Tel. Knob** (Stromberg-Carlson List No. 2341) has a height of 2 1/4 inches, a diameter of 1 3/4 inches, a 1/2 inch hole and four 1/8 inch grooves. Weight per barrel of 1000 knobs 395 pounds.

The **No. 5 1/2 Bull Dog Split Porcelain Knob** has a wonderful grip as its name implies. A feature of this knob is that a nail can be withdrawn to replace broken parts. It is adapted for use with a 10 penny wire nail. Height 1 3/4 inches. Diameter 1 1/8 inches. Weight per barrel of 3000 knobs 465 pounds.

Porcelain Knobs (Cont.)



No. 4.2 GR. **No. 5 1/2** **4 GR. TEL.**
List No. 2340 List No. 2349-A List No. 2341



2 GR. TEL.
List No. 2120

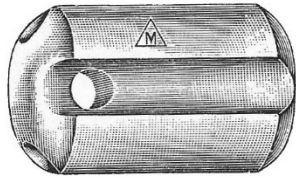
List No.	Description	Less than Paper Car-ton (100)	Paper Car-ton (100) and over	Lots of 1/5 to 2/5 bbl.	Lots of 2/5 to bbl.	Bbl. lots and over
F.O.B. Rochester, per 1000						
20	No. 4 Porcelain	\$19.49	\$17.84	\$16.94	\$15.84	\$15.04
799	No. 4 1/2 Porc'n	18.49	16.94	15.99	14.99	14.19
2123	No. 61 Split "	13.56	12.41	11.51	10.58	9.87
2120	2-Groove Tel.	30.13	28.33	27.38	25.93	24.93
2340	4-Groove Tel.	21.25	19.40	18.45	17.35	16.50
2341	4-Groove Tel.	49.24	44.84	42.04	39.54	37.84
2349	Unassembled	12.07	11.04	10.43	10.02	9.52
2349-A	Assembled with nails	16.01	14.61	13.51	12.56	11.96

F.O.B. Kansas City, per 1000						
20	No. 4 Porcelain	19.95	18.30	17.40	16.30	15.50
799	No. 4 1/2 Porc'n	18.95	17.40	16.45	15.45	14.65
2123	No. 61 Split "	13.85	12.70	11.80	10.87	10.15
2120	2-Groove Tel.	30.54	28.47	27.79	26.34	25.34
2340	4 Groove Tel.	21.70	19.85	18.90	17.80	16.95
2341	4-Groove Tel.	50.03	45.63	42.83	40.33	38.63
2349	Unassembled	12.38	11.35	10.74	10.33	9.38
2349-A	Assembled with nails	16.33	14.93	13.83	12.88	12.28

F.O.B. Chicago, per 1000						
20	No. 4 Porcelain	18.58	16.93	16.03	14.93	14.13
799	No. 4 1/2 Porc'n	17.58	16.03	15.08	14.08	13.28
2123	No. 61 Split "	12.99	11.84	10.94	10.01	9.29
2120	2-Groove Tel.	29.29	27.49	26.54	25.09	24.09
2340	2-Groove Tel.	20.36	18.51	17.56	16.46	15.61
2341	4-Groove Tel.	47.68	43.28	40.48	37.98	36.28
2349	Unassembled	11.46	10.43	9.82	9.41	8.98
2349-A	Assembled with nails	15.38	13.98	12.88	11.93	11.33

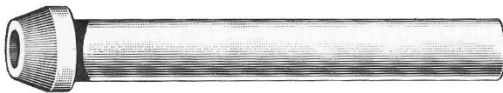
F.O.B. Factory, per 1000						
20	No. 4 Porcelain	17.60	15.95	15.05	13.95	13.15
799	No. 4 1/2 Porc'n	16.60	15.05	14.10	13.10	12.30
2123	No. 61 Split "	12.35	11.20	10.30	9.37	8.65
2120	2-Groove Tel.	28.40	26.60	25.65	24.20	23.20
2340	2-Groove Tel.	19.40	17.55	16.60	15.50	14.65
2341	4-Groove Tel.	46.00	41.60	38.80	36.20	34.60
2349	Unassembled	10.80	9.77	9.16	8.75	8.25
2349-A	Assembled with nails	14.70	13.30	12.20	11.25	10.65

No. 500 to 506 Porcelain Strain Insulators



List No.	Height	Diameter	No. in Barrel	Lbs. Weight Per Barrel	
2350	2 1/4 ins.	1 1/4 ins.	1700	450	
2351	3 3/8 ins.	2 1/4 ins.	400	440	
F.O.B. Factory, per 1000					
List No.	Less than paper car-tons (100)	Paper car-tons (100)	Lots of 1/5 to 2/5 bbl.	Lots of 2/5 to bbl.	Bbl. lots
2350	No. 500 \$ 53.00	\$ 48.00	\$ 44.25	\$ 40.00	\$ 35.40
2351	No. 502 153.50	139.00	136.00	130.50	127.50
F.O.B. Chicago, per 1000					
2350	No. 500 54.12	49.12	45.37	41.12	36.52
2351	No. 502 158.17	143.67	140.67	135.17	132.17
F.O.B. Kansas City, per 1000					
2350	No. 500 55.70	50.70	46.95	42.70	38.10
2351	No. 502 164.52	150.02	147.02	141.52	138.52

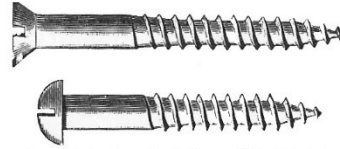
Unglazed Porcelain Tubes



Tube List Dimensions Conform with the Rules of the Underwriters' Board.

List No.	Inside Diameter	Outside Diameter	Length	Standard Package	
1218	5/8-inch	3/4-inch	3-inch	4500	
1219	"	"	4 "	3600	
1220	"	"	5 "	2900	
1221	"	"	6 "	2000	
1222	"	"	8 "	1500	
Other sized tubes furnished on application.					
List No.	Less than paper car-tons (100)	Paper car-tons (100)	Lots of 1/5 to 2/5 bbl.	Lots of 2/5 to bbl.	Bbl. lots.
F.O.B. Rochester, per 1000					
1218	\$ 7.57	\$ 7.00	\$ 6.64	\$ 5.90	\$ 5.28
1219	9.46	8.60	8.31	7.64	6.98
1220	11.60	10.57	9.82	9.09	8.52
1221	15.81	14.39	13.36	12.39	11.66
1222	67.51	61.31	42.31	35.11	28.81
F.O.B. Chicago, per 1000					
1218	7.32	6.75	6.39	5.65	5.03
1219	9.15	8.30	8.00	7.33	6.68
1220	11.25	10.22	9.47	8.74	8.17
1221	15.36	13.94	12.91	11.94	11.24
1222	66.88	60.68	41.68	34.68	28.18
F.O.B. Kansas City, per 1000					
1218	7.70	7.13	6.77	6.03	5.41
1219	9.61	8.76	8.46	7.79	7.14
1220	11.78	10.75	10.00	9.27	8.70
1221	16.05	14.63	13.60	12.53	11.90
1222	67.83	61.63	42.63	35.43	28.83
F.O.B. Factory, per 1000					
1218	7.05	6.48	6.12	5.38	4.76
1219	8.82	7.97	7.67	7.00	6.35
1220	10.88	9.85	9.10	8.37	7.80
1221	14.85	13.43	12.40	11.43	10.70
1222	66.20	60.00	41.00	33.80	27.50

Patent Iron Wood-Screws

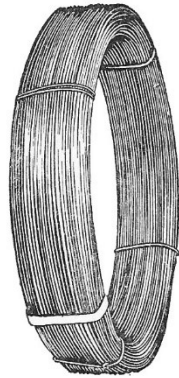


Additional varieties invoiced from this list at varying discounts: Flat, Round, Fillister and Oval Head Screws, Dowel, Winged, Headless, Pinched and Bung Head, Felloe, Screws, Bright, Blued, Nickel-Plated, Silver Plated, Brassed, Bronzed, Coppered, Japanned, Lacquered, Tinned and Drive Screws.

No.	List Prices Per Gross				
	1/4 In.	3/8 In.	1/2 In.	5/8 In.	3/4 In.
No. 0...	\$.72	\$.72	\$.72	\$.72	\$.72
No. 1...	.72	.72	.72	.72	.72
No. 2...	.72	.72	.72	.72	.75
No. 3...	.72	.72	.72	.72	.78
No. 4...	.72	.72	.72	.72	.82
No. 5...	.72	.75	.78	.78	.85
No. 6...	.78	.80	.82	.82	.90
No. 7...	.82	.84	.86	.86	.95
No. 8...	.88	.90	.92	.92	1.00
No. 9...	.94	.96	.98	.98	1.10
No. 10...		1.05	1.07	1.07	1.15
No. 11...		1.10	1.12	1.12	1.25
No. 12...		1.20	1.20	1.20	1.35
No. 13...			1.25	1.25	1.50
No. 14...			1.30	1.30	1.65
No. 15...					1.80
No. 16...					
	1/2 In.	1 In.	1 1/2 Ins.	1 3/4 Ins.	1 7/8 Ins.
No. 2...	\$.74	\$.80	\$.88	\$.98	1.10
No. 3...	.78	.84	.92	1.05	1.20
No. 4...	.82	.87	.98	1.10	1.30
No. 5...	.85	.92	1.05	1.15	1.35
No. 6...	.90	.98	1.10	1.20	1.45
No. 7...	.94	1.05	1.15	1.30	1.50
No. 8...	1.00	1.10	1.20	1.35	1.55
No. 9...	1.05	1.20	1.30	1.40	1.60
No. 10...	1.15	1.30	1.40	1.50	1.70
No. 11...	1.25	1.40	1.55	1.65	1.80
No. 12...	1.35	1.50	1.60	1.70	1.85
No. 13...	1.45	1.60	1.70	1.80	1.90
No. 14...	1.55	1.70	1.80	1.90	2.00
No. 15...	1.75	2.00	2.15	2.35	2.60
No. 16...	2.00	2.50	2.50	2.80	2.90
No. 17...		2.70	2.75	3.20	3.50
No. 18...		2.80	3.30	3.80	4.00
No. 20...		3.50	4.00	4.30	4.50
No. 22...			4.80	5.10	5.20
No. 24...			5.40	5.90	6.00
	2 Ins.	2 1/4 Ins.	2 1/2 Ins.	2 3/4 Ins.	3 Ins.
No. 5...	\$1.45	\$1.55	\$1.90		
No. 6...	1.50	1.60	2.00	2.40	2.95
No. 7...	1.55	1.65	2.10	2.60	3.00
No. 8...	1.60	1.75	2.20	2.70	3.05
No. 9...	1.65	1.85	2.30	2.80	3.10
No. 10...	1.75	1.95	2.40	2.90	3.15
No. 11...	1.85	2.05	2.50	3.00	3.20
No. 12...	2.00	2.20	2.60	3.10	3.30
No. 13...	2.20	2.35	2.70	3.20	3.40
No. 14...	2.45	2.65	2.90	3.30	3.50
No. 15...	2.75	3.10	3.30	3.60	3.80
No. 16...	3.10	3.50	3.65	3.90	4.20
No. 17...	3.70	3.85	4.20	4.60	4.80
No. 18...	4.20	4.55	4.70	5.00	5.50
No. 20...	4.80	5.30	5.80	6.10	6.50
No. 22...	5.50	6.10	6.70	7.20	7.50
No. 24...	6.40	6.90	7.50	8.50	8.70
No. 26...					10.50
	3 1/2 Ins.	4 Ins.	4 1/2 Ins.	5 Ins.	6 Ins.
No. 8...	\$3.90	\$4.90	\$...	\$...	\$...
No. 9...	4.00	5.10			
No. 10...	4.10	5.20			
No. 11...	4.20	5.30			
No. 12...	4.30	5.40	7.00	8.10	10.00
No. 13...	4.40	5.60	7.20	8.30	10.30
No. 14...	4.50	5.90	7.60	8.60	11.00
No. 15...	4.75	6.20	7.85	9.10	11.60
No. 16...	4.95	6.50	8.15	9.70	12.40
No. 17...	5.40	7.00	8.60	10.10	13.00
No. 18...	6.15	7.60	9.15	11.00	14.50
No. 20...	7.30	8.60	9.85	11.50	16.00
No. 22...	8.70	9.70	11.20	13.00	18.00
No. 24...	10.20	11.20	13.50	15.00	20.00
No. 26...	12.00	14.00	16.00	18.00	23.00
No. 28...		16.00	18.50	21.00	27.00
No. 30...		18.50	21.50	24.00	30.50

Discounts	Round Head	Flat Hd
	Blued	Bright
Less than 10 gross	60%	65%
10 to 25 gross	65%	70%
25 gross and more	Special	Special

Galvanized Telephone Wire



"Indiana" Telephone and Telegraph Wire

"Crapo" Patents—New Process

Double Galvanized Telephone and Telegraph Wire is drawn from the highest grade material of special analysis galvanized under the Crapo Patents, insuring a wire with a maximum resistance to corrosion due to the superior adhesion of the pure zinc. This galvanized wire neither cracks nor peels.

Every coil of wire is guaranteed to conform to all standard specifications, to meet the most exacting conditions and to give complete satisfaction.

"EXTRA BEST BEST" (E.B.B.) is highest in electrical conductivity, having a range of electrical resistance of 4,700 to 5,000 mile ohms.

"BEST BEST" (B.B.) is slightly higher in resistance than E.B.B. but combines conductivity with tensile strength to make a very popular grade, having a maximum electrical resistance of 5,600 mile ohms.

"STEEL." This grade is designed for short-line service where electrical conductivity can be sacrificed for tensile strength. Maximum resistance 6,500 mile ohms.

All above grades are galvanized under the same improved process.

List No.	Size B. W. G.	Diam. in Inches	STEEL		Per lb.
			Approx. Wt. in lbs. per Mile	Approx. Tensile Strength in lbs.	
353	6	.203	590	1770	.06 3/4
354	8	.165	390	1170	.06 1/8
355	9	.148	314	942	.06 1/8
925	10	.134	258	774	.06 3/8
926	12	.109	170	510	.06 3/8
927	14	.083	99	297	.07 1/4

List No.	Size B. W. G.	Diam. in Inches	B. B.		Per lb.
			Approx. Wt. in lbs. per Mile	Approx. Tensile Strength in lbs.	
929	6	.203	590	1652	.06 3/8
930	8	.165	390	1092	.06 3/8
931	9	.148	314	879	.06 3/8
932	10	.134	258	722	.06 7/8
933	12	.109	170	476	.07
934	14	.083	99	277	.07 3/8

List No.	Size B. W. G.	Diam. in Inches	E. B. B.		Per lb.
			Approx. Wt. in lbs. per Mile	Approx. Tensile Strength in lbs.	
936	6	.203	590	1475	.07 1/4
937	8	.165	390	975	.07 1/4
938	9	.148	314	785	.07 1/4
939	10	.134	258	645	.07 3/8
940	12	.109	170	425	.07 3/8
941	14	.083	99	247	.08 1/4

All Sizes Except No. 6 B. W. G. put up in 1/2-Mile Coils. No. 6 B. W. G. Put Up in 1/4 Mile Coils

Discounts	
Less than 1500 lbs.	5%
1500 lbs. to 5000 lbs.	10%
5000 lbs. and less than carloads	15%
Carloads (36,000 lbs.)	15-5%

For freight allowance when shipped in quantities of not less than 500 lbs. direct from the factory, inquire from our nearest office.

Additions

\$.60 per 100 lbs. to net price when shipped from Kansas City stock.

Extra Additions when shipping less than 1500 lbs.

1/4 cent per lb. to list when less than 1500 lbs. is shipped.

Galvanized Steel Strand



Composed of Seven Wires Twisted Together

Used in telephone work for guying poles and for supporting aerial telephone cables. This material can be furnished in four grades or strengths, viz. Regular, Siemens-Martin, High Strength and Extra High Strength. The regular grade can be furnished with either single or double galvanizing, but all others with double galvanizing only. Steel strands all consist of seven wires twisted together, the combined size and strength depending upon the sizes and strengths of the individual wires.

Regular Galvanized Strand

The breaking weight of this strand is from fifteen to twenty times its weight per 1000 feet. This grade of strand is used for guying poles, etc., where no great flexibility is required and where a strand of moderate strength will meet all requirements.

List No.	Seven Strands of No.	Ins.	Single or Double Galvanized		Ultimate Strength	Per 100 ft.
			Weight per 100 feet Single Galv.	Weight per 100 feet Double Galv.		
920	8	1/2	50 lbs.	52 lbs.	7400 lbs.	\$5.50
921	9 1/2	7/16	38 "	40 "	5700 "	4.50
922	11	3/8	28 "	30 "	4250 "	3.50
923	12	5/16	19 1/4 "	21 "	3200 "	2.50
924	14	1/4	12 "	12 "	1900 "	1.75

Unless otherwise specified, single galvanized strand will be furnished on all orders

	Discounts	
	Single Galvanized	Double Galvanized
Less than 250 ft.	30%	20%
250 ft. to 1,000 ft.	35%	25-5%
1,000 to 2,500 ft.	40%	30%
2,500 to 5,000 ft.	45%	35%
5,000 ft. and over	Special	Special

	F. O. B. Roch. & Chicago		F. O. B. Kansas City	
	Single Galvanized	Double Galvanized	Single Galvanized	Double Galvanized
Less than 250 ft.	30%	20%	20%	20%
250 ft. to 1,000 ft.	35%	25-5%	25-5%	25-5%
1,000 to 2,500 ft.	40%	30%	30%	30%
2,500 to 5,000 ft.	45%	35%	35%	30%
5,000 ft. and over	Special	Special	Special	Special

For freight allowance when shipped in quantities of not less than 500 lbs. direct from the factory, inquire from our nearest office.

Put up in coils of 250 ft., 500 ft., and 1000 ft.

Over 1000 ft. furnished on reels if specified.

Note—We will not cut coils. Full length coils must be taken.

Siemens-Martin Strand

High Grade Galvanized Wire Strand

This strand is composed of very soft pliable wire but of considerably higher strength than the regular grade. It is the grade that usually is employed for suspending aerial cables.

List No.	Diameter	Weight Per 100 ft.	Ultimate Strength	Per 100 ft.
652	5/8 inch	80 lbs.	19,000 lbs.	\$8.25
653	1/2 "	52 "	11,000 "	5.25
654	7/16 "	40 "	9,000 "	4.30
655	3/8 "	30 "	6,800 "	3.25
656	5/16 "	22 "	4,680 "	2.50
657	9/32 "	17 "	4,380 "	2.05
658	1/4 "	13 "	3,050 "	1.70
659	3/16 "	7 1/2 "	2,000 "	1.35

Galvanized Steel Strand (Cont.)

High Strength Strand

High Grade Galvanized Wire Strand

The breaking weight of this strand is over thirty times its weight per 1000 feet. It is used where a stronger strand than the Siemens-Martin grade is required. It is stiffer and more difficult to handle than either Siemens-Martin or regular grades but when in place is very efficient.

List No.	Diameter	Weight Per 100 ft.	Ultimate Strength	Per 100 ft.
2280	5/8 inch	80 lbs.	25,000 lbs.	\$12.00
2281	1/2 "	52 "	18,000 "	7.25
2282	7/16 "	40 "	15,000 "	6.00
2283	3/8 "	30 "	11,500 "	4.40
2284	5/16 "	21 "	8,100 "	3.20
2285	9/32 "	17 "	7,300 "	2.80
2286	1/4 "	12 "	5,100 "	2.25
2287	3/16 "	7 1/2 "	3,300 "	1.80
2288	1/8 "	3 3/8 "	1,500 "	1.20

Extra High Strength Strand

High Grade Galvanized Wire Strand

The breaking weight of this strand is over fifty times its weight per 1000 feet. What has been said about High Strength Strand is true of this strand but in a more pronounced degree.

List No.	Diameter	Weight Per 100 feet	Ultimate Strength	Per 100 ft.
2289	5/8 inch	80 lbs.	42,000 lbs.	\$14.60
2290	1/2 "	52 "	27,000 "	8.80
2291	7/16 "	40 "	22,500 "	7.20
2292	3/8 "	30 "	17,250 "	5.25
2293	5/16 "	21 "	12,100 "	4.25
2294	9/32 "	17 "	10,900 "	3.50
2295	1/4 "	12 "	7,600 "	2.85
2296	3/16 "	7 1/2 "	4,990 "	2.40
2297	1/8 "	3 3/8 "	2,250 "	1.60

Discounts

Covering all High Grade Galvanized Steel Strand

	F. O. B. Roch. & Chicago	F. O. B. Kansas City
Less than 250 ft.	7 1/2 %	2 1/2 %
250 ft. to 1,000 ft.	15 %	10 %
1,000 to 3,000 ft.	15-5 %	15 %
3,000 to 5,000 ft.	20 %	15-5 %
5,000 to 10,000 ft.	25 %	20 %
10,000 ft. and over.	Special	

For freight allowance when shipped in quantities of not less than 500 lbs. direct from the factory, inquire from our nearest office.

Put up in coils of 250 ft., 500 ft., and 1000 ft.

Over 1000 ft. furnished on reels if specified.

Note—We will not cut coils. Full length coils must be taken.

Weatherproof Hard Drawn

Copper Line Wires

Triple Braid



Weatherproof line wire is often called "tree wire" because it is generally used for sections of open wire lines, where branches interfere and make the use of bare wire impractical.

The wire is made up with three braids, all impregnated with moisture proofing and weather proofing compound. The outside braid is finished with a hard smooth surface.

All weatherproof wire listed below is put up in one-half mile coils, except No. 14 and No. 16.

List No.	B. & S. Gauge	Weight per Mile	Per lb.
2479	8	395 lbs.	\$.28 1/4
33	10	290 "	.29 3/4
34	12	184 "	.31 1/4
35	14	137 "	.34 1/4
36	16	105 "	.37 1/4
37	18	84 "	.41 1/4

Weatherproof Duplex Wire—

Copper

Triple Braid



Composed of two copper conductors separately insulated with three braids impregnated with weather-proofing and insulated compound and twisted together.

List No.	B. & S. Gauge	Feet per Pound	Per lb.
804	16	26	\$.38 1/4
42	18	30	.42 1/4

100 lbs. to 200 lbs., 1c less
200 lbs. and over, one size,.....special

Add

50 cents per 100 lbs. when shipped from Kansas City Stock.

Weatherproof Insulated

Iron Line Wire



A soft iron wire, with weatherproof insulation, two or three braid, for use where line runs through trees; prevents possibility of grounded wires.

Put up and sold only in half-mile coils.

List No.	B. W. G.	Weight Per Mile	Per lb.
26	Double Braid 10	350 lbs.	\$.20
27	" " 12	225 "	.21 1/2
28	" " 14	145 "	.26
1597	Triple Braid 10	400 "	.20
1598	" " 12	260 "	.22
1599	" " 14	175 "	.27 1/2

Add

3/4 cent per lb. when shipped from Kansas City stock.

1 cent per lb. extra to above prices for Extra B. B.

50% to above prices for broken coils.

Switchboard Wire

Made of pure copper conductors tinned, insulated with two silk and one cotton wrapping. Insulation thoroughly impregnated with beeswax. Used principally for making up hand formed switchboard cables and is therefore furnished in all standard color combinations. Standard spool contains from 8 to 10 pounds of wire, 18 Base.

Single Switchboard Wire—Tinned

Two Silk and One Cotton Insulation



List No.	Pc. No.	B. & S. Gauge	Approx. ft. per lb.	Per lb.
2480	20061	18	165	\$1.42 1/2
675	20051	22	340	1.45 1/2

Discounts

1-9 lbs.	Net
10-24 lbs.	5%
25 lbs. and over.	10%

Twisted Switchboard Wire—Tinned



List No.	Pc. No.	B. & S. Gauge	Approx. ft. per lb.	Per lb.
2356	20061	18	82	1.44 1/2
679	20051	22	170	1.47 1/2

Discounts

1-9 lbs.	Net
10 to 24 lbs.	5%
25 lbs. and over.	10%

Stromberg-Carlson "Duratex" Jumper Wire

Duratex Jumper Wires consist of No. 22 B. & S. Gauge copper conductors tinned to facilitate soldering and insulated with an enamel coating. The enameling adheres firmly to the conductor but can be easily removed to expose the bare tinned surface. The conductor also is insulated with two servings of silk which are applied in opposite directions. This insulation is impregnated with a waterproof insulating compound which remains plastic and preserves the high insulation over the conductors.

The outer covering of Duratex Jumper Wires is a closely woven cotton braid which is rendered flameproof in the skein before braiding. The materials used in this process will not absorb moisture nor deteriorate with age. The finished wire is small in diameter and cannot be ignited by flame and maintains a high insulation throughout its life.

Single Conductor

List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight per 1000 ft.	Price per 1000 ft.
2358	20081	22	White	3	\$10.00
2359	20081	22	Slate	3	10.00
2360	20081	22	Blue	3	10.00
1956	20081	22	Red	3	10.00

Twisted Pair



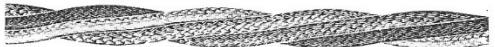
List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight per 1000 ft.	Price per 1000 ft.
1957	20082	22	Red and White	6	\$20.00

Triplex



List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight per 1000 ft.	Price per 1000 ft.
1958	20083	22	Red, White and Slate	9	\$30.00

Quadruplex



List No.	Pc. No.	B. & S. Gauge	Color	Lbs. Weight per 1000 ft.	Price per 1000 ft.
1959	20084	22	Red, White, Slate and Blue	12	\$40.00

Discounts

Less than 1000 ft.	Net
1000 ft. to 5000 ft.	10%
5000 ft. to 10000 ft.	20%
10000 ft. to 25000 ft.	25%
25000 ft. and over.	Special
Weight Per 1000 ft. Single approx.	3 lbs.
" " " " Duplex "	6 "
" " " " Triplex "	9 "
" " " " Quadruplex "	12 "

F. O. B. Rochester and Chicago

This wire is put up in 500 foot coils with an instruction tag on each coil which states the best method of attaching jumper wire to the terminals.

Flameproof Rubber Covered Jumper Wire

Insulated with a high grade rubber about .057 inches. Consists of copper conductor covered with a flame-proof braid that does not fray out. The following colors are standard: single conductor, red; double conductor, red and white; triple conductor, red, white and black; quadruple conductor, red, white, black and yellow. Put up in coils of approximately 500 ft.

Single Conductor



List No.	B. & S. Gauge	Lbs. Weight Per 1000 Ft.	Per 1000 ft.
1389	20	10	\$13.70
1390	22	8	13.70

Twisted Pair



List No.	B. & S. Gauge	Lbs. Weight Per 1000 Ft.	Per 1000 ft.
821	20	20	\$27.40
822	22	16	27.40

Triplex

List No.	B. & S. Gauge	Lbs. Weight Per 1000 Ft.	Per 1000 ft.
824	20	30	\$38.40
825	22	24	38.40

Quadruplex

List No.	B. & S. Gauge	Lbs. Weight per 1000 Ft.	Per 1000 ft.
827	20	40	\$54.80
828	22	32	54.80

Discounts

Less than 1,000 ft.	25%
1,000 to 5,000 ft.	33 1/3%
5,000 to 10,000 ft.	40%
10,000 to 25,000 ft.	45%
25,000 ft. and over.	Special

All prices are f. o. b. Rochester, N. Y., or Chicago, Ill.

The following net advances must be added to all rubber covered telephone wire shipped from Kansas City stock.

List No.	Per 1000 ft.
1389	\$.15
1390	.15
821	.30
822	.30
824	.50
825	.50
827	.60
828	.60

Rubber Covered Telephone Wire — Copper

Single Conductor Plain Rubber-Covered Wire



List No.	B. & S. Gauge	Insulation	Weight per 1000 ft.	List Price Per 1000 ft.
43	19	3-32	10 1/2 lbs.	\$11.50

Twisted Pair Plain Rubber-Covered Wire



List No.	B. & S. Gauge	Insulation	Weight per 1000 ft.	List Price Per 1000 ft.
45	19	3-32	22 1/2 lbs.	\$23.00

**Rubber Covered Telephone Wire
—Copper (Cont.)**

**Single Conductor
Rubber-Covered, Braided, Saturated**



List No.	B. & S. Gauge	Insulation	Weight per 1000 ft.	List Price Per 1000 ft.
44	19	3-32	11½ lbs.	\$ 8.70
666	18	4-32	12½ "	9.70
1613	16	4-32	21 "	12.20
1609	14	5-32	21 "	16.50

**Double Conductor
Rubber-Covered Saturated Braid**



Double conductor, both conductors black rubber with saturated black braid, and then twisted. One conductor has large thread run in braid for distinguishing.

List No.	B. & S. Gauge	Insulation	Weight per 1000 ft.	List Price Per 1000 ft.
770	19	3-32	23 lbs.	\$17.40
768	18	4-32	26 lbs.	19.40
946	16	4-32	42 "	24.40
942	14	5-32	62 "	33.00

All prices are f. o. b. Rochester, N. Y., or Chicago, Ill.
When shipped from Kansas City stock the following net advances.

List No.	Per 1000 ft.
43	.15
45	.30
44	.15
666	.15
1613	.20
1609	.35
770	.30
768	.35
946	.35
942	.60

**Interior Telephone Wire
Copper—Rubber-Covered Glazed Braid**



For interior telephone wiring. Furnished in single, duplex and triplex-twisted. Each conductor pure copper tinned and insulated with a thickness of rubber with outside glazed cotton braid. Colored tracer threads in braid facilitate identification and testing.

Single Conductor

List No.	B. & S. Gauge	Insulation	Weight per 1000 ft.	Color	Per 1000 ft.
2492	19	3-32	11 lbs.	Oak Braid	\$10.25
2493	19	3-32	11 "	Olive Green	10.25

Double Conductor



Double conductor, both conductors are covered with glazed braid. One conductor being distinguished by a red thread running through braid.

List No.	B. & S. Gauge	Insulation	Weight per 1000 ft.	Color	Per 1000 ft.
671	19	3-32	23 lbs.	Oak Braid	\$20.50
2361	19	3-32	23 "	Olive Green	20.50

Triple Conductor



Triple conductor, glazed cotton braid; one conductor plain solid color; one conductor plain solid color with red tracer; one conductor plain solid color with green tracer; then all three conductors twisted together.

List No.	B. & S. Gauge	Insulation	Weight per 1000 ft.	Color	Per 1000 ft.
1607	19	3-32	32 lbs.	Oak Braid	\$30.75
2362	19	3-32	32 "	Olive Green	30.75

Discounts on Rubber-Covered Copper Telephone Wire
 Less than 1,000 ft. 35%
 1,000 to 5,000 ft. 40%
 5,000 to 25,000 ft. 45%
 25,000 ft. and over. Special

Lead-Covered, Rubber-Covered Wire



Used for telephone wiring buried in the earth or running through mines, subway, etc. Lead covering protects wire from mechanical injury and excludes moisture.

Per 1000 Feet Net—Single Conductor

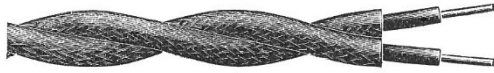
List No.	B. & S. Gauge	Rubber Wall Inches	Thick-ness Lead	Weight 1000 Feet	Less 100 Feet	100 to 250	250 to 500	500 to 1000	1000 ft. and Over
2363	16	3-64	3-64	155	\$29.40	\$28.35	\$27.30	\$26.25	\$25.20
2364	14	3-64	3-64	183	37.80	36.45	35.10	33.75	32.50

Double Conductor

2365	16	3-64	3-64	278	\$57.90	\$54.75	\$48.69	\$45.63	\$42.60
2366	14	3-64	3-64	289	73.75	69.80	62.05	58.18	54.35

Above prices for shipment from Chicago Stock.

Stromberg-Carlson Rubber-Covered Drop Wire, Copper Clad



Composed of two copper clad steel conductors, separately insulated with 7/64-inch rubber insulation and a black saturated weatherproof braid, twisted together. This wire is used by many of the largest telephone companies and is recommended as it will not stretch and has the same non-corrosive properties as pure copper wire.

List No.	B. & S. Gauge	Thick-ness Insulation		Weight per 1000 ft.	Less than 1000 ft.	1000 to 5000	5000 to 25,000	25,000 or more	Add per 1000 feet Kansas City
2348	17	7-64	100 Megohm Test	36	\$13.75	\$13.25	\$11.75	Special	\$.35

The above prices are for Rubber Covered Copper Clad Wire when delivered to all points East of the Mississippi River. On shipments West of the Mississippi River, actual freight to Mississippi River will be allowed.

Rubber-Covered, Special-Tinned Iron, Telephone, Drop Wire

Saturated Braid—Single Conductor

Composed of special alloy iron conductors insulated rubber, braided and saturated. The conductor is very tough and pliable and is tinned to facilitate soldering and to prevent corrosion. An economical and very satisfactory drop wire for all telephone purposes. Furnished in several gauges as follows:



List No.	B.W.G.	Equivalent to B. & S. Gauge	Thickness Insulation	Weight per 1000 ft.	Less than 1000 feet	1000 to 5000	5000 to 10,000	10,000 to 25,000	25,000 and Over	Add per 1000 feet Kansas City
1603	No. 18	No. 16	1/8 " "	19 "	4.96	4.73	4.48	4.37	Special	\$.10
1604	No. 16	No. 14	3/32 " "	32 "	6.23	5.92	5.61	5.47	Special	.18

Twisted Pair



List No.	B.W.G.	Equivalent to B. & S. Gauge	Thickness Insulation	Weight per 1000 feet	Less than 1000 feet	1000 to 5000	5000 to 10,000	10,000 to 25,000	25,000 and Over	Add per 1000 feet Kansas City
1600	No. 18	No. 16	1/8 " "	39 "	9.95	9.45	8.96	8.74	Special	\$.20
	No. 16	No. 14	3/32 " "	65 "	12.46	11.84	11.21	10.93	Special	.35
1602	No. 14	No. 12	11/64 " "	80 "	14.50	13.78	13.05	12.72	Special	.50

Above prices F. O. B. Rochester or Chicago.

Cross-Arm Braces



Made of stiff Bessemer steel, full size and weight. Punched one inch from end to take one 1/2-inch and one 3/8-inch bolt. Standard bundles contain 20 braces each.

F.O.B. Rochester and Chicago, per 100

List No.	Size	Weight Per 100	Less than Std. Pkg.	Std. Pkg.	Pkg. and over
843	1 1/4 x 1/4 x 20 Galvanized	167 "	\$10.30	\$ 8.65	
845	1 3/8 x 3/8 x 22 Galvanized	156 "	10.25	8.55	
144	1 3/8 x 3/8 x 24 Galvanized*	170 "	12.05	10.05	
847	1 1/2 x 1/2 x 24 Galvanized	202 "	12.10	10.10	
146	1 3/8 x 3/8 x 26 Galvanized	184 "	11.90	9.92	
849	1 1/2 x 1/2 x 26 Galvanized	217 "	12.98	10.85	
851	1 1/4 x 1/4 x 28 Galvanized	234 "	13.95	11.65	
853	1 1/4 x 1/4 x 30 Galvanized*	250 "	14.95	12.50	

F.O.B. Kansas City, per 100

843	1 1/4 x 1/4 x 20 Galvanized	167 "	\$12.00	\$10.05	
845	1 3/8 x 3/8 x 22 Galvanized	156 "	11.90	9.95	
144	1 3/8 x 3/8 x 24 Galvanized*	170 "	13.10	10.92	
847	1 1/2 x 1/2 x 24 Galvanized	202 "	14.20	11.83	
146	1 3/8 x 3/8 x 26 Galvanized	184 "	13.85	11.52	
849	1 1/2 x 1/2 x 26 Galvanized	217 "	15.20	12.70	
851	1 1/4 x 1/4 x 28 Galvanized	234 "	16.35	13.65	
853	1 1/4 x 1/4 x 30 Galvanized*	250 "	17.50	14.60	

Those sizes marked (*) carried in stock.

