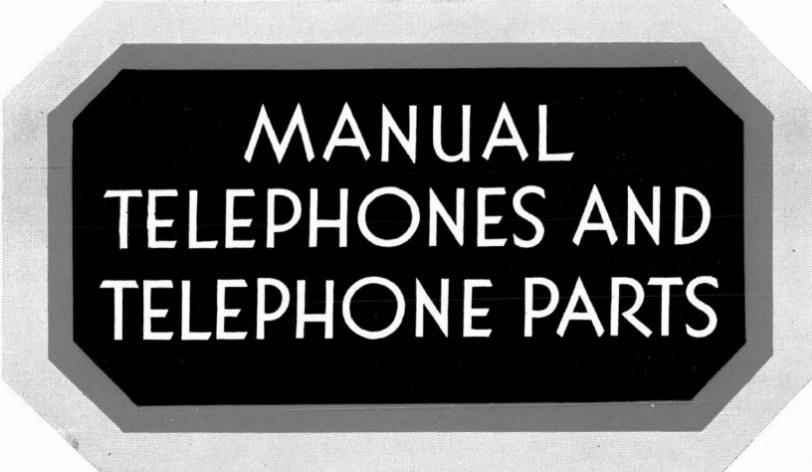




AM  
EL  
®



MANUAL  
TELEPHONES AND  
TELEPHONE PARTS

CATALOGUE 5002

Made by

AMERICAN ELECTRIC COMPANY  
CHICAGO, U. S. A.

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# Manual Telephones and Parts

## Central Battery Telephones

### The Monophone

#### Monophone Desk Sets

The three Monophone desk sets for central battery service, shown hereafter, are similar in design and construction but use different circuits. The No. 5-A Monophone uses a booster coil circuit and requires a special bell box. The No. 15-A Monophone has an induction coil receiver and may be used with any existing bell-box. The No. 7 Monophone has an induction coil and condenser mounted in the base and may also be used with any installed ringer box. See Page 9 for ringer boxes.



Monophone Desk Set  
No. 5-A and No. 15-A

#### The No. 5-A Monophone (Requires Ringer Box No. 7006)

Monophone Desk Set No. 5-A uses a booster-type anti-sidetone circuit. The base is of black japanned brass and contains the bakelite terminal strip, to which the Monophone switch and handpiece are connected.

	Code No.
Desk Set Complete - - - - -	501
Desk Stand Only - - - - -	502
Ringer Box - - - - -	7006

When ordering, specify ringer frequency desired.

#### No. 5-A Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-900-AO
Monophone Switch - - - - -	D-730474-A
Connecting Cord - - - - -	D-542273-A

#### The No. 7 Monophone (Uses Conventional Ringer Box)

The practical advantages offered by the No. 7 or Two-Conductor Monophone have led many telephone companies to adopt it as their standard telephone. In appearance, it is similar to the Nos. 5-A and 15-A Monophones, differing only in that the base is raised one inch for mounting an induction coil and condenser. The incorporation of these parts in the desk stand permits this instrument to be used with any ringer box—or, for extension service, to be attached directly to the line.

	Code No.
Desk Set Complete - - - - -	701
Desk Stand Only - - - - -	702
Ringer Box - - - - -	7004

When ordering, specify ringer frequency desired.

#### The No. 15-A Monophone (Uses Conventional Ringer Box)

The No. 15-A Monophone has the same appearance as the No. 5-A Monophone but uses a unique type of receiver. This receiver contains an induction coil which performs the same functions as the special induction coil in the ringer box used with the 5-A Monophone. Since no external induction coil is necessary, a series type ringer box may be used.

	Code No.
Desk Set Complete - - - - -	1501
Desk Stand Only - - - - -	1502
Ringer Box Used with Above Desk Stand - - - - -	7004

When ordering, specify ringer frequency desired.

#### No. 15-A Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-903-AO
Monophone Switch - - - - -	D-730474-A
Connecting Cord - - - - -	D-542275-A
Resistance Coil - - - - -	D-281634-A



The No. 7 or Two-Conductor Monophone

#### No. 7 Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-900-AO
Monophone Switch - - - - -	D-730247-A
Induction Coil - - - - -	D-281201-A
Condenser - - - - -	AC-18530
Connecting Cord - - - - -	D-541871-A

# Manual Telephones and Parts

## Central Battery Telephones—The Monophone (Continued)



Monophone Wall Set  
No. 6 and No. 16

### Monophone Wall Sets Nos. 6 and 16

The Monophone wall sets have a feature of convenience found in no other wall set because the transmitter and receiver are combined in one unit and it is not necessary for the user to stand during a conversation. He may be seated anywhere within a cord's length of the wall box. These sets may be mounted on the side of a desk or anywhere within reach—thus keeping the top of the desk clear.

The wall set consists of a Monophone cradle mounted on a black-japanned steel ringer box, of the enclosed-gong type. Installed, complete with hand unit, it is 12 inches high and 9 inches wide, and projects 4 inches from the mounting surface.

#### The No. 6 Monophone

Monophone wall set No. 6 is wired in accordance with the booster circuit, with the induction coil mounted in the ringer box.

Code No.

Monophone Wall Set - - - - - 601

When ordering, specify ringer frequency desired.

#### No. 6 Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-900-AO
Monophone Switch - - - - -	D-730474-A
Induction Coil and Terminal Strip - - - - -	D-281900-A
Condenser - - - - -	D-6897
Condenser Bracket - - - - -	D-73684
Cover Terminal Strip - - - - -	D-15515-A

#### The No. 16 Monophone

The No. 16 Monophone has an induction coil receiver.

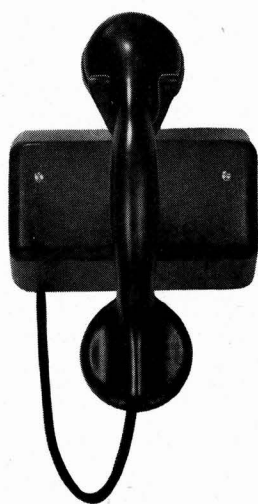
Code No.

Monophone Wall Set - - - - - 1601

When ordering, specify ringer frequency desired.

#### No. 16 Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-903-AO
Monophone Switch - - - - -	D-730474-A
Resistance Coil - - - - -	D-281634-A
Condenser - - - - -	D-6897
Condenser Bracket - - - - -	D-73684
Base Terminal Strip - - - - -	D-15513-A
Cover Terminal Strip - - - - -	D-15515-A



Monophone Extension Set  
No. 4 and No. 14

### Monophone Extension Sets Nos. 4 and 14

These sets are used for extension service on any central battery telephone. Since they are intended for such use only, they do not have a ringer. The elimination of this item permits making the extension set extremely compact. These sets consist of a bakelite wall box on the top of which is mounted a fork for holding the hand unit. When the unit is in place, it rests against the push-rod of the Monophone switch, holding the springs open. The wall box requires only a space  $3\frac{3}{4}$  inches by  $5\frac{1}{4}$  inches in size, so that it may be easily mounted in any location at which the ringer of the main telephone is audible.

