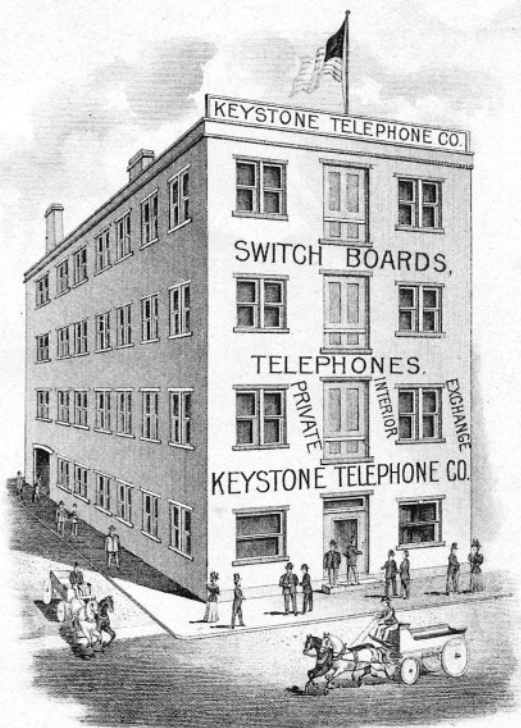


**KEYSTONE TELEPHONE CO.** DEALERS IN ALL KINDS OF  
**TELEPHONE SUPPLIES**  
SOLE MANUFACTURERS OF THE  
**KEYSTONE TELEPHONE**  
*Office & Factory,  
565 Old Ave.*  
*Pittsburg, Pa.*

# Keystone Telephone Co.



*Office & Factory, 565 Old Ave.*

**PITTSBURGH, PA.**

# Keystone Telephone Co.

x x x

## OFFICERS.

C. D. CALLERY, President.

FRANK R. LIGGETT, Vice President.

BURT HUBBELL, Secy. & Treas.

J. G. IHMSEN, Manager.

x x x

General Offices and Factory,  
PITTSBURGH, PA.

x x x

## Branch Offices:

NEW YORK.  
CHICAGO.

PHILADELPHIA.  
BUFFALO.

## CATALOGUE.

THE Keystone Telephone Co. was organized some two years ago to manufacture and sell Telephones, Switchboards and Supplies. The policy of the company has been to move cautiously and safely and to let the worth and efficiency of the instruments it manufactured be the means of its growth and progress, rather than depend upon sensational advertisements of misrepresentations, such as indulged in by some of our competitors.

The development and high efficiency of the "Keystone Telephones" has been so pronounced that the company's growth has been phenomenal and it now occupies a position among the leading manufacturers in the United States. This company will not rest here, however; but will, by constant improvement and close attention to details, endeavor to keep the "Keystone" make of Telephones and Switchboards ahead of their competitors.

Purchasers of Telephones and Switchboards may be assured that in buying "Keystone" instruments, they will be getting an apparatus that will contain all new improvements to date. The many customers of the company throughout the country attest to the high grade of "Keystone" instruments and even go further than this by saying that "they are *Better* than any other make of Telephones manufactured." Further, a large and gratifying trade of this company is with

Exchanges throughout all parts of the United States that were originally equipped with Telephones of other makes, but who now recognize the superiority of the KEYSTONE instruments and are buying them for their increased business. Purchasers will always find this company attentive to their wants, prompt in their shipments and fully appreciative of the favor of their orders. This company, therefore, recommend their Telephones and Switchboards and themselves to persons wanting high grade instruments and pleasant business relations and wish to say that they will make a serious mistake if they purchase goods of this nature without first getting prices and investigating the KEYSTONE instruments.

**PRICES.**—In naming you prices on KEYSTONE instruments, please bear in mind that these instruments should not be compared with a certain class of cheap grade Telephones that are being extensively advertised. Our Telephones will cost more at first than most others, but ultimately they will be considerably cheaper, inasmuch as they will not require the repairs that will be necessary to cheaper grades of Telephones.

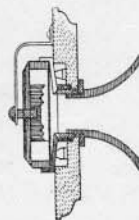
Goods shown in the catalogue are subject to the following discount.....