Angle Iron Alley Arm Braces

Galvanized



Used for bracing crossarms that are mounted with greater portion of arm on one side of pole than on the other as required in alleys or along streets to avoid branches of trees. Made of angle iron heavily galvanized. Punched with 1/4 inch holes, one for attaching to crossarm and two for attaching to pole. Provided with forged ends and step.

F.O.B. Rochester and Chicago, per 100

List No.	Length	Dimensions Angle Iron	Weight Per 100	Less than 100	100 and over
733	5 feet	1 1/2 x 1 1/2 x 1/4	1050 lbs.	\$104.50	\$ 87.25
734	6 "	1 1/2 x 1 1/2 x 1/4	1280 "	118.00	98.50
735	7 "	1 3/4 x 1 3/4 x 1/4	1240 "	157.60	127.50
736	10 "	2x2x1/4	1725 "	350.75	260.00

F.O.B. Kansas City, per 100

733	5 feet	1 1/2 x 1 1/2 x 1/4	1050 lbs.	116.00	97.00
734	6 "	1 1/2 x 1 1/2 x 1/4	1280 "	119.00	99.50
735	7 "	1 3/4 x 1 3/4 x 1/4	1240 "	170.75	142.75
736	10 "	2x2x1/4	1725 "	350.00	292.00

Cross-Arm Back Braces



Used for bracing crossarms on curved lines and on terminal poles in addition to regular crossarm braces as an additional stiffening. Made of angle iron heavily galvanized. $\frac{1}{8}$ inch hole punched at center and $\frac{1}{8}$ inch holes at ends.

F.O.B. Rochester and Chicago, per 100

List No.	Length	Dimensions Angle Iron	Weight Per 100	Less than 100	100 and over
2227	5 feet	1 1/2 x 1 1/2 x 1/8	900 lbs.	\$86.00	\$72.00
2228	6 "	1 1/2 x 1 1/2 x 1/8	1100 "	101.00	84.50
2367	6 "	1 1/2 x 3/8 Flat.	1150 "		Special

F.O.B. Kansas City, per 100

2227	5 feet	1 1/2 x 1 1/2 x 1/8	900 lbs.	95.50	79.50
2228	6 "	1 1/2 x 1 1/2 x 1/8	1000 "	112.50	94.00
2367	6 "	1 1/2 x 3/8 Flat	1150 "		Special

Machine Bolts

Galvanized



F.O.B. Roch. and Chicago

F.O.B. Kansas City

Size	Std. Pkg.	F.O.B. Roch. and Chicago			F.O.B. Kansas City		
		Less than 100	100 to 250	250 to 1000	Less than 100	100 to 250	250 to 1000
3/8 x 3 in.	1000	\$2.08	\$1.91	\$1.73	\$2.22	\$2.03	\$1.85
3/8 x 3 1/2 "	1000	2.27	2.08	1.89	2.42	2.22	2.02
3/8 x 4 "	1000	2.45	2.25	2.05	2.62	2.40	2.18
3/8 x 4 1/2 "	1000	2.62	2.40	2.18	2.79	2.56	2.31
3/8 x 5 "	1000	2.95	2.72	2.46	3.14	2.88	2.63
3/8 x 6 "	1000	3.29	3.02	2.76	3.52	3.23	2.94
1/2 x 4 1/2 "	600	4.45	4.09	3.72	4.81	4.42	4.05
1/2 x 5 "	500	4.70	4.32	3.93	5.07	4.66	4.24
1/2 x 6 "	500	5.18	4.76	4.34	5.62	5.16	4.70
1/2 x 7 "	400	6.15	5.21	4.74	6.15	5.65	5.14
1/2 x 8 "	300	7.12	6.53	5.95	7.76	7.13	6.49
1/2 x 10 "	250	8.34	7.65	6.97	9.10	8.36	7.60
1/2 x 12 "	250	9.34	8.56	7.80	10.16	9.34	8.50
1/2 x 16 "	250	10.32	9.48	8.61	11.41	10.60	9.39
3/4 x 8 "	250	8.55	7.85	7.14	9.40	8.62	7.85
3/4 x 10 "	200	9.66	8.87	8.08	10.60	9.85	8.95
3/4 x 12 "	175	10.82	9.44	9.05	12.00	11.00	10.00
3/4 x 14 "	200	11.92	10.90	9.90	13.30	12.20	11.10
3/4 x 16 "	175	13.10	12.00	10.95	14.50	13.30	12.10

Lag Screws, Carriage Bolts and Machine Bolts may be assorted to make quantity.

Carriage Bolts

Galvanized



F.O.B. Roch. and Chicago

F.O.B. Kansas City

Size	Std. Pkg.	F.O.B. Roch. and Chicago			F.O.B. Kansas City		
		Less than 100	100 to 250	250 to 500	Less than 100	100 to 250	250 to 500
3/8 x 3 1/2 in.	1000	\$2.19	\$2.00	\$1.82	\$2.33	\$2.14	\$1.95
3/8 x 4 "	1000	2.37	2.18	1.98	2.54	2.33	2.12
3/8 x 4 1/2 "	1000	2.52	2.32	2.12	2.71	2.48	2.26
3/8 x 5 "	1000	2.84	2.61	2.38	3.04	2.79	2.54
3/8 x 5 1/2 "	1000	3.00	2.76	2.52	3.22	2.95	2.69
3/8 x 6 "	1000	3.19	2.93	2.67	3.42	3.14	2.86
1/2 x 4 "	600	4.00	3.68	3.35	4.33	3.97	3.62
1/2 x 4 1/2 "	500	4.24	3.89	3.54	4.58	4.22	3.83
1/2 x 5 "	500	4.50	4.12	3.75	4.85	4.45	4.05
1/2 x 5 1/2 "	500	4.73	4.35	3.96	5.12	4.70	4.27
1/2 x 6 "	500	4.97	4.56	4.15	5.38	4.95	4.50

Lag Screws, Carriage Bolts and Machine Bolts may be assorted to make quantity.

Lag Screws

Galvanized



F.O.B. Roch. and Chicago

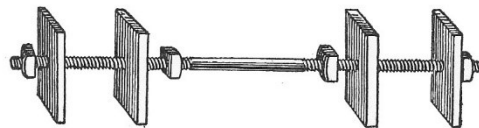
F.O.B. Kansas City

Size	Std. Pkg.	F.O.B. Roch. and Chicago			F.O.B. Kansas City		
		Less than 100	100 to 250	250 to 1000	Less than 100	100 to 250	250 to 1000
3/8 x 3 in.	2000	\$1.89	\$1.74	\$1.57	\$1.99	\$1.83	\$1.67
3/8 x 3 1/2 "	1500	2.06	1.89	1.71	2.18	1.99	1.82
3/8 x 4 "	1500	2.22	2.04	1.86	2.36	2.16	1.97
3/8 x 4 1/2 "	1000	2.40	2.20	2.00	2.54	2.34	2.12
3/8 x 5 "	1000	2.59	2.38	2.17	2.74	2.52	2.30
1/2 x 2 1/2 "	1500	2.55	2.49	2.26	2.89	2.65	2.41
1/2 x 3 "	1000	2.96	2.72	2.48	3.17	2.91	2.65
1/2 x 3 1/2 "	1000	3.22	2.96	2.69	3.44	3.16	2.88
1/2 x 4 "	1000	3.48	3.19	2.90	3.71	3.41	3.12
1/2 x 4 1/2 "	1000	3.73	3.42	3.12	4.00	3.67	3.34
1/2 x 5 "	500	3.98	3.66	3.31	4.27	3.92	3.58
1/2 x 6 "	500	4.48	4.12	3.75	4.83	4.43	4.04
1/2 x 7 "	500	5.00	4.58	4.17	5.38	4.95	4.50

Lag Screws, Carriage Bolts and Machine Bolts may be assorted to make quantity.

Double Arming Bolts

Galvanized



Furnished with 2 nuts, no washers

Per 100

F.O.B. Roch. and Chicago

F.O.B. Kansas City

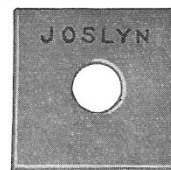
List No.	Size	Std. Pkg.	F.O.B. Roch. and Chicago			F.O.B. Kansas City		
			Less than 100	100 to 250	250 to 1000	Less than 100	100 to 250	250 to 1000
150	1/2" dia. 12 in.	225	\$ 9.75	\$8.95	\$8.15	\$10.50	\$ 9.62	\$ 8.77
830	14 "	250	10.45	9.62	8.75	11.20	10.40	9.48
746	16 "	225	11.10	10.20	9.26	12.05	11.05	10.10
748	18 "	200	11.88	10.90	9.94	12.90	11.85	10.80
752	1/2" dia. 12 in.	150	15.80	14.50	13.20	17.30	15.90	14.45
754	14 "	150	16.80	15.45	14.05	18.50	17.00	15.45
756	16 "	150	17.80	16.35	14.90	19.60	18.00	16.40
758	18 "	125	18.80	17.25	15.70	20.75	19.00	17.35

Washers extra not included in list prices above

Bolts 12" to 14" have 6" threads. Bolts over 14" have threads 8" long

Assortment of lag screws, carriage, machine and double arming bolts may be made to make up a quantity.

Square Washers

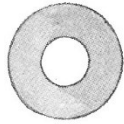


Galvanized Per 100

F.O.B. Rochester and Chicago

List No.	Description	Std. Pkg.	Less than 100	100 to 500	500 to 1000
860	4" x 4" x 1/8" for 3/8" and 1/2" bolts	300	7.15	6.56	5.97
F.O.B. Kansas City					
858	2" x 2" x 5/8" for 1/8" and 3/8" bolts	1500	1.52	1.39	1.27
860	4" x 4" x 1/8" for 3/8" and 1/2" bolts	300	8.05	7.37	6.70

Round Washers For Lag Screws



Galvanized, per 100

F.O.B. Rochester and Chicago

List No.	Size	Weight per 100	Std. Pkg.	Less than 100	100 to 500	500 to 1000
153	1" diam. by No. 14 gauge, 1/8" hole	1 1/2 lbs	8000	\$.33	\$.305	\$.28
154	1 1/4" diam. by No. 14 gauge, 1/2" hole	3 "	8000	.455	.415	.38
155	1 3/8" diam. by No. 12 gauge, 1/8" hole	4 "	5000	.605	.65	.51
156	1 3/4" diam. by No. 10 gauge, 1/8" hole	8 "	2500	1.03	.945	.86
F.O.B. Kansas City						
153	1" diam. by No. 14 gauge, 1/8" hole	1 1/2 lbs	8000	.35	.32	.29
154	1 1/4" diam. by No. 14 gauge, 1/2" hole	3 "	8000	.48	.44	.405
155	1 3/8" diam. by No. 12 gauge, 1/8" hole	4 "	5000	.65	.60	.545
156	1 3/4" diam. by No. 10 gauge, 1/8" hole	8 "	2500	1.10	1.04	.925

Pole Steps

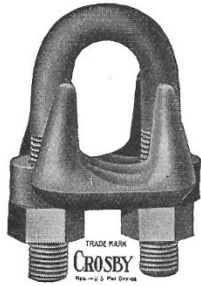
Galvanized—Cone Pointed



F.O.B. Rochester and Chicago, per 100

List No.	Size	Weight per 100	Std. Pkg.	Less than 100	100 to 500	500 to 1000
160	1/2"x9 inch	690 lbs.	350	\$7.85	\$7.20	\$6.55
F.O.B. Kansas City, per 100						
160	1/2"x9 inch	690 lbs.	350	8.50	7.80	7.10

Crosby Wire Rope Clip Galvanized



Light and durable. Forged from best quality open-hearth steel. Has been a standard article for many years and is considered one of the most effective wire rope fasteners manufactured.

F.O.B. Rochester and Chicago, per 100

List No.	For	Weight per 100	Std. Pkg.	Less than 100	100 to 500	500 to 1000
169	For 1/4 inch rope	25 lbs.	500	\$22.50	\$20.60	\$18.60
170	" 3/8 " "	25 "	500	22.50	20.00	18.60
171	" 1/2 " "	37 "	500	23.40	21.40	19.50
172	" 3/4 " "	75 "	200	29.20	26.80	24.40
F.O.B. Kansas City, per 100						
169	For 1/4-inch rope	25 lbs.	500	22.80	21.00	19.10
170	" 3/8 " " "	25 "	500	22.80	21.00	19.00
171	" 1/2 " " "	37 "	500	26.10	23.90	21.80
172	" 3/4 " " "	75 "	200	29.70	27.20	24.90

Cincinnati Wire Rope Clip

Galvanized



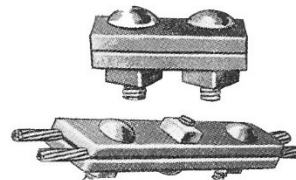
A plate with spiral corrugations to fit between the strands of the rope and absolutely prevent slipping, and a U-bolt to pull the two ropes against each other and against the plate. The bolt is heavy enough for the heaviest strain required.

F.O.B. Rochester and Chicago, per 100

List No.	For	Weight per 100	Std. Pkg.	Less than 100	100 to 250	250 to 500
173	For 1/4 inch rope	16 lbs.	200	\$4.65	\$4.27	\$3.89
174	" 3/8 " "	17 "	175	4.93	4.53	4.13
175	" 1/2 " "	27 "	200	6.30	5.80	5.28
176	" 3/4 " "	46 "	200	9.06	8.33	7.58
F.O.B. Kansas City, per 100						
173	For 1/4-inch rope	16 lbs	200	4.85	4.45	4.05
174	" 3/8 " " "	17 "	175	5.15	4.72	4.30
175	" 1/2 " " "	27 "	200	6.58	6.05	5.50
176	" 3/4 " " "	46 "	200	9.55	8.75	7.98

Galvanized Guy Clamps

Rolled Steel



The standard clamp for aerial cable construction and guying heavy pole leads. Also used by some companies for cable suspension clamp by omitting center clamp bolt and substituting carriage bolt to go through pole. Heavily galvanized.

Per 100

F.O.B. Rochester and Chicago

List No.	Weight per 100	Std. Pkg.	Less than 100	100 to 250	250 to 500
204 Large size 3 bolts 6"	210 lbs.	75	\$25.50	\$23.40	\$21.30
205 Small size 2 bolts 3"	110 "	200	14.80	13.60	12.40
F.O.B. Kansas City					
204 Large size 3 bolts 6"	210 lbs.	75	\$27.80	\$25.60	\$22.30
205 Small size 2 bolts 3"	110 "	200	16.10	14.80	13.50

Universal Guy Clamp

Galvanized



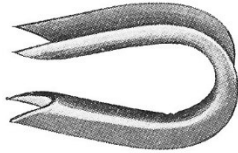
This clamp will take any size of wire rope commonly used from 1/4 to 1/2 inch which avoids carrying stocks of different sizes. Made of malleable iron and heavily galvanized.

List No.	No. of Bolts	Weight Per 100	Each
1396	2	100 lbs.	\$.23
1397	3	160 "	.35

Discounts

Less than 100	Net
100 or over	5%

Steel Wire Rope Thimbles



Used for terminating standard wire rope on guy or anchor rods and around poles, etc. Galvanized.

List No.	Used with Rope	Circumference	Per 100				
			Weight per 100	Standard Package	Less than 100		
F.O.B. Rochester and Chicago							
180	3/8 in.	1 in.	10 lbs.	10	\$4.18	\$3.84	\$3.50
875	1/2 in.	1 1/2 in.	18 "	22	5.40	4.96	4.52
F.O.B. Kansas City							
180	3/8 in.	1 in.	10 lbs.	10	4.30	3.97	3.59
875	1/2 in.	1 1/2 in.	18 "	22	5.63	5.16	4.70

Turnbuckles



Useful for tightening special guying fixtures, such as pole truss braces, etc. Made with two eyes and with one hook and one eye.

Hook and Eye

List No.	Size	Weight per 100	Standard Package	Per 100			
				Less than Std. Pkg.	Std. Pkg. and over	Less than Std. Pkg.	
F.O.B. Rochester and Chicago							
2200	1/2 x 6"	170 "	10	\$66.00	\$55.20	\$ 67.50	\$56.50
2201	1/2 x 9"	225 "	10	99.00	82.80	101.00	84.30
2202	1/2 x 12"	300 "	10	115.50	96.50	117.40	98.10
2203	5/8 x 9"	340 "	10	119.00	99.50	122.00	102.00
2204	5/8 x 12"	425 "	10	138.00	115.50	143.00	118.00
2206	3/4 x 12"	510 "	10	181.00	152.50	188.50	157.50
F.O.B. Kansas City							
2207	1/2 x 6"	170 lbs.	10	66.00	55.20	67.50	56.50
2208	1/2 x 9"	225 "	10	99.00	82.80	101.00	84.30
2209	1/2 x 12"	300 "	10	115.50	96.50	117.40	98.10
2210	5/8 x 9"	340 "	10	119.00	99.50	122.00	102.00
2211	5/8 x 12"	425 "	10	138.00	115.50	143.00	118.10
2213	3/4 x 12"	510 "	10	181.10	152.50	188.50	157.50

Double Eye

2207	1/2 x 6"	170 lbs.	10	66.00	55.20	67.50	56.50
2208	1/2 x 9"	225 "	10	99.00	82.80	101.00	84.30
2209	1/2 x 12"	300 "	10	115.50	96.50	117.40	98.10
2210	5/8 x 9"	340 "	10	119.00	99.50	122.00	102.00
2211	5/8 x 12"	425 "	10	138.00	115.50	143.00	118.10
2213	3/4 x 12"	510 "	10	181.10	152.50	188.50	157.50

Guy Wire Hooks



Used to keep the guy wires from slipping out of place on poles. Drilled for two lag screws or bolts.

Galvanized—Per 100

List No.	Size	Weight per 100	Std. Pkg.	Per 100		
				Less than 50	50 to 100	100 and over
F.O.B. Rochester and Chicago						
761	1 1/2 x 3/8 x 6" 2 bolt	90 lbs.	250	\$10.05	\$9.20	\$8.40
2900	1 3/4 x 1/4 x 3" 1 bolt	40 "	500	4.66	4.28	3.89
F.O.B. Kansas City						
761	1 1/2 x 3/8 x 6" 2 bolt	90 lbs.	250	11.00	10.20	9.20
2900	1 3/4 x 1/4 x 3" 1 bolt	40 "	500	5.07	4.65	4.23

Cable Suspension Clamp



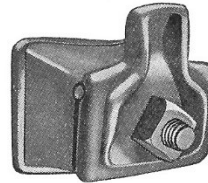
For securing aerial cable messenger wires to poles. A low-priced and durable clamp.

Galvanized—Per 100

F.O.B. Rochester and Chicago

List No.	Size	Weight per 100	Std. Pkg.	Less than 50	50 to 100	100 and over
2214	1/2 x 2 1/2" 1 bolt	90 lbs.	150	\$9.40	8.63	\$7.85
F.O.B. Kansas City						
2214	1/2 x 2 1/2" 1 bolt	90 lbs.	150	10.20	9.35	9.10

Non-Breakable Messenger Hanger



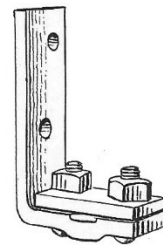
Holds messenger wire away from pole and has ear, which facilitates stringing messenger before clamping permanently. Fastens to pole with a single through bolt. When ordering specify whether for 1/8 inch messenger wire and smaller or 3/8 inch strand and larger. Galvanized Malleable Iron.

Galvanized—Per 100

F.O.B. Rochester and Chicago

List No.	Size	Weight per 100	Std. Pkg.	Less than 50	50 to 100	100 and over
2038	For 1/8" Strand	150 lbs.		\$37.40	\$34.40	\$31.25
2039	For 3/8" Strand	150 lbs.		37.40	34.40	31.25
F.O.B. Kansas City						
2038	For 1/8" Strand	150 lbs.		39.00	35.00	32.60
2039	For 3/8" Strand	150 lbs.		39.00	35.80	32.60

Universal Messenger Hanger



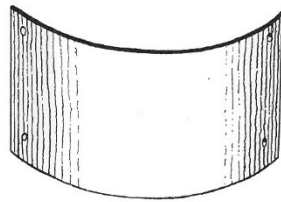
An extra strong galvanized messenger hanger for aerial cable construction.

Galvanized—Per 100

F.O.B. Rochester and Chicago

List No.	Dimensions	Weight per 100	Std. Pkg.	Less than 50	50 to 100	100 and over
855	3/8 x 1 3/4"	240 lbs.	100	\$37.90	\$34.80	\$31.60
856	1/2 x 2"	300 lbs.	100	41.30	37.90	34.50
F.O.B. Kansas City						
855	3/8 x 1 3/4"	240 lbs.	100	40.30	37.00	33.70
856	1/2 x 2"	300 lbs.	100	44.50	40.80	37.20

Strain Plates—Galvanized

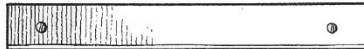


These plates are nailed to pole beneath guy wires to prevent guy from cutting and weakening poles.

Galvanized—Per 100
F.O.B. Rochester and Chicago

List No.	Size	Weight per 100	Std. Pkg.	Less than 50	50 to 100	100 and over
2195	4x8 14 Ga.	90 lbs.	400	\$9.60	\$8.72	\$8.04
F.O.B. Kansas City						
2195	4x8 14 Ga.	90 lbs.	400	10.50	9.55	8.68

Pole Shims

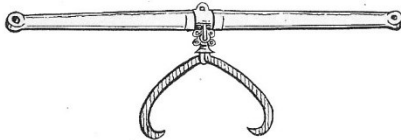


Nailed to poles or trees to prevent guy wires from cutting into wood. Shims are punched with 1/4 inch holes, 3/4 inch from ends.

Galvanized—Per 100
F.O.B. Rochester and Chicago

List No.	Size	Weight per 100	Std. Pkg.	Less than 50	50 to 100	100 and over
193	1 1/4 x 3/16 x 8"	60 lbs.	500	\$5.38	\$4.95	\$4.50
F.O.B. Kansas City						
193	1 1/4 x 3/16 x 8"	60 lbs.	500	5.95	5.45	4.97

Carrying Hook



List No.	Description	Weight	Each
206	Lifting and Carrying Hook, 4 feet, Maple..	8 lbs.	\$2.65
207	" " " " 5 " " "	10 "	2.80

Cant Hook



List No.	Description	Weight	Each
208	Cant Hook with maple handle 4 1/2 feet long.....	7 1/2 lbs.	\$2.65

Wood Tamping Bar



List No.	Description	Weight	Each
209	Faced and bound with iron shoe, 7 feet long.....	12 1/2 lbs.	\$3.57

Tamping and Digging Bar



List No.	Description	Weight	Each
210	Octagonal Steel, 1 inch x 7 feet.....	20 lbs.	\$4.50
211	Octagonal Steel, 1 1/8 inch x 8 feet.....	30 "	5.78

Crow Bars



List No.	Description	Weight	Each
214	Pinch Point.....	6 lbs.	\$2.00
215	Pinch Point.....	10 "	3.00

Crow and Digging Bars



List No.	Description	Weight	Each
216	Octagonal Steel, 1 inch x 7 feet.....	20 lbs.	\$4.35
217	Octagonal Steel, 1 1/8 inch x 8 feet.....	28 "	5.30

Spud Digging Tool and Tamping Bar



The handles are made of crucible steel tubing (especially for this purpose) and are as strong as solid steel bar. The blades are forged from the best open hearth crucible mining tool steel and tempered. Length 9 feet.

List No.	Description	Weight	Each
218	Spud with tamping end.....	19 1/2 lbs.	\$5.25

Eureka Post Hole Digger



List No.	Description	Weight	Each
223	Length 4 feet.....	11 1/4 lbs.	\$1.70

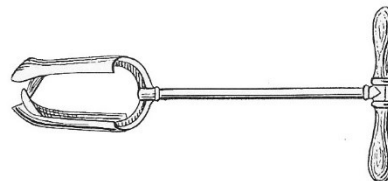
Loy (or Slick) Digging Tool



The most useful construction tool made, used in digging holes for setting poles. Only the best crucible steel used. It is best illustrated by stating that it is a large flat chisel with a wood handle. Give them a trial and you will never use a bar.

List No.	Description	Weight	Each
220	Length 8 feet.....	18 lbs.	\$6.65

Iwan's Post Hole Auger



This auger will save you time and labor in your construction work. One man can bore from 50 to 60 five-foot holes in one day with a 12-inch auger.

List No.	Description	Weight	Each
767	To bore 8 inch diameter, 4-foot overall..	12 lbs.	\$1.85
769	To bore 10 inch diameter, 4-foot overall..	14 "	2.20
771	To bore 12 inch diameter, 5 1/2-ft overall..	16 1/2 "	5.35

Long-Handled Spoons



List No.	Weight Each
224 Spoons, 7 feet, 22 inch straps.....	8 lbs. \$3.10
225 Spoons 8 feet, 22 inch straps.....	9 " 3.36

Long-Handled Shovels



List No.	Weight Each
226 Shovels, 7 feet, 22 inch straps.....	8 lbs. \$3.10
227 Shovels, 8 feet, 22 inch straps.....	9 " 3.30

Shovel and Spoon Handles

List No.	Weight Each
947 Shovel Handles, 8 feet Maple.....	5 lbs. \$2.00
948 Shovel Handles, 7 feet ".....	4 " 1.80
949 Spoon Handles, 8 feet ".....	6 " 2.00
950 Spoon Handles, 7 feet ".....	5 " 1.80

Plain Pike Pole



List No.	Weight Each
233 12 feet long—2 inch handle.....	9 lbs. \$2.26
234 14 " " " ".....	11 " 2.95
235 16 " " 2 1/2 " ".....	16 " 4.40
236 18 " " " ".....	18 " 4.85
237 20 " " " ".....	20 " 5.60

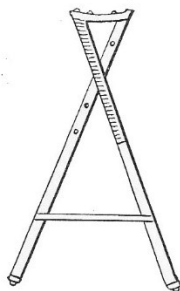
Guarded Pike Pole or Raising Fork



Handles made of Washington fir and the fork of malleable iron

List No.	Weight Each
228 12 feet long—2 inch handle.....	10 lbs. \$3.65
229 14 " " " ".....	12 " 4.25
230 16 " " 2 1/2 " ".....	15 1/2 " 5.80
231 18 " " " ".....	17 1/2 " 6.10
232 20 " " " ".....	19 1/2 " 6.40

Pole Supports Jenny Pattern



The construction of these pole supports is strong and rigid. The uprights are 2 x 4 dressed on all sides. The joint where the uprights cross is gained and the joint reinforced by iron plates bolted through the uprights. The bottom of each leg is provided with a spiked iron shoe to prevent slipping.

List No.	Weight Each
238 Height 6 feet.....	40 lbs. 9.30
239 Height 7 feet.....	45 " 10.70
1628 Height 8 feet.....	50 " 11.60

Ground Rods

Galvanized

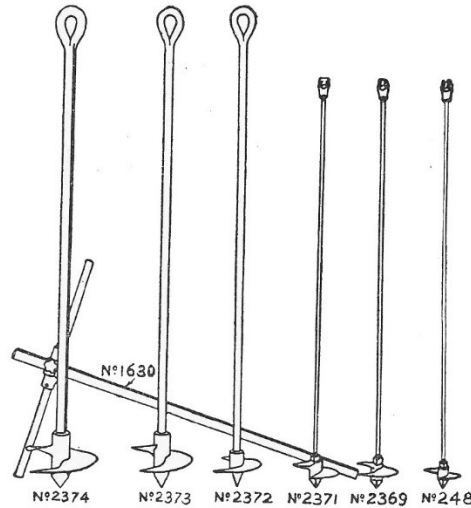


Used for making ground connection for rural line telephones, lightning arresters and cable pole terminal box grounds. Made of iron with point at one end and drilled hole at other end. Furnished galvanized as follows:

List No.	Diam.	Lgth.	Wt per 100 Lbs.	Std. Pkg.	Per 100	
					F.O.B. Roch'r & Chicago	F.O.B. Kansas City
1633	3/8 in	5 ft.	176	20	\$17.45	\$14.58
258	1/2 "	6 "	360	20	32.75	26.80
2481	5/8 "	6 "	555	10	47.40	39.60

Ground rods of these types can also be furnished either with a 6-inch free end of No. 10 B. & S. copper wire soldered to connection end of rod or with a Kling Clamp.

Matthews Scrulix Anchors



A most convenient type of anchor for guy wires because it screws into solid ground without loosening the soil as when anchors are installed in dug holes. The manufacturer of the Scrulix Anchors guarantees the 6, 7 and 8 inch sizes to outlast all other anchors using galvanized steel rods of the same cross-section, and they guarantee the 8, 10 and 12 inch anchors with square rods to outlast all others with the same round section galvanized. Furnished in various sizes, as shown in the following table:

List No.	Galvanized Round Rods	Diam. of Anchor	Size of Rod	Weight per 100
248	Medium Strains	6 in.	1 1/2 in. x 6 ft.	750 lbs.
2369	Heavy "	7 "	1 1/2 " x 6 "	1200 "
2371	Heavy "	8 "	1 1/2 " x 6 "	1500 "

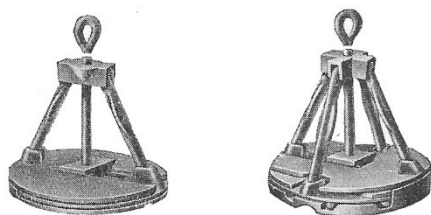
List No.	Galvanized Square Rods	Diam. of Anchor	Size of Rod	Weight per 100
2372	Heavy Strains	8 in.	1 1/2 in. x 6 ft.	3700 lbs.
2373	" "	10 "	1 1/2 " x 6 "	5700 "
2374	" "	12 "	1 1/2 " x 6 "	7900 "

1630 Wrench for above (Must be used with round anchors)
No Wrench needed on heavy anchors.

List No.	Quantity Prices—Each		Special
	Less than 100	100 to 499	
248	\$ 1.65	\$ 1.48 1/2	Special
2369	2.30	2.07	
2371	3.05	2.74 1/2	
2372	9.00	8.55	
2373	11.00	10.45	
2374	15.00	14.25	
1630	7.00	7.00	

All Prices F. O. B. St. Louis

Everstick Anchors Without Rods



Two-way Anchor Four-way Anchor

List No.	Description	Price Each
Less than 100—F.O.B. St. Louis, Mo.		
2512	No. 5, two-way. Holding surface 45 square ins. 5-inch circle, expands to 5 x 9 ins. Installed in 5-in. hole.	\$.70
2513	No. 6, two-way. Holding surface 66 square ins. 6-inch circle, expands to 6 x 11 ins. Installed in 6-in. hole.	1.12
2514	No. 8, two-way. Holding surface 120 square ins. 8-inch circle, expands to 8 x 15 ins. Installed in 8-in. hole.	1.35
2515	No. 6, four way. Holding surface 121 square ins. 6-inch circle, expands to 11 ins. Installed in 6-in. hole.	1.25
2516	No. 8, four-way. Holding surface 225 square ins. 8-inch circle, expands to 15 ins. Installed in 8-in. hole.	1.95
2517	No. 10, four-way. Holding surface 361 square ins. 10-inch circle, expands to 19 ins. Installed in 10-in. hole.	3.40

Anchor or Guy Rods



Furnished with one square nut. Square washers extra. Galvanized—Per 100

List No.	Size	Lbs. Wt.	Srd. Pk.	F.O.B. Rochester or Chicago		F.O.B. Kansas City	
				Less St.Pk.	Std. Pkg. & over	Less St.Pk.	Std. Pk. & over
900	1/2" x 6'	5	10	\$40.75	\$34.00	\$45.40	\$37.90
901	1/2" x 7'	5 1/2	10	45.40	37.90	50.40	42.00
903	5/8" x 6'	7	10	57.60	48.20	64.20	53.60
904	5/8" x 7'	8	10	64.90	54.20	72.50	61.00
905	5/8" x 8'	9	10	71.50	59.80	77.60	67.10
907	3/4" x 6'	10	5	76.10	63.75	85.60	71.50
908	3/4" x 7'	11 1/2	5	86.10	72.00	97.00	81.00
910	3/4" x 8'	13	5	96.50	80.50	99.20	91.25
911	3/4" x 9'	14 1/4	5	106.00	88.50	120.50	100.75
912	1" x 8'	23 3/4	3	172.80	144.30	195.00	163.00
914	1" x 10'	29	3	208.00	174.00	236.00	197.50

Rods—Galvanized

Less than 100—F.O.B. St. Louis, Mo.

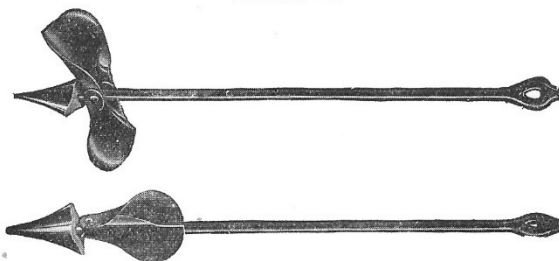
List No.	Description	Price Each
2518	6 feet, 1/2-inch	\$.32
2519	6 feet, 5/8-inch	.42
2520	6 feet, 3/4-inch	.60
2521	6 feet, 1-inch	.94
2522	8 feet, 5/8-inch	.55
2523	8 feet, 3/4-inch	.74
2524	8 feet, 1-inch	1.50
2525	10 feet, 1-inch	1.75

Discounts

100 Anchors or over	Special
100 Rods or over	Special

Note: Nos. 5 and 6 Two-Way Anchors will take 5/8 or smaller rods of any length. No. 6 Four-Way and No. 8 Two-Way, 3/4 or smaller. Nos. 8 and 10 Four-Way, 1 inch rod or smaller, any length.

Drive and Twist Anchors Galvanized



The anchor is driven into the ground the desired depth with a sledge or maul. The blades are set by twisting to the right three revolutions. The design of the blades, like those of a screw propeller, causes them to spread when the anchor is twisted. The pitch is such that they spread to an angle of 90 degrees with the rod in three revolutions. The pull is on solid earth that has not been disturbed.

List No.	Mfrs. No.	Length of Shaft Ft.	Diam. of Shaft In.	Span of Blades In.	Weight Lbs.	Less than 100 Each	100 or over Each
2070	1	4	3/4	8	8	\$1.90	\$1.85
2071	2	5	7/8	10	12	3.00	2.95
2072	3	6	1	12	15	3.40	3.35

Paragon Grounds



The Paragon grounds are made of a perforated sheet of pure copper; the cone is filled with pea size charcoal or coke. The charcoal absorbs moisture by capillary attraction, keeping the earth around the cone always moist, insuring a perfect and permanent ground.