#### The No. 4 Monophone

Monophone extension set No. 4 has an induction coil in the wall box.

Code No.

Monophone Extension Set - - - 401

#### No. 4 Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-900-AO
Monophone Switch - - - - -	D-730514-A
Terminal Strip - - - - -	D-15513-A
Induction Coil - - - - -	D-281901-A
Condenser - - - - -	D-6897

#### The No. 14 Monophone

Monophone extension set No. 14 uses an induction-coil-type receiver.

Code No.

Monophone Extension Set - - - 1401

#### No. 14 Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-903-AO
Monophone Switch - - - - -	D-730518-A
Terminal Strip - - - - -	D-15513-A
Resistance Coil - - - - -	D-281634-A
Condenser - - - - -	D-6897

# Manual Telephones and Parts

## Central Battery Telephones—(Continued)

### Type 21 Telephones

#### The Type 21 Desk Set

The overall height of this telephone is 11½ inches and the diameter of the base is 5⅝ inches. Easy accessibility to the terminal block in the base is obtained by loosening a single "non-losable" screw. The removal of another screw permits the withdrawal of the hookswitch for inspection. joint similar in appearance to a ball-and-socket joint. Furnished with a six-foot cord. Ringer Boxes are shown on Page 9. The desk set uses the booster type circuit.

	Code No.
Desk Set Complete - - - - -	- 2104
Desk Stand Only - - - - -	- 2108
Ringer Box - - - - -	- 7001

When ordering, specify ringer frequency desired.

#### Type 21 Desk Stand Parts

	Code No.		Code No.
Receiver - - - - -	D-5164-A	Desk Set Cord - - - - -	D-542275-A
Hooksprings and Mounting - - - - -	D-78279-A	Transmitter - - - - -	D-38201-A
Plate - - - - -		Base Terminal Strip - - - - -	D-15381-A



Type 21 Desk Stand

#### The Type 21 Wall Set

The base and cover of the wall set are of steel, finished in durable black japan. The transmitter is mounted on the cover by a hinge similar to that used on the desk telephone. The cover, opened by merely turning a screw, may be readily removed after loosening a locking plate. The terminal strip is mounted on the induction coil and all connections are made to it so that any necessary changes may be made without disturbing the interior wiring of the set. The booster circuit is used.

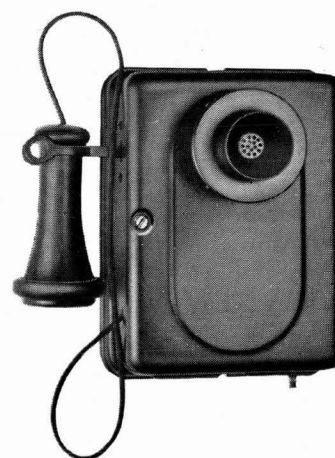
The wall set is 10 inches wide, and 9⅝ inches high, and 7½ inches deep, including the transmitter and receiver. It can be mounted on a surface 7¼ inches by 9⅝ inches in size.

	Code No.
Wall Telephone Set - - - - -	2113

When ordering, specify ringer frequency desired.

#### Type 21 Wall Set Parts

	Code No.		Code No.
Receiver - - - - -	D-5164-A	Transmitter - - - - -	D-38201-A
Hooksprings and Bracket - - - - -	D-73683-A	Condenser - - - - -	D-6897
Induction Coil and Terminal Strip - - - - -	D-281899-A	Condenser Bracket - - - - -	D-73684
		Cover Terminal Strip - - - - -	D-15515-A



The Type 21 Wall Set

# Manual Telephones and Parts

## Local Battery Telephones The Monophone



Monophone Desk Set No. 9

### Local Battery Monophone Desk Set No. 9

Monophone Desk Stand No. 9 must be used with special ringer boxes as listed.

	Code No.
Complete with Ringer Box—3 bar generator—1000 ohm ringer	- - - 901
Complete with Ringer Box—5 bar generator—1600 ohm ringer	- - - 902
Complete with Ringer Box—5 bar generator—2500 ohm ringer	- - - 903

### No. 9 Monophone Parts

	Code No.
Monophone Hand Unit	- - - - - L-918-AO
Monophone Switch	- - - - - D-730474-A
Connecting Cord—4 Conductor	- - - - - D-542273-A

### Local Battery Monophone Desk Stand No. 19

(Uses Conventional Ringer Box)

This desk stand is identical in appearance with Monophone Desk Stand No. 7 shown on Page 3. It has an induction coil mounted in the base and may be used with any conventional local battery ringer box.



Monophone Desk Set No. 19

	Code No.
Monophone Desk Stand	- - - - - 1902

### Monophone Desk Set No. 8

Monophone Desk Set No. 8 is a complete local battery telephone, including generator and ringer—all combined in a compact table set, only 10 1/4 inches high. The four-conductor cord and terminal block—furnished with each instrument—permits placing the batteries in any desired location. Only the terminal block need be permanently mounted.

The two-bar generator used in this instrument will adequately serve where there are not more than four parties to a line. For long and heavily loaded lines, however, the No. 9 Monophone, shown above is recommended.



Monophone Desk Set No. 8

	Code No.
Desk Set Complete—Including Terminal Block	- - - - - 801

### No. 8 Monophone Parts

	Code No.
Monophone Hand Unit	- - - - - L-918-AO
Monophone Switch	- - - - - D-730240-A
Induction Coil	- - - - - D-281569-A
Generator	- - - - - AC-90124
Ringer	- - - - - MC-56223-D
Connecting Cord—4 Conductor	- - - - - D-542273-A
Terminal Strip	- - - - - MC-1533

# Manual Telephones and Parts

## Local Battery Telephones—The Monophone (Continued)

### Monophone Wall Set No. 10

Consists of a cradle-rest, which holds the Monophone hand unit, mounted on a steel wall box containing ringer, two-bar generator and induction coil. The user of this telephone need not stand while talking but may be seated a cord's length from the wall box, a feature that is unobtainable with conventional type local battery wall telephone. As installed, complete with Monophone hand unit, it is 12 inches high and 9 inches wide and projects 4 inches from the mounting surface. Monophone Wall Set No. 10 will be found convenient for mounting on the side of a desk, thus keeping the top of the desk clear.

Although the two-bar generator is especially powerful for its size, this instrument is not recommended where there are more than four parties to a line.