**MATERIAL.**—All the parts of our Telephones are manufactured from our own designs and under our own supervision, and great care is taken in using the best possible material and workmanship.

**WOODWORK.**—We will fill orders of either oak or walnut, boxes, of very best grades of dry lumber and highly finished.

**TRANSMITTERS** made by this company are put together with the greatest possible care as to construction and material used and after exhaustive tests, we claim to produce a Carbon for Transmitter use that cannot be excelled. We use various forms in constructing our Transmitters. For Telephones fitted for short line work only, we recommend the Carbon Ball Transmitter. This Transmitter is composed of a back plate of carbon, called a Disk, with seven indentations in its face, into which fit seven small Carbon Balls. These balls also lie against the Carbon Diaphragm, the force of gravity keeping them in the proper adjustment. The especial features of the Transmitter is, that it cannot pack, cannot get out of adjustment, and works well from 25 to 30 miles with but one cell of battery. It is very desirable for short line work and for small Exchanges.

For our Telephones fitted for long distance work, we use our Revolving Granular Hunnings type of Transmitter, (as shown in cut). This Transmitter is especially built for hard work, where considerable battery power is required, and will carry speech for very long distances. It is so arranged, that by turning the



Revolving  
Hunnings' Transmitter.

Mouthpiece on the outside of the door the entire Transmitter may be revolved, thus avoiding any possibility of the granular carbon packing. This is a very important feature in Transmitters, as all Hunning's Transmitters will pack unless built in this form.

Our Long Distance Arm Transmitter, as used in Telephones Nos. 4, 5 and 11, is built on the same ideas as employed in the Bell Long Distance instrument and is mentioned by many of our customers as being superior to the "Bell." From actual tests, our Long Distance Transmitters are doing the same work as the Bell Long Distance, in talking to Boston, New York, Chicago, St. Louis, etc., and we can recommend it as being the most sensitive Transmitter in the market.

The Granular Carbon Transmitters used in our Disk Sets 12, 13 and 15, are practically the same as that used in our Long Distance Arm Transmitter, and can be depended upon to give just as good service.

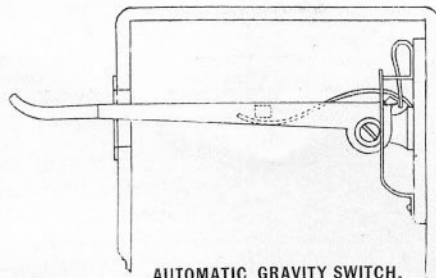
**MAGNETOS** used in our work are of the most scientific designs to produce the greatest possible strength. We furnish them either with or without box and wired either for Series or Bridged work. We claim to supply the best Magnetos manufactured. The following sizes we keep in stock and can ship promptly.

10,000 Ohms.....\$ 8 00	25,000 Ohms.....\$13 00
15,000 " ..... 9 00	35,000 " ..... 15 00
20,000 " ..... 12 00	45,000 " ..... 17 00

The above are for Series work, with Box, and Automatic Switch all wired ready for use.

Bridging Bell, same capacity, \$1.00 extra.

**SWITCHES** used in our Telephones are of our own design of Gravity Hooks and material used, especially in the springs, is the very best material and design. Our Switches and



**AUTOMATIC GRAVITY SWITCH.**

Price, - \$1.50.

Springs extend to the full width of the Magneto Box and the spring is of heavy clock spring and will not give out. We use no spiral springs about our work—they are dangerous and will always give trouble.

**INDUCTION COILS.**—We manufacture all of our own Induction Coils and to this fact we attribute a large share of our great success. Induction Coils should be made of different sizes for different kinds of work and great care must be taken in their construction to give good results from the Telephones they are used in.

250 Ohms, Ind. Cplis.....	\$ 60
350 " " " .....	1 00
500 " " " .....	1 50

Our Coils are  $3\frac{1}{2}$  to  $5\frac{1}{2}$  inches long.