It is ideal for grounding lightning arresters of all kinds, pole cable terminals, distributing and protector frames and toll line arresters.

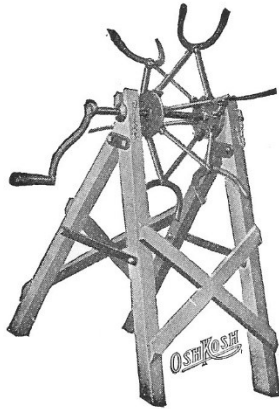
The cone is furnished complete with charcoal and with braided, hollow copper cable into which the ground wire may be soldered. The cable is securely soldered to the bottom of the cone.

List No.	Length	Shape	Gauge	Each
1636	1 foot	Cone	No. 22 Perforated	\$5.00
1637	2 feet	Cone	No. 22 Perforated	6.25

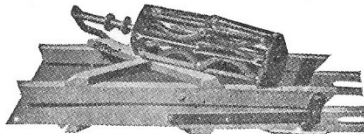
Discounts

Less than 10	40%
10 to 24	45%
25 to 99	50%
100 to 499	50 and 5%
500 and over	Special

Folding Take-up Reel



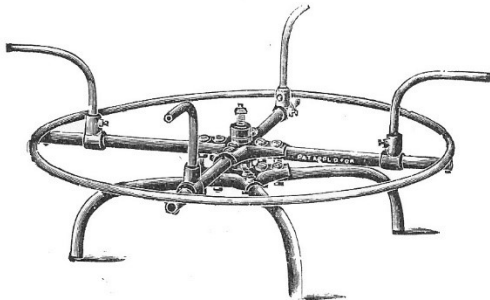
Folding Take-up Reel, Open



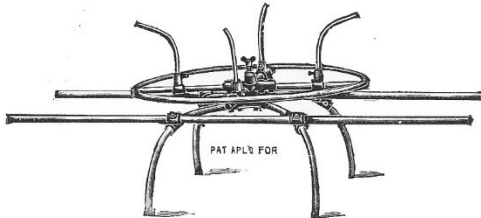
Folding Take-up Reel, Closed

List No.	Makes Coil	Weight	Each
259	Folding, for 18 inch coil	45 lbs.	\$18.00
260	Folding, for 21 inch coil	48 lbs.	18.40

"Ready" Pay-Out Reels



List No. 264

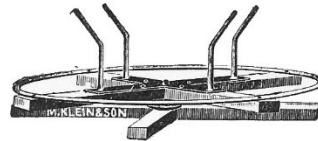


List No. 203

"Ready" Band Tension Pay-Out reels are a combination of all reels, making an ideal reel for telephone companies, especially for hard drawn copper. This reel we would recommend as being adapted for all classes of work.

List No.	Weight	Each
264 "Ready" Band Tension Pay-Out reels	41 lbs.	\$12.00
203 "Ready" No. 203 is the same as No. 264, made in barrow style	41 lbs.	15.00

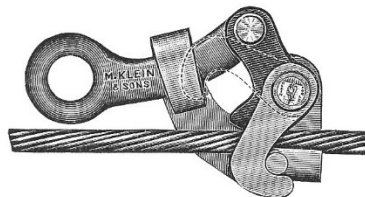
Pay-Out Reel



Substantially built of hard wood and reinforced with steel plates. A good easy running reel for use on repair wagons.

List No.	Weight	Each
261 With Pegs	40 lbs.	\$12.00

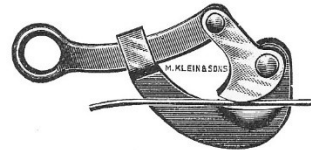
Improved Havens' Grip



Designed for handling plain or stranded wire from No. 6 guage to 3/4-inch in diameter. The body and handle of this clamp are made of steel forgings and the eccentric of hardened steel.

List No.	Weight Each	Each
2199	5 1/2 lbs.	\$7.00

Havens' Grip

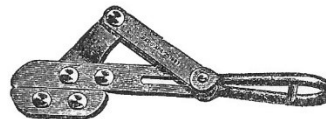


A popular grip for general line construction work. Body and handles are made of drop forged steel and the eccentric of hardened tool steel. Rivets are steel, machine turned, galvanized finish.

List No.	For Wire Sizes	Weight Each	Each
267	No. 8 and smaller	1 lb.	\$2.00
268	1/2-inch cable and smaller	2 1/2 lbs.	3.00

Buffalo Grips

Without Pulley



The Buffalo Grip is one of the most popular tools of its class ever placed on the market. It will instantaneously grip the wire and will not drop off. It will not slip under the severest tension and will not injure the softest wire.

List No.	Price Each
278 No. 1—Extreme opening .22 inch, holding all wires from the smallest to No. 6	\$2.85
952 No. 2—Extreme opening .35 inch, holding all wires from the smallest to No. 0	4.15

Discounts

Same as Buffalo Grips with Pulley

Buffalo Grip with Pulleys



List No.	Description	Price Each
954	No. 1—Extreme opening .22 inches, holding wire from smallest to No. 6, inclusive. Will accommodate rope 3/8 inch in diameter.	\$3.80
955	No. 2—Extreme opening .35 inches, holding wire from smallest to No. 0, inclusive. Will accommodate rope 1/4 inch in diameter.	6.00
279	No. 3—Extreme opening .48 inches, holding wire from smallest size to No. 0000. Will accommodate rope 5/8 inch in diameter.	9.05
956	No. 4—Extreme opening .52 inches, holding weatherproof wire, sizes No. 6 to No. 1, inclusive. Will accommodate rope 1/8 inch in diameter.	6.00

Discount on All Above Buffalo Grips
 Less than 12..... Net
 12 or more..... Special

Buffalo Lineman's Tool

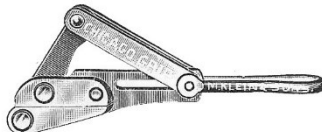


Latest adaptation to needs of line construction men. Self-adjusting brake which holds securely under severest tension.

List No.	Description	Price Each
280	No. 1—Extreme opening of .22 inch, holding wire from smallest size to No. 6, inclusive. Will accommodate rope 3/8 inch in diameter.	\$6.00

Discount on Buffalo Lineman's Tool
 Less than 12..... Net
 12 or more..... Special

**Chicago Grips—Plain
 For Bare Wires**

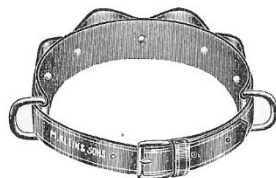


Once this grip seizes a wire it holds on—the harder the pull, the tighter the hold. It pulls straight without leaving kinks in the wire. The main body piece and lever are forged steel and draw parts are of wrought steel. The gripping jaws are machined smooth.

List No.	Size	Weight	Each
2503	For No. 6 wire and smaller.	1 1/2 lbs.	\$2.00

Above grip can also be furnished for use on insulated wire.

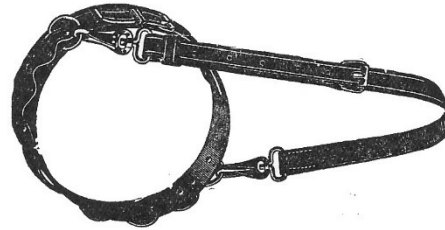
Lineman's Tool Belt



Made of oak tanned harness leather 2 1/4 in. wide with loop layer 1 inch wide, formed into 6 tool loops. Belt is made in 38, 40, 42, 44 and 46 inch lengths. Be sure to specify length when ordering.

List No.	Approx. Weight	Each
302	With rings for safety strap.	1 1/2 lbs. \$4.75

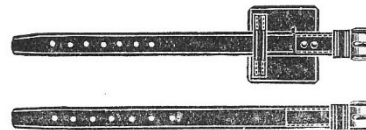
Belt and Safety Strap



This belt is the same as list No. 302 and is provided with a safety strap 1 1/4 inches wide and 6 feet long, provided with a strong snap hook at both ends. Strap may be shortened or lengthened by adjusting buckle, or it may be detached entirely from the belt. Made 38, 40, 42, 44 and 46 inch lengths. Be sure to specify length when ordering.

List No.	Description	Approx. Weight	Each
304	Belt and safety strap.	4 lbs.	\$9.60
305	Safety strap only.	2 "	4.85

Climber Straps



List No.	Description	Weight per pair	Per Set
300	Set of Eastern climber straps with plain leather pads.	1 1/2 lbs.	\$3.45

Lineman's Climbers



Made by Mathias Klein & Sons and considered by linemen throughout the country as the standard of quality. Made of special springy steel and forged to proper dimensions for safety and lightness. Cuffs in Eastern type climbers are made of tool steel riveted into shank while hot, then ground, filed and tempered.

List No.	Type	Approx. Wt. per pair	Per Pair
295	Eastern without straps.	3 3/8 lbs.	\$4.10

Eastern climbers are made in lengths from 15 to 18 inches by 1/2 inch variations.

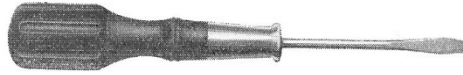
Champion Screw Driver

Machinist Style



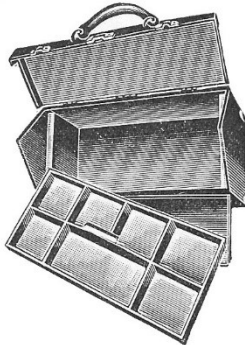
List No.	Length	Dozen
363	2 1/2 inch.	\$3.25
364	3 "	4.00
365	4 "	4.25
366	5 "	5.50
367	6 "	6.00
368	7 "	6.75
369	8 "	9.00
370	10 "	11.00
372	12 "	12.00

Champion Screw Driver (Cont.)
Cabinet Style



List No.	Length	Dozen
968	2½ Inch	\$3.25
969	3½ "	4.00
970	4½ "	4.25
971	5½ "	6.25
972	6½ "	6.75
973	8½ "	8.00
974	10½ "	9.00
975	12½ "	13.15

Metal Tool Kits



These Kits are made of prepared steel throughout, but are no heavier than other grips and tool kits, their average weight ranging from 5 to 11 pounds, depending on size.

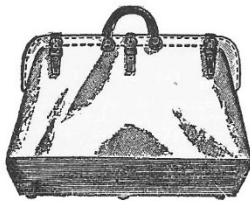
They will stand the hard usage for they are made of 26 gauge steel not tin. They are reinforced throughout by double forming and double seaming. Extra wiring and bracing, together with electric welding and solid riveting, give them the needed strength to withstand the wear and tear and rapid depreciation given the average tool kit.

They are finished in brown baked enamel that will not rub off or chip easily. Strong Yale or Corbin notched locks, genuine full sized corner irons and heavy side catches. They will not buckle nor change shape with the heaviest loads.

List No.	Style No.	Length	Width	Height	Weight	Each
2009	114	14	7	9	4½ lbs.	\$5.25
2010	116	16	9	11	5½ "	5.50
2011	118	18	10	13	6½ "	5.75
2012	120	20	11	13	7½ "	6.00
2013	122	22	11	13	10½ "	6.25

Discount
25%

Lineman's Tool Bag



List No.	Each
308	Canvass, 20 inch, with leather bottom..... \$5.75

"Yankee" Ratchet Screw Driver No. 11

Right and Left Hand and Rigid



List No.	Each
373	2 inch.....\$.50
374	3 "..... .60
375	4 "..... .65
376	5 "..... .70
377	6 "..... .85
378	8 "..... .95

"Yankee" Special Ratchet Screw Driver—No. 30

Right and Left Hand and Rigid



Three bits of different widths are included with each tool. The extreme length of tool with bit in chuck is 13½ inches closed and 19½ inches when extended.

Packed one only in a strong paper box. The advantages of this over similar tools are in its greater simplicity, compactness, strength, durability, and that it can be used as a rigid screw driver in any part of its length, as well as push or ratchet screws in or out.

List No.	Each
98	Size No. 2.....\$2.50

"Yankee" Automatic Drill No. 40



Bores holes in hard or soft woods without splitting. Pushing handle down revolves the drill point, and a spring pushes handle back to its place, while drill point stands still during the upward movement. In hard or tough woods this drill can be operated as a ratchet.

The "Yankee" embodies improvements over those now in the market in the Magazine for drills. This is found in the handle and reached by pushing catch toward top of tool, which causes interior of handle to move upward, showing all the drills in plain sight, and so they can be readily removed.

To insert drill the sleeve of chuck is turned to left, the drill inserted and sleeve let go. If the sleeve does not return to its place, push on drill and turn in chuck until it does. The tool is made of brass nickel plated and finely finished.

Eight drills are furnished with each tool, one each, 1-16, 5-64, 3-32, 7-64, 1-8, 9-64, 5-32 and 11-64 inch.

List No.	Trade No.	Each
99	40.....	\$2.40

Bell Hanger's Drills



No.	12-In. per doz.	18-In. per doz.	24-In. per doz.	30-In. per doz.
6	\$ 7.50	\$10.00	\$12.50	\$15.00
8	8.00	10.50	13.00	15.50
10	8.75	11.00	13.50	16.00
12	9.50	12.00	14.50	17.00
14	10.50	13.00	15.50	18.00
16	12.00	14.50	17.00	19.50
18	13.50	16.00	18.50	21.00
20	15.25	17.75	20.25	22.75
22	17.00	19.50	22.00	24.50
24	19.00	21.50	24.00	26.50
26	21.00	23.50	26.00	28.50
28	23.00	25.50	28.00	30.50
30	25.00	27.50	30.00	32.50
32	27.50	30.00	32.50	35.50
34	30.50	33.00	35.50	39.00
36	33.00	36.00	39.00	42.50

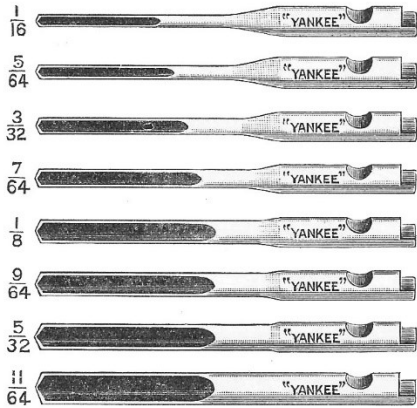
The numbers indicate the sizes in thirty-second of an inch. Use numbers and lengths in ordering these drills.

Discounts

Less than 6.....	Net
6 or more.....	10%

Yankee Chuck with Drill Points

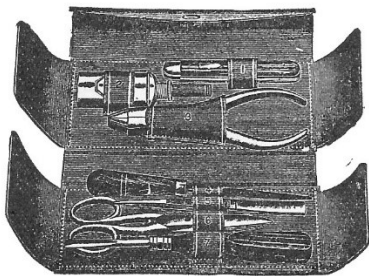
For use with No. 30 "Yankee" Ratchet Spiral Screw Driver



Eight drill points as above, are furnished with each chuck. The chuck and eight drill points are put up in a small, round wooden box. The outside of the chuck corresponds in size to the end of the screw driver. Bits used in No. 30 Spiral Ratchet Screw Driver, while the inner portion of the chuck is made to conform to the ends of the drill points used in No. 40 "Yankee" Automatic Drill. The drill point is first put in the chuck, and the two together put in chuck of No. 30 "Yankee" Spiral Ratchet Screw Driver in the same manner as bits are put in.

List No.	Each
976	Yankee Chuck with eight drill points.....\$1.00

Electrician's Pocket Tool Kit



This outfit is indispensable to the practical electrician. The case is made of the best quality russet leather, hand stitched. It is of convenient pocketbook style with firm metallic clasp, and measures 3 x 6 inches. It contains the following tools, viz.: 1 electrician's knife, 1 oil can, 1 pair 6 inch pliers, 1 file, 1 pair tweezers, 1 pair electrician's shears and 1 screw driver.

List No.		Each
424	Complete Kit.....	\$7.50
1027	Case only.....	2.00
1006	Electrician's Knife.....	1.25
1029	Oil Can.....	.20
993	Pliers.....	2.00
1030	File.....	.25
1031	Tweezers.....	.50
373	Screw Driver.....	.50
407	Shears.....	1.25

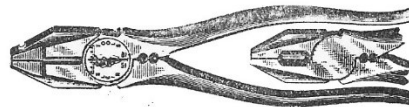
Pliers

**Klein's "Diamond Special" Pliers
Side Cutting**



List No.		Weight Per Dozen	Per Pair
2379	5 inch	3 lbs.	\$2.60
977	6 "	5 "	2.80
978	7 "	7 1/2 "	3.35
979	8 "	12 "	3.75

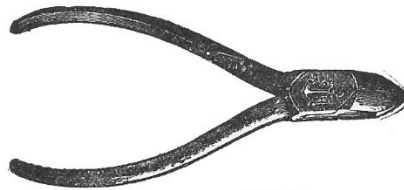
**Klein's "Diamond Special"
Side Cutting Pliers
With Sleeve Twister**



7-inch size Twister fitted for No. 12 McIntire sleeves. B. & S. gauge.
8-inch and 9-inch size Twister fitted for No. 10 new McIntire sleeves. B. & S. gauge.

List No.		Weight Per Dozen	Per Pair
1666	7 inch	7 1/2 lbs.	\$3.75
1667	8 "	12 "	4.45

**Genuine Swedish Oblique
Cutting Pliers
Polished**



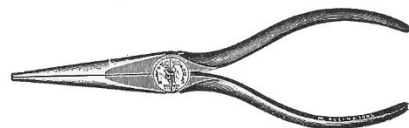
List No.		Weight Per Dozen	Per Pair
993	4 1/2 inch	3 3/4 lbs.	\$2.00
994	5 "	4 "	2.25
995	5 1/2 "	4 1/4 "	2.50

**Extra Long Oval Nose
Side-Cutting Pliers**



List No.		Weight Per Dozen	Per Pair
2375	5 With Side Cutter	2 3/4 lbs.	\$2.20
2376	6 " " "	3 "	2.40

Extra Long Nose Oval Point Pliers



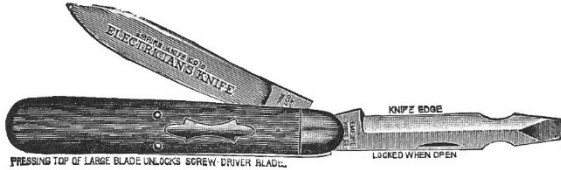
List No.		Weight Per Dozen	Per Pair
401	5 inch	3 1/4 lbs.	\$1.85
1671	6 "	3 1/2 "	2.00

Electrician's Scissors



List No. 407 5½ inch long, Nickel-plated..... Each \$1.25

Combination Knife



A combination of knife and screw driver. The screw driver blade has an edge on one side for scraping wires, so that the knife blade need not be used for that purpose, but kept sharp for other uses. Screw driver blade when opened is locked and cannot close on hand.

List No. 1006 Double Blade..... Price Each \$1.25

Splicing Clamps

Splicing clamps are an absolute necessity in making dependable electrical and mechanical joints in wires. The splicing clamps listed herein are properly designed and proportioned for most efficient use and are tempered and hardened so as to preserve their gripping qualities. All splicing clamps are furnished with polished heads and black handles. Packed one in carton.



List No.	Description	Weight	Each
861	A handy vest pocket size adapted for telephone troublemen. Has five round holes, accommodating all sizes of copper wire from 8 to 16 B. & S. gauge, and all sizes of iron wire from 10 to 18 B. W. G. Length 8 inches.....	¾ lbs.	\$2.60



List No.	Description	Weight	Each
409	Fitted with five round holes and one oval hole for Nos. 6, 8, 10, 12 and 14 iron wire or Nos. 4, 6, 8, 10 and 12 copper wire. Length 10½ inches.	1¼ lbs.	\$3.35



List No.	Description	Weight	Each
1675	Fitted with five sets of chambers adapted for twisting double tube copper sleeve joints Nos. 6 to 17 B. & S. gauge and iron sleeve joints Nos. 8 to 19 B. W. G. Length 10¾ inches.....	1¼ lbs.	\$3.35

Combination Wire and Sleeve Clamps

The following splicing clamps have been designed to meet the requirements of general telephone, telegraph, railway and electric light work. They splice bare copper and iron wires, and can be used for twisting double tube sleeve joints by simply reversing the handles of the clamp. Forged from a select grade of tool steel, properly hardened and tempered. The handles will not buckle when closed.



List No.	Size	Description	Weight Each	Each
413	9-inch	Standard telephone clamp for general line and trouble work. Has four round holes, accommodating all sizes of copper wire from 6 to 12 B. & S. gauge, and all sizes of iron wire Nos. 8 to 14 B. W. G. The reverse side has four sets of chambers adapted for twisting double tube copper sleeve joints Nos. 8 to 17 B. & S. gauge, and iron sleeve joints Nos. 10 to 19 B. W. G.	12 oz.	\$3.50



List No.	Size	Description	Weight Each	Each
2077	10¾-inch	This clamp is intended for general telephone and telegraph work where a large range of wires is used. It has five round holes and one oval hole, and will accommodate all sizes of iron wire from Nos. 6 to 14 B. W. G., and all sizes of copper wire from 4 to 12 B. & S. gauge. The reverse side has five sets of chambers adapted for twisting double tube copper sleeve joints, Nos. 6 to 17 B. & S. gauge, and iron sleeve joints Nos. 8 to 19 B. W. G.	1¼ lbs.	\$4.75

Klein's Combination Steel Lag Screw Wrench

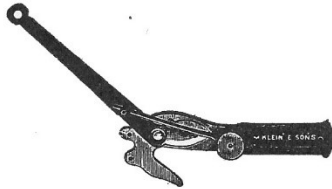


These wrenches are forged from select bar steel. The slot is formed in a cross shape, and will fit machine bolts, nuts or lag screws from ¾-inch to 5/8-inch. The small end of the wrench is arranged for ¼-inch machine bolts or lag screws. The round hole allows the end of a bolt to come through as the nut is run on.

The jaw is wider at its upper portion, and when this wrench is put on a nut or bolt, the tendency is to draw the bolt-head or nut into the wrench and prevent slipping off.

List No.	Length	Weight Per Dozen	Each
2087	13¼ inch.....	20 lbs.	\$2.50

Tree Trimmers

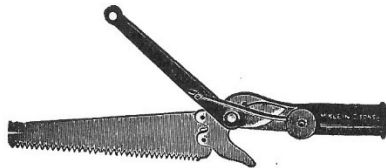


The head is constructed of malleable iron, and comprises the hook portion with which the knife operates and the socket into which the handle is inserted. This socket is perfectly straight, eliminating the necessity of tapering the end of the handle. The knife is forged from crucible steel and is integral with the lever and the cutting edge is carefully tempered and ground, making it very effective. This trimmer will sever a 1½-inch branch. The knife is held open by a flat steel spring and is operated by a rope attached to the end of the lever.

Two threaded holes are provided for attaching a saw.

List No.	Size	Weight Each	Each
100	19-inch overall	3½ lbs.	\$4.25

Combined Tree Trimmer and Saw



This tree trimmer is the same as No. 100 with saw attached as shown.

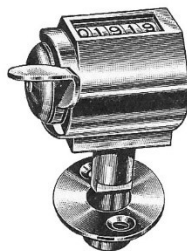
List No.	Size	Weight Each	Each
426	23-inch	4 lbs.	\$5.75
2032	Saw only	¾ lb.	1.50

Tree Trimmer Handles

List No.	Size	Description	Weight Each	Each
104	18 ft.	Composed of two 9-foot handles joined with ferrule in center	9¾ "	4.50

Veeder Switchboard Counter

Style 8



Show rate of increase, so that exact calculations for the future may be made. They likewise show how better to divide the work on the board among the operators. Number of calls during each hour of the day can be shown. Interesting sta-

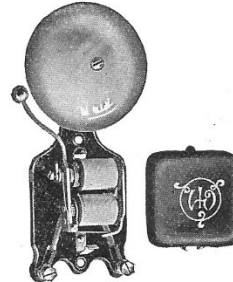
tistics are easily obtained by their use. Sockets fit in keyboard permanently. Counter can be inserted or removed at will.

List No.	Each
1147	\$2.50

Discounts

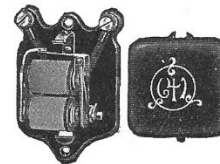
1 dozen and over	10%
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Iron Box Bells



List No.	Per 100
1239	2 ohm resistance, 2½-in. gong, less than 10..... \$60.00
	10 to 99..... 54.00
	100 to 499..... 50.00
	500 and over..... Special
1240	2 ohm resistance, 3 in. gong, less than 10..... 65.00
	10 to 99..... 57.00
	100 to 499..... 54.00
	500 and over..... Special
1241	2 ohm resistance, 4 in. gong, less than 10..... 84.00
	10 to 99..... 75.00
	100 to 499..... 70.00
	500 and over..... Special
1746	5 ohm resistance, 2½ in. gong, less than 10..... 90.00
	10 to 99..... 80.00
	100 to 499..... 75.00
	500 and over..... Special
1747	5 ohm resistance, 3 in. gong, less than 10..... 95.00
	10 to 99..... 84.00
	100 to 499..... 79.00
	500 and over..... Special
1748	5 ohm resistance, 4 in. gong, less than 10..... 114.00
	10 to 99..... 101.00
	100 to 499..... 95.00
	500 and over..... Special
1749	20 ohm resistance, 2½ in. gong, less than 10.... 106.00
	10 to 99..... 96.00
	100 to 500..... 91.00
1750	20 ohm resistance, 3 in. gong, less than 10..... 111.00
	10 to 99..... 100.00
	100 to 500..... 95.00
1751	20 ohm resistance, 4 in. gong, less than 10..... 130.00
	10 to 99..... 127.00
	100 to 500..... 111.00

Iron Box Buzzers



List No.	Per 100
1141	5 ohms resistance, less than 10..... \$ 89.00
	10 to 99..... 79.00
	100 to 499..... 74.00
	500 and over..... Special
1142	20 ohms resistance, less than 10..... 105.00
	10 to 99..... 95.00
	100 to 499..... 90.00

Milonite Perfection Nail

Size No. 18



Used for installing twisted pair wire. The head is of insulating material and the shank is covered with an insulating paint obtained in dark green and dark brown. Furnished in two lengths, 1/2-inch and 3/4-inch shank. Unless otherwise specified we will furnish 3/8-inch shank dark brown.

List No.	Per 1000
1697	Less than 10,000..... \$1.25
	10,000 to 50,000..... Less 5%
	50,000 and over..... Less 10%

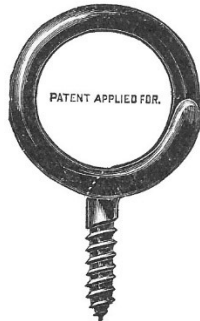
Blake Insulated Staples



List No.	Per 1000
1085	No. 1—1/2-inch long—For hardwood, for single and twisted pair wire. Single Pkgs. 20c each 1000 to 5000..... \$1.75 5000 to 9999..... 1.70 10,000 and over..... 1.60
1086	No. 3—3/4-inch long—For general use, for single and twisted pair wire. Single Pkgs. 20c each 1000 to 5000..... 1.75 5000 to 9999..... 1.70 10,000 and over..... 1.60
1087	No. 5—5/8-inch long—For hardwood, for twisted 3 wire and extra heavy pair wire Single Pkgs. 25c each 1000 to 5000..... 2.00 5000 to 9999..... 1.90 10,000 and over..... 1.80
2504	No. 6—3/4-inch long—For general use, for twisted 3 wire and extra heavy pair wire Single Pkgs. 25c each 1000 to 5000..... 2.00 5000 to 9999..... 1.90 10,000 and over..... 1.80

Sizes can be assorted to make quantity.

Galvanized Bridle or Distributing Rings



Made of best quality of iron. Wires readily inserted or removed through opening. These rings are approved and being used by the largest and most progressive Telephone Companies. They are not found where there is trouble on the line.

Galvanized—Per 1000

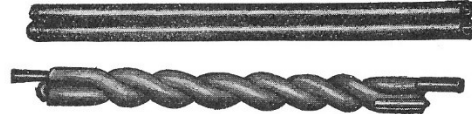
List No.	Style	Eye	Shank	Lbs. Wt. per 100	F.O.B. Chicago	F.O.B. Kansas City
2384	Style A	1 5/8"	1 5/8"	80	\$40.00	\$42.80
2385	Style C	1 1/4"	1 1/4"	70	37.50	40.00
2386	Style E	3/8"	1/8"	24	16.50	17.20

Discounts

Less than 100.....	25%
100 to 500.....	30%
500 and over.....	33 1/2%

Wire Connectors or Sleeves

Double Tube



Tinned Steel Connectors for Iron Wire

List No.	Wire Gauges	Per 1000
	B. W. G. B. & S.	
1057	For iron wire, size 14	12 \$22.00
1056	" " " " 12	10 23.50
472	" " " " 10	8 28.50
473	" " " " 9	7 40.50
474	" " " " 8	6 46.50

Half length sleeves less 20%.
Combination sizes, add \$2.50 per 1000.

Tinned Copper Connections for Iron Wire

3001	For iron wire, size 14	12 \$30.00
3002	" " " " 12	10 36.50
3003	" " " " 10	8 66.00

Plain Copper Connectors for Copper Wire

2969	For copper wire, size —	17 \$22.00
1059	" " " " —	14 26.00
1058	" " " " —	12 27.00
475	" " " " —	10 33.50
476	" " " " —	9 46.00
477	" " " " —	8 63.00
478	" " " " —	7 80.00
479	" " " " —	6 90.00

Add

For tinned copper connectors for copper wire, add \$3.00 per 1000 to prices on plain copper connectors.

For combination or split sizes, add \$2.00 per 1000.
Half length sleeves, No. 12 B. & S. and larger, less 40%;
No. 14 B. & S. to No. 17 B. & S. less 25%.

Discounts

Less than 5000, net; 5000 and over, 10%.

No. 32 Torch



Makes a perfect fire, whether employed indoors or out, in hardwind or extreme cold. A strong blast heat is generated by a powerful burner and the resulting blue flame is a joy to the user. A small amount of gasoline is required. This torch is strong, exceedingly well built and handsomely finished.

Has a hook and a support on the burner for holding soldering coppers, and the mechanic who desires this type of torch will surely be pleased. The tank is made of heavy gauge brass, equipped with automatic brass pump.

List No.	Capacity	Shipping Weight	Each
1715	One Quart	4 1/4 lbs.	\$5.40

No. 130 Torch



No. 130 Type

The No. 130 Torch is made to meet the demand for a low-priced tool. It is good value for the money and while it is not as powerful as the better grade C. & L. torches it is guaranteed to give better results than any similar torch on the market. The burner is made of bronze metal having tapered burner tube, and produces a steady, blue flame. It has solid, cast hook and support for holding a soldering copper.

List No.	Capacity	Shipping Weight	Each
2387	One Quart	4½ lbs.	\$5.10

No. 208 Torch (Quart Size)

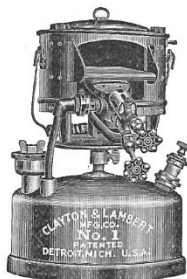
For Gasoline or Kerosene
The Greatest Utility Torch Made



The No. 208 is the most powerful Quart Torch ever produced. The tank is made of heavy gauge seamless drawn brass reinforced, with automatic brass pump and fitted with new Double Needle Burner, producing a steady pure blue flame of intense heat, using very little fuel. It is guaranteed to work perfectly in the Wind and in Weather far below zero. The No. 208 Torch is fully protected by patents and will give the user perfect satisfaction. It is impossible to enlarge the orifice, a very great improvement. Sold everywhere under maker's guarantee.

List No.	Capacity	Shipping Weight	Each
2014	One Quart	5½ lbs.	\$5.70

No. 1 Fire Pot

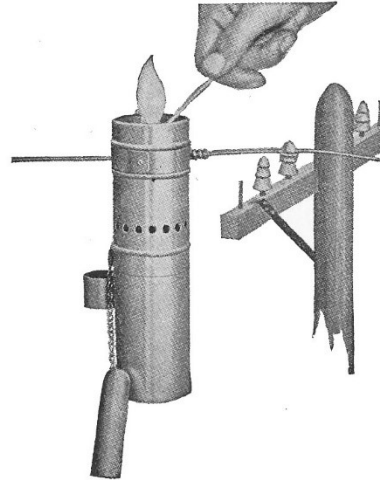


The No. 1 Fire Pot, which has been Standard with the trade for over thirty years, has recently been improved by using the Patented Double Blunt Needle Burner. The upper needle

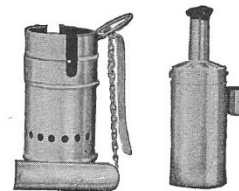
cleans—the lower needle regulates—and the orifice cannot be forced larger, thus ruining the burner. Burns Gasoline or Kerosene and produces about 300 degrees more heat than any other burner. Other improved and patented features are heavy reinforced drawn steel tank, tinned inside and out (Rust Proof) fitted with Patented Cushion Protection Band which prevents injury to base of tank. Patented Automatic Brass Pump. Large funnel fitted with Patented Dust Proof Cap. Burner is swiveled and can be turned up or down. Top section is removable and tank and burner make a splendid torch. Will heat a pair of twelve pound coppers and melt a pot of metal at the same time. A strictly high-grade fire pot for all indoor and outdoor work in the wind. The No. 1 gives universal satisfaction.

List No.	Capacity	Shipping Weight	Each
1700	Seven pints	11 lbs.	\$10.38

“Staysalite” Lineman’s Torch



Showing Torch Suspended on the Line Above



Torch and Shield Detached

The Staysalite Torch has these main features:

- It stays lit in a wind.
- It is light; it is small.
- It is lit and extinguished in a moment, as wanted.
- It burns alcohol without odor or noise.
- It has no adjusting parts, therefore it cannot get out of order.
- It is carried in the lineman's belt and does away with the ground man.
- It is hung directly on the wire under the joint to be soldered.
- It can be used as a small heater or soldering iron.
- It is provided with a cup for holding soldering paste.
- Its features: Small, Light, Ready to grasp. Quick to light and extinguish—just as one would a candle; and its effective flame makes it handy and always a ready source of heat for soldering or other purposes where heat is required. With the wind shield in place it STAYSALITE, and for the man on the pole having many joints to make, it is as readily applied to the work as the grip or splicing clamp and can be lighted and extinguished momentarily, as required.

List No.	Weight Each	List Price Each
2234	1¼ lbs.	\$5.00

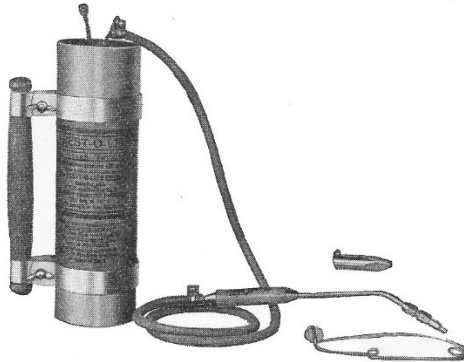
Regular Soldering Coppers



List No.	Weight	Each
452	1/2 pounds each	\$.24
1717	3/4 " "	.36
1718	1 " "	.48
1719	1 1/2 " "	.72
1720	2 " "	.96

Weight given is that of each copper (not pair).

Prest-O-Lite Soldering Outfit



List No. 2914

An economical, convenient and dependable torch for all telephone work. Its lightness makes it easy for the lineman to use, and its steady, intense flame makes not only neater but stronger connections.