Monophone Wall Set	- - - - -	Code No. 1002
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Monophone Wall Set No. 10

### No. 10 Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-918-AO
Monophone Switch - - - - -	D-730474-A
Generator - - - - -	AC-90124
Induction Coil - - - - -	D-281569-A
Terminal Strip - - - - -	D-15513-A
Ringer—1000 ohm - - - - -	MC-56230-D

### Monophone Extension Set No. 17

Similar to No.'s 4 and 14 Monophones, shown on page 4. Since this set is for extension service only it does not contain a ringer or generator. It is 8¾ inches high, 5½ inches long and projects 4¾ inches from the wall. Requires only a space of 3¾ inches by 5½ inches in size for mounting.

Monophone Extension Set	- - - - -	Code No. 1702
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### No. 17 Monophone Parts

	Code No.
Monophone Hand Unit - - - - -	L-918-AO
Induction Coil - - - - -	D-281569-A
Terminal Strip - - - - -	D-15513-A
Monophone Switch - - - - -	D-730518-A



Monophone Extension Set  
No. 17

# Manual Telephones and Parts

## Local Battery Telephones—(Continued)

### Type 200 Telephones

#### The Type 200 Desk Set

The Type 200 Desk Stand is generally similar to the Type 21 central battery instrument.

Ringer boxes are finished in either golden oak or ebony black finish. State which is desired when ordering.



Type 200 Desk Set

	Code No.
Desk Set complete with Ringer Box, 3 bar generator—1000 ohm ringer	- - - 201
Desk Set complete with Ringer Box, 5 bar generator—1600 ohm ringer	- - - 202
Desk Set complete with Ringer Box, 5 bar generator—2500 ohm ringer	- - - 203
Desk Stand Only	- - - 205

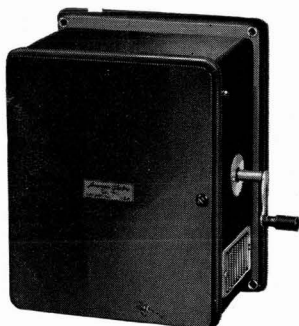
#### Type 200 Desk Set Parts

	Code No.		Code No.
Transmitter	- - - D-38218-A	Generator—3 bar	- - AC-9092
Receiver	- - - D-5164-A	5 bar	- - AC-90116
Hookspgs. and Mtg. Plate	- D-78279-A	Ringer—1000 ohm	- - MC-56221-D
Desk Set Cord	- - MC-54227	1600 ohm	- - MC-56221-E
Base Terminal Strip	- - D-15381-A	2500 ohm	- - MC-56221-G
Induction Coil	- - MC-2888	Ringer Box Terminal Strip	MP-4696

#### Type 200 Wall Set

The concealment of the ringer, the shorter transmitter arm, and the attractive small cabinet are all features exclusive with this instrument. The individual parts are arranged to preserve the compactness of the instrument but all connections are easily accessible for making any desired changes.

The cabinet is made of quarter sawed oak and finished in either golden oak or ebony black. The overall dimensions are 15 1/4 inches high, 7 1/4 inches wide and 5 1/4 inches deep.



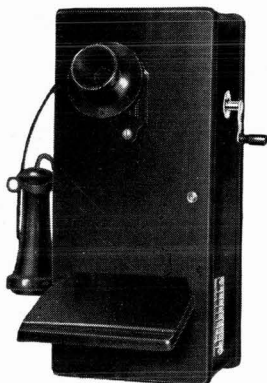
Ringer Box for  
Type 200 Desk Set

	Code No.
Wall Set complete with 3 bar generator—1000 ohm ringer	- - - - - 210
Wall Set complete with 5 bar generator—1600 ohm ringer	- - - - - 211
Wall Set complete with 5 bar generator—2500 ohm ringer	- - - - - 212

Type 200 Wall Set can be furnished with a condenser wired in series with the receiver, or with push button for selective signalling, if so desired. Give Code No. above and state "with condenser" or "with push button." Also state whether golden oak or ebony black finish is desired.

#### Type 200 Wall Set Parts

	Code No.		Code No.
Transmitter Arm		Generator—3 bar	- - AC-9092
Complete	- - - MC-3827	5 bar	- - AC-90116
Receiver	- - - D-5164-A	Ringer—1000 ohm	- - MC-56221-D
Induction Coil	- - - MC-2888	1600 ohm	- - MC-56221-E
		2500 ohm	- - MC-56221-G
		Hookswitch	- - MC-6251



Type 200 Wall Set

# Manual Telephones and Parts

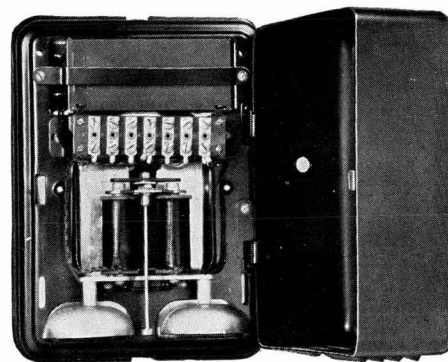
## Ringer Boxes

### Central Battery

These ringer boxes are of standard central battery design and may be used with almost any make of telephone. They are furnished with steel cases which are heavily black-japanned. They are  $9\frac{5}{8}$  inches high,  $7\frac{1}{4}$  inches wide and 4 inches deep. The base of each ringer box, with all its parts, is interchangeable with that of the corresponding Type 21 Wall Telephone.

	Code No.
Ringer Box for Type 21 Desk Stand - - - - -	7001
Ringer Box for 5-A Monophone Desk Stand - - - - -	7006
Ringer Box for 15-A Monophone Desk Stand - - - - -	7004

When ordering state ringer frequency desired.



Interior View of Ringer Box

### Central Battery Ringer Box Parts

	Code No.		Code No.
Induction Coil—		Condenser - - - - -	D-6897
Two-winding - - - - -	D-281897-A	Condenser Bracket - - - - -	D-73684
Induction Coil—		Terminal Strip - - - - -	D-15513-A
Three-winding - - - - -	D-281901-A		

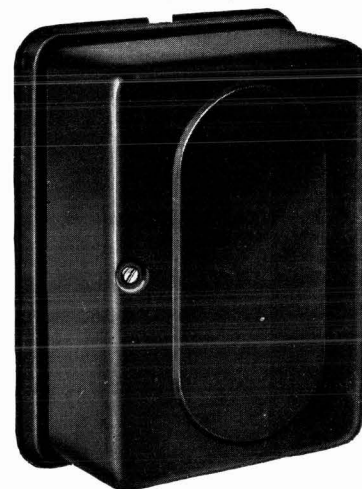
### Local Battery

The local battery wood ringer boxes are of the latest design with concealed gongs. Small openings on each side of the box, screened with wire mesh, allow the ringer to be clearly audible. The dimensions of the box are  $9\frac{1}{8}$  inches high,  $7\frac{3}{4}$  inches wide, and  $5\frac{1}{2}$  inches deep. Finished in either golden oak or ebony black, as desired. May be furnished with condenser wired in series with the receiver or with push button for selective signalling, when required. In ordering, give code number and state "with condenser" or "with push button."