## RECEIVERS.

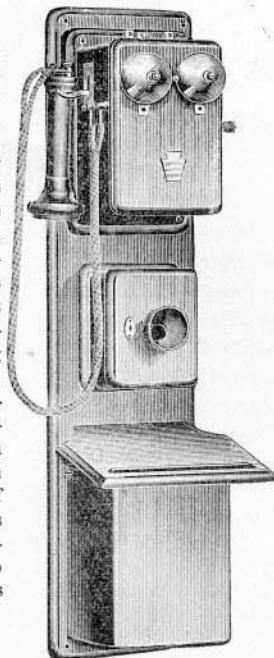
ALL Standard Receivers used in our work are made of the very best compound bar Magnets, with hard rubber Cases; we guarantee these Receivers to be the best in the market. We have a specially constructed Watch-case Receiver, fitted with head-band, as per cut, that we sell for use on Switchboards. This Receiver is the most powerful manufactured and the results from its use are simply wonderful. Switchboard operators are troubled greatly by not being able to hear subscribers. Through this Receiver, the poorest Telephone can be heard distinctly, and all Exchanges should have one of them.

On application, we will send one on two days' trial.

We also manufacture a rubber case Watch-case Receiver with double pole Magneto that is very complete and serviceable.

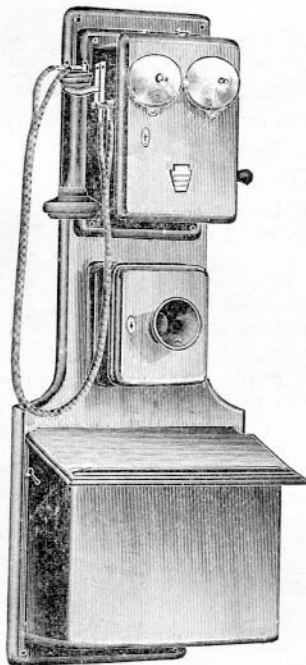
## SET NO. 1.

This instrument is fitted with Carbon Ball Transmitter, Standard Generator, Gravity Switch, Standard Receiver and one cell of wet Battery, all complete to attach to the line. It is especially desirable for short line uses or for Exchanges that are confined to distances not exceeding ten miles radius. Every detail in construction is as carefully looked after in this instrument as in the higher class of Telephones, and it is in all respects a desirable Telephone to use under conditions as above named.



**PRICE, \$20.00.**

## SET No. 2.

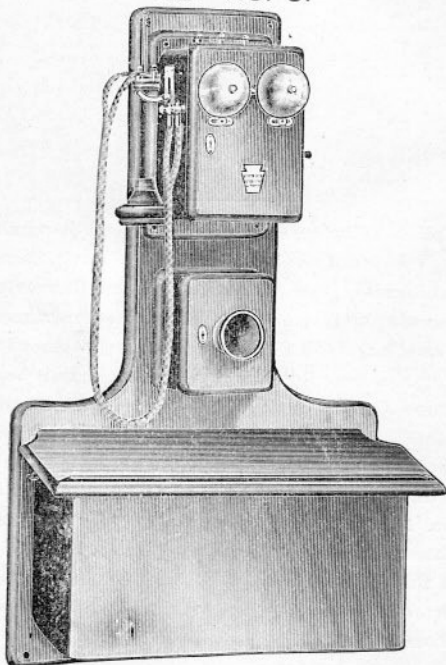


PRICE, - - - \$22.00.

## SET No. 2.

OUR Telephone No. 2 is fitted with regular Standard Generators, Gravity Switch, Standard Receiver, two cells of Battery and Revolving Hunning's Transmitter. This style of instrument is used largely in Exchange work and is somewhat more desirable for private line work than is Telephone No. 1, because its Transmitter carries a considerably larger volume of sound than does Telephone No. 1. This is largely due to the fact of the extra Battery on No. 2, while the Transmitter on No. 1 cannot carry successfully more than one Battery. Great care is taken in the construction of this instrument, and we can recommend it to any one wanting a first-class and durable Telephone.