All outfits are furnished complete with tanks and gas ready for use.

F.O.B. Indianapolis, Ind.

List No.	Description	Each
2914	No. 1, complete with torch handle, torch and soldering copper.	\$11.75
2915	No. 2, complete with torch.	9.90

Electric Soldering Irons



List No. 2028—16 oz.



List No. 2029—20 oz.

These Electric Soldering Irons are slender, compact and light weight. They are thoroughly insulated and may be easily repaired because of their complete accessibility.

Tips made of hard copper, nicked and tinned, like those in illustrations are furnished unless special tips are ordered, for which an extra charge is necessarily made. New tips can easily be replaced by any one.

List No.	Weight	Length	Watts	List Price Each
3025	18 oz.	12 1/8 in.	100	\$8.00
3026	26 oz.	12 3/8 in.	200	9.25

All orders must state clearly the operating voltage range. Standards are 110 to 115 volts.

Ward Electric Soldering Irons

May be used with either direct or alternating current of 105 to 115 volts. Approved by the Underwriters' Laboratories.

List No.	Description	Price Each
2861	Straight Point	\$2.00
2862	Swivel Point	2.50

Discount

Operating Telephone Companies and Radio Dealers
List, less 30%. In dozen lots, List, less 35%.

Jeweler's Soldering Copper



List No.	Each
453	9 1/2 inches long (1 3/4 ounces) \$.45

Allen Soldering Stick



(Put Up Regularly in Round Sticks 6 In. Long and 1 In. in Diameter, in Individual Wooden Boxes)

List No.	Price per stick	List Price Each
457		\$.30

Discounts

12 and over.....Less 25%

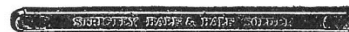
Highland Soldering Paste



The Highland Soldering Paste is absolutely free from acid or any ingredient injurious to insulation. It is condensed to such a degree that one pound of it will do as much work as three gallons of ordinary soldering solution. It will save solder and make a better joint than any other soldering flux on the market. It is convenient and always ready for use, with nothing to break and nothing to spill.

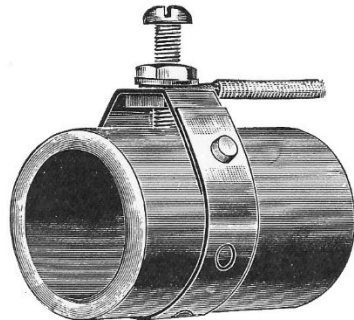
List No.	Per Can
454	2-ounce box, single \$.25
	12 boxes, 2 ounce, one delivery \$1.75 Doz.
455	1-pound can.....Each 1.00
456	5-pound can.....Each 3.75

Solder



List No.	(Strictly Half and Half)	Per Lb.
1497	In regular bars	
	Less than 25 lbs.....\$.51	
	25 to 50 lbs......41	
	50 lbs. and over.....Special	
1499	In wire, No. 10 gauge	
	Less than 25 lbs......53	
	25 to 50 lbs......51	
	50 lbs. and over.....Special	

Blackburn Adjustable Clamp

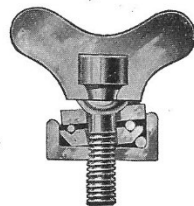
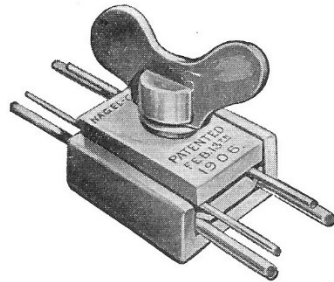


- 2826 No. 0 Fits 3/8" and 1/2" Ground Rod.
- 2827 No. 1A Fits 3/8", 1/2", 3/4", 1" and 1 1/4" pipe.
- 2828 No. 2 Fits 1 1/2", 2", 2 1/2" and 3" pipe.

Above are for Telephone Circuits.

	Each Doz. Lot	Per 100 100 Lots	Per 100 500 Lots	Per 1000 1000 Lots
2826 No. 0.....	\$.12	\$10.00	\$ 9.50	\$ 90.00
2827 No. 1A.....	.14	11.00	10.50	100.00
2828 No. 2.....	.16	12.00	11.50	110.00

N-C Test Connectors



Sectional View

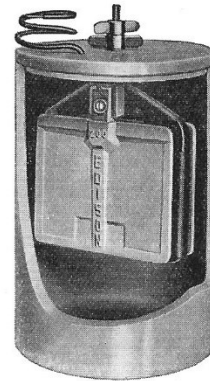
This Test Connector differs from others in that it can be hooked on to the line, while the other wires to be connected are being brought into position. This is accomplished by opening the connector as far as it will go, hooking it over the line on the lower side of channel, then giving the wing screw a few turns which will prevent the connector from falling off line.

List No.	Price Each
2395 Copper for Copper Wires	
Less than 100.....	\$.10
100 to 500.....	.09
500 and over.....	.08
2396 Copper tinned for Iron Wires	
Less than 100.....	.14
100 to 500.....	.12
500 and over.....	.10

Edison Primary Cells

Type S-403

Capacity 400 Amp-Hrs.



Complete cell consists of round glass jar, zinc oxide assembled element (one copper oxide plate assembled with two zinc plates), one can caustic soda, one bottle of special battery oil, porcelain cover, and terminal nuts and washers. This one replaces Type R.R. and Type 400 renewals replace Type R.R. renewals. Type R.R. cells can be converted into Type 403 cells by securing Type 400 renewals with Type 403 cover and nuts.

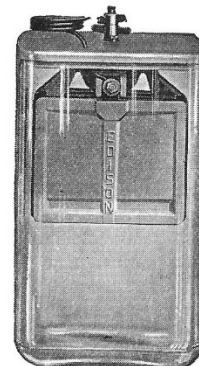
List No.	Each
2102 Type S-403 Cell complete.....	\$4.60
2103 Complete renewal consists of assembled element, one can caustic soda and one bottle of special battery oil.....	2.05
2104 Glass Jar.....	2.00
2105 Porcelain Cover.....	.60
2106 Terminal nuts and washers per sets.....	.20
2107 Zinc Oxide elements assembled.....	1.80
2108 Can of Caustic Soda.....	.36
2109 Bottle Special Battery oil.....	.09

Discounts

Less than \$5.00.....	Net
\$5.00 and less than \$100.00.....	Less 10%

Type S-502

Capacity 500 Amp-Hrs.



This type of cell is especially adapted for telephone work generally and is now the standard with many companies. Its distinct features are constancy of voltage, low internal resistance, freedom from local action or waste of energy when standing idle; low cost of material per unit of energy produced, ease of renewal, and minimum labor costs.

Complete cell consists of a rectangular heat-resisting glass jar, zinc oxide assembled element, (one copper oxide plate as-

Edison Primary Cells

Type S-502 (Cont.)

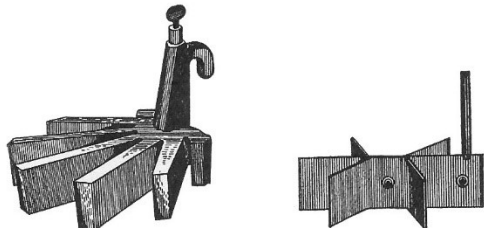
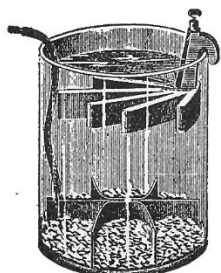
sembled with two zinc plates), one can caustic soda, one bottle special battery oil, porcelain cover, and terminal nuts and washers.

List No.	Each
2110 Type S-502 Cell complete.....	\$4.80
2111 Complete renewal consists of assembled element, one can caustic soda and one bottle of special battery oil.....	2.15
2112 Glass Jar.....	2.10
2113 Porcelain cover.....	.60
2114 Terminal nuts and washers per set.....	.20
2115 Zinc oxide assembled.....	1.90
2116 Can caustic soda.....	.42
2117 Bottle special battery oil.....	.09

Discounts

Less than \$5.00.....	Net
\$5.00 and less than \$100.00.....	Less 10%

Crowfoot Gravity Battery



This is the standard type of battery for all closed circuit work. Includes the best quality of glass jars with heavy zincs and coppers.

List No.	Small 5 x 7	Price
502	Cell, complete, less blue vitriol, less than 50....	\$.90
	50 to 100.....	.88
	100 and over.....	Special
503	Zincs, less than 12.....	.50
	12 to 50.....	.48
	50 to 100.....	.46
	100 and over.....	Special
504	Coppers, less than 50.....	.13
	50 to 100.....	.12
	100 and over.....	Special
505	Glass Jars, less than 24.....	.50
	24 to 72.....	.45
	72 and over.....	Special
6 x 8		
1126	Cell, complete, less blue vitriol, less than 50....	1.00
	50 to 100.....	.98
	100 and over.....	Special
1127	Zincs, less than 12.....	.56
	12 to 50.....	.55
	50 to 100.....	.53
	100 and over.....	Special
1128	Coppers, less than 50.....	.15
	50 to 100.....	.13½
	100 and over.....	Special

1129	Glass Jars, less than 24.....	\$.50
	24 to 72.....	.45
	72 and over.....	Special

Per Lb.

1268	Blue Vitriol, less than 25 lbs.....	.16
	25 to 100 lbs.....	.15
	100 lbs. to barrel lots.....	.13
	Barrel lots and over.....	Special

Regular Columbia Dry Cells

Gray Label



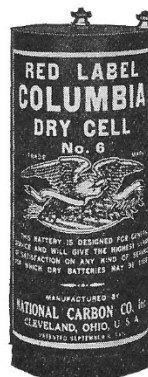
A low current telephone dry cell made only in No. 6 size (2½" x 6"). Furnished with round jackets and with flush top carbon as desired. Fahnestock spring binding posts furnished without extra charge. Initial shipping amperage—18 to 22 amperes. This cell is designed especially for telephone or other light drain intermittent service.

List No.	Dimensions	No. in bbl.	Wt. Each	Wt. per bbl.
531	2½" x 6"	125	2 lbs.	300 lbs.
			Less than 12	12 to 50
Gray Label			\$.35	\$.30
				Box Lots \$.27½

Special Prices on contracts

Columbia Dry Cell

Red Label



Red Label is the general utility cell, made in No. 6 size, round jacket. Furnished with either screw or Fahnestock binding posts.

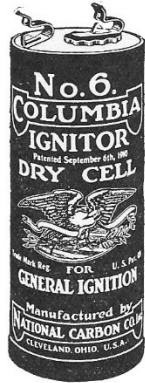
List No.	Dimensions	No. in Bbl.	Wt. per Bbl.
2397	2½" x 6"	125	300 lbs.
			Less than 12
Red Label			\$.45
			12 to 50
			\$.36
			Box Lots \$.32½

Special Prices on contracts

Columbia Dry Cell

(Ignitor)

A heavy duty dry cell designed especially for gas engine ignition service, telephone changers, train dispatching telephones, operation of miniature lamps and street car signals. Furnished in round jackets and with either screw or Fahnestock Binding Posts.



List No.	Dimensions	No. in Bbl.	Wt. per Bbl.
2041	2 1/4" x 6"	125	300 lbs.
	Less than 12	12 to 50	Box Lots
2041 Ignitor	\$.45	\$.36	\$.32 1/2

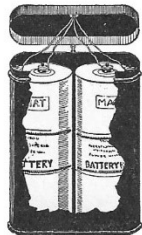
Special Prices on contracts

Ever-Ready Flashlight Battery

Especially desirable for testing and all light work

List No.	Mfr's No.	Each
2872	790	\$.20

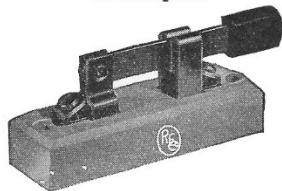
Paragon Battery Box



Made of sheet steel, finished in black japan, and is lined throughout with heavy insulating fibre, which protects the sides of the box and the edges of the holes. Has holes at top and bottom for leading in wires. The cover is attached to the box by a nickel-plated chain. Can be removed to replace batteries without taking out the screws. Made in two sizes: No. 2 will take two No. 6 dry cells and No. 3 will take three No. 6 dry cells.

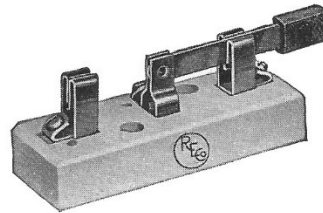
List No.	Trade No.	Type	Each
2398	2	2 cell	\$1.05
2399	3	3 cell	1.15

**Baby Knife Switches
Porcelain Base
25 Ampere**

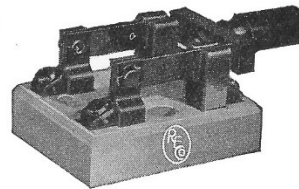


List No. 538

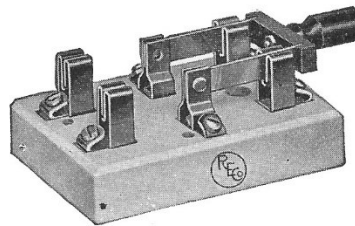
Baby Knife Switches (Cont.)



List No. 540



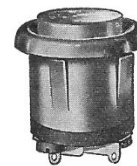
List No. 542



List No.	Style	Dimensions	Standard Package	List Price Each
538	S.P.S.T.	3 3/4 x 1 1/2 inches	100	\$.20
540	S.P.D.T.	4 3/4 x 1 3/8 inches	100	.32
542	D.P.S.T.	3 3/4 x 2 inches	100	.35
544	D.P.D.T.	5 x 2 5/8 inches	50	.50

Less than standard package.....Net
Standard package and over.....Less 10%

Midget Push Button



This push button is exceedingly well constructed and of a small and pleasing design, especially adapted for mounting in groups on a plate, individually on desk, or in places where economy of space is a factor.

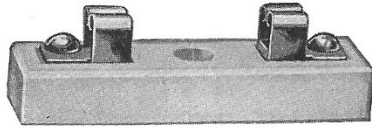
The shell is finished in polished nickel or brush brass with white or black celluloid button as desired, and the circuit closing springs are nickel silver with scraping contacts. Fits in 5/8-inch hole and is held securely in place by springs on the sides.

List No.	1 to 100 to 500 & 99 499 over
1272 White Celluloid Centers.....Each	\$.46 \$.44 \$.42
1273 Black Celluloid Centers.....Each	.46 .44 .42

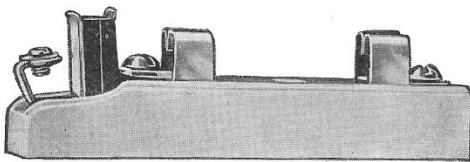
Telephone Protective Devices

All Telephone Protective Devices are Furnished Less Fuses.
Fuses are extra.

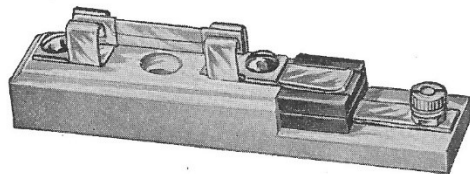
Single Line Protectors



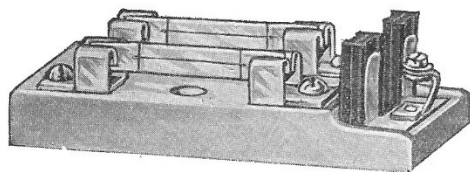
List No.		Standard Pkg.	Each
558	S. P. W. U. Fuse Block.....	100	\$.20
	Use No. 568 Fuse		



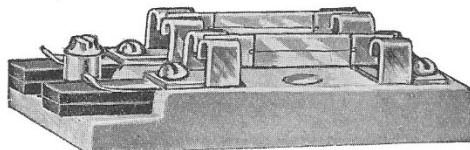
List No.		Standard Pkg.	Each
560	S. P. W. U. Fuse and Carbon Lightning Arrester.....	100	\$.25
	Use No. 566 Fuse.		



List No.		Standard Pkg.	Each
1271	S. P. W. U. Fuse Block and Carbon Lightning Arrester.....	100	\$.35
	Use No. 568 Fuse.		

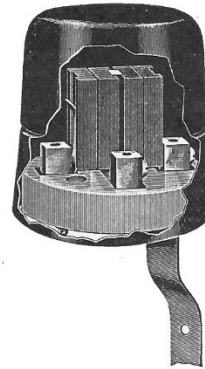


List No.		Standard Pkg.	Each
564	D. P. W. U. Fuse and Carbon Lightning Arrester.....	100	\$.40
	Use No. 566 Fuse.		



List No.		Standard Pkg.	Each
1928	D. P. W. U. Fuse and Carbon Lightning Arrester (Same as No. 564, except carbon blocks are horizontal).....	100	\$.40
	Use No. 566 Fuse.		

Tel. Protective Devices (Cont.)

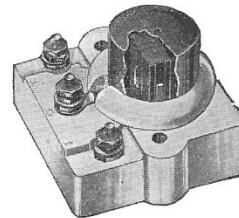


List No.		Standard Pkg.	Each
1281	Lightning Arrester, for outside work ..	100	\$.70

Discounts on all the above listed Telephone Protective Devices

Less than Standard Package.....	Net
Standard Packages and over.....	10%

Note—Above prices on telephone protective devices do not include the fuses. Fuses must be ordered extra.

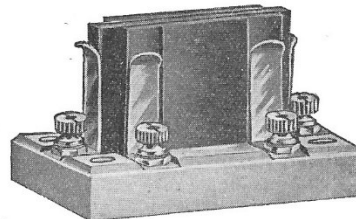


This is an in-door arrester, designed particularly for toll line service. Carbons are treated by a special process to make them practically self-cleaning. The carbons are enclosed with a fibre insulated cap, which keeps them free from dust and dirt and prevents danger from discharges.

List No.		Each
2401	Lightning Arrester.....	\$.50

Discounts

Less than 25.....	Net
25 and over.....	5%



This arrester is highly recommended for use on toll lines and bridging circuits. The arrester is designed to afford a broad carbon surface and not increase the size of the arrester. It occupies very small space, is strongly built and sells at a reasonable price.

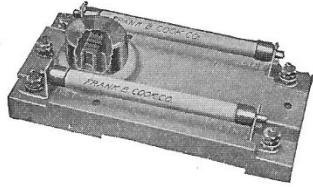
List No.		Each
642	Toll Line Arrester.....	\$.40

Discounts

Lots of less than 100.....	Net
100 and over.....	10%

Sub-Station Protectors

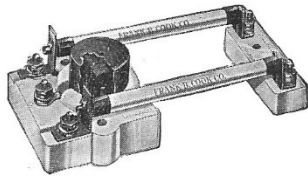
Type B-7



A most popular type of sub-station protector. Equipped with 3 ampere tubular fuses (List No. 1554) and carbon block arrester. All parts neatly assembled on a strong white porcelain base with hexagonal lock nut terminals. Carbon block arrester is set in a depression in the base and covered with ventilated dust-proof brass cap. Dimensions 6 3/4 x 3 x 2 inches.

List No.	Net Weight	Each
1760	1 3/4 lbs.	\$.95

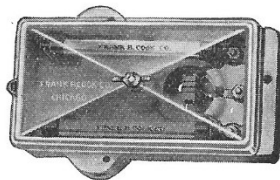
Type B-13



This protector is designed to carry either long or short fuses (List Nos. 1554 and 1770). Consists of two pieces of porcelain, one carrying fuse clips for the line end and the other with fuse clips for instrument and also the carbon block arresters. Unless otherwise specified this protector will be furnished with 3 ampere fuses (List No. 1554). Dimensions 7 x 2 x 3 inches.

List No.	Net Weight	Each
2164 Protector complete	1 1/4 lbs.	\$.90
2165 Mounts for line end	1/8 lb.	.25
2166 Instrument end	3/4 lb.	.60
2167 Asbestos mat		.15

Type B-9



A compact weather-proof and fire-proof protector for outside use in exposed locations. All parts enclosed within a heavy porcelain box which is provided with gaskets pressed steel cover held in place by a wing nut. Equipped with 3 ampere tubular fuses (List No. 1554) and carbon block arrester. All connections are made with hexagonal lock nut binding posts. Dimensions 7 1/2 x 3 x 4 3/4 inches.

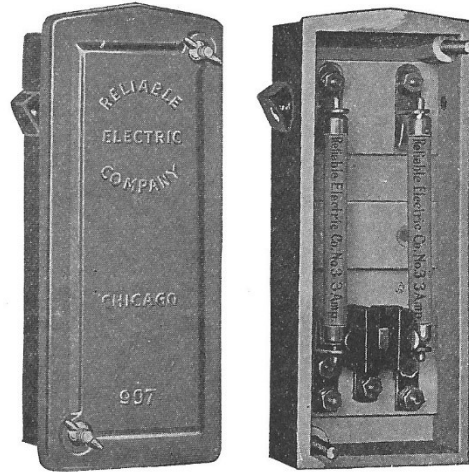
List No.	Net Weight	Each
1756	3 1/4 lbs.	\$1.35

Discounts on all of the above mentioned Subscriber's Protectors

Less than 50	Net
50 and over	5%

Individual Station Protector

No. 997-A



Approved by the National Board of Fire Underwriters

A perfectly waterproof large carbon air gap protector for outdoor mounting, to be used for protection against lightning and crosses with electric circuits. It is mounted in a vitrified porcelain box with the top shaped to shed water away from the cover and with protected vents under the eaves to insure ventilation and prevent sweating. A smooth cast-iron cover, red enameled, is fitted with a pure rubber gasket and locked in place by means of two wing nuts.

Consists of two No. 3 Blow-Rite tubular wood fuses—3 amperes, 4 3/8 inches shoulder to shoulder, held in place by goose neck contacts with phosphor bronze tension springs, and four large carbon blocks with two "U" shaped mica dielectrics.

List No.	Weight	Length	Width	Depth	List Price
2085	3 3/4 pounds	8 3/4"	4 1/8"	2 3/4"	\$1.35

Discounts

Less than 100	Net
100 and over	10%

No. 997-B

Approved by the National Board of Fire Underwriters.

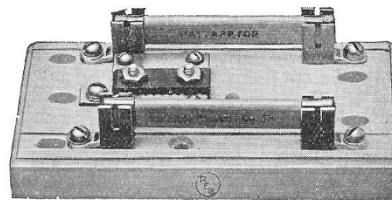
This is a self-cleaning saw-tooth air gap lightning arrester mounted in a perfectly weatherproof housing as shown above.

Consists of two No. 3 Blow-Rite tubular wood fuses, 3 amperes, 4 3/8 inches shoulder to shoulder, held in place by nicked phosphor bronze contact springs with four projections which bite into the fuse-tips, and two adjustable saw-tooth metal discharge plates placed .005 inch from the carbon ground.

List No.	Weight	Length	Width	Depth	List Price
2086	3 3/4 pounds	8 3/4"	4 1/8"	2 3/4"	\$1.35

Discounts

Less than 100	Net
100 and over	10%



No. 2409

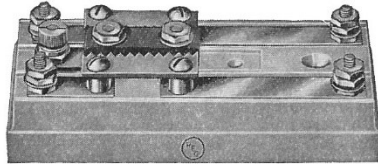
A self-cleaning, saw-tooth air gap protector to be used for protection against lightning and crosses with electric circuits. Can be supplied with or without "all over" metal cover which encloses the fuses as well as the lightning arresters.

No. 2408 consists of two No. 2410 Blow-Rite fibre fuses—3 amperes, 3 1/2 inches tip to tip, held in place by nicked phosphor bronze contact springs which grip the flat tips of the fuse; and two adjustable, saw-tooth metal discharge plates normally placed .005 inch from the carbon ground.

No. 2409 is the same protector equipped with No. 2411 Blow-Rite flat wood fuses.
The wires enter through sloping holes from the top and bottom ends of the porcelain.

List No.	Each
2408 Protector less cover.....	\$.95
2408 Protector with cover.....	1.10
2409 Protector less cover.....	.95
2409 Protector with cover.....	1.10

Discounts	
Less than 100.....	Net
100 and over.....	10%



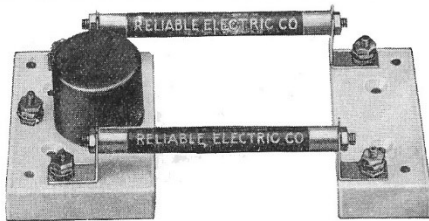
List No. 2491

A self-cleaning, saw-tooth air gap protector to be used for protection against lightning, particularly at rural and other isolated stations where it is desirable to be free from the annoyance of cleaning carbons, and where crosses with electric circuits are not likely to occur.

Consists of two adjustable saw-tooth metal discharge plates normally placed .005 inch from the carbon ground. Can be supplied with or without "all over" metal cover.

List No.	Each
2490 With cover.....	\$.70
2491 Without cover.....	.55

Discounts	
Less than 100.....	Net
100 and over.....	10%



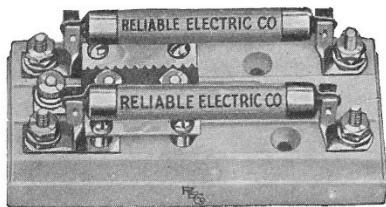
List No. 2937

A carbon block air gap protector to be used for protection against lightning and crosses with electric circuits. The lightning arresters are enclosed in a brass screw cover.

Consists of two List No. 2414 Fuses and List No. 2460 Discharge Blocks.

List No.	Description	Each
2937	Protector with saw-tooth discharge block.....	\$1.10

Discounts	
Lots less than 100.....	Net
100 and over.....	10%



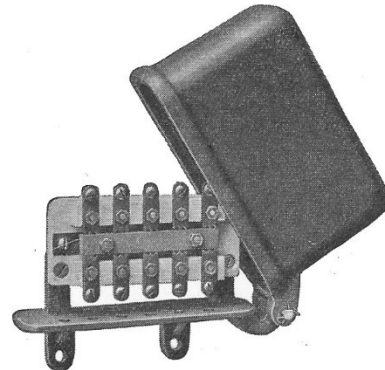
List No. 2938

A self-cleaning, saw-tooth air gap protector to be used for protection against lightning and crosses with electric circuits. Consists of two List No. 2925 Tubular Wood Fuses, held in place by nickled phosphor bronze contact springs, and two adjustable saw-tooth metal discharge plates.

List No.	Description	Each
2938	Protector, less cover.....	\$.95
2939	Protector with "all over" metal cover.....	1.10

Discounts	
Lots less than 100.....	Net
100 and over.....	10%

Cross Arm Lightning Arrester



A self-cleaning, saw-tooth air gap lightning arrester with capacity for ten wires, to be used out-of-doors and for draining lines of lightning at the cross-arm without grounding the lines. All five pairs of lightning arresters can be connected to one pair of wires if desired. The lightning arresters are mounted in a cast-iron case to protect them from the weather and from sharpshooters and rock throwers. The arresters should be mounted on the arm out of the lineman's way.

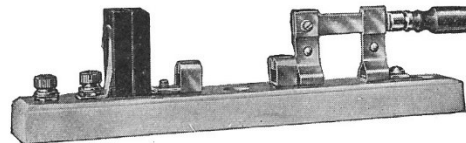
Consists of ten saw-tooth metal discharge plates normally placed .010 inch from the carbon ground. Screws to keep arrester parts and screw connections from working loose.

Weight, 5½ pounds. Size 7 x 2¾ x 5¼ inches.

List No.	List Price
2485	\$2.10

Discounts	
Less than 25.....	Net
25 and over.....	10%

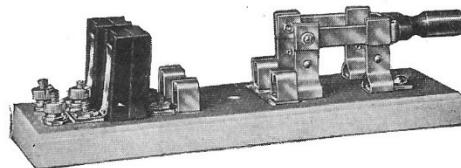
Combined Switch and Arrester



Combined Protector and Switch cut-out mounted on wood or porcelain base as ordered.

List No.	Each
74 S. P. Combined Switch and Arrester.....	\$.65

Use No. 568 Fuse.



List No.	Each
75 D. P. Combination Switch and Arrester.....	\$1.00

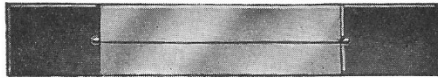
Use No. 568 Fuse.

Discounts	
Less than 50.....	Net
50 and over.....	10%

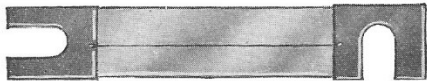
Telephone Fuses

Enclosed Type

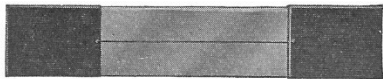
Fuses for telephone work are ordinarily of $\frac{1}{4}$ or $\frac{1}{2}$ ampere capacity. There are two styles of fuses, Western Union or Postal. The terminal of the Western Union is plain and on the Postal styles, it is notched for placing under binding screws. These fuses are made with copper terminals. As different protectors require different fuses, it is advisable to give List Number when ordering.



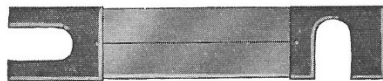
List No. 566



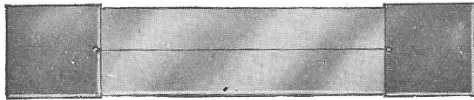
List No. 567



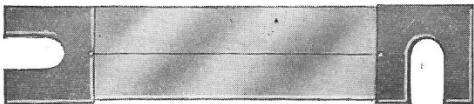
List No. 568



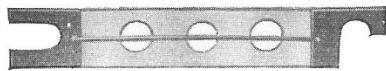
List No. 569



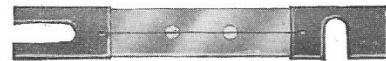
List No. 570



List No. 571



List No. 105



List No. 2400

List No.	Description	Per 100
566	Copper Terminal, $2\frac{1}{4} \times 3\frac{3}{4}$ in.	\$2.40
567	Copper Terminal, $2\frac{1}{4} \times 3\frac{3}{4}$ in.	2.60
568	Copper Terminal, $2 \times 3\frac{3}{4}$ in.	2.40
569	Copper Terminal, $2 \times 3\frac{3}{4}$ in.	2.60
570	Copper Terminal, $2\frac{1}{2} \times \frac{1}{8}$ in.	2.80
571	Copper Terminal, $2\frac{1}{2} \times \frac{1}{8}$ in.	3.00
105	Special P. S. Copper Terminal, $2\frac{1}{2} \times \frac{1}{8}$ in.	2.60
2400	Special P. S. Copper Terminal, $2 \times \frac{1}{4}$ in.	2.60

Discounts

All Telephone Fuses subject to a discount of 10% in lots of 1000.

Tubular Fuses



List No. **Type A-7** Each
1767 Woodfuse, with copper ends. For use with protector strips or pole cable terminals. $4\frac{3}{4}$ " shoulder to shoulder. \$.08



List No. **Type A-9** Each
1554 Composition Fuses, for use with type B-4, B-7, B-8 and B-9, Subscriber's Station Protectors, or with Pole Cable Terminals. Does not give a flash and does not continue the arc when blown, $4\frac{3}{4}$ " shoulder to shoulder. \$.10



List No. **Type A-12** Each
1770 Composition Fuse. For use with Types B-5 and B-6 Sub-Station Protectors. 3 " shoulder to shoulder. \$.10



List No. **Type A-45** Each
2463 Short Composition Fuse, with copper tips. For use in H-36 central office protector. This fuse is of smaller diameter than A-12. $3\frac{1}{8}$ " shoulder to shoulder. \$.10



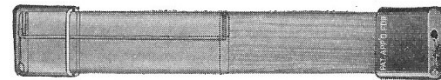
List No. **Type A-46** Each
2464 Short Wood Fuse, with copper tips. Used in H-36 central office protector. Diameter, $\frac{11}{16}$ inch, $3\frac{1}{8}$ " shoulder to shoulder. \$.10

Discounts

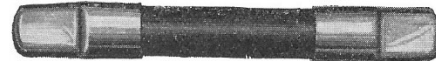
Less than 500..... Net
500 and over10%

Blow-Rite Fuses

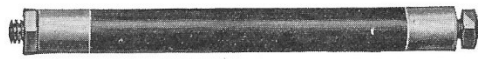
Sizes and types for every kind of telephone protector. When ordering fuses specify the code number of the protector to insure selection of correct fuse. Blow-Rite fuse wire has great tensile strength and accurate fusing characteristics, so that you are sure to receive perfect fuses when Blow-Rite is specified.



List No. **Flat Wood Fuse. Wire Lies in Open Slot** Each
2411 No. 44 $3\frac{1}{2}$ " over all..... \$.10

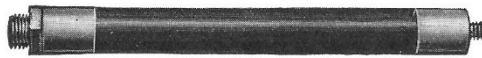


Round Fibre with Flat Tip. Made in two lengths as follows:
List No. Each
2412 No. 49 5 " over all..... \$.13
2410 No. 52 $3\frac{1}{2}$ " over all..... .13



Round Fibre with Nutted Ends. Made in two Lengths as follows:
List No. Each
2413 No. 53 $3\frac{3}{4}$ " shoulder to shoulder..... \$.13
2414 No. 55 $4\frac{1}{8}$ " shoulder to shoulder..... .13

Blow-Rite Fuses (Cont.)



Round Fibre $\frac{1}{8}$ " Hexagon Nut, $\frac{3}{32}$ " threaded tip

List No.	Each
2415 No. 56 $4\frac{1}{8}$ " shoulder to shoulder	\$.13



$\frac{7}{8}$ " Fibre Telegraph Fuse. Made in lengths as follows:

List No.	Each
2416 No. 78 $4\frac{1}{2}$ " overall. 8/10 ampere	\$.12
2417 No. 79 $5\frac{1}{2}$ " overall. 8/10 ampere	.12
2418 No. 80 $4\frac{1}{2}$ " overall. 1 to 10 amperes	.12
2461 No. 81 $5\frac{1}{2}$ " overall. 1 to 10 amperes	.12



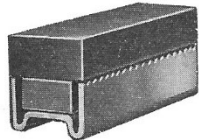
Tubular Wood Fuse

List No.	Each
2924 No. 3 $4\frac{3}{8}$ " Shoulder to Shoulder	\$.10
2925 No. 27 $4\frac{3}{4}$ " Shoulder to Shoulder	.10

Discounts

Less than 500	Net
500 and over	10%

Discharge Block



A self-cleaning sawtooth discharge block designed to replace the line carbon and mica separator of existing and new lightning arresters.

The cut shows the self-cleaning discharge block, with carbon ground block ready for insertion in a lightning arrester. Carbon ground blocks of various shapes and thicknesses adapt the discharge block to fit any lightning arrester which uses $\frac{5}{8}$ " x $1\frac{1}{4}$ " grooved carbon or copper blocks.

Order carbons as a separate item, giving size of block required or type of arrester.

List No.	Each
2460	\$.08

Discounts

Less than 1000	Net
1,000 and over	10%

Blow-Rite Fuse Wire



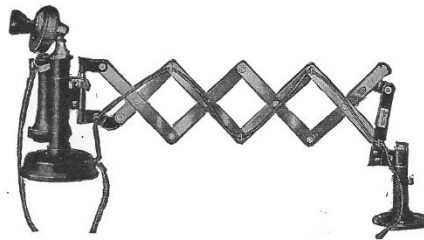
Reliable Blow-Rite Fuse Wire is a copper alloy made especially for lining telephone fuses. It has great tensile strength and can be soldered without fear of burning the wire. It is rated at its exact blowing point and does not corrode or crystallize as ordinary fuse wire does.