### Ringer Box for Type 200 Desk Stand

	Code No.
Ringer Box complete with 3 bar generator—1000 ohm ringer - - - - -	220
Ringer Box complete with 5 bar generator—1600 ohm ringer - - - - -	221
Ringer Box complete with 5 bar generator—2500 ohm ringer - - - - -	222

State whether golden oak or ebony black finish is desired.



Central Battery Ringer Box

### Parts for above Ringer Box

	Code No.		Code No.
Induction Coil - - - - -	MC-2888	Ringer—1000 ohm - - - - -	MC-56221-D
Terminal Strip - - - - -	MP-4696	1600 ohm - - - - -	MC-56221-E
Generator—3 bar - - - - -	AC-9092	2500 ohm - - - - -	MC-56221-G
5 bar - - - - -	AC-90116		

### Ringer Box for No. 9 Monophone

Ringer Box complete with 3 bar generator—1000 ohm ringer - - - - -	911
Ringer Box complete with 5 bar generator—1600 ohm ringer - - - - -	912
Ringer Box complete with 5 bar generator—2500 ohm ringer - - - - -	913

State whether golden oak or ebony black finish is desired.

### Parts for above Ringer Box

	Code No.		Code No.
Induction Coil - - - - -	D-281569-A	Ringer—1000 ohm - - - - -	MC-56221-D
Terminal Strip - - - - -	MP-5112	1600 ohm - - - - -	MC-56221-E
Generator—3 bar - - - - -	AC-9092	2500 ohm - - - - -	MC-56221-G
5 bar - - - - -	AC-90116		

### Ringer Boxes for Extension Service

	Code No.
C. B. Steel Ringer Box with ringer and condenser - - - - -	5100
C. B. Steel Ringer Box with ringer only - - - - -	5101

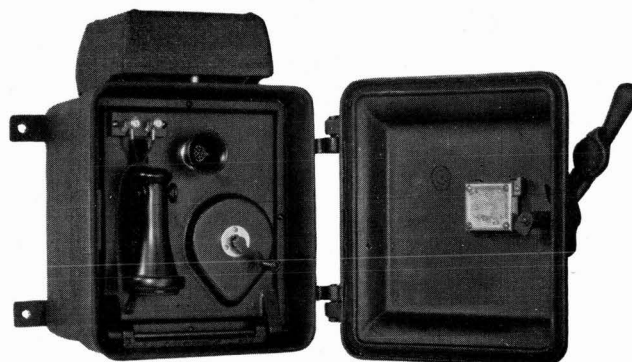
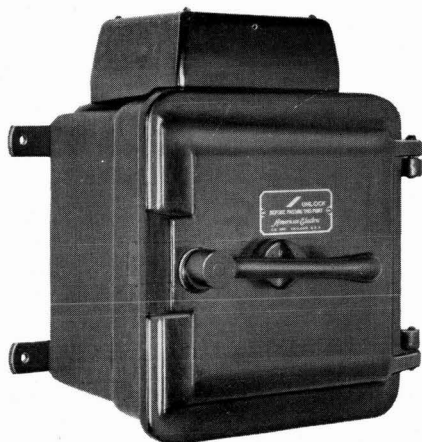
When ordering state frequency of ringer.



Local Battery Ringer Box

# Manual Telephones and Parts

## The Mine Telephone



The telephone shown here is intended for use in mines, quarries, boiler rooms—in fact, wherever unusual strength and moisture-proof construction are desirable. The parts are enclosed in a heavy cast iron case provided with two doors, each of which is made moisture-tight by means of a sponge rubber gasket. The case is heavily coated with black rust-resisting paint. It is 11½ inches wide, 15 inches high, and 12¼ inches deep, over all.

The outer door has a cam type locking handle, and a strong lock, for which two keys are furnished. When this door is opened, the telephone is ready for use. The working parts are mounted on the inner door which is opened only for installation and inspection. The terminal block is mounted in the case which has holes in the top and bottom for ½-inch conduit. A pole plug is furnished for plugging the unused hole.

The ringer is mounted under a cast-iron hood on the top of the case, and is fitted with three-inch, loud ringing gongs. Ringer connections are made through insulated brass rods which pass through the case, making a water-tight connection. Coils are of enameled wire and all connecting wires are insulated with "Sarco" moisture-proofing compound.

Furnished in three types:

Code No.

Mine Telephone—Central Battery using series circuit and straight line ringer	- - - - - 2901
Mine Telephone—Central Battery using booster circuit	- - - - - 2902
Mine Telephone—Local Battery with 5 bar generator and 1600 ohm ringer	- - - - - 2903

For mine telephones with dials see catalogue on Strowger Dial Telephones.

## Special Telephones

### Standard Telephones with Special Features

Our standard central and local battery telephones will meet all ordinary requirements, but peculiar climatic or other operating conditions may make it advisable to use specially constructed telephones. Such telephones can be supplied with any of the following features:

1. Rubber covered interior wiring.
2. Rubber insulated cords.
3. Metal parts brass instead of steel.

4. White nickel finish for all parts not otherwise protected.
5. Metal insect-excluding screen over ringer box openings.
6. Waterproof transmitters.
7. Transmitter cut-off buttons.
8. Supersensitive transmitters.
9. Impregnated coils.

When ordering special telephones, add the word "Special" to the code number of the corresponding central or local battery instrument, and state as fully as possible what changes are desired.

# Manual Telephones and Parts

## Receivers

These receivers are of standard size and shape, with shells and earcaps of polished black bakelite, and are fitted with moisture-proof cords. Cords are thirty-three inches long, and are covered with a brown silk braid. Unless otherwise specified, they are trimmed with spades.

The receiver has two coils, each having a resistance of 37.5 ohms. The coil cores pass through the brass mounting cup and are bolted to the poles of a horseshoe magnet.

	Code No.
Receiver—With Spade-trimmed Cord - - - - -	D-5164-A
Receiver—With Tipped Cord - - - - -	MC-5143

### Receiver Parts

	Code No.		Code No.
Shell - - - - -	D-52055-A	Diaphragm - - - - -	D-3833
Cap - - - - -	D-67186	Magnet - - - - -	D-56195



Receiver, Disassembled

## Transmitters

The transmitter is of simple construction and of unsurpassed transmission quality. The front plate, or frame, is of brass, heavily black-japanned. The main diaphragm, of aluminum, is perfectly flat, except for an abrupt bend at its very edge. The front carbon electrode is mounted on an auxiliary metal diaphragm which is free to vibrate in unison with the main diaphragm. Current is conveyed, by this arrangement, to the front electrode without the need of flexible conductors.