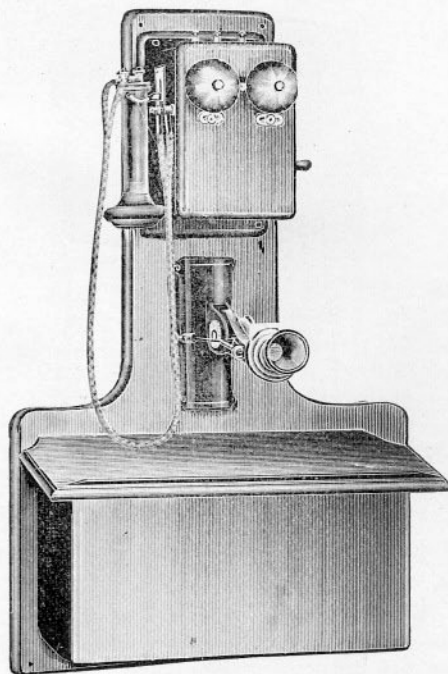
SET No. 3.



**PRICE, - - - - \$30.00.**

THIS Telephone is made for extra heavy work, such as used on Long Toll Lines, and is fitted with heavy Bridging Bells, Gravity Switch, Standard Receiver, three cells of Battery and Revolving Hunning's Transmitter. We can guarantee that there are no more complete Telephones manufactured than our No. 3, as they are doing work on heavy lines over long distances where telephones of other makes have failed.

SET No. 4.

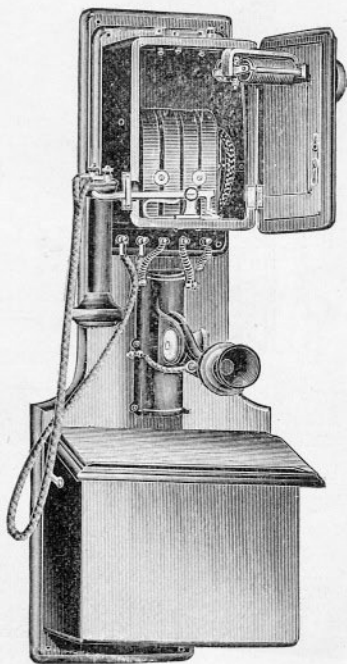


**PRICE, - - - : \$33.00.**

OUR No. 4 Telephone carries the same general description as No. 3; the Generator, Receiver and Switch is the same, and for a Transmitter we use the Long Distance Arm Transmitter instead of Transmitter in box. No stronger nor better instrument can be manufactured, and we recommend it for heavy line work.



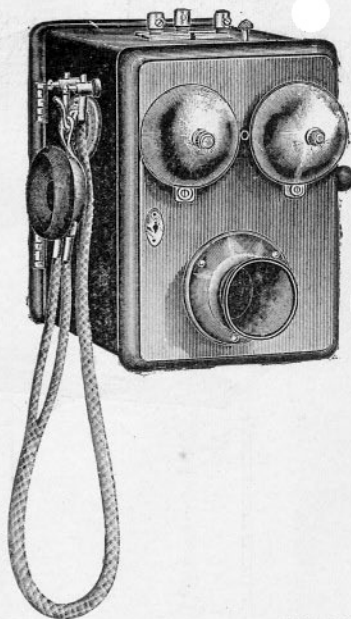
## SET No. 5.



PRICE, - - - - \$32.00.

THIS instrument is identical with No. 4, with the exception that it has room for but two cells of Battery, while No. 4 uses three cells. In all ordinary work two cells are sufficient and make a more pleasing appearance.

## SET No. 6.

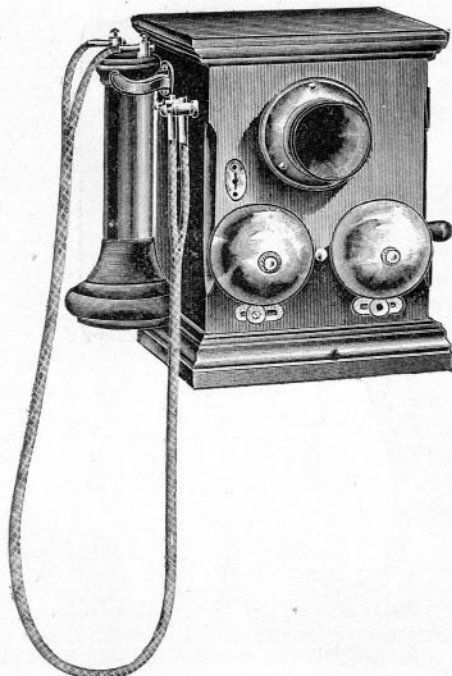


PRICE, - - - - \$20.00.