Blow-Rite fuse wire is put up on 300-foot spools for use in relining telephone fuses.

Made in 1, 2, 3, 4, 5, 6, 7 and 10 amperes blowing point.

List No.	Per Spool
2462 300-foot spools	\$1.25

Regular Adjustable Brackets



Regular Adjustable Telephone Brackets are of substantial construction, instantly adjustable to different lengths, with no friction or wear. The telephone swivels on the front rod, the bracket revolves on the base. Easily mounted on desk, wall or in other convenient place. Nickel plated finish with black enamel trim; all black finish can be furnished if desired. Made up in four lengths, 26, 30, 34 and 38 inches.

Lengths given are from the center of the mounting to the mouthpiece.

Standard Lengths, with No. 83, 84, No. 85, 85X, 88 or 94 Mounting and Any Style Clamp.

List No.	When Extended With Clamp	Single Brackets	Weight Packed	Price
1943	26 in.		5 lbs.	\$4.50
1944	30 in.	" "	6 lbs.	5.00
1945	34 in.	" "	7 lbs.	5.50
1946	38 in.	" "	8 lbs.	6.00

Add 50c to above prices if No. 86 mounting is wanted
Floor Pedestal..... \$4.00

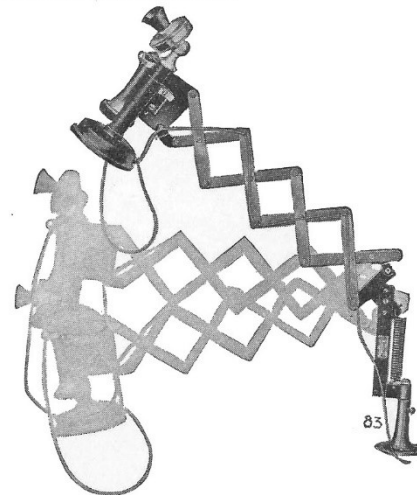
Discounts

Less than 12	Net
12 or more	10%

Hi-Lo Adjustable Brackets

Keeps the telephone out of the way, yet within easy reach. Adjustable to different lengths and heights. With the up-and-down adjustment it is possible to lower the bracket below the horizontal plane as well as raise above. Arm is self-balancing and permits use of telephone from standing or sitting position. Nickel plated finish with black enamel trim; all black finish can be furnished if desired. Furnished in three lengths, 28, 32 and 36 inches.

Standard Lengths, with No. 83, 84, No. 85, 85X, 88 or 94 Mounting and Any Style Clamp.



List No.	When Extended With Clamp	Single Brackets	Weight Packed	Price
2021	28 in.		7 lbs.	\$6.50
2022	32 in.	" "	8 lbs.	7.00
2023	36 in.	" "	9 lbs.	7.50

Note—If the No. 86 mounting is furnished an additional charge of 50c is to be made in the above price. One No. 107 Receiver Fork furnished with each single and two with each double bracket.

Add 20c to list price when Rear Rod longer than standard is furnished for making triple arm. When furnished separate, price 30c.

Arm only, Regular Type (26 inches) less clamp, mounting, and fork, \$3.40. 50c for each added 4-inch extension.

Arm only, Hi-Lo Type (28 inches) less clamp, mounting, and fork, \$5.40.

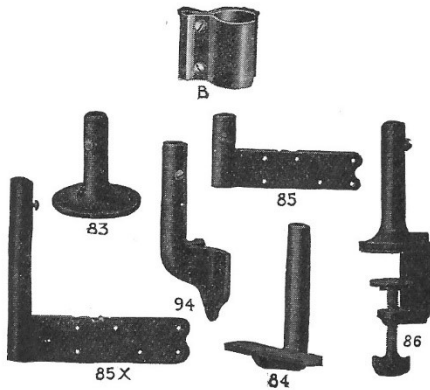
Extra eyelets for cord, per dozen, 35c.

Discounts

Less than 12.....	Net
12 or more.....	10%

Adjustable Telephone Bracket Mountings and Clamps

Prices on Parts Only

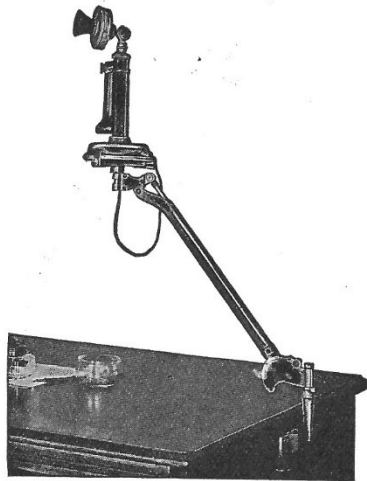


List No.	Style No.	Clamp	Each
2055	B	Clamp	\$.35
1952	83	Mounting	.75
2059	84	"	.75
2060	85	"	.75
2061	85X	"	.75
2063	94	"	.75
2064	86	"	1.25

Discounts

Less than 12.....	Net
12 or more.....	10%

Equipoise Arm



Unbreakable. Made entirely of cold steel; perfectly self-balancing in any position, operated by touch of a finger.

List No.	Each
1786 24" length hard rubber finish.....	\$7.50

Discounts

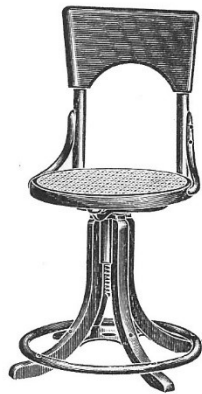
Less than 6.....	Net
6 to 12.....	10%
12 or more.....	20%

Operator's Chairs

The accompanying illustrations show the highest grade of operator's chair that we furnish. It can be had with cane seat. Standard chairs are Golden Oak unless otherwise specified; but we can, upon special order, furnish chairs finished to match the fixtures.



No. 1244



No. 1242



No. 1243

All these chairs regardless of the height of the base are of the following dimensions:

Seat 16 inches; Height of top of back from seat, 15 inches; width of back at top, 15½ inches; outside measurement of base on floor, 19 inches.

List No.	Height of Seat When		Foot rests	2¾" high	Each
	Screwed Down	Seat Adjustment			
1242	18"	4"	"	"	\$12.00
2435	20"	4"	"	"	12.00
1243	24"	7"	"	"	13.25
1244	28"	7"	"	"	13.25

Operator's Chairs (Cont.)

Standard finish light golden oak, rubbed dull; imitation mahogany finish 50 cents per chair extra.

- Rubber screw tips extra..... \$2.50 doz.
- Rubber tips and metal caps extra..... 7.50 doz.
- Casters extra..... 3.75 doz.

All chairs F. O. B. factory

Please specify if you desire operators' chairs to be crated. If the chairs are crated, the following additional charges will be made:

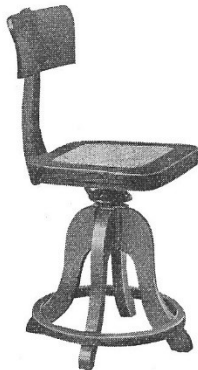
	Per Crate
For crate holding 1 chair.....	\$.75

F. O. B. Muncie, Ind.

P. B. X. Style 10

This chair is especially designed by us for use with low type switchboards, such as our Nos. 101, 102 and 105 switchboards

In designing this chair, the comfort of the operator who has to remain seated at the switchboard all day, was a prime consideration.



P. B. X. Style 10

The chair has a large, roomy cane seat; the position of the back can be regulated forward and back, up and down, and it has a spring tension. The legs are equipped with glides, and have a foot rest or rail 2 3/4 inches from the floor. This foot rest also acts as a reinforcement for the chair legs, thus making it a most sturdy chair. The seat has an adjustment of from 18 to 22 inches from the floor. It can be furnished in Oak or imitation Mahogany finish. Oak furnished, unless otherwise specified.

List No.		Each
2497	F. O. B. Rochester and Chicago	\$11.25

Add 50 cents each for Kansas City shipment.

Standard finish oak, rubbed dull; imitation mahogany finish, 50 cents per chair extra.

Please specify if you desire operators' chairs to be crated. If the chairs are crated, the following additional charges will be made.

	Per Crate
For crate holding 1 chair.....	\$.75

Independent Pay Station Telephone Signs



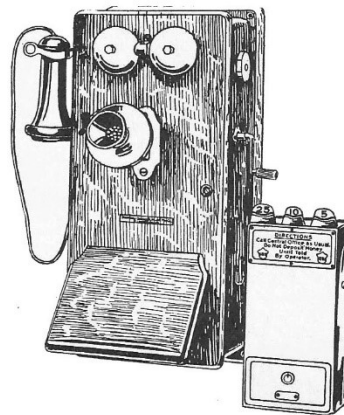
They are unlike the lithographed steel signs. The enamel is fused into the steel (18 gauge) with a blast furnace in 1,500 degrees heat. They are guaranteed never to fade or tarnish from effects of the weather. They will last a business lifetime.



List No.	Trade No.	Size	Colors	Each
1161	1	17 x 18"	Red, White and Blue	\$3.30
1163	2	8 x 18"	Red, White and Blue	1.50

Pay Station Coin Collectors

No. 1247 Three Slot Wall Type



List No. 1247

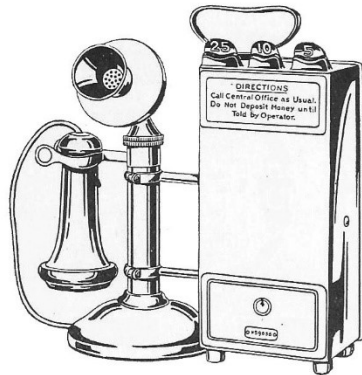
List No. 1247 Pay Station is designed to attach to any wall telephone by means of a metallic mounting plate. Has slots for 5, 10 and 25 cent coins. Furnished with duplicate keys—no two locks alike. Dimensions 9 x 4 1/2 x 3 inches.

The telephone is not included.

List No.	F. O. B. Hartford, Conn.	Each
1247	Price Pay Station only, with mounting plate....	\$10.50

Add 10% for shipment from stock.

No. 1248 Three Slot Desk Type

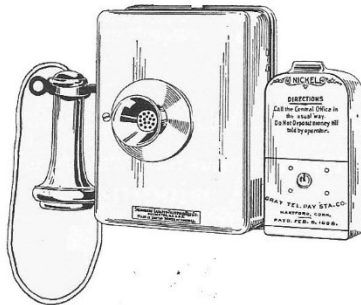


The pay stations illustrated on this page are entirely automatic in their operation. The user is only required to drop the coin in the proper slot when told to do so by the operator. No levers to punch or pull—no buttons to operate. Coins placed in wrong slot by mistake are automatically returned to the patron through the register slot.

Desk stand is not included.

List No.	F. O. B. Hartford, Conn.	Each
1248.....		\$14.50
Add 10% for shipment from stock.		

No. 1245 Single Slot Wall Type

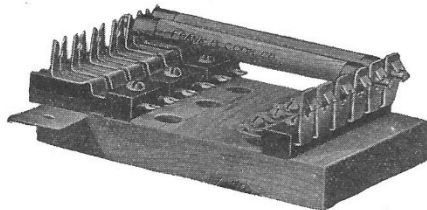


Fitted for reception of a single coin only. Fastens to any wall telephone by means of a metal mounting plate. Dimensions 7 x 3 3/8 x 3 1/8 inches.

List No.	F. O. B. Hartford, Conn.	Each
1245	For nickels only	\$5.75
1816	For dimes only	8.25

Prices of paystations do not include the telephones.
Add 10% for shipment from stock.

Type H-14 Protector Strip



This strip is designed for mounting in cable pole houses. Is regularly furnished with 5 ampere tubular fuses (List No. 1767) and grooved carbons which ground upon a copper strip. Fuse clips are made of nickel silver set in hard rubber blocks.

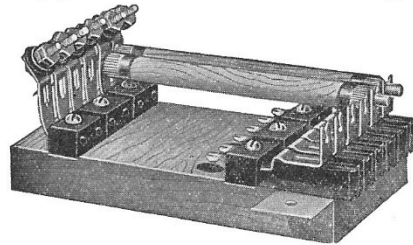
Type H-14 Protector Strip (Cont.)

Solder connections are provided on line side and both solder and screw connections on jumper side. Height per pair 1 1/4 inches; Depth 6 inches; Width 3 inches.

List No.	Net Weight per 100 pairs	List Price per pair
1849	40 lbs.	\$.75
Discounts		

Less than 100 pairs.....Net
100 pairs and over.....5%
Note: Extra charge of \$.075 per pair for unequipped spaces on partially equipped protector mounting strips.

Type H-19 Protector Strip



This protector strip is similar in all respects to the Type H-14, except that the jumper side is equipped with lock nut connections located outside of the fuses. Height per pair 1 1/4 inches; Depth 6 inches; Width 3 inches.

List No.	Weight per 100 pairs	List Price per pair
1850	40 lbs.	\$.75
Discounts		

Less than 100 pairs.....Net
100 pairs and over.....5%
Note: Extra charge of \$.075 per pair for unequipped spaces on partially equipped protector mounting strips.

Pole Cable Terminals

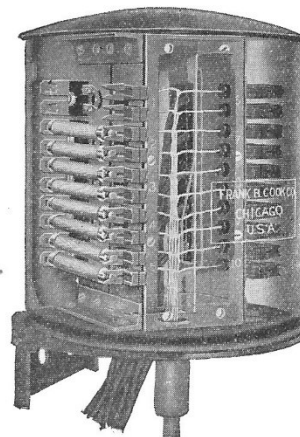
The pole cable terminals listed on the following pages contain a number of exclusive design and construction features. All are of the metal box type, and are fitted with a spring catch which holds the cover firmly when in either open or closed positions.

All protected type terminals are fitted with carbon block and fuse type protectors. The fuses are secured in place under tension by phosphor bronze tips so as to give a permanent good contact. Mounting brackets are made of heavy malleable iron thoroughly galvanized. The dimensions of all terminals permit installation on either the pole or crossarm and they can be placed between wires if necessary.

All terminals and all junction boxes are equipped with self-soldering nozzles which eliminate the use of pothead splices.

When so ordered, we will furnish all terminals wired with cable stubs or other connections. Unless otherwise specified we use No. 22 B. & S. gauge cable cut to extend six feet below terminal. We will furnish copper hoods for any terminal when desired.

**Type S-6 Pole Cable Terminal
No Pothead Necessary**



An all-metal terminal with complete tubular fuse and carbon block protection. Cable wires are terminated in hollow rivet terminals each provided with solder so that a touch of a hot soldering copper makes the connection instantly. Drop wire side of terminal is fitted with a fibre fanning strip and connections can be soldered or screwed under nuts and washers as preferred. This terminal is regularly furnished with List No. 1767 Type A-7 fuses 5 ampere capacity.

Equipped with self-soldering nozzle.

List No.	F. O. B. Chicago, Ill.					With 6-foot Stub Each
	Capac'y	Height	Diam.	Wght.	Each	
1817	10 Pairs	14 in.	9 in.	12 lbs.	\$14.00	\$16.50
1818	16 "	17½ "	9 "	15 "	19.00	22.00
1820	26 "	26½ "	9 "	20 "	26.00	29.75
1822	51 "	39½ "	9 "	35 "	46.00	52.00

Prices on other sizes upon application.

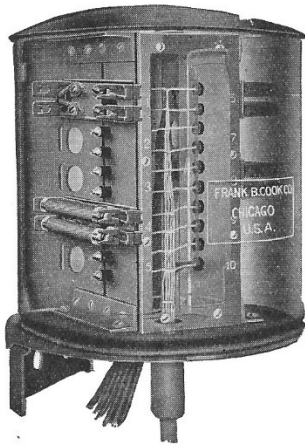
Discount	
Lots of less than 5.....	Net 5%
5 and over.....	5%

Type S-16-D Pole Cable Terminal

No Pothead Necessary

This terminal is practically the same as Type S-6 except that the protector units are assembled in pairs so that the terminal may be installed with only the equipment that is actually required for immediate use. Additional pairs of protectors may be installed at any future time.

Protector units for this terminal, List No. 1840 (Type H-29-D) are fitted with carbon blocks and List No. 1767 Type A-7 tubular fuses of 5 ampere capacity.



List No.	F. O. B. Chicago, Ill.					With 6-foot Stub Each
	Capac'y	Height	Diam.	Weight	Each	
2189	10 Pairs	14 in.	9 in.	11 lbs.	\$10.00	\$12.50
2190	16 "	17½ "	9 "	13 "	12.00	15.00
2191	26 "	26½ "	9 "	16 "	15.00	18.75
2192	51 "	39½ "	9 "	27 "	28.00	32.00

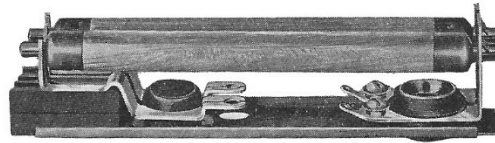
Discounts	
Lots of less than 5.....	Net 5%
5 and over.....	5%

Prices on other sizes on application.

Above terminals are furnished less protector units List No. 1840, Type H-29-D, which are additional.

Unit Protector Mounting

H-29-D

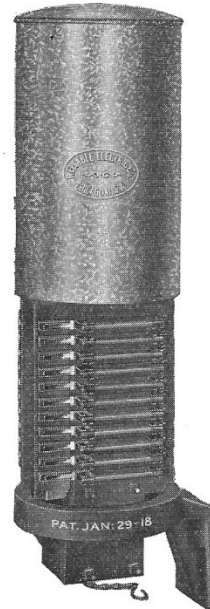


List No.	F. O. B. Chicago, Ill.	Pair
1840	H-29-D Individual Protector Mountings, per pair	\$.70

Discounts	
Lots of less than 50.....	Net 5%
50 and over.....	5%

Type AG Pole Cable Terminal

No Pothead Required



A protected cable terminal to be used without pothead for open wire distribution from lead covered aerial or underground cable. Arranged for mounting on pole and provided with galvanized iron cover 6¾ inches in diameter.

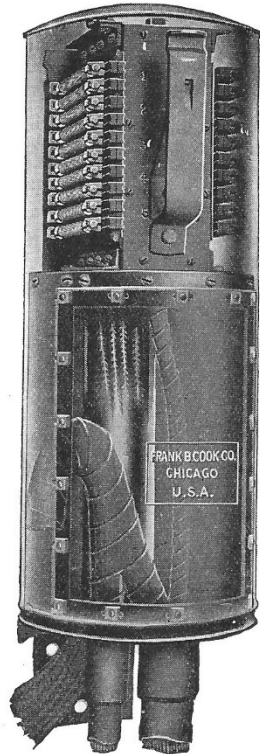
The treated maple protector mounting panels open wide to facilitate soldering and the cable compartment requires only a small amount of compound. When specified, these terminals are equipped with a No. 22 B. & S. gauge 6-foot cable stub. An extra charge is made for the cable.

Each pair of protectors consists of two renewable wood fuses, lined with 5-ampere fuse wire, four carbon blocks and two U-shaped mica dielectrics. The fuse posts and carbon springs are heavy nickleled phosphor bronze. The screw binding posts for terminating drop wires have spring lock washers to prevent loosening of wires.

List No.	F. O. B. Chicago, Ill.					With 6-foot Stub Each
	Capac'y	Height	Diam.	Weight	Each	
2180	11 pair	14 in.	6¾ in.	15 lbs.	\$12.00	\$14.00
2181	16 "	17 "	6¾ "	17 "	17.00	19.50
2182	26 "	23½ "	6¾ "	20 "	24.00	27.50
2183	50 "	38½ "	6¾ "	36½ "	41.00	46.00

Discounts	
Lots of less than 10.....	Net 10%
10 and over.....	10%

Junction Box for Cable



Junction Box furnishes a most economical and simple means of installing and splicing main leads of cable and extending branches of smaller cable to other distributing points. It renders sleeve splicing or wiped joints unnecessary. It makes cable testing a very simple matter, as the box can be opened more easily than can a cable joint. It is absolutely moisture-proof, and has a sliding galvanized sheet metal hood which furnishes added protection. The Junction Box is equipped with self-soldering nozzle, and is made of pressed sheet steel thoroughly galvanized. A rubber gasket between the body of the box and the cover renders the joint moisture-proof.

The Junction Box can be furnished separate or combined with either the type S-6, S-16-D or S-M-1 terminal. If desired, the Junction Box may be installed and the terminal added at any future time. This is a new original feature of the Cook box.

To get price of Combination Terminal and Junction Box add price of Junction Box for attaching to terminal and price of self-soldering nozzles to price of size and style of terminal wanted.

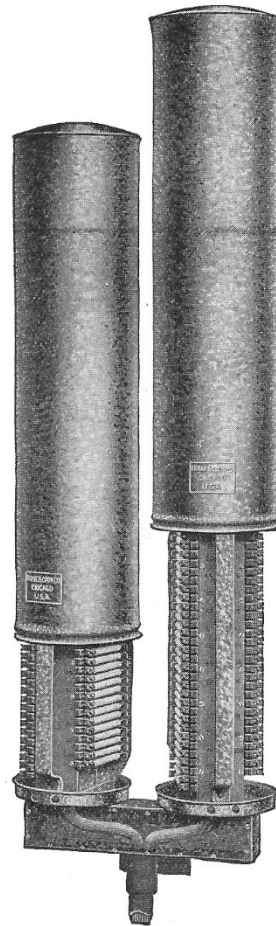
F. O. B. Chicago, Ill.

List No.	Description	Height In.	Diam. In.	Net Weight	Each
1494	Junction Box only, for use without terminal.....	18	10	27 lbs.	\$16.00
1495	Junction Box, for use with terminal	18	10	27 "	16.00

Discounts

Lots of less than 5.....	Net
5 and over.....	.5%

Method of Arranging for 100-Pair Terminal



Where it is necessary to distribute a 100-pair cable through a protected terminal, we recommend twin 50-pair terminals mounted on a junction box, as a single terminal of 100-pair height is not practical.

The junction box is made of heavy sheet steel, thoroughly galvanized, and is equipped with a single 100-pair self-soldering nozzle. The cable is fastened to the nozzle of junction box, in the same manner as described under our S-6 terminal. The sheath of the cable is removed inside the junction box, and the wires divided one-half to each 50-pair terminal, one of which is numbered 1 to 50, and the other 51 to 100.

The front of the junction box is easily removed, and when in place, is made tight with a rubber gasket and machine screws. After cable is installed, the junction box, as well as the terminals, may be filled with compound.

This junction box will be furnished with any of our S type terminals. Exact type of terminal desired should be specified when placing order.

F.O.B. Chicago, Ill.—Per 100 pair

List No.	Capacity	Height Ins.	Width Ins.	Net Weight	List Price Each
2432	102-pr. (2-51-pr.) complete.....	5-6	44	20	73 lbs. \$100.00

Discounts

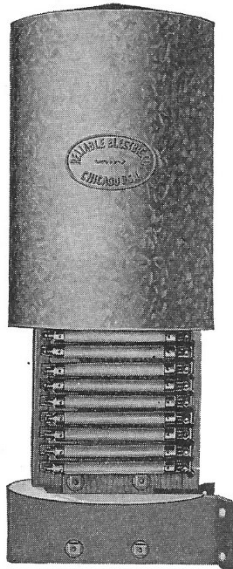
Lots of less than 5.....	Net
5 and over.....	.5%

Self-Soldering Nozzles

F. O. B. Chicago, Ill.

List No.	Size	Outside Diam. of Nozzle Inches	Opening Inches	List Price
2419	10 pair	1	5/8	\$1.00
2420	15 or 20 pair	1 1/4	3/4	1.00
2421	25 pair	1 1/2	1	1.00
2422	30 to 50 pair	1 3/4	1 1/4	1.25
2423	60 to 75 pair	1 3/4	1 3/8	1.50
2424	75 to 100 pair	2	1 1/2	1.50
2425	150 pair	2	1 5/8	1.75

Type A-27 Cable Terminal



A protected cable terminal with air tight cable compartment to be used without pothead for open wire distribution from lead-covered aerial or underground cable. Arranged for mounting on pole and provided with hot galvanized steel cover and bracket.

Each pair of protectors consists of two List No. 2925 Tubular Wood Fuses, two Carbon Blocks and two List No. 2460 Discharge Blocks.

List No.	F.O.B. Chicago, Ill.	Each	With Cable Stub
2916	11 pair complete.....	\$13.00	\$15.00
2917	16 pair complete.....	18.00	20.50
2918	26 pair complete.....	25.00	28.50
2919	50 pair complete.....	43.00	48.00

Discounts

Lots less than 10.....	Net
10 and over.....	10%

Type A-56 Pole Cable Terminal

A Protected Pole Cable Terminal for use without pothead for protection against lightning and crosses with electric circuits. Cover and bracket are hot galvanized.

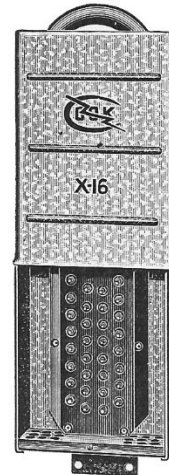
Equipped with List No. 2460 Discharge Blocks.

List No.	F.O.B. Chicago, Ill.	Each	With Cable Stub
2930	11 pair complete.....	\$13.00	\$15.00
2931	16 pair complete.....	18.00	20.50
2932	26 pair complete.....	25.00	28.50

Discounts

Lots less than 10.....	Net
10 and over.....	10%

Type X Unprotected Terminal



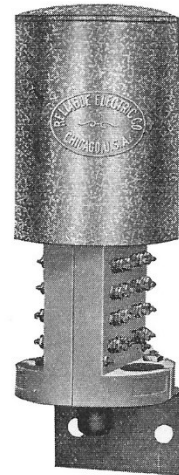
An all steel unprotected terminal made of fine materials, spot welded and galvanized. Studs and nuts are of tinned brass. The hood is reversible, so that the cable stub may be brought from the top or bottom by simply turning the hood.

List No.	F.O.B. Chicago, Ill.	Each	With Cable Stub
2892	X-11 11 pair.....	\$5.00	\$ 8.00
2893	X-16 16 pair.....	6.00	9.00
2894	X-26 26 pair.....	8.50	12.25

Discounts

Lots of less than 5.....	Net
5 to 24.....	5%
25 to 49.....	10%
50 and over.....	15%

Type R Pole Cable Terminal



An unprotected porcelain cable terminal to be used without pothead for multiple tap distribution from lead covered cable. Arranged for mounting on pole and provided with galvanized iron cover.

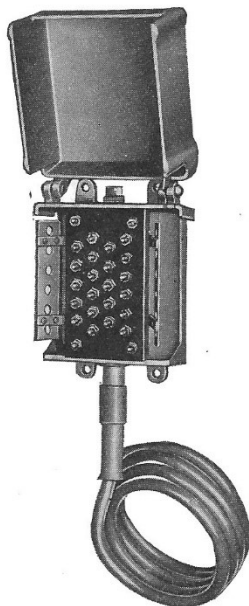
The cable is brought into the terminal through a lead nipple and soldered to hollow lock nut binding posts which are embedded in the porcelain panels to prevent twisting and breaking of cable wires. When specified, these terminals are equipped with a No. 22 B. & S. gauge 6-foot cable stub. An extra charge is made for the cable.

List No.	Capac'y	Height	F. O. B. Chicago, Ill.	Diam.	Weight	Each	With Cable Stub
2184	5 pair	7 1/4 in.	6 1/4 in.	4	lbs.	\$3.40	
2185	11 "	7 1/4 "	6 7/8 "	4 1/2 "	"	3.50	\$5.50
2186	16 "	9 1/2 "	6 7/8 "	6 "	"	5.25	7 75
2187	21 "	9 1/2 "	6 7/8 "	6 1/2 "	"	6.00	
2188	26 "	10 3/4 "	6 7/8 "	8 "	"	6.50	10.00

Discounts

Lots of less than 10.....	Net
10 and over.....	10%

Type GR Pole Cable Terminal



A hot galvanized cast-iron Cable Terminal to be used without pothead for multiple tap distribution from lead-covered cable. The cable is brought into the terminal through a tinned brass nipple to which the sheath of the cable is soldered.

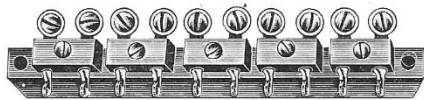
Terminals are equipped with heavy lock nut binding posts. When specified, these terminals are equipped with six foot stub at top or bottom.

List No.	F.O.B. Chicago, Ill.	Each	With Cable Stub
2934	11 pair complete	\$5.50	\$ 7.00
2935	16 pair complete	8.75	8.75
2936	26 pair complete	9.75	12.50

Discounts

Lots less than 10	Net
10 and over	10%

Type GG-4 Connecting and Distributing Strip



This connecting strip is made up in pairs with a screw and washer connection on one side and a soldered connection on the other side. The clips are made of nickel silver and are securely mounted in hard rubber blocks. Made up in any required number of pairs. Dimensions per pair: Height 1 1/2 inches; Width 1 1/2 inches; Depth 2 1/2 inches. Net weight per 100 pairs — 8 pounds.

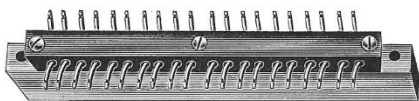
F. O. B. Chicago, Ill.

List No.	Pair
2161	\$.15

Discounts

Less than 300 pair	Net
300 pair and over	5%

Type GG Connecting and Distributing Strip



For use in pole houses and buildings. Consists of a single row of nickel silver clips imbedded in hard rubber block which

Type GG Connecting and Distributing Slip (Cont.)

is mounted on a maple strip. Furnished in three standard sizes as follows:

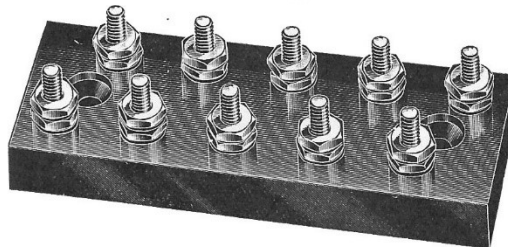
F. O. B. Chicago, Ill.

List No.	No. Pairs	Weight per 100 pairs	Each
722	10	6 lbs.	\$1.00
723	26	6 "	2.60
724	50	6 "	5.00

Discounts

Less than 300 pair	Net
300 pair and over	5%

Connecting Blocks



Pc. 14037—5 pair Composition Terminal Block60 each
Pc. 14036—7 pair Composition Terminal Block84 each

Cables—Switchboard

These cables are used for connecting apparatus within a telephone exchange building. The wires in these cables are tinned copper with double silk and single cotton insulation, color coded. The cores are saturated with beeswax compound to facilitate installation work and to protect the cable from moisture.

The overall covering of the cable may be either a painted cotton braid indicated by the letter "B" or a pure lead sheath indicated by the letter "L"—affixed to the code number of the cable.

No. 16 B. & S. Gauge Cables—Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter per 100 ft.	Price
75-BE	10	Round	3/8 in.	\$50.00

No. 19 B. & S. Gauge Cables—Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter per 100 ft.	Price
86-B	10	Round	7/8 in.	\$20.00
85-B	20	"	3/4 in.	36.00

Above cables have one spare pair.

No. 22 B. & S. Gauge Cables Singles and Triplets

Code No.	No. of Singles	No. of Triplets	Shape	Approximate Diameter per 100 ft.	Price
68-B	20	20	Round	3/8 in.	\$40.00
69-B	20	20	Oval	7/8 x 1/2 in.	40.00

Above cables have one spare triplet and one spare single conductor.

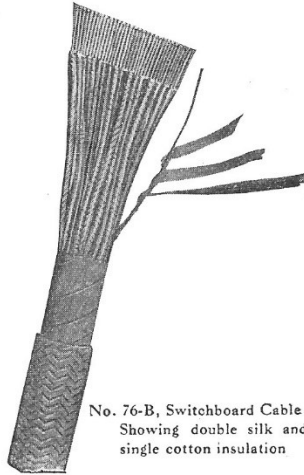
No. 22 B. & S. Gauge Cables—Pairs

Code No.	No. of Pairs	Shape	Approximate Diameter	Thickness Lead Sheath	Price per 100 ft.
71-B	10	"	3/8 in.		\$12.00
71-L	10	"	27/64 "	3/64 in.	22.00
82-B	15	"	13/32 "		18.75
83-L	15	"	31/64 "	1/16 "	26.00
66-B	20	"	15/32 "		20.00
66-L	20	"	35/64 "	1/16 "	29.50
84-B	25	"	9/16 "		23.75
84-L	25	"	43/64 "	5/64 "	38.00

Code No.	No. of Pairs	Shape Round	Approximate Diameter	Thickness of Lead Sheath	Price per 100 ft.
90-B	50	"	5/8 in.		43.00
90-L	50	"	47/64 "	5/64 in.	70.00
91-B	100	"	1 "		98.00
91-L	100	"	1 9/64 "	3/32 "	145.00

Above cables from 10 to 50 pairs inclusive have one spare pair. The 100 pair cable has two spare pairs.
 Note: Quantity discount on Cable will be quoted upon request.

No. 22 B. & S. Gauge Cables—Triplets

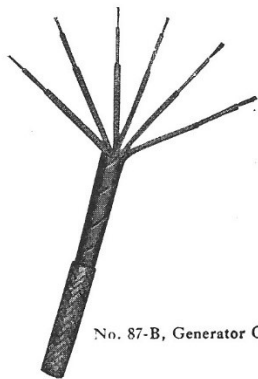


No. 76-B, Switchboard Cable
 Showing double silk and single cotton insulation

Code No.	No. of Triplets	Shape	Approximate Diameter	Price per 100 ft.
65-B	20	Round	$1 \frac{5}{16} \times \frac{9}{16}$ in.	\$ 30.00
67-B	100	Oval	$1 \frac{1}{8} \times \frac{13}{16}$ "	180.00
72-B	10	Round	$1 \frac{1}{8} \times \frac{11}{16}$ "	13.75
76-B	20	Oval	$1 \frac{1}{8} \times \frac{21}{32}$ "	30.00

Above 10 and 20 triplets cables have one spare triplet. The 100 triplet cables has two spare triplets.

Cables—Generator
 Four Party Harmonic Ringing

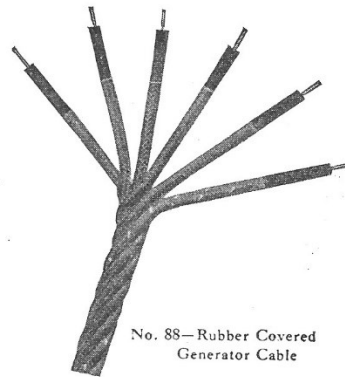


No. 87-B, Generator Cable

Code No. 87-B is designed especially for carrying ringing current through the switchboard positions. The cable is made up of six single conductors, No. 22 B. & S. Gauge, with double silk and single cotton insulation, and has a moisture-proof brown cotton braid over all.

Code No.	No. of Conductors	Approximate Diameter	Price per 100 ft.
87-B	6	5/16 in.	\$7.50

Cables—Generator (Cont.)