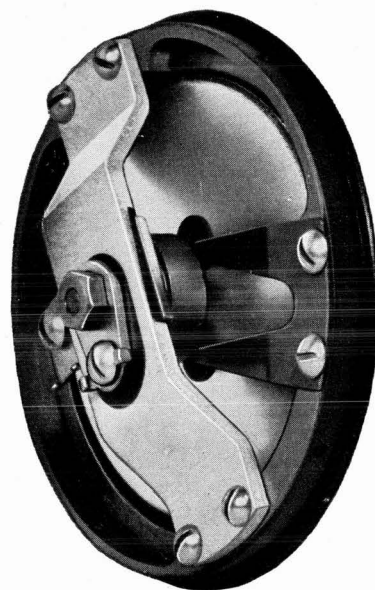
The transmitter regularly furnished is designed to operate satisfactorily under all ordinary conditions of central-battery service. For use on high-resistance lines, a type of transmitter designed to meet these conditions and capable of operating on weaker currents than the regular transmitter, is recommended and can be supplied.

The framework has four equally-spaced tapped holes for mounting-screws. Transmitters are furnished without mouthpieces, which are listed below separately.

	Code No.
For Type 21 Wall and Desk Telephones - - - - -	D-38201-A
For Type 200 Desk Telephone - - - - -	D-38218-A
Complete with Arm, for Type 200 Wall Telephone - - - - -	MC-3827
Transmitter Mouthpiece - - - - -	D-38238

### Transmitter Repairs

For best operation, transmitters must be carefully adjusted, and all current-carrying parts must be clean and dry, when assembled. Since it would be difficult to meet these requirements in the field, we recommend that transmitters requiring repairs to be sent to us. Please place a tag bearing your name on all such transmitters and pack them carefully to prevent damage in shipping.

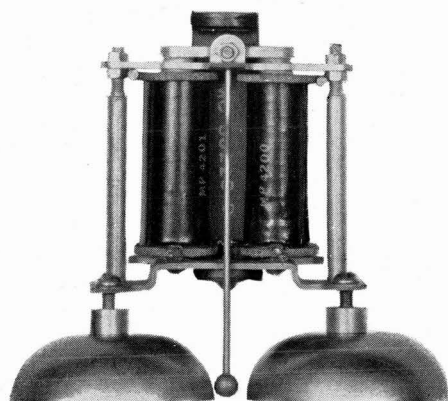


Rear View of Transmitter

# Manual Telephones and Parts

## Ringers

### Local Battery



Local Battery Ringer

The simple, substantial construction of these ringers make them highly efficient and free from all ordinary forms of ringer troubles. The coils are wound on spools having Norway iron cores which are thoroughly annealed. The heads of the coils are fibre, and the winding is carefully done with the best grade magnet wire. Each coil, before and after assembling, is tested and its resistance carefully measured.

The various types listed are substantially the same, differing only in the mounting required for the particular telephone with which it is used. Furnished with gongs unless otherwise specified.

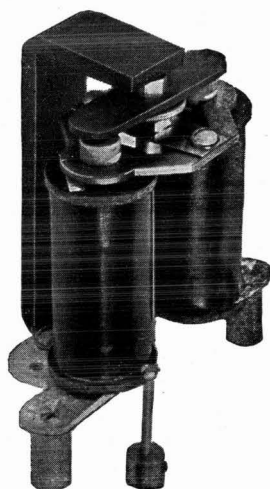
	Code No.
Ringer for No. 8 Monophone—1000 ohm - - - - -	MC-56223-D
Ringer for No. 9 Monophone—1000 ohm - - - - -	MC-56221-D
Ringer for No. 9 Monophone—1600 ohm - - - - -	MC-56221-E
Ringer for No. 9 Monophone—2500 ohm - - - - -	MC-56221-G
Ringer for No. 10 Monophone—1000 ohm - - - - -	MC-56230-D
Ringer for Type 200 Telephones—1000 ohm - - - - -	MC-56221-D
Ringer for Type 200 Telephones—1600 ohm - - - - -	MC-56221-E
Ringer for Type 200 Telephones—2500 ohm - - - - -	MC-56221-G

### Central Battery

Straight-line ringers have a moving unit mounted between pivots. These ringers are fitted with a biasing spring permitting the use of pulsating ringing current, and may therefore be used for biased-bell ringing on party lines.

Harmonic ringers have the clapper arm fastened to a steel rod, the assembly being adjusted to operate at one, and only one, of the standard frequencies. The assembly is very simple and requires no adjustments.

Furnished complete with gongs, unless otherwise specified.



Harmonic Ringer

Frequency	Total Resis.	Code No.
Straight-line - - - - -	1400 Ohms - - - - -	D-56292-A
16.6 Cycle - - - - -	2760 Ohms - - - - -	D-56293-A
20 Cycle - - - - -	2110 Ohms - - - - -	D-56298-A
25 Cycle - - - - -	2080 Ohms - - - - -	D-56294-A
30 Cycle - - - - -	1224 Ohms - - - - -	D-56299-A
33.3 Cycle - - - - -	528 Ohms - - - - -	D-56295-A
42 Cycle - - - - -	528 Ohms - - - - -	D-56300-A
50 Cycle - - - - -	476 Ohms - - - - -	D-56296-A
54 Cycle - - - - -	476 Ohms - - - - -	D-56301-A
66 Cycle - - - - -	476 Ohms - - - - -	D-56297-A
66.6 Cycle - - - - -	476 Ohms - - - - -	D-56297-A

### Gongs for Above Ringers

	Code No.
2 1/2-inch diam. Eccentric Hole, White Nickel Finish - - - - -	D-56166-A
2 1/2-inch diam. Eccentric Hole, Black Rubber-Japan Finish - - - - -	D-56166-B
2 1/2-inch diam. Eccentric Hole, Wood Gong - - - - -	D-56194

(Used where a different sound is desirable because several ringers are located close together.)

# Manual Telephones and Parts

## Generators

These generators are designed on principles well-tested in actual operation. The magnet steel—which governs the efficiency of the generator—is of the highest quality obtainable. The field pieces are soft iron castings, and the generator heads are of heavy sheet brass, accurately formed. Long bushings are provided as bearings for the crank and generator shafts.

The gear and pinion are made of dissimilar metals, the pinion being steel and the gear wheel brass. This type of construction not only doubles the life of the parts but also insures smooth running. A protector cap, with cushion springs inside, is placed over the pinion, the springs absorbing the shock of sudden starting and thus reducing the strain on the gears.

Shunt springs are provided to shunt the armature winding out of the circuit while it is idle. Turning the crank automatically breaks this short-circuit.

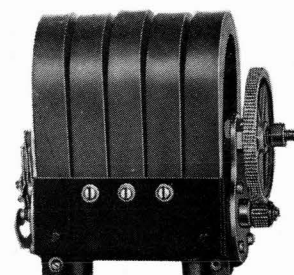
Three- and five-bar generators are of familiar standard design. The two-bar generator is a special development for use in steel ringer boxes.

Three-Bar Generator	- - - - -	Code No.	- 6623
Five-Bar Generator	- - - - -		6625
(For use in Type 200 Wall Sets, and in Ringer Box for Type 200 Desk Sets)			
Two-Bar Generator	- - - - -		6622
(For use in Monophone Desk Set No. 8, and Monophone Wall Set No. 10)			

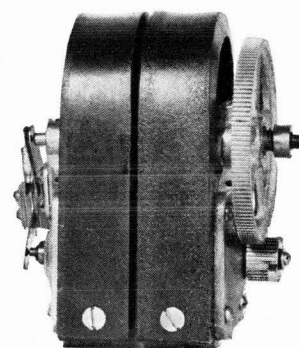
### Generator Crank

Crank is not furnished with the above generators, but must be ordered separately, if desired.

Generator Crank	- - - - -	Code No.	- 1929
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Five-Bar Generator



Two-Bar Generator

## Telephone Switching Keys

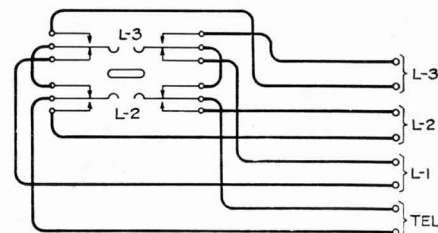
The telephone switching key is intended for use wherever it is desirable that two or three telephones may be answered from one position. It consists of a standard, three-way locking, lever-type key, wired, by means of a formed cable, to the terminals of an eight-point phenol-fiber terminal strip, which provides screws and soldering lugs for exterior connections.

The working parts of the telephone switching key are protected by a pressed steel cover which, like the base, is finished in dull black japan. The complete unit is only  $1\frac{1}{2}$  inches high,  $3\frac{3}{8}$  inches wide and  $5\frac{3}{4}$  inches long, including the handle, and because of this small size, may be mounted in almost any convenient location, such as the side of a desk or table.

As may be seen from the circuit to the right, the telephone with which the key is installed is normally on L-1. When the key is thrown to the side, the telephone is put in parallel with the telephone on L-2 or L-3, with the three-way type or on L-2 with the two-way type.



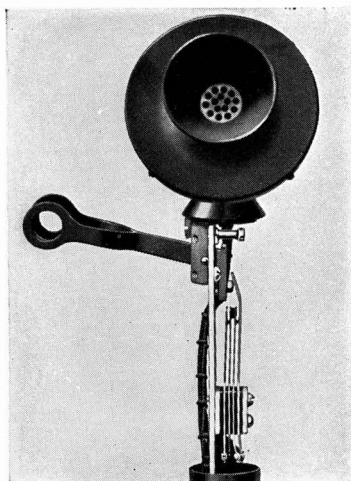
The Telephone Switching Key



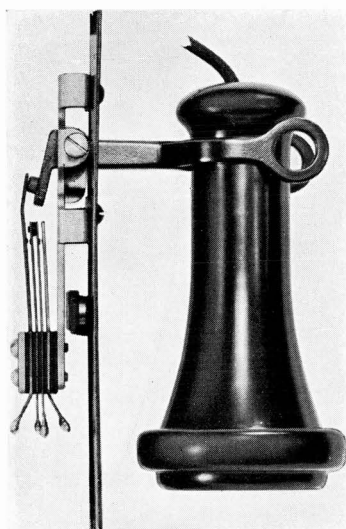
Three-Way Circuit

Three-way Switching Key	- - - - -	Code No.	MC-8885
Two-way Switching Key	- - - - -		MC-88003

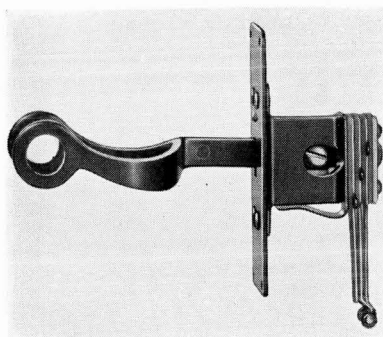
# Manual Telephones and Parts



Hookswitch for Desk Telephones



Hookswitch for Type 21 Wall Telephones



Hookswitch for Type 200 Wall Telephones

## Hookswitches

Hookswitch springs should be as stiff as can be operated by the weight of the receiver. Springs which are very flexible hold contacts together rather loosely and thereby cause poor contacts and the resulting sparking, pitting, and noise in the receiver.

The springs of these hookswitches are made of stiff phosphor bronze and hold the contacts tightly together. The contacts are carefully located in correct alignment, and are made of an alloy of silver and gold.

Phenol fiber insulates the springs from the frame and the clamping screws. The clamping screws can be removed, if necessary, to permit changing the springs. Connecting terminals are staggered to simplify connecting.

### Hookswitch for Desk Telephones

The hookswitch used on both the Type 21 and Type 200 desk stands is mounted on a steel plate which is screwed to the transmitter mounting at the top and to the base plate at the bottom. In this very rigid form of construction, the hookswitch has no connection with the center post of the desk stand and is easily accessible for inspection.

The hookswitch contains four springs and closes two circuits when the receiver is lifted.

Code No.

Hookswitch for Desk Telephones - - - - - D-78279-A

Hookswitch for Desk Telephones Complete with Receiver Hook - - - 3200

### Hookswitch for Type 21 Wall Telephone

The hookswitch used on the Type 21 wall telephone is completely self-contained. The pivots for the receiver hook are a part of the framework. The hookswitch will not lose its adjustment even if the side of the telephone case should become bent. Four springs close two circuits when operated.

Code No.

Hookswitch for Type 21 Wall Telephones - - - - - D-73683-A

Hookswitch for Type 21 Wall Telephones Complete with Receiver Hook - 8100

### Hookswitch for Type 200 Wall Telephone

The hookswitch used on the Type 200 wall telephone is combined with the mounting plate and the receiver hook. The unit is complete in itself and needs only to be mounted on the side of the telephone. The standard hookswitch contains three springs. Other spring combinations can be furnished, if desired.

Code No.