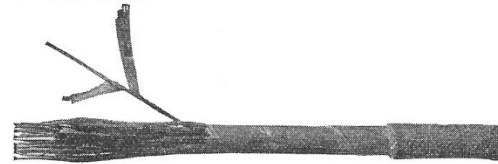
No. 88—Rubber Covered Generator Cable

Code No. 88 Cable is used to carry generator current through partitions or other places where a thoroughly moisture-proof cable is desired without the expense of lead sheathing. Consists of six single conductors No. 18 B. & S. Gauge rubber covered and braided (no outside overall covering).

Code No.	No. of Conductors	Approx. Diameters Braided	Price per 100 ft.
88	6	$\frac{1}{16}$ in.	\$7.50

Inter-Communicating Cables

In each cable all wires are No. 22 B. & S. Gauge except the two pairs used for talking and signalling battery which are No 18 B. & S. Gauge.



All wires are tinned copper with single silk and single cotton insulation. The cable core is saturated with beeswax compound. Covering overall—either painted cotton braid indicated by letter "B" or pure lead sheath indicated by the letter "L" affixed to the code number of each cable.

Code No.	Pairs	Thickness of lead sheath	Outside diam.	Weight per 1000 ft.	Price per 100 ft.
70-B	8		5/16 in.	85 lbs.	\$ 7.50
70-L	8	23/64 in.	23/64 "	300 "	12.50
60-B	14		27/64 "	130 "	11.00
60-L	14	1/2 "	1/2 "	535 "	18.00
61-B	24		33/64 "	195 "	16.50
61-L	24	19/32 "	19/32 "	685 "	25.00
62-B	34		9/16 "	255 "	22.50
62-L	34	43-64 "	43/64 "	950 "	39.00

In each cable all single conductors are No. 22 B. & S. Gauge and the two pairs used for common talking and common return ringing circuits are No. 18 B. & S. Gauge.

Code No.	Cond.	Thickness of lead sheath	Outside diam.	Weight per 1000 ft.	Price per 100 ft.
77-B	10		19/64 in.	65 lbs.	\$ 6.00
77-L	10	11/32 in.	11/32 "	270 "	11.50
78-B	15		11/32 "	85 "	7.25
78-L	15	25/64 "	25/64 "	320 "	12.00
79-B	20		23/64 "	80 "	8.75
79-L	20	13/32 "	13/32 "	345 "	14.50
80-B	30		13/32 "	112 "	12.00
80-L	30	31/64 "	31/64 "	525 "	21.00

Telephone Cables

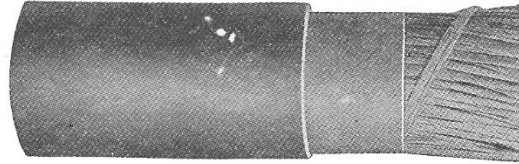
Paper Insulated, Lead Encased Telephone Cables

The electro-static capacity specified always by us is the regular or natural electro-static capacity obtained by testing one wire against the remaining wires of the cable, the sheath grounded. This is a most efficient test. The electro-static capacity used for telephone purposes is .12 micro-farads per mile.

An additional charge will be made for Cable reels and lagging.

Full credit will be given for reels only, provided they are in good condition on their return, either to manufacturers whose name is on the reel, or to us at Chicago, Ill. Freight charges must be prepaid on empty reels returned, and Bill of Lading should be sent to us.

Following prices are per one thousand feet. No. 22 B. & S. D. W. P. .12 E.S.C. Cable with Standard Lead Sheath.



Conductors No. 22 B. & S. Gauge, Double Paper Insulation, Covering on Pairs Colored Red and White

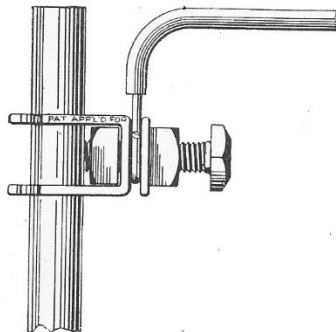
List No.	Pairs	Sheath	Approx. Weight Per 1000 ft.	Under 100 ft.	100 to 250 ft.	250 to 500 ft.	500 to 1000 ft.	1000 or more
2448	10	$\frac{1}{16}$ inch	380	\$ 122.37	\$ 115.90	\$ 109.37	\$ 102.87	\$ 96.65
2449	15	$\frac{3}{32}$ inch	606	184.50	174.70	164.90	155.10	145.50
2450	25	$\frac{1}{8}$ inch	683	229.20	217.00	204.80	192.60	180.50
2451	50	$\frac{3}{16}$ inch	950	362.40	343.10	323.28	304.50	285.20
2452	75	$\frac{1}{4}$ inch	1405	532.20	503.80	475.40	447.00	418.60
2453	100	$\frac{5}{16}$ inch	1584	640.60	606.40	572.20	538.00	503.80
2454	150	$\frac{3}{8}$ inch	2196	936.00	886.00	836.00	786.00	736.00
2455	200	$\frac{7}{16}$ inch	2524	1162.55	1100.35	1038.15	975.95	913.57

Prices subject to change without notice.

Above cable carried in Chicago stock. Prices F. O. B. Chicago, Ill.

Prices on cable for direct shipment from factory on application.

Kling Klamp For Ground Rods



Cheaper and more satisfactory in every way than the trouble some soldered rod. Adapted for copper or iron wire connections All parts are heavily galvanized.

"The tip of the bolt makes clean contact even on a rusty rod."

List No.	Description	Price Each
2811	$\frac{3}{4}$ " Clamp	\$.15
2812	$\frac{5}{8}$ " Clamp	.18

Discounts	
Less than 100.....	Net
100 to 999.....	Less 10%
1000 and over.....	Less 20%

S-C Insulating Cable Compound



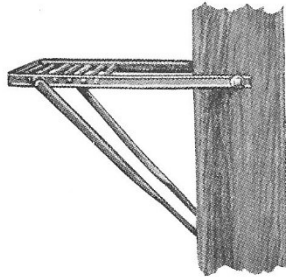
List No.	Per Gal.
1061	1 to 3 Gallons, 8 lbs. to gal. \$1.00
	3 Gallons to 5 Gallons..... .90
	5 gallons and over..... Special



Cable Clamp

List No.	Diam. of Lead Cov'd Cable	Size of Cable and Number of Pairs and Gauge of Wire	Size of Wood Screw	Size of Anchors	List Price per 100
2469	5/0	3/8" Smaller than 10 pairs Switchboard	No. 5 x 1"	1/8" x 3/4"	\$1.75
2471	3/0	1/2" 15 pr. Switchboard	No. 10 x 1"	1/8" x 3/4"	2.15
2472	2/0	5/8" 20, 25, 30 pr. Switchboard —10 pr. 19 Gauge—15, 20, 25 pr. 22 Gauge	No. 10 x 1"	3/8" x 3/4"	2.25

Pole Seats



These Pole Seats are made of hot-galvanized steel frames and braces. The steel seats are made of square bar set with the corners up to prevent slipping.

F.O.B. Factory—Per 100

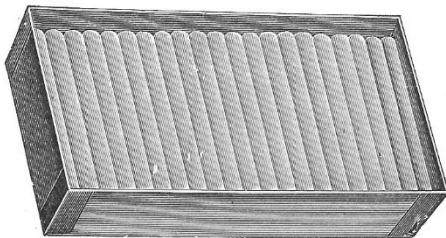
List No.	Std. Pkg.	Less Std. Pkg.	Std. Pkg. & over
1902	12 x 13 7/8" Steel seat	5	\$199.84 \$179.84
1904	12 x 11" " "	5	190.95 171.85

Paper Insulators for Cables



Paper tubes are used almost universally as insulators in the splicing of cables. The tubes, while cheap and simple, must be good and well made. They are constructed of strong, tough paper tightly rolled. Made up in three diameters, 3/8-inch for No. 22 gauge, 1/2-inch for Nos. 19 and 20 gauge, and 5/8-inch for No. 18 gauge.

Unless otherwise specified we furnish 1/2-inch. One hundred and ten are packed in a neat pasteboard box, that number being what is ordinarily required for the splicing of a 50-pair cable. The insulators when packed present an appearance like this:



Paper Sleeves in Box

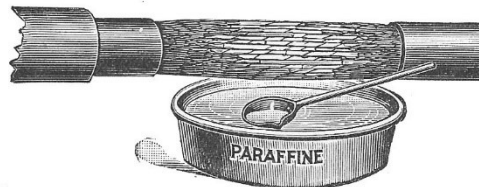
List No.	Per M
480	3 inches long..... \$.90
1561	6 inches long..... 1.35
1562	12 inches long..... 2.70
481	18 inches long..... 4.00
	10,000 and over..... Special

Lead Sleeves

F.O.B. Roch. & Chicago F.O.B. Kan. City

List No.	Inside Diam.	Thickness of Wall	Approx. Wt. per ft.	Per lb.	Per lb.
1285	1 1/4 in.	1/8 in.	2 1/2 lbs.	\$.19	\$.19 1/2
1286	1 1/2 "	1/8 "	3 "		
1287	1 3/4 "	1/8 "	3 1/2 "		
1288	2 "	1/8 "	4 "		
1289	2 1/2 "	1/8 "	5 "		
1290	3 "	1/8 "	7 "		
2926	3 1/2 "	1/8 "	8 "		
2927	4 "	1/8 "	9 "		
2928	4 1/2 "	1/8 "	10 "		

Paraffine



List No.	Per lb.
484	Guaranteed 140° test..... \$.15
	100 lbs. and over..... Special

"A" No. 1 Yellow Wax



List No.	Per lb.
1065	..... \$ .40

Iron Soldering Ladles



List No.	Each
482	3 inch diameter of bowl..... \$.60
1044	4 inch diameter of bowl..... .75

Wiping Solder



List No.	F.O.B. R. & C. Per lb.	F.O.B. K. C. Per lb.
1062	36/62..... \$.40	\$.44

Iron Melting Pots



List No.		Each
1046	5 inch diam.....	\$1.00
1047	6 inch diam.....	1.25
1048	8 inch diam.....	1.75

Shave Hook



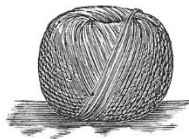
List No.		Each
1067	No. L-936.....	\$.50

Boxwood Dresser



List No.		Each
1068	No. L-994.....	\$1.25

Marline



Six Cord—Put up in One and Five-Pound Balls

List No.		F. O. B. Roch. & Chicago	F. O. B. K. C. Per Lb.
870	Less than 10 lbs.....	\$.29	\$.30
	10 to 25 lbs.....	.26	.27
	25 lbs. and over.....		Special

Lacing Twine—Not Waxed

Used for lacing wires into cables or lacing "Fanned out" ends.
Six Cord—Put up in One-Pound Balls—Not waxed.

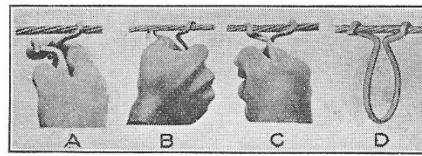
List No.		Per lb.
1070	.....	\$3.00
	10 lbs. and more.....	Special

Lacing Twine or Lock Stitch—Waxed

Used for Lacing Cable Put Up in One-Pound Balls—Waxed

List No.		Per lb.
871	11, Cord.....	\$3.00
	10 lbs. and more.....	Special

National Aerial Cable Rings



National rings are made of a high carbon semi-spring steel wire of special cross section, hot dip galvanized after forming. They are much stronger than the older types of flat wire aerial rings, and due to their peculiar formation National rings are attachable to the supporting messenger by hand. This feature is of great value as it enables these rings to be attached to the strand with ease and rapidity, and in addition the zinc coating is not injured in the slightest by attaching them.

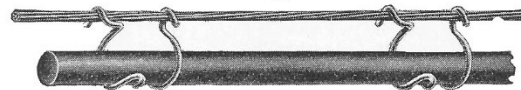
F. O. B. Cleveland, Ohio

List No.		List Std. Price Pkg. Per 1000
2441	1½ inch No. 11 Round Wire.....	2000 \$12.85
2442	2 inch ½ x ¼ Flat Wire.....	1000 18.40
2443	2½ inch ½ x ¼ " ".....	500 22.80
2444	3 inch ½ x ¼ " ".....	500 26.00
2445	3½ inch ½ x ¼ " ".....	500 29.00

Add 10% in less than standard package plus an extra charge of 50 cents for breaking standard package to make up the exact quantity.

The size is determined by the dimension of the inside circular opening of the rings, when on the strand. In ordering specify size of strand on which to be used. Allow at least ½ inch greater diameter of ring than outside diameter of cable to be installed.

Blackburn's Neverslip Cable Hangers



Net Prices—F. O. B. St. Louis

List No.		Lbs. per 1000	Packed to Sack	Price Per M
2526	1½ inch Hanger.....	114	500	\$15.00
2527	2 " ".....	122	500	17.00
2528	2½ " ".....	186	500	22.50
2529	3 " ".....	200	500	25.50
2530	3½ " ".....	224	500	28.00

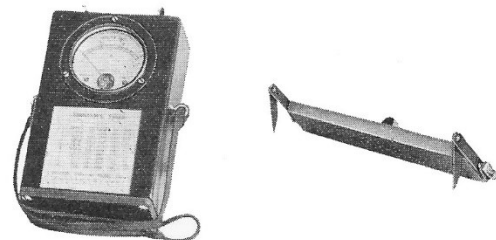
Add 10% to Price for lots less than original packages.

Blackburn's Duplex Cable Hangers

List No.		Packed in Sack	Price per M
2970	1½ inch Hanger.....	1000	\$14.00
2971	2 " ".....	1000	16.00
2973	2½ " ".....	500	20.50
2974	3 " ".....	500	24.50
2975	3½ " ".....	500	29.00

Add 10% to Price for lots less than original package.

Little Detective Splice Tester and Voltmeter Set



This device consists of a hard wood bar eleven inches long, on each end of which is attached a folding blade hook with hardened saw tooth edges that make a positive contact on each side

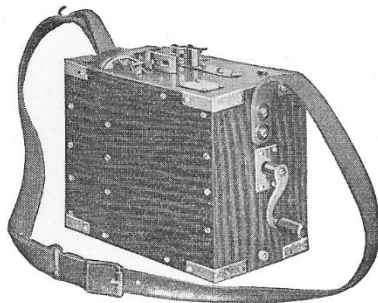
of the joint under test. By means of wires attached to Fahnestock phosphor bronze clips that are soldered to the blades, and lead down the test pole to the voltmeter set, the exact condition of a joint is easily determined. The test pole is not furnished with the set inasmuch as any light pole of sufficient length to reach from the ground to the line is satisfactory.

In addition to use with the splice tester the voltmeter set is invaluable for making electrical tests in switchboards and telephones. The following are some of the tests that can be made: Grounds, Short Circuits, Coils, Circuits, Transmitters, Cords, Keys and Condensers.

List No.	Description	Price Each
2952	Splice Tester complete, consisting of Voltmeter Set, Connector Block, Battery and Neck Band...	\$13.00
2953	Voltmeter Set only.....	11.50
2954	Connector Block only.....	1.50

The "Stewart" Test Set

Made in Two Sizes



The "Stewart" Test Set tells which way and how far trouble is from the tester, without opening the line.

When locating trouble, the important things to know are what is the trouble and where it is. The "Stewart" is the only Test Set that will tell this. Any lineman that can climb a pole can tell what the trouble is and where it is if he has a "Stewart" while the best lineman in the world can only guess at it without cutting the line, if he is not equipped with the "Stewart." It takes time and material (in other words, it costs money) to open a line for test.

List No.	Description	Price Each
2436	Weight 7 lbs. for Light Service.....	\$36.00
2437	Weight 10 lbs. for Heavy Duty.....	36.00

Stromberg-Carlson Test Sets

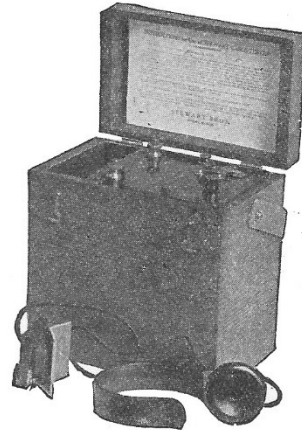


Get your linemen this compact, light weight magneto Test Set. Durable and accessible. Equipped with hand or shoulder strap. Rigidly assembled and built to withstand hard use out doors. Weighs only thirteen pounds with batteries, packed for shipment approximately nineteen pounds.

Test Set uses No. 790 (2 cell unit) Eveready Tungsten battery.

Code	Type	Generator	Ring Resistance	Price Each
843	Bridging	5 Bar	1000 ohms	\$27.00
844-E	Bridging	3 Bar	1600 ohms	16.00
P-14038	Adjustable Shoulder Strap			2.00

Type "L" Stewart Cable Tester



The principles used in this instrument are the only methods that will locate all kinds of cable trouble except open circuits. This Cable Tester has patented features which make it the only one that will actually locate cases of water trouble.

Our Exploring Coil is so constructed that it will only pick up the tone that is carried on the pair in trouble, and in this way you can locate all the trouble that will give false locations with any other coil.

Water trouble is the hardest of all cable trouble to locate. The following explains why:

When water gets in a cable it crosses all the pairs that are wet, with each other, and with the armor of the cable. When tone is put out over a pair it passes to all the pairs that are wet, and to the armor, and from the armor to the messenger, either thru a cross or metal clips. When the tone gets to the armor and messenger it runs both ways and it can be readily seen that a common Exploring Coil will pick up the tone going ahead on the armor or messenger and give a false test, but the "Stewart" Exploring Coil by eliminating the tone on the armor and messenger will not pick up any tone beyond the fault.

An indicating lamp is contained in the set for picking out bad pairs and for indicating quickly if the trouble is still on the pair after the sender has been connected. The lamp will test all metallic trouble.

List No.	Description	Price Each
2494	Complete with Exploring Coil.....	\$57.00
2495	Exploring Coil and Receiver only.....	15.50

Pyrene Fire Extinguisher



The Pyrene Fire Extinguisher is a manually operated brass pump enclosed in a brass shell. The pump is double-acting with the piston operating directly on the liquid without intervening air pressure. A stroke of the piston in either direction throws the liquid approximately twenty-five feet. Because the pump acts directly on the liquid it can be expelled with great force. This breaks the liquid up when hitting a burning substance, forming a spray that volatilizes readily. There are no valves to turn or look for when in a hurry. The extinguisher is three inches in diameter, fourteen inches long and weighs when filled six pounds.

List No.	Description	Price Each
2446	Pyrene 1-qt. Extinguisher.....	\$14.00
2465	Liquid per quart.....	1.80

Calculagraphs

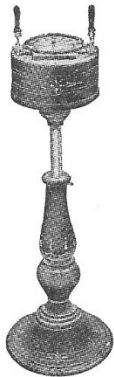
Furnished in case. Style A, B or C, as specified

Model No. 6

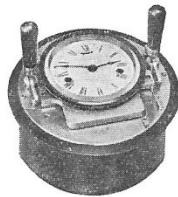
Description

Calculates and prints elapsed time in minutes and quarter minutes, has visible dial and records the time of day.

Pedestal for calculagraph for use with style A case, height adjustable from 26 to 40 inches from floor to ticket plate.



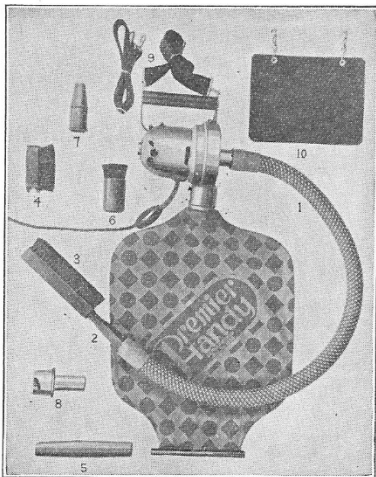
Style A



Style C

List No.	Description	Each
2498	Style-A Calculagraph.....	\$100.00
2499	Pedestal only.....	20.00
2468	Style-C Calculagraph.....	100.00
2484	Ribbon for calculagraph. Unless otherwise ordered blue is shipped. Other colors made to order.....	1.00

Vacuum Cleaner



The Premier Handy Vacuum Cleaner with its specially designed tools is manufactured exclusively for telephone use. With this instrument it is possible to keep dust and dirt out of every part of the switchboard and terminal equipment.

It is supported by a strap over the operator's shoulder and held in position by another light strap around the waist. The weight complete with all cleaning tools is less than ten pounds. Every cleaner is sold under a written guarantee.

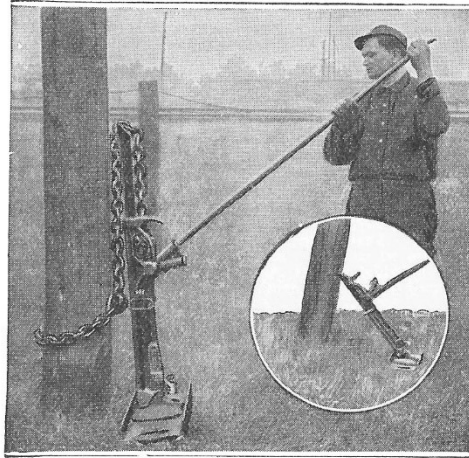
F. O. B. Cleveland, Ohio

List No.	Description	Price
2882	Vacuum Cleaner with tools complete.....	\$50.00
2883	Set of Telephone Cleaning Tools.....	15.00

Note—Cleaner motor designed for voltages from 32 to 250 A.C. or D.C. Specify voltage.

Discount to Telephone Companies.....33 1/3%

Simplex Pole Jack



Especially designed for pulling and straightening of telephone, trolley and lighting poles. No digging is necessary—two men with this Jack can do the work of five in one-quarter the time. For straightening poles only one man is required.

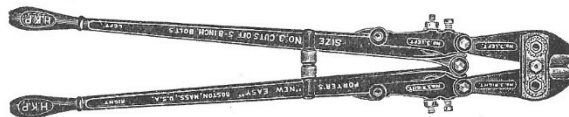
Construction: Malleable standard and base. All other parts steel drop forgings. Equipment includes 8 feet of steel chain, steel lever bar and steel I beam base support.

List No.	Capacity	Height	Lift	Weight	Price
2048	15 tons	39 in.	24 in.	189 lbs.	\$70.00

Discount

Less.....25%

New Easy Bolt Cutters



List No.	Trade No.	Weight	Length	To cut bolts inches	Each
2044	0	3 lbs.	18 inches	1/8	\$4.00
2045	1	5 1/4 "	24 "	3/8	5.50
2046	2	9 "	30 "	1/2	7.50
2047	3	13 "	36 "	3/4	9.75

Nos. 0 and 1 have open handle grips. Nos. 2 and 3 have solid grips. Adjusted by set screw. No special wrench or shims required.

Cable Grip



SINGLE EYE

This Grip is used for pulling in all kinds of underground or aerial cable

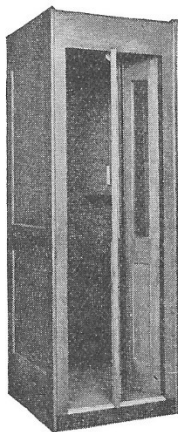
By its use a saving can be effected in wire, cable, time and labor.

The cost of this Grip can be saved in cable alone in less than a day's time. Every inch of cable is saved.

Prices F. O. B. Syracuse, N. Y.

List No.	36 Inches Long	Each
1922	1 inch.....	\$3.50
1921	1½ ".....	3.75
1920	2 ".....	4.00
1919	2½ ".....	4.25
1918	3 ".....	4.50

Stromberg-Carlson Telephone Booths

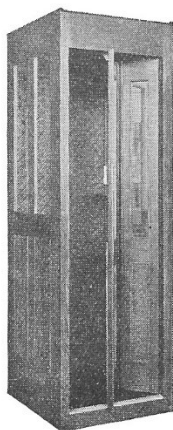


Type "A" Booth

For group installation. This folding door booth is furnished with unfinished sides. Separators are used between the units of group installations and finished panels are used at each end of the group only.

The inside is lined with sheet metal, the floor and baseboard covered with linoleum and the threshold provided with a safety tread.

Dimensions are: height 88¼", unit width 29", depth 30¼".

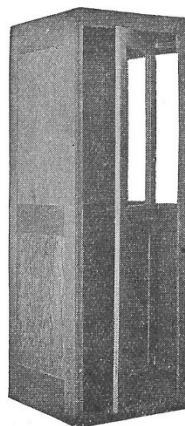


Type "B" Booth

Folding door type, similar to Type "A" in construction except that it is built as a single unit and is finished on all sides. Several can be placed in a group with glass panels at the front only.

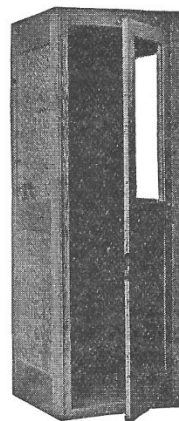
The inside is lined with sheet metal, hardwood floor and safety tread on threshold. Shelf furnished with each booth. The door of each booth has two glasses, also the left side and one in the right side.

Telephone Booths (Cont.)



Type "C" Booth

This booth is built as a single unit, made throughout of selected, kiln-dried plain white oak or birch. It is equipped with a reinforced back panel for mounting a wall telephone or coin collector. Requires only 6 inches in front of the booth for the opening and closing of the receding door. Dimensions are: height 83½", width 28½", depth 29¼". Finished inside and out by staining, shellacking and varnishing. The floor is thoroughly oiled.



Type "D" Booth

This booth is of the swinging door type, made throughout of selected kiln-dried plain white oak or birch. The right and left sides are interchangeable. All sides are framed and paneled. A writing shelf is furnished which affords means of mounting a desk set.

Its dimensions are the same as Type "C" but differs in door opening and equipment. Finished inside and out by staining, filling, shellacking and varnishing. The floor is thoroughly oiled.

Booths can be secured in the following finishes—each is provided with a safety door. A slight pressure on the right side of the door, either from within or without, opens the door. The door never locks.

Carried in stock—shipped, assembled or knocked down— assembled with a screw driver. Furnished in the following codes:

Type "A" Booth

List	Material	Finish	Back	Price
2979	Mahogany	Light	Hardwood	\$94.00
2980	"	"	Softwood	85.00
2981	Quartered Oak	Medium	Hardwood	91.00

Telephone Booths (Cont.)

List	Material	Finish	Back	Price
2982	Quartered Oak	Medium	Softwood	\$84.00
2983	Mahogany	Dark	Hardwood	94.00
2984	"	"	Softwood	85.00

Extra Parts

2985	Oak End Panels			\$13.50 Ea.
2986	Mahogany End Panels			14.50 "
2987	Oak Separators			4.50 "
2988	Mahogany Separators			6.25 "
2989	Oak Seats			2.75 "
2990	Mahogany Seats			2.75 "

Orders for Type "A" Booths should state the number of end panels and separators desired.

All prices F. O. B. Chicago, Illinois.

*See Note at bottom of next column.

Type "B" Booth

List	Material	Finish	Description	Price Each
2991	Plain Oak	Medium Oak	With 2 glasses in door, 2 glasses in left side, 1 glass in right side.	\$112.00
2992	Birch	Dk. Mahogany	With 2 glasses in door, 2 glasses in left side, 1 glass in right side.	115.00
2993	Birch	Light "	With 2 glasses in door, 2 glasses in left side, 1 glass in right side.	115.00
2994	Plain Oak	Medium Oak	2 glasses in door only	102.00
2995	Birch	Dk. Mahogany	2 " " "	105.00
2996	Birch	Light "	2 " " "	105.00

All prices F. O. B. Chicago, Illinois.

*See Note at bottom of next column.

Type "C" Booth

List No.	Material	Finish	Panels
2802	Plain Oak	Medium Oak	Glass panel in door and in right side.
2803	Birch	Dark Mahogany	Glass panel in door and in right side.
2804	Birch	Light "	Glass panel in door and in right side.
2805	Plain Oak	Medium Oak	Glass panel in door and in both sides.
2806	Birch	Dark Mahogany	Glass panel in door and in both sides.
2807	Birch	Light "	Glass panel in door and in both sides.
2808	Plain Oak	Medium Oak	1 glass panel, in door only.
2809	Birch	Dark Mahogany	1 glass panel, in door only.
2810	Birch	Light "	1 glass panel, in door only.

Unless otherwise specified a booth with glass in door and glass panel in right side will be furnished.

Prices

Plain Oak Booth	\$80.00
Birch Mahogany	80.00

All prices F. O. B. Chicago, Illinois.

*See Note below.

Type "D" Booth

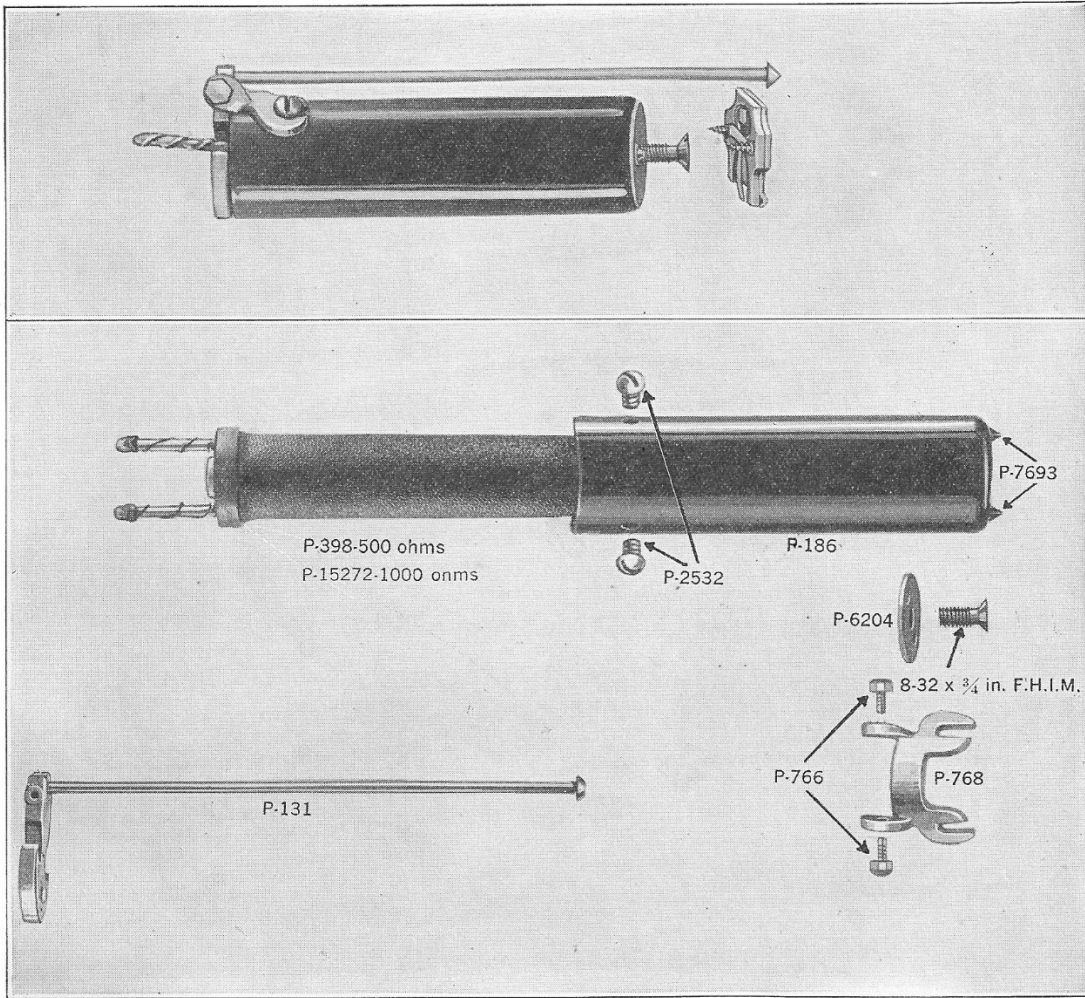
List	Material	Finish	Description	Price Each
2997	Plain Oak	Medium Oak	Glass panels in door and one side.	\$66.00
2998	Birch Mah.	Light Mah.	Glass panels in door and one side.	66.00
2999	Plain Oak	Med. Finish	Glass panels in door and both sides.	66.00
3000	Birch Mah.	Light Mah.	Glass panels in door and both sides.	66.00

Orders for Type "D" Booth should state the finish and arrangement of glass panels desired.

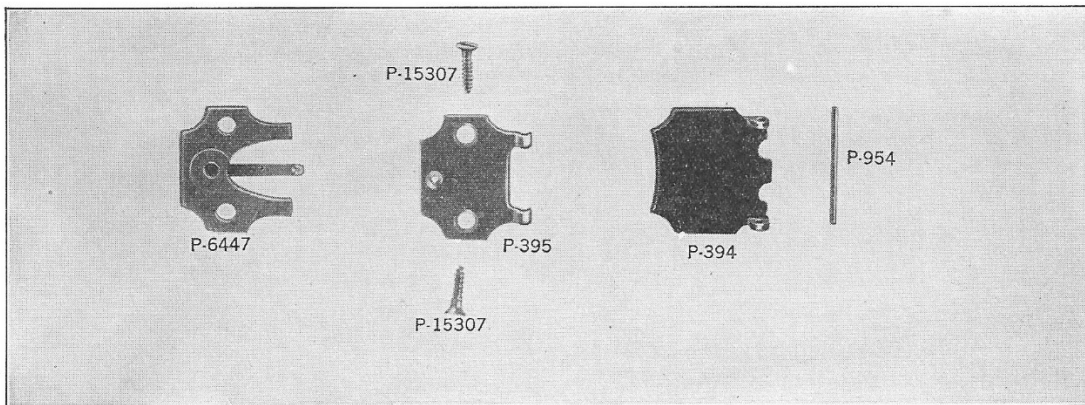
All prices F. O. B. Chicago, Illinois.

*NOTE—Booths are regularly shipped assembled, unless especially ordered knocked down.