Hookswitch for Type 200 Wall Telephone Complete - - - - - MC-6251

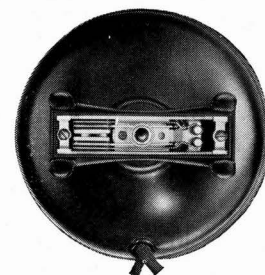
# Manual Telephones and Parts

## The Monophone Switch

The switch which is mounted in the Monophone serves the same purposes as the hookswitch of a conventional telephone. When the hand unit is placed upon it, the plunger rod moves downward, and through a lever arm moves a pair of bakelite bushings into contact with the springs, thus breaking the circuits through their contacts.

The contacts are made of a special alloy. The springs are of phosphor bronze, and are stiff enough to create ample contact pressure, thus insuring low contact resistance. Monophone switches are furnished complete with connecting cords to fit the particular Monophone in which they are to be used.

Monophone Type No.	No. of Springs	Switch Code No.
5-A, 6, 7, 9, 10, 15-A, 16	5	D-730474-A
4	4	D-730514-A
14, 17	4	D-730518-A
8	4	D-730240-A



Monophone Switch

### Monophone Tools

The name plate which covers the Monophone switch is held on by a nut which may be removed by means of the wrench shown herewith. This tool may also be used for loosening the bushing in the Monophone hand unit, for changing the angle of the receiver cap, and as a gauge when adjusting the springs of the Monophone switch.

Monophone Tool	Code No.
- - - - -	H-50754



Monophone Tool  
H-50754

A special spanner wrench is used for removing the Monophone cradle.

Spanner Wrench	Code No.
- - - - -	H-43173

## The Line and Cord Terminal Blocks

The terminal block illustrated is used for connecting the cord of the No. 7 or Two-Conductor Monophone to the line for extension service. It can, of course, be used wherever it is necessary or desirable to connect two pairs of wires, as it is small, neat and easily mounted. A typical such use is for connecting the interior substation wiring to the outside drop wires.

Terminal Block for No. 7 Monophone	Code No.
- - - - -	D-15430

A type similar to the above but containing four terminals in strip form is used with the No. 8 Monophone for connecting the four-conductor desk set cord with the two line wires and battery connections.

Terminal Block for No. 8 Monophone	Code No.
- - - - -	MC-1533



Line and Cord Terminal Block

# Manual Telephones and Parts

## Cords

The cords furnished with the telephones shown in this catalog are moisture-proofed by having each conductor covered with two wrappings of silk saturated with "Sarco," a moisture-proofing compound of high efficiency. Telephones intended for use in very damp climates are fitted with rubber-covered cords, which will resist actual immersion in water. The rubber-covered cord has a layer of vulcanized rubber between the untreated Tussah wrapping and the brown cotton braid of each conductor. Except for the method of moisture-proofing, both of these types of cords are alike.

An individual conductor is made as follows: Two ribbons of alloy copper are wound, in separate layers, around a strong cotton thread. Six of these tinsel threads are twisted together around a cotton thread in such a way that a conductor is formed in which all strain is taken up by the cotton. The conductor thus produced is very strong, flexible and of low resistance.

A cord is made by laying together the required number of conductors, and covering them with a brown silk braid. Before the connecting-clips are added, the ends of the conductors are covered with tinned copper wire, to which the clips are then firmly soldered.

### Receiver Cords

Used on all receivers. Two-conductor cord, thirty-three inches long.

Receiver Cord, "Sarco" Treated	- - - - -	Code No. D-541846-A
Receiver Cord, Rubber Covered	- - - - -	D-542044-A

### Desk Set Cords

Three-conductor cord, six feet long. Used for connecting Type 21 desk stand and No. 15-A Monophone desk stand to the ringer box.

Desk Set Cord "Sarco" Treated	- - - - -	Code No. D-542275-A
Desk Set Cord, Rubber Covered	- - - - -	D-542046-A

Four-conductor cord, six feet long. Used for connecting Monophone desk stands No. 5-A and No. 9 to the ringer box.

Desk Set Cord, "Sarco" Treated	- - - - -	Code No. D-542273-A
Desk Set Cord, Rubber Covered	- - - - -	D-542048-A

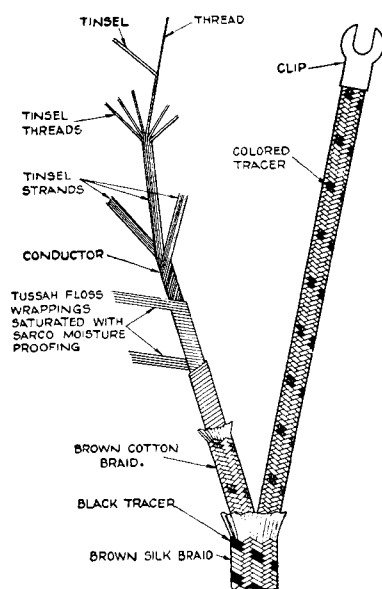
Two-conductor cord, six feet long. Used for connecting Monophone desk stand No. 7 to the ringer box—or to the terminal block for extension service.

Desk Set Cord, "Sarco" Treated	- - - - -	Code No. D-541871-A
Desk Set Cord, Rubber Covered	- - - - -	D-542063-A

### Cord for Monophone Hand Units

Three-conductor cord, fifty-three inches long. Used for connecting Monophone hand unit to the Monophone base.

Monophone Cord, "Sarco" Treated	- - - - -	Code No. D-542271-A
Monophone Cord, Rubber Covered	- - - - -	D-542042-A



The Construction of Sarco-Treated Cords

# Manual Telephones and Parts

## Induction Coils

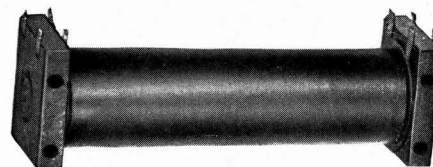
The cores of our induction coils are made up of silicon-iron strips as this material has been found to be the best for this purpose, although, for manufacturing reasons, is not generally used. The coils are wound over these cores, and ended on terminal lugs on the wooden spool heads. Connections may be made to these lugs without endangering the windings.

### For Type 21 Telephones

This coil is intended for use with regular central battery booster circuits. The inner winding is 1400 turns, and has a resistance of twenty-seven ohms. The outer winding, of 1700 turns, has a resistance of fourteen ohms. The complete coil is 4" by 1 1/8" by 1 1/4" in size.

When furnished with our Type 21 wall telephone and ringer boxes, this coil is complete with mounting bracket and terminal strip.

	Code No.
Induction Coil, only - - - - -	D-281897-A
Induction Coil, Complete with Terminal Strip - - - - -	D-281899-A

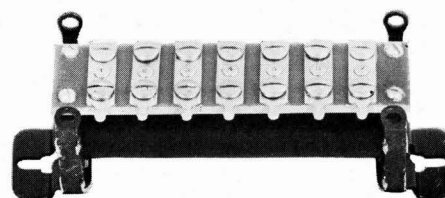


Induction Coil D-281897-A

### For Central Battery Monophones

The coil used with Monophones Nos. 4, 5-A, 6 and 7 has three windings. In size and general appearance it is identical with the above coil.