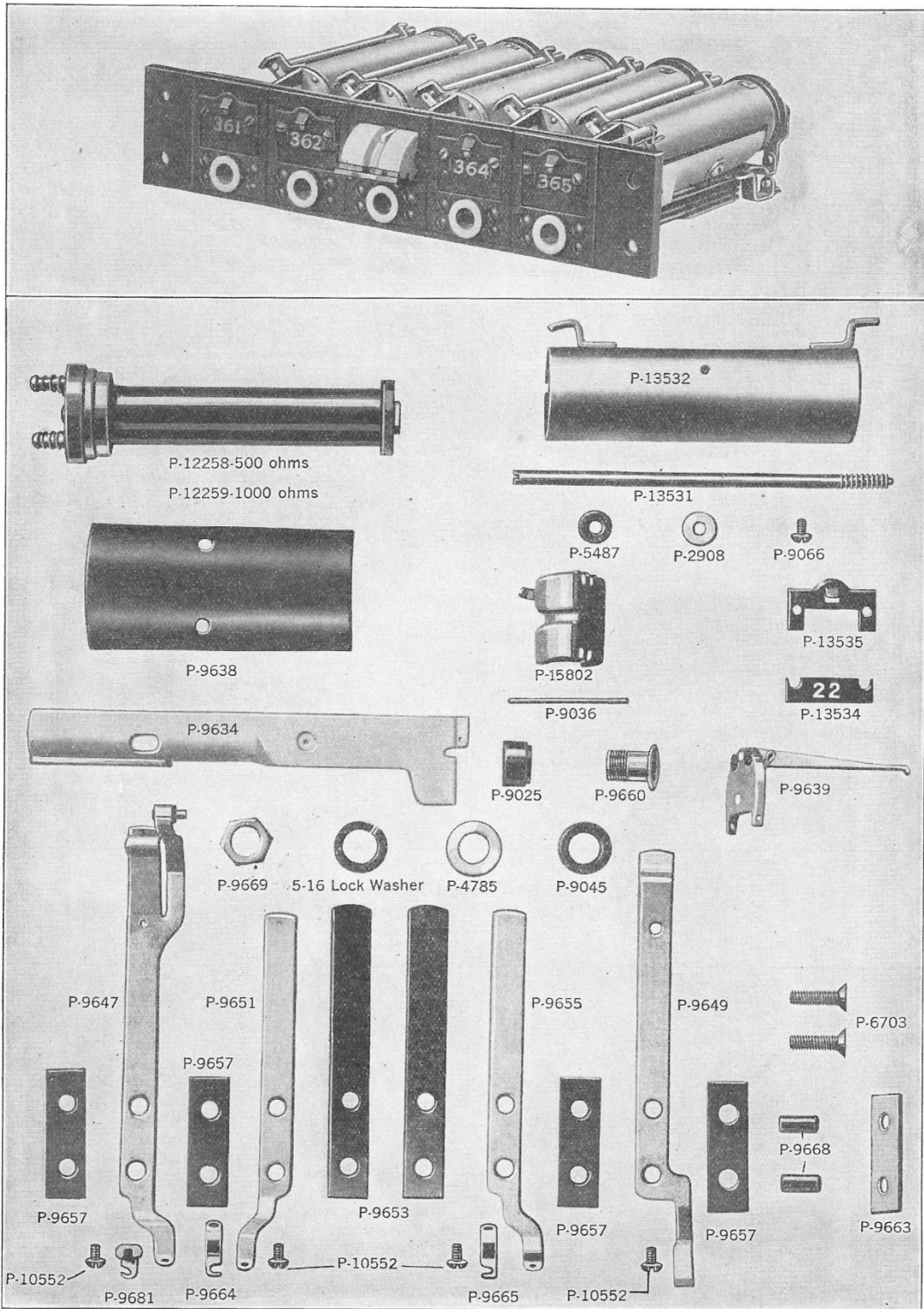
There is an extra charge of \$5.00 net per booth for crating charges and \$1.50 for knocking down.



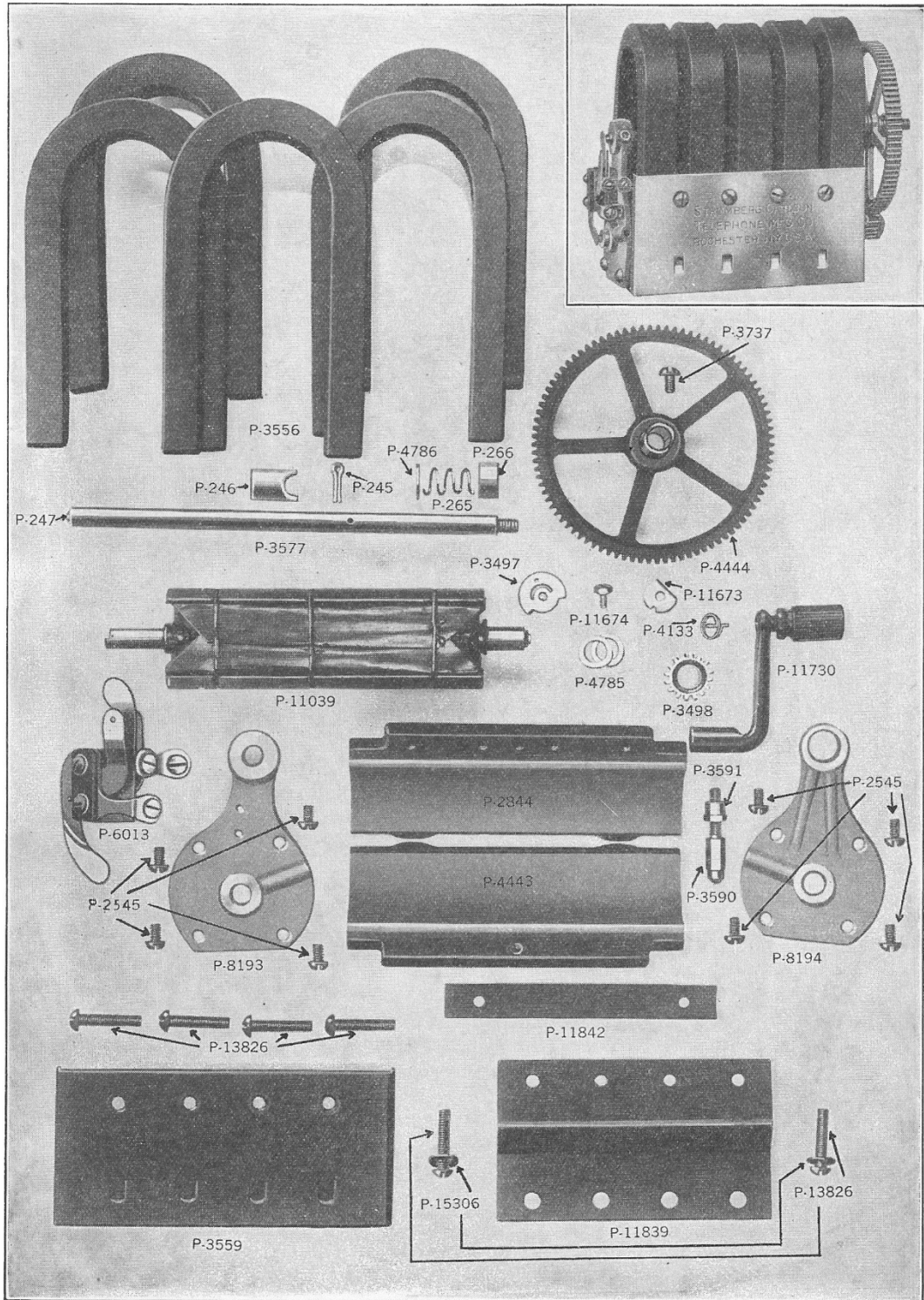
No. 4 Drop



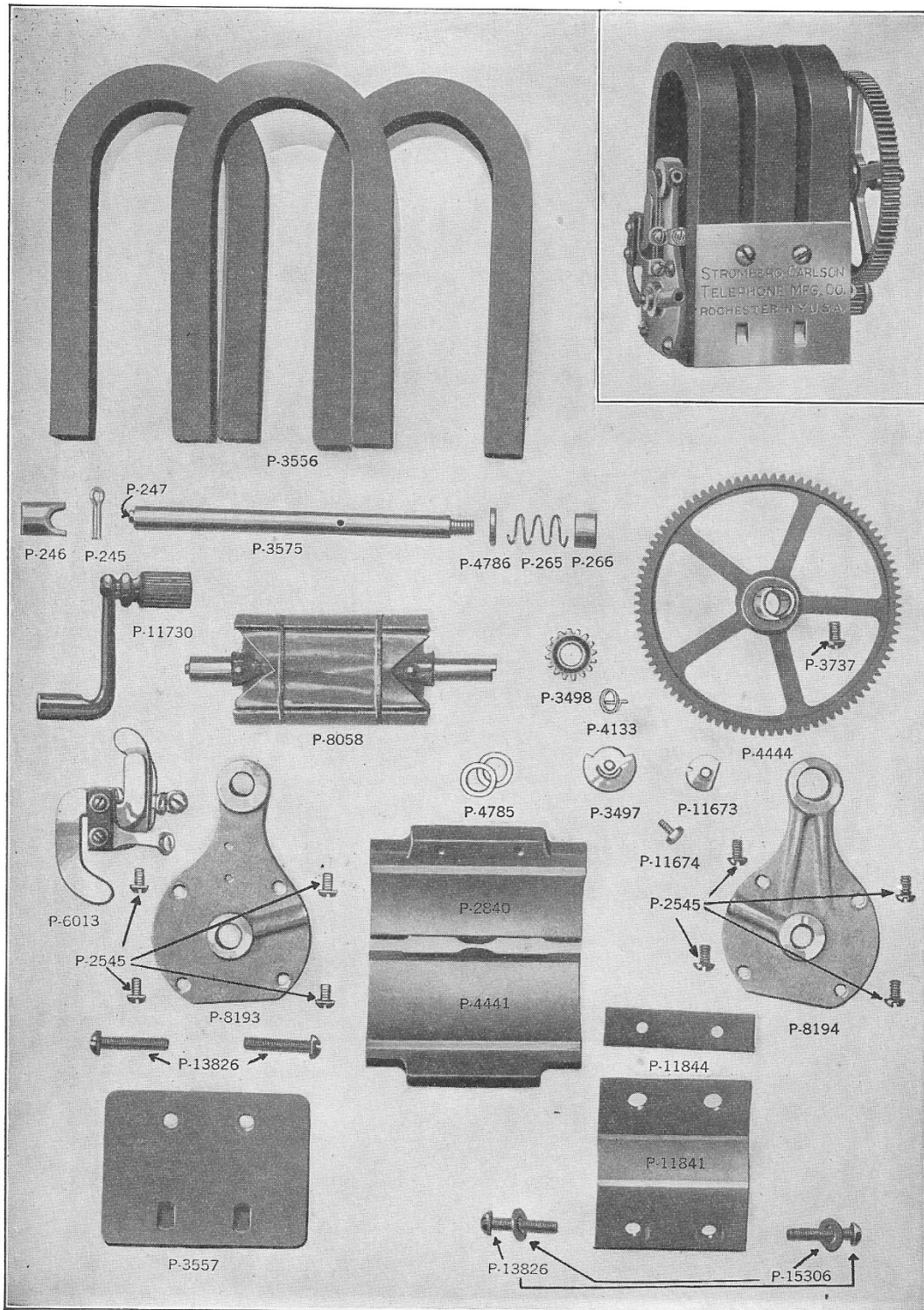
No. 14 Drop Blank



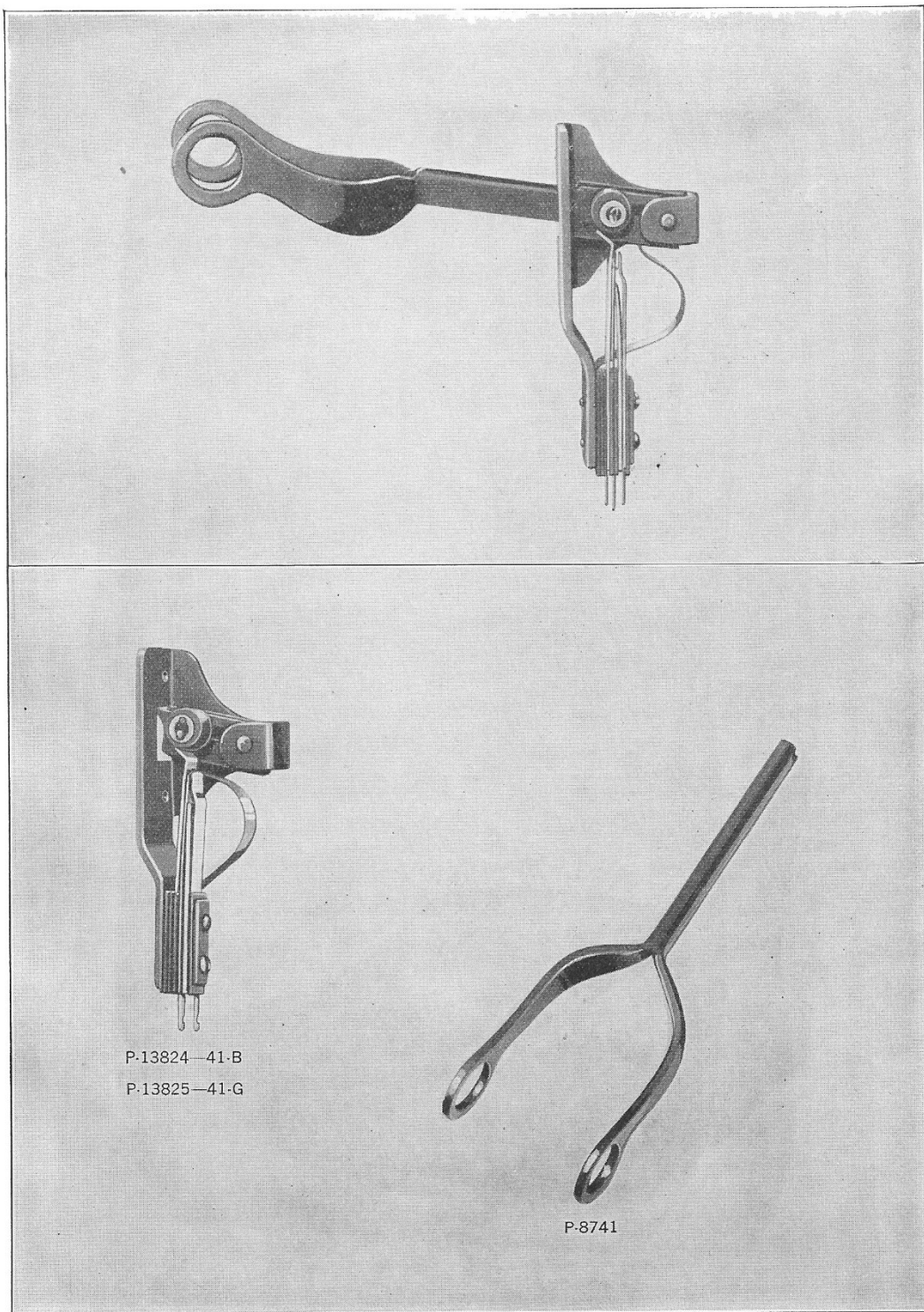
No. 11 Drop



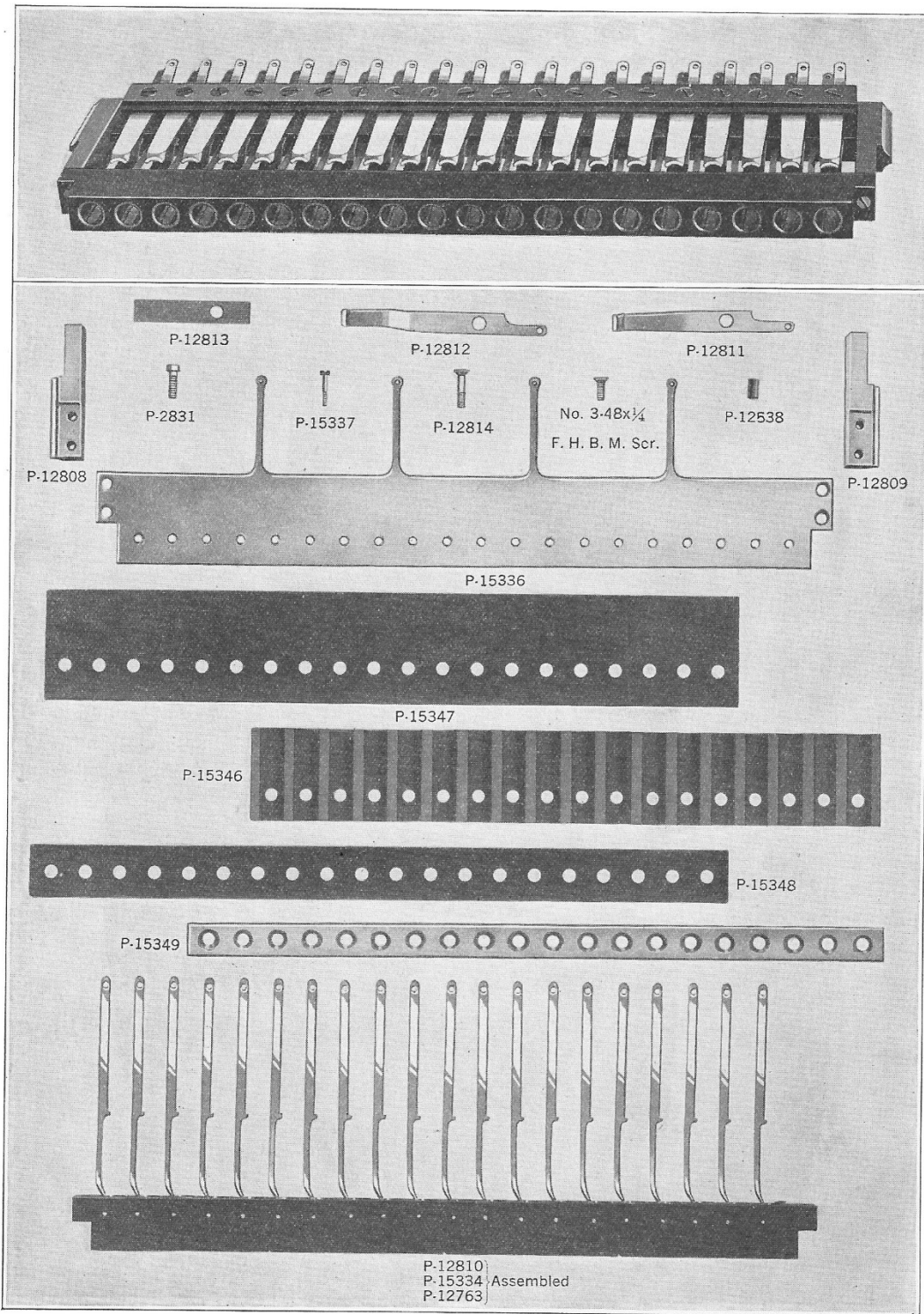
No. 38 Generator



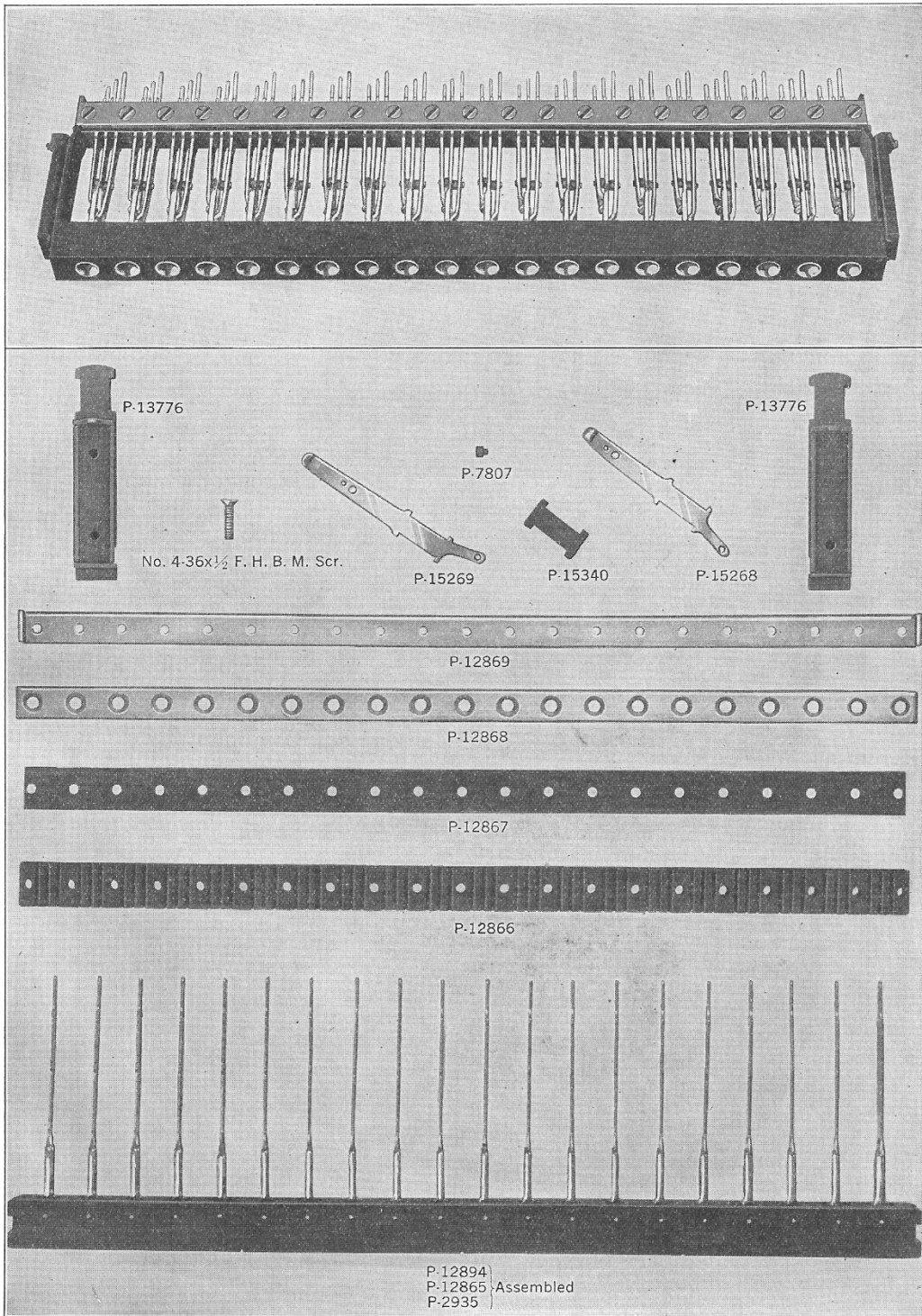
No. 53 Generator



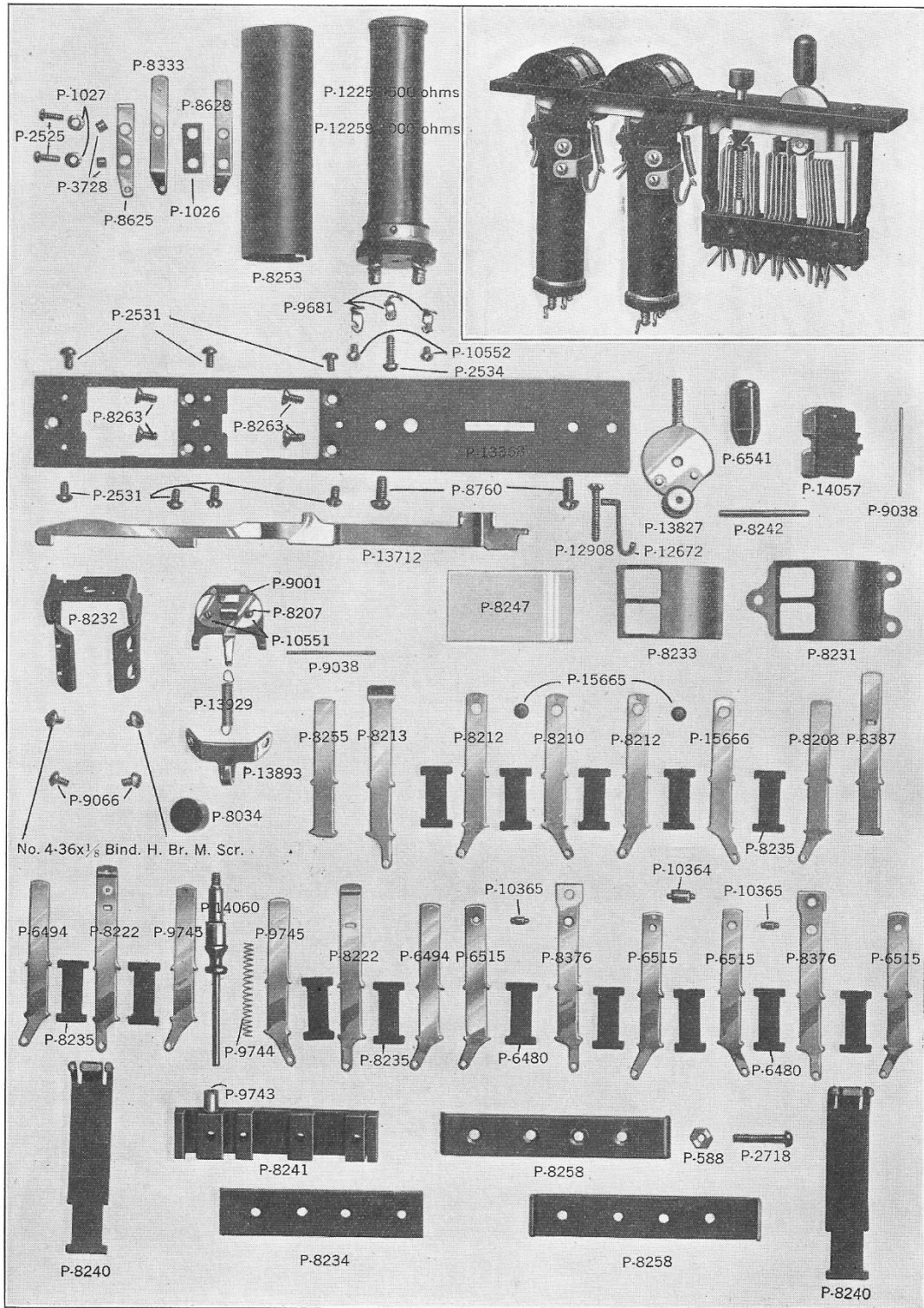
No. 41 Hookswitch



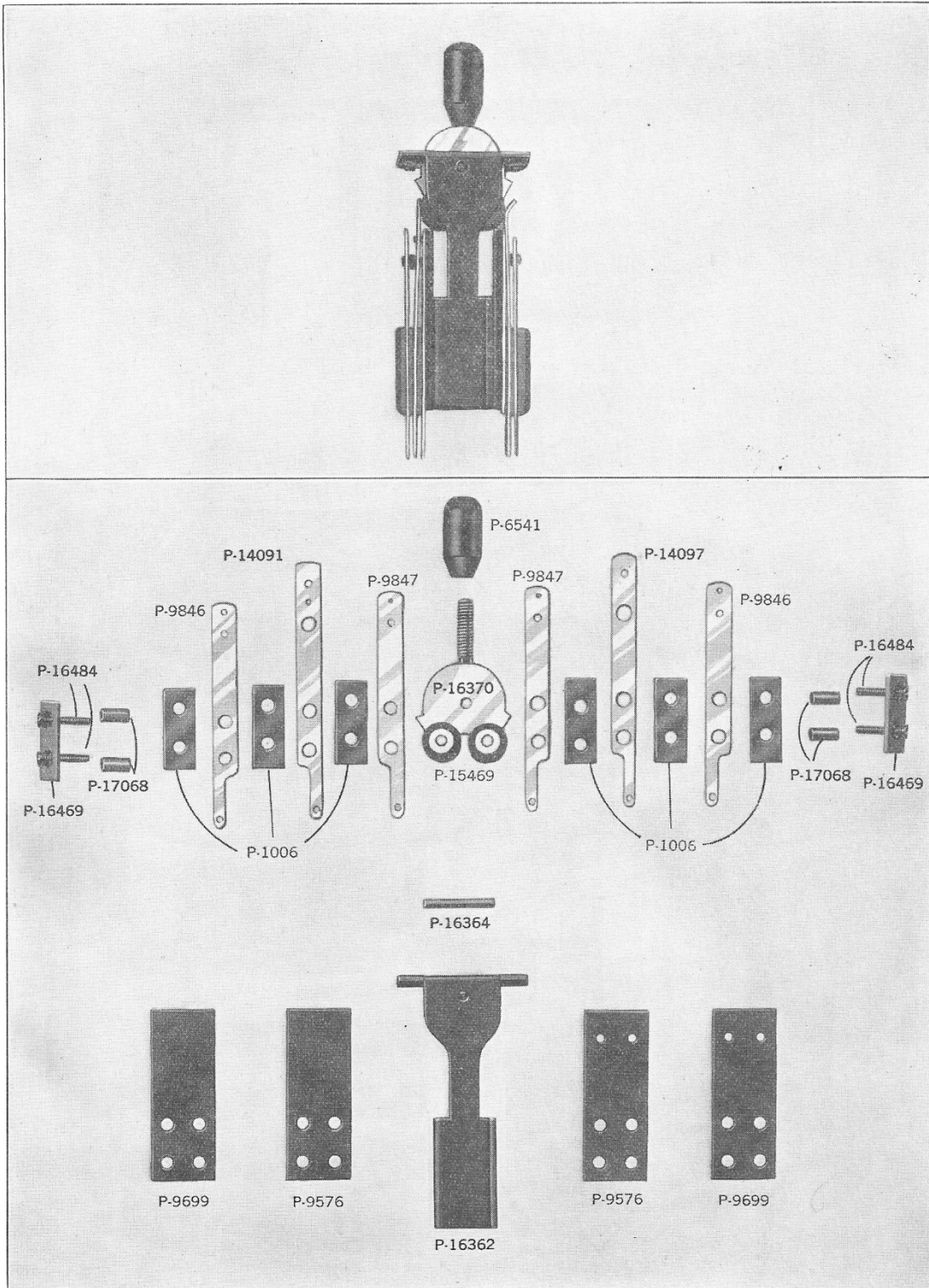
No. 127 Jack



No. 130 Jack, No. 81 Mounting

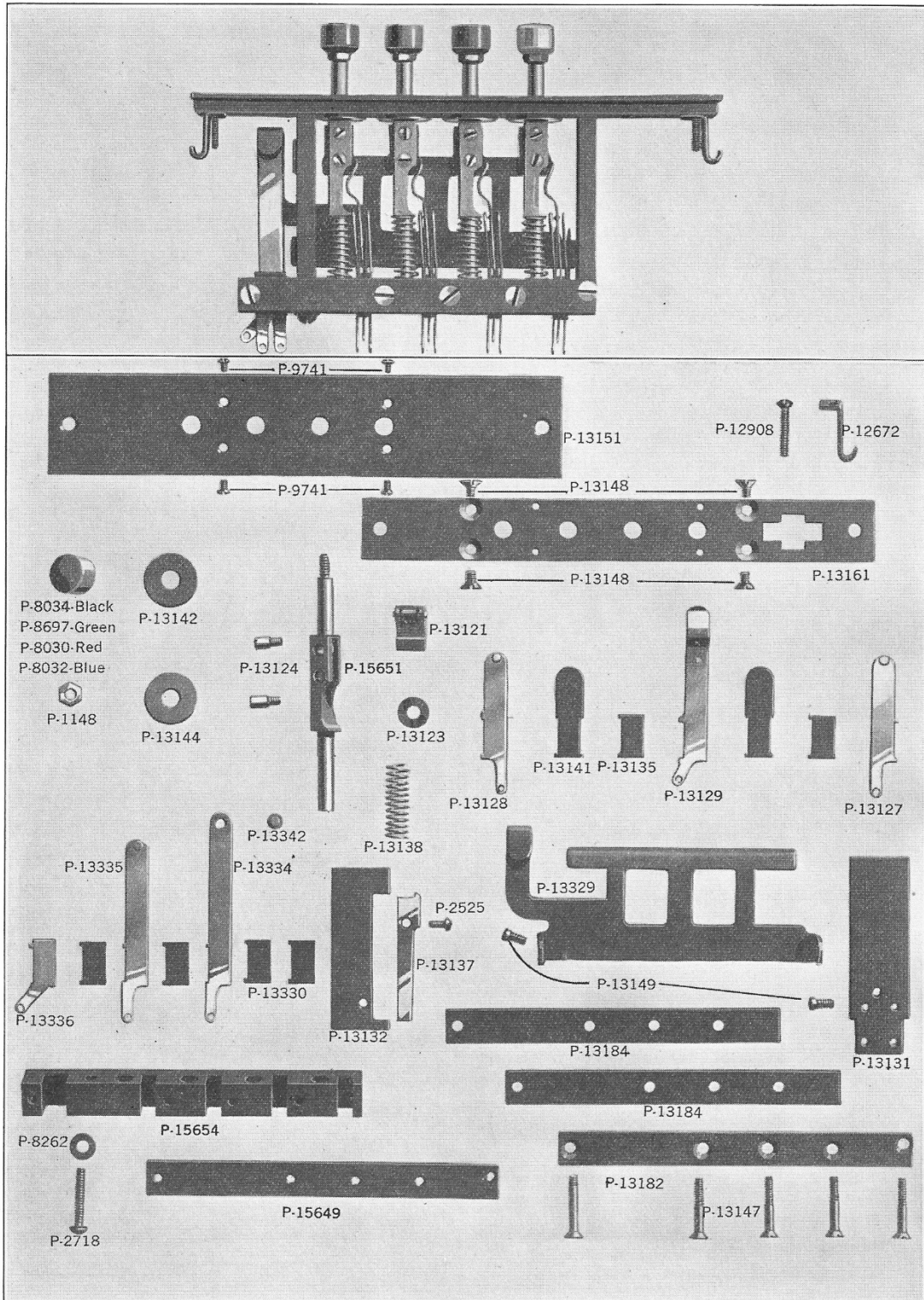


No. 169 Key

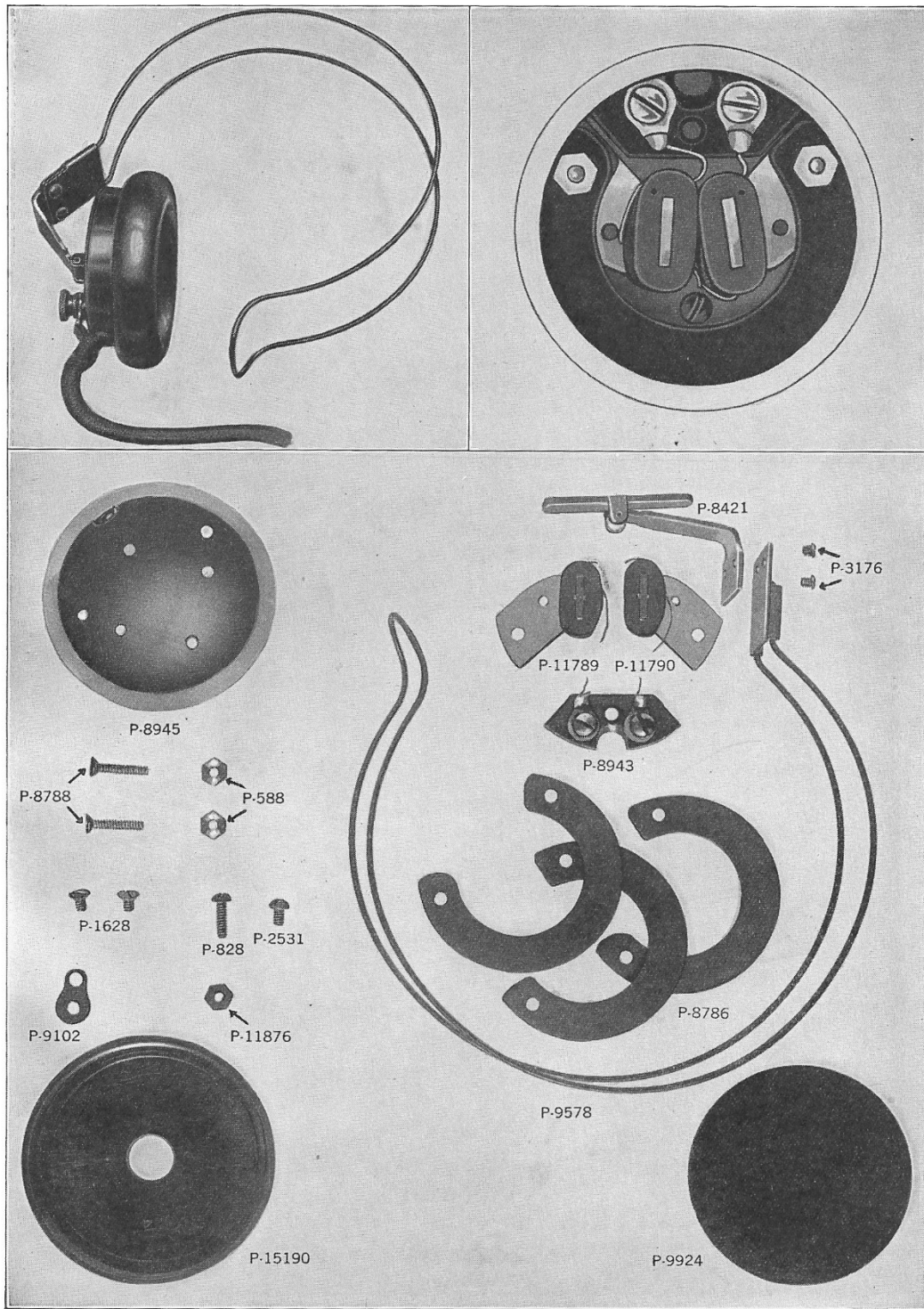


No. 170 Type Key

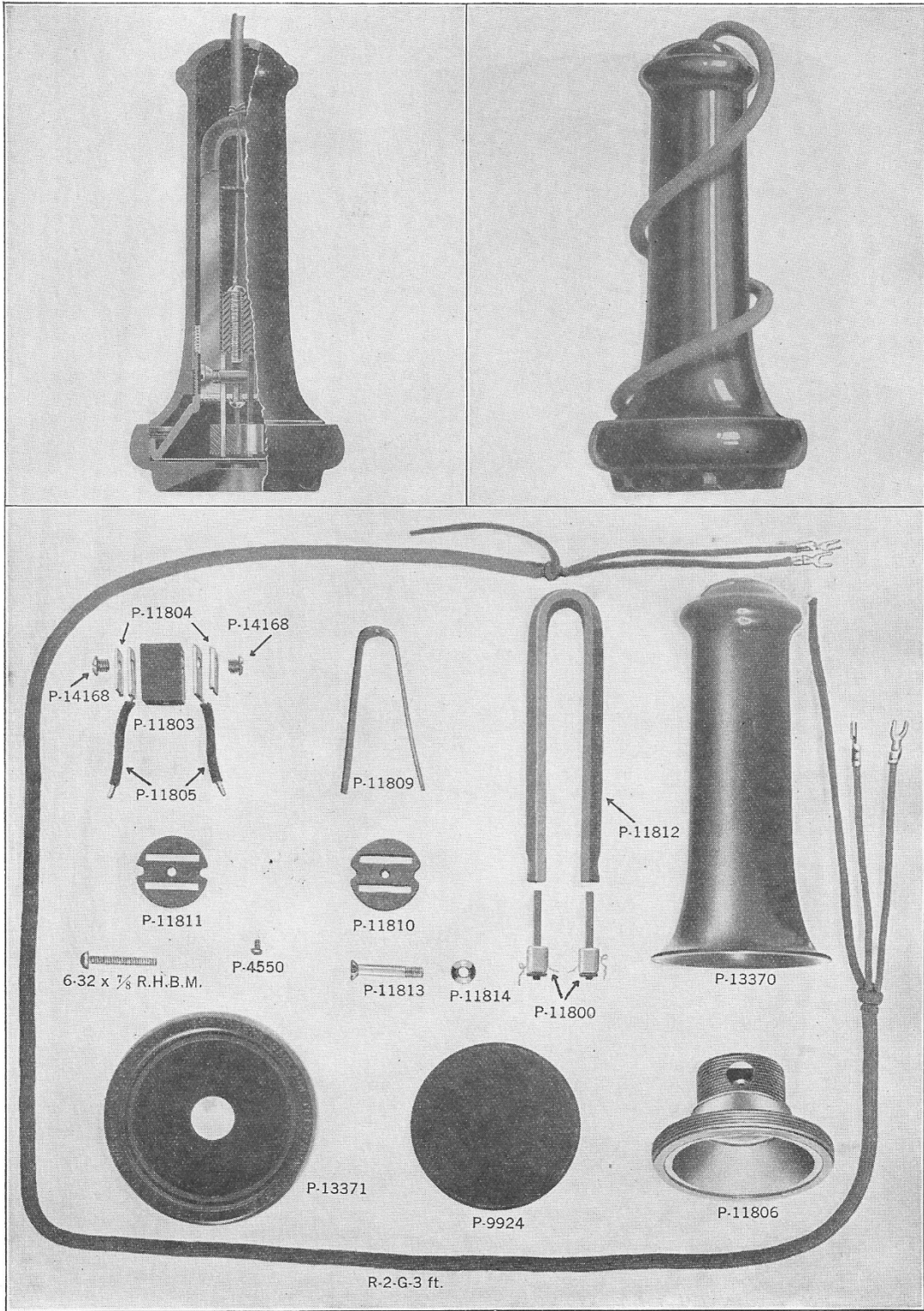
Owing to the great number of different spring combinations used on the No. 170 Type Key, it is advisable to send in the broken or worn spring as a sample when ordering



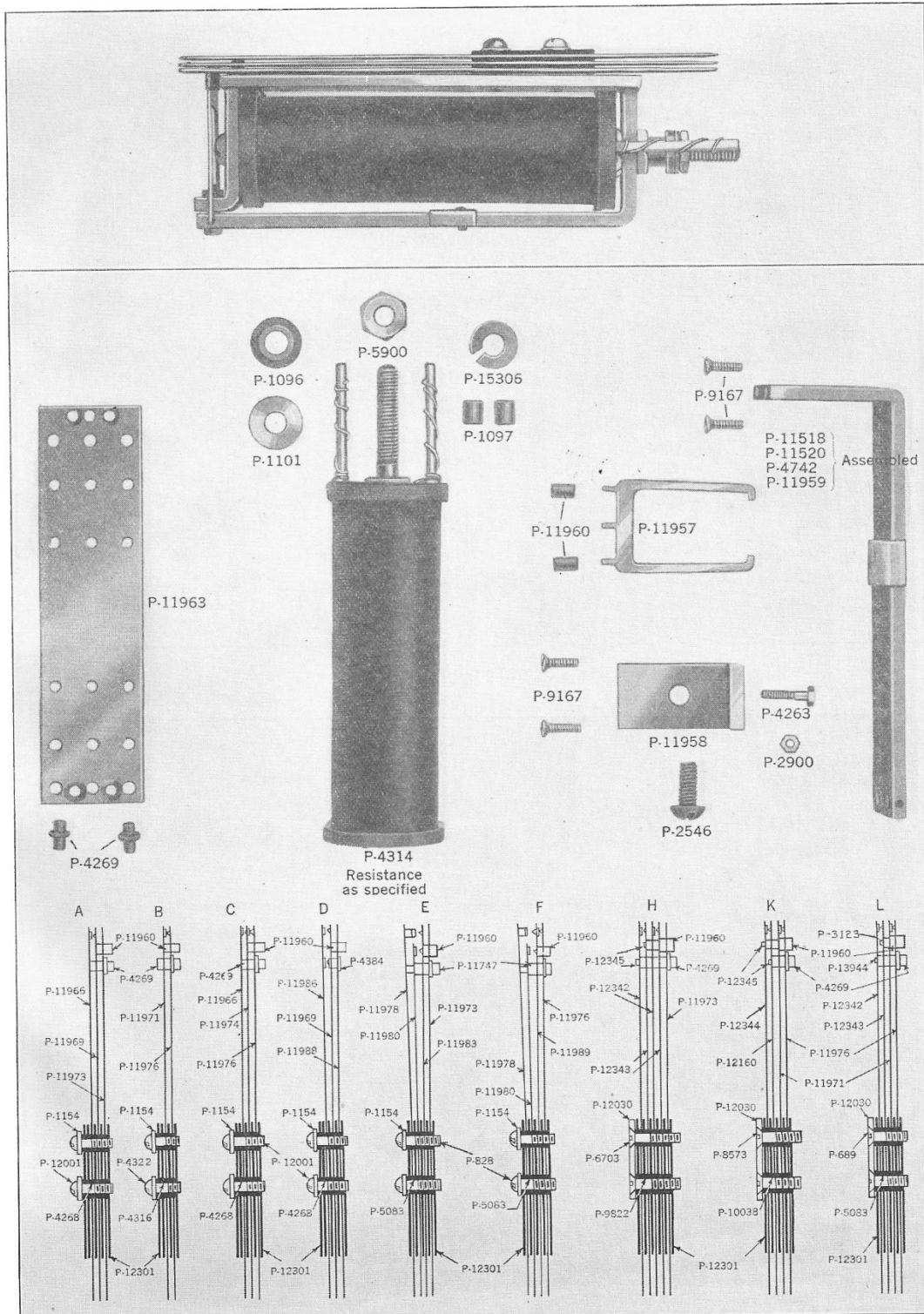
No. 200 Key



No. 20-A Receiver

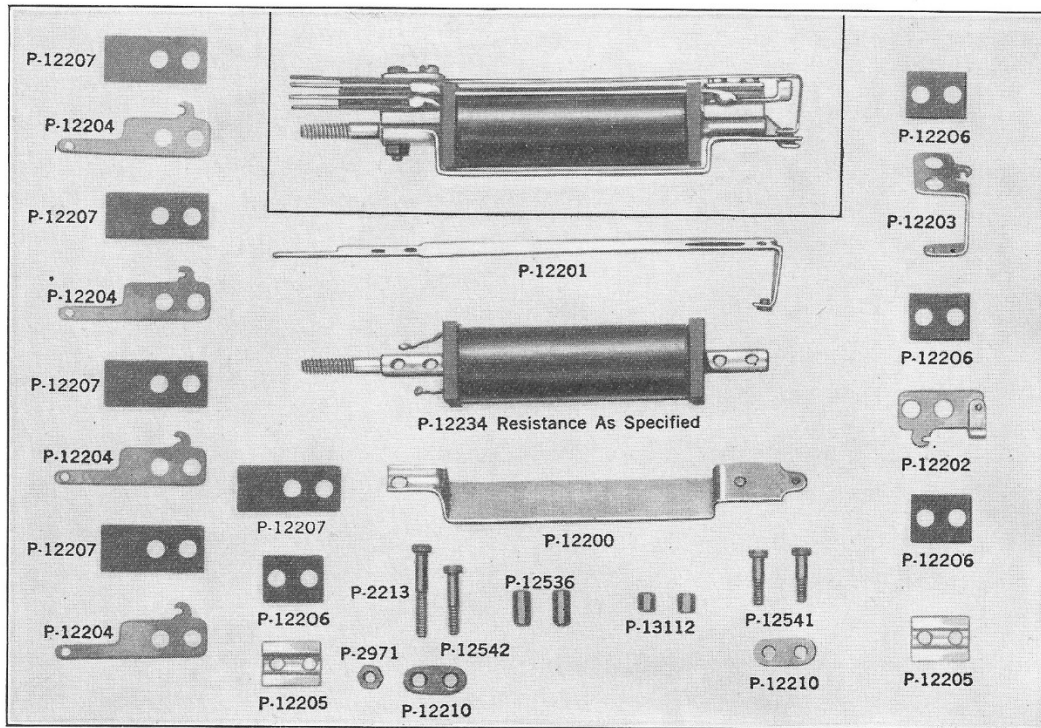


No. 27-A Receiver

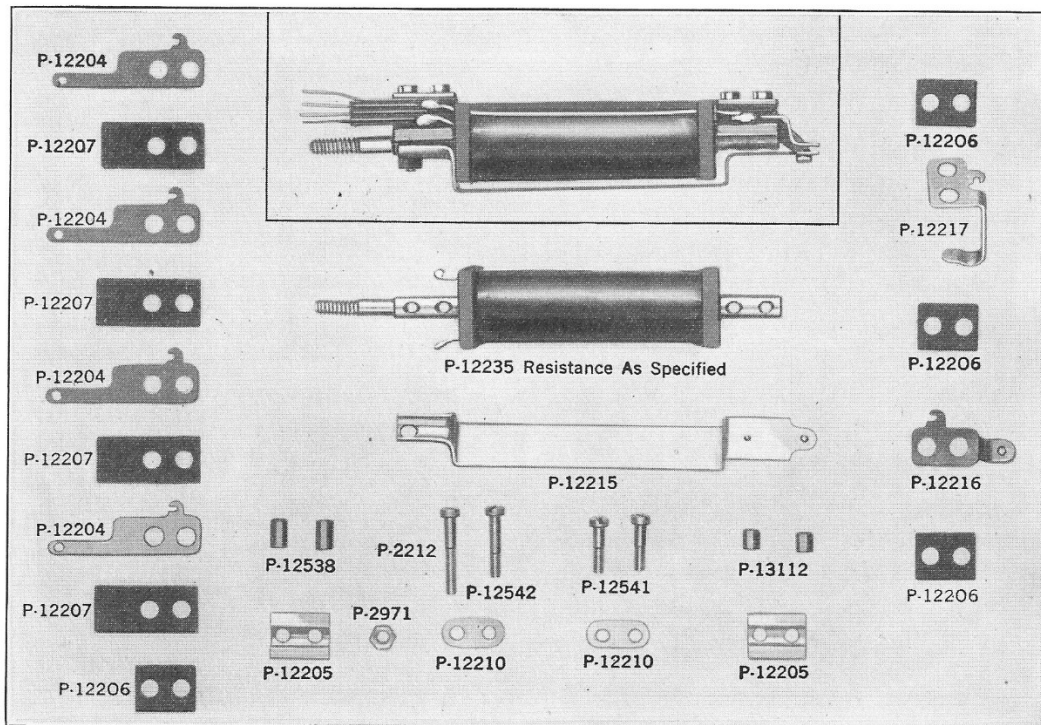


No. 150 Relay

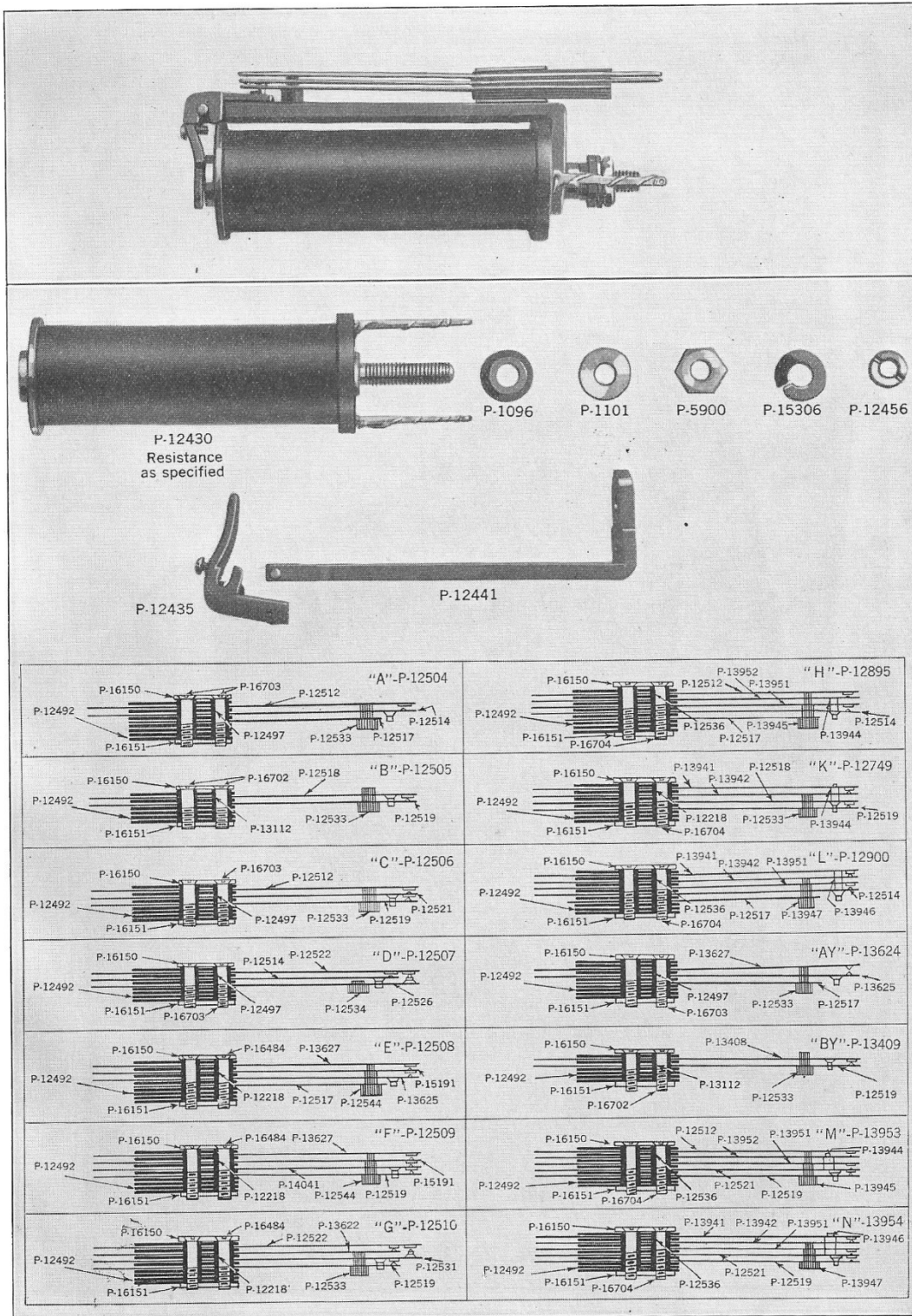
NOTE: Manufacture of this Relay has been discontinued. However, repair parts may be furnished.



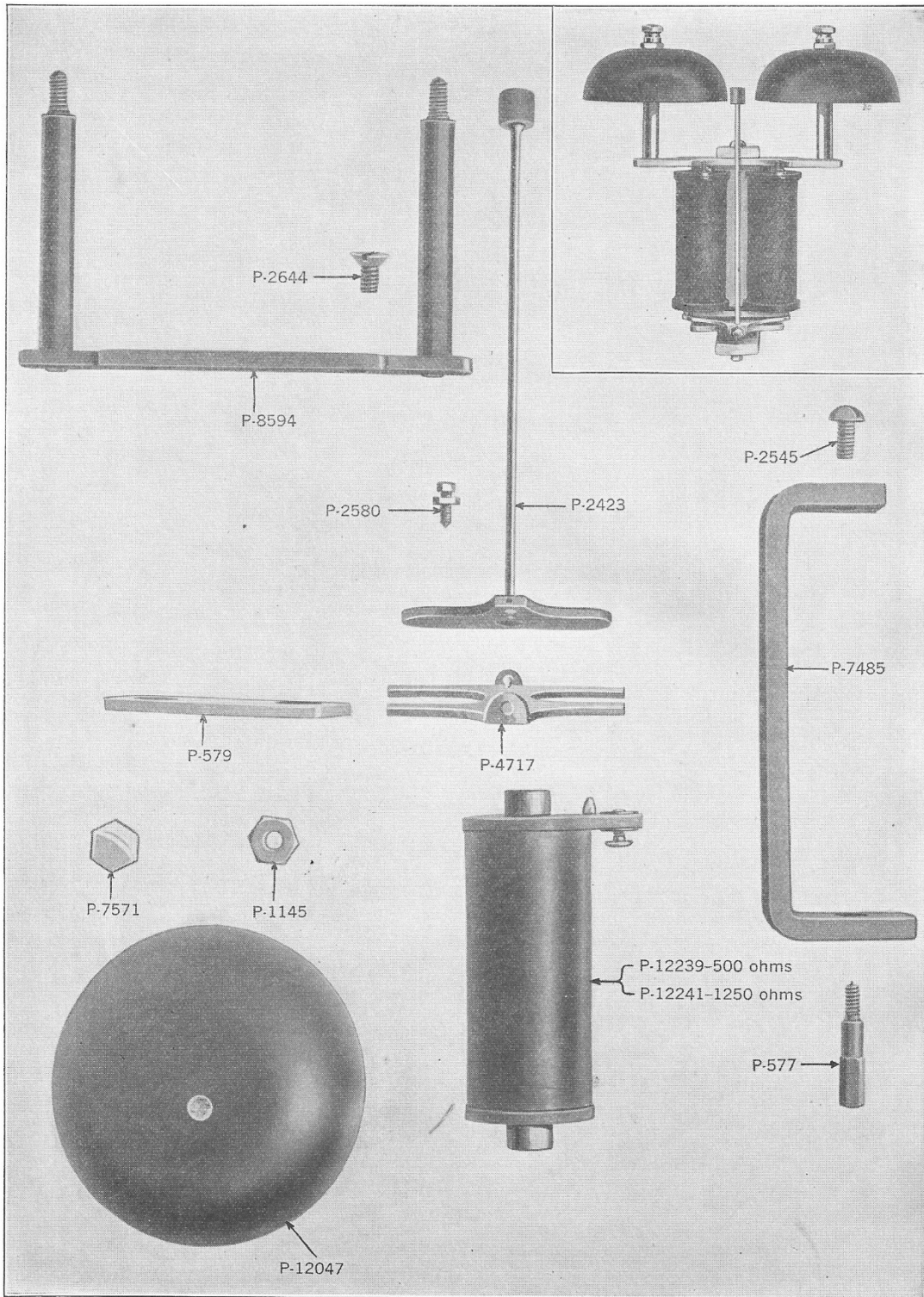
No. 193-BB Relay



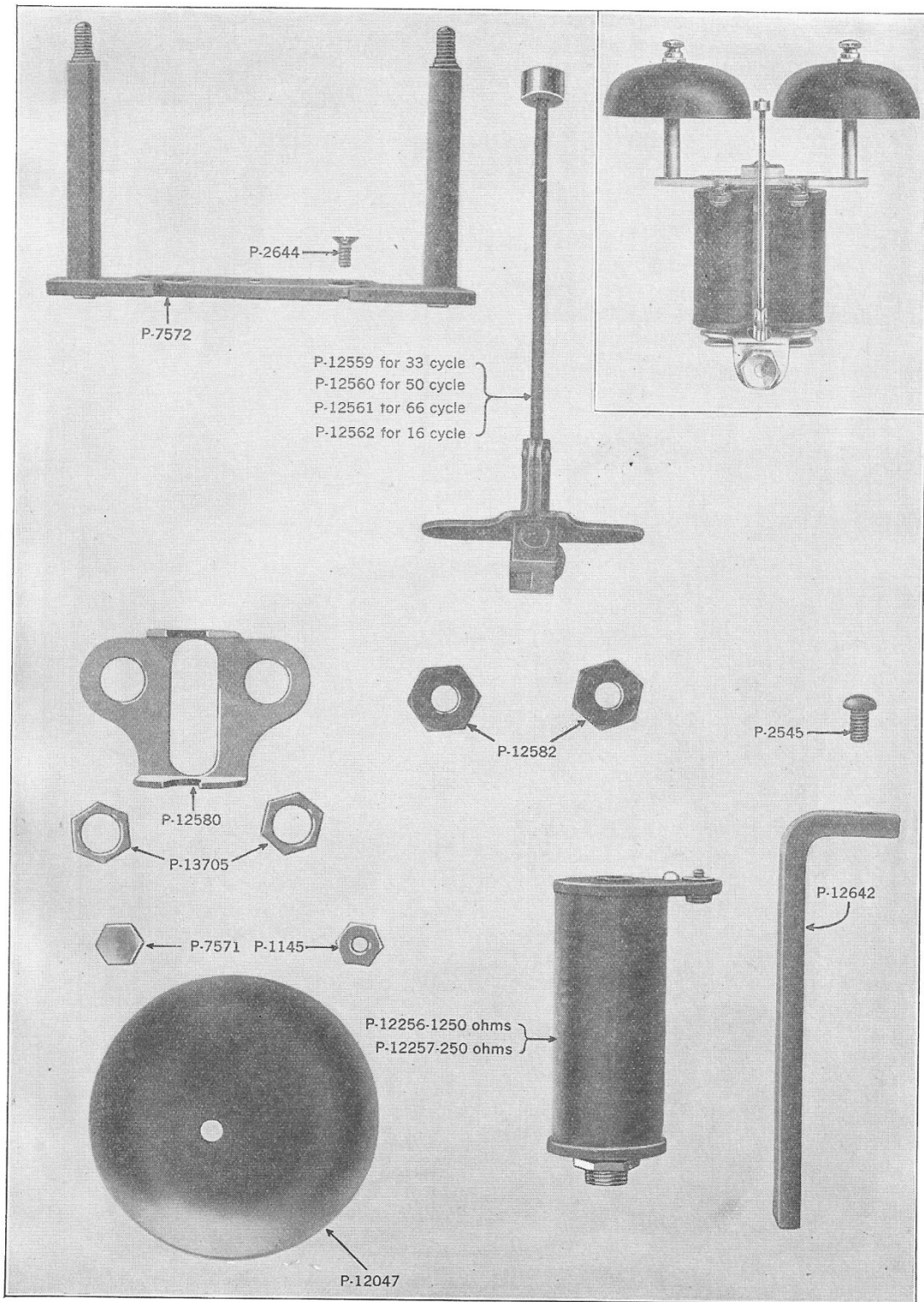
No. 194-A Relay



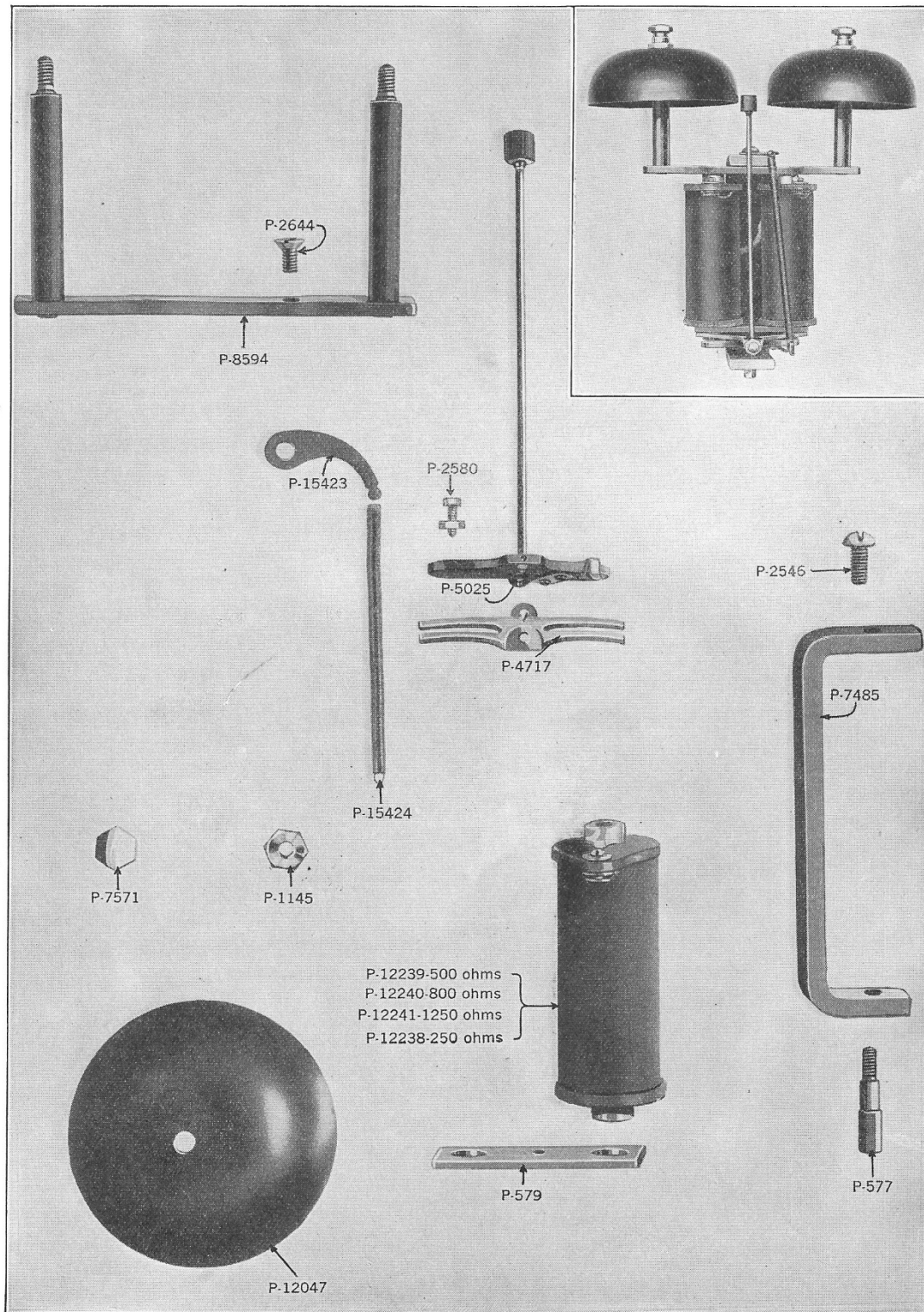
No. 200 Relay



No. 46 Ringer



No. 47 Ringer



No. 49 Ringer

Parcel Post Chart—Zones

Weight in Pounds	Local (See Note 1)	1st up to 50 miles	2nd 50 to 150 miles	3rd 150 to 300 miles	4th—300 to 600 miles	5th—600 to 1000 miles	6th—1000 to 1400 miles	7th—1400 to 1800 miles	8th over 1800 miles
1	\$0.07	\$0.07	\$0.07	\$0.08	\$0.08	\$0.09	\$0.10	\$0.12	\$0.13
2	.08	.08	.08	.10	.12	.15	.18	.22	.25
3	.08	.09	.09	.12	.16	.21	.26	.32	.37
4	.09	.10	.10	.14	.20	.27	.34	.42	.49
5	.09	.11	.11	.16	.24	.33	.42	.52	.61
6	.10	.12	.12	.18	.28	.39	.50	.62	.73
7	.10	.13	.13	.20	.32	.45	.58	.72	.85
8	.11	.14	.14	.22	.36	.51	.66	.82	.97
9	.11	.15	.15	.24	.40	.57	.74	.92	1.09
10	.12	.16	.16	.26	.44	.63	.82	1.02	1.21
11	.12	.17	.17	.28	.48	.69	.90	1.12	1.33
12	.13	.18	.18	.30	.52	.75	.98	1.22	1.45
13	.13	.19	.19	.32	.56	.81	1.06	1.32	1.57
14	.14	.20	.20	.34	.60	.87	1.14	1.42	1.69
15	.14	.21	.21	.36	.64	.93	1.22	1.52	1.81
16	.15	.22	.22	.38	.68	.99	1.30	1.62	1.93
17	.15	.23	.23	.40	.72	1.05	1.38	1.72	2.05
18	.16	.24	.24	.42	.76	1.11	1.46	1.82	2.17
19	.16	.25	.25	.44	.80	1.17	1.54	1.92	2.29
20	.17	.26	.26	.46	.84	1.23	1.62	2.02	2.41
21	.17	.27	.27	.48	.88	1.29	1.70	2.12	2.53
22	.18	.28	.28	.50	.92	1.35	1.78	2.22	2.65
23	.18	.29	.29	.52	.96	1.41	1.86	2.32	2.77
24	.19	.30	.30	.54	1.00	1.47	1.94	2.42	2.89
25	.19	.31	.31	.56	1.04	1.53	2.02	2.52	3.01
26	.20	.32	.32	.58	1.08	1.59	2.10	2.62	3.13
27	.20	.33	.33	.60	1.12	1.65	2.18	2.72	3.25
28	.21	.34	.34	.62	1.16	1.71	2.26	2.82	3.37
29	.21	.35	.35	.64	1.20	1.77	2.34	2.92	3.49
30	.22	.36	.36	.66	1.24	1.83	2.42	3.02	3.61
31	.22	.37	.37	.68	1.28	1.89	2.50	3.12	3.73
32	.23	.38	.38	.70	1.32	1.95	2.58	3.22	3.85
33	.23	.39	.39	.72	1.36	2.01	2.66	3.32	3.97
34	.24	.40	.40	.74	1.40	2.07	2.74	3.42	4.09
35	.24	.41	.41	.76	1.44	2.13	2.82	3.52	4.21
36	.25	.42	.42	.78	1.48	2.19	2.90	3.62	4.33
37	.25	.43	.43	.80	1.52	2.25	2.98	3.72	4.45
38	.26	.44	.44	.82	1.56	2.31	3.06	3.82	4.57
39	.26	.45	.45	.84	1.60	2.37	3.14	3.92	4.69
40	.27	.46	.46	.86	1.64	2.43	3.22	4.02	4.81
41	.27	.47	.47	.88	1.68	2.49	3.30	4.12	4.93
42	.28	.48	.48	.90	1.72	2.55	3.38	4.22	5.05
43	.28	.49	.49	.92	1.76	2.61	3.46	4.32	5.17
44	.29	.50	.50	.94	1.80	2.67	3.54	4.42	5.29
45	.29	.51	.51	.96	1.84	2.73	3.62	4.52	5.41
46	.30	.52	.52	.98	1.88	2.79	3.70	4.62	5.53
47	.30	.53	.53	1.00	1.92	2.85	3.78	4.72	5.65
48	.31	.54	.54	1.02	1.96	2.91	3.86	4.82	5.77
49	.31	.55	.55	1.04	2.00	2.97	3.94	4.92	5.89
50	.32	.56	.56	1.06	2.04	3.03	4.02	5.02	6.01
51	.32	.57	.57	1.08					
52	.33	.58	.58	1.10					
53	.33	.59	.59	1.12					
54	.34	.60	.60	1.14					
55	.34	.61	.61	1.16					
56	.35	.62	.62	1.18					
57	.35	.63	.63	1.20					
58	.36	.64	.64	1.22					
59	.36	.65	.65	1.24					
60	.37	.66	.66	1.26					
61	.37	.67	.67	1.28					
62	.38	.68	.68	1.30					
63	.38	.69	.69	1.32					
64	.39	.70	.70	1.34					
65	.39	.71	.71	1.36					
66	.40	.72	.72	1.38					
67	.40	.73	.73	1.40					
68	.41	.74	.74	1.42					
69	.41	.75	.75	1.44					
70	.42	.76	.76	1.46					

Note 1—The local rate applies to parcels mailed under the following conditions: (a) at any city post office for local delivery at such office; (b) at any city letter carrier office, or at any point within its delivery limits, for delivery by carriers from that office; (c) at any post office from which a rural route starts, or when mailed at any point on a rural route for delivery at any other point thereon, or at the office from which the route starts, or for delivery on any other rural route starting from the same office.

Note 2—The limit of weight has been increased from 50 pounds to 70 pounds in the Local, First, Second and Third Zones. Fifty pounds is the limit weight in the Fourth to Eighth Zones.

DIMENSIONS—The combined length and girth of a package is not to exceed 84 inches.

INSURANCE FEES—5c. for \$5.00; 8c. for \$25; 10c. for \$50, and 25c. for \$100.

C. O. D.—Parcels may be sent C. O. D. to Money Order Post Offices on payment of addition to regular postage, i. e.: 12c.—\$10, 15c.—\$50, 25c.—\$100. All C. O. D. parcels are insured without additional cost.

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