	Code No.
Induction Coil, only - - - - -	D-281901-A
Induction Coil, complete with Terminal Strip - - - - -	D-281900-A



Induction Coil and Terminal Strip  
D-281899-A

### For Local Battery Monophones

Identical in appearance and size with the above, but especially designed for magneto service.

	Code No.
Induction Coil - - - - -	D-281569-A

### For Type 200 Telephones

This coil is a standard 3 terminal, short-core, induction coil and may be used in practically any standard magneto telephone. The primary winding, of 380 turns of No. 26 gauge copper wire, has a resistance of 1.8 ohms—while the secondary winding of 1520 turns of No. 28 gauge, has a resistance of 14 ohms. The dimensions of this coil are 2 3/4" by 1 1/8" by 1 1/8".

	Code No.
Induction Coil - - - - -	MC-2888



Induction Coil D-281901-A

## Monophone Resistance Coil

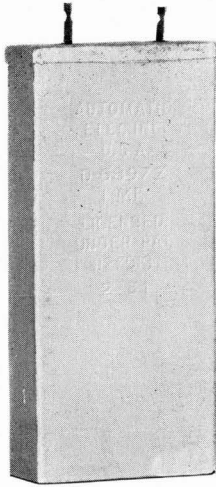
The resistance coil which is used on Monophones Nos. 11-A and 16 is wound, to a resistance of 205 ohms, on a micarta form 5/8" square. The winding ends on tinned terminals, to which exterior connections are to be soldered.

	Code No.
Monophone Resistance Coil - - - - -	D-281634-A



Resistance Coil

# Manual Telephones and Parts



The Condenser

## Condensers

The complete condenser is only 2"x4 $\frac{3}{4}$ "x $\frac{11}{16}$ " in size, over all, and is fitted with soldering terminals.

	Code No.
2.0 m. f. - - - - -	D-68033
.5 m. f. - - - - -	D-6890
.7 m. f. - - - - -	D-6894
1.0 m. f. - - - - -	D-6897
Condenser Bracket - - - - -	D-73684

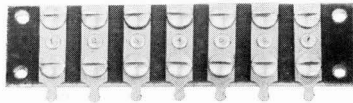
## Terminal Strips

The terminal strip used on ringer boxes and wall telephones is made of phenol fiber, which is strong and is an excellent insulator. It has seven terminals, fastened by means of tubular rivets. Each of these terminals has a tip, tinned for soldering, and two screws under which cord tips or wires may be fastened.

	Code No.
Terminal Strip for Wall Telephones and Ringer Boxes - - - - -	D-15513-A

To mount the above terminal strip on a flat surface, such as the cover of the wall telephone, it is fitted with a steel bracket which raises it from the mounting surface.

	Code No.
Terminal Strip with Bracket - - - - -	D-15515-A



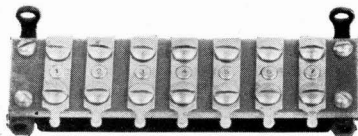
Terminal Strip D-15513-A

The terminal strip which is mounted in the base of the desk stand and Monophones is similar in construction to the above strips, but curved to conform to the base. It is fitted with eight brass terminals, each of which has a tinned tip to which wire may be soldered, and a screw under which wires may be placed.

	Code No.
Terminal Strip for Desk Set Base - - - - -	D-15381-A

A terminal strip, similar to D-15513-A, but having eight terminals, is also available.

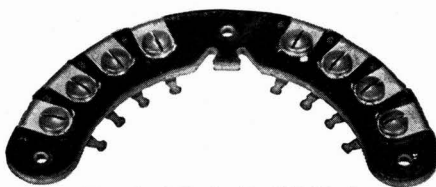
	Code No.
Eight-point Terminal Strip - - - - -	D-15488-A



Terminal Strip D-15515-A

## Monophone Parts

	Code No.		Code No.
Hand Unit, with Polarized Receiver, and Transmitter		Transmitter 5C-1, Regular Type - - -	D-38192-A
D-38192-A - - -	L-900-AO	Current Range — .125 to .250 Amp.	
Hand Unit, with Induction-Coil Receiver, and Transmitter		Transmitter 5C-2, Weak-Current Type - - -	D-38204-A
D-38192-A - - -	L-903-AO	Current Range — .060 to .125 Amp.	
Transmitter Cap - - -	D-38210-A	Transmitter 5C-3, Weak-Current Type - - -	D-38200-A
Receiver Cap - - -	D-67149-A	Current Range—Below .060 Amp.	
Hand Unit Shell - - -	D-52048-A	Transmitter 5L, Local Battery Type - - -	D-38217-A
Wall Box for Monophones Nos. 4, 14 and 17 - - - - -	D-49248	Receiver, Polarized Type	D-5154-A
Cradle for Monophones Nos. 5-A and 15-A -	D-62037-A	Receiver Induction-Coil Type - - - - -	D-5155-A



Terminal Strip D-15381-A

# Manual Telephones and Parts

## Local Battery Monophone Wall Set No. 18

Consists of a cradle-rest, which holds the Monophone hand unit, mounted on a regular local battery ringer box, containing ringer and induction coil, and a five-bar generator. As installed, complete with Monophone hand unit, it is 12 inches high and 9 inches wide, and projects 4 inches from the mounting surface.

The five-bar generator furnished in this Monophone is extremely powerful, and will ring even over heavily-loaded rural lines.

Code No.

Monophone Wall Set ..... 1801



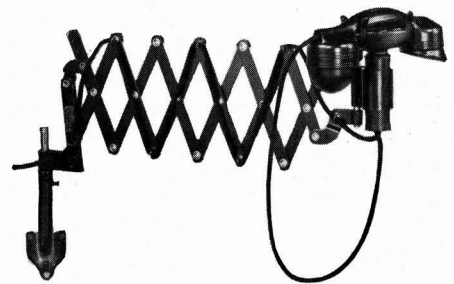
Monophone Wall Set No. 18

## The Bracket Monophone

The Bracket Monophone combines the convenience of an extension arm with that of the Monophone hand unit with the combined receiver and transmitter. It consists of a Monophone assembly permanently and rigidly fastened to a bracket. The bracket revolves on the base and is instantly adjustable to different lengths. The bracket is finished in black enamel. It uses the same mountings as listed above. Length 28 inches. When ordering, specify whether the Bracket Monophone is to be used for central or local battery service.

Code No.

Bracket Monophone ..... 1902



The Bracket Monophone