THIS Telephone was gotten up with a view of getting a complete instrument in the smallest possible space, and is desirable for portable use in street car service, or in factories where users want small, compact Telephones. It is fitted with either Carbon Ball or Hunning's Granular Carbon Transmitter, Standard Generator, Watch-case Receiver, and dry batteries placed in rear of box. This Telephone is complete in all its parts, and is guaranteed to be efficient and durable.

SIZE, 5 x 7-7.

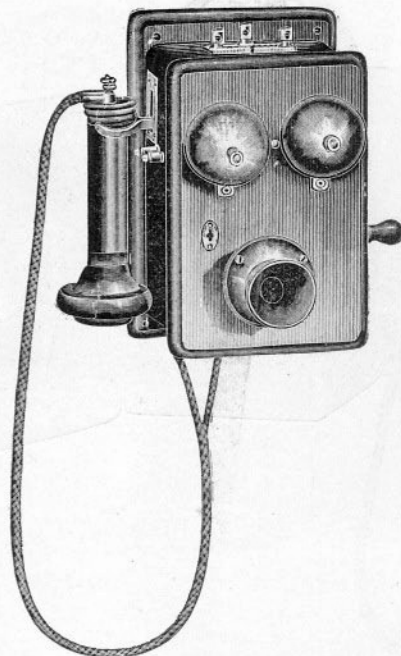
## SET NO. 7.



**PRICE, - - - - \$20.00.**

OUR No. 7 is designed for use as a Desk Set and is fitted with either Carbon Ball or Revolving Granular Transmitter, Standard Generator and Receiver and Gravity Switch. The Batteries for this Telephone are placed under the desk. This Telephone affords a good Desk Set without the trouble of putting generators under the desk and is much used on this account. The size of this Telephone is 6 x 6 x 9 inches.

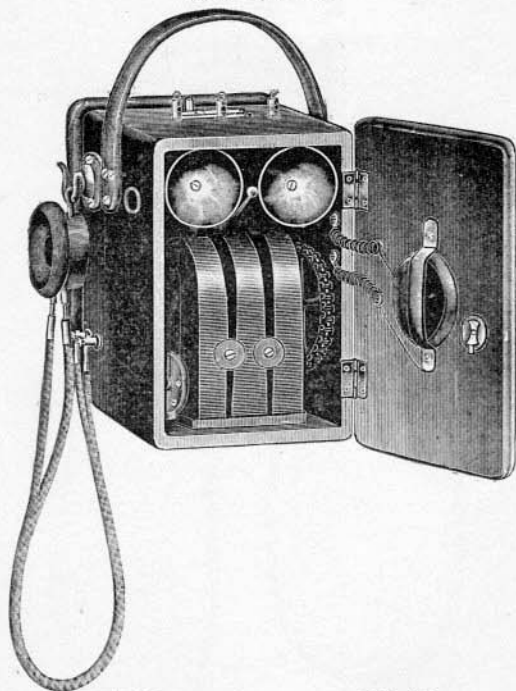
## SET NO. 8.



**PRICE, - - - - \$16.00.**

THIS Telephone is largely used in factories where a compact instrument is wanted; it contains Standard Generator, either Carbon Ball Transmitter or Revolving Granular Hunning's Transmitter, Gravity Switch, and Standard Receiver, and with the Batteries, which are placed in some convenient place, it makes a complete and substantial Telephone.

## SET No. 9.



PRICE, . . . . \$20.00.

ALL Exchanges and Toll Line Companies have daily use for linemen's Test Sets and we have gotten up our No. 9 to cover as completely as possible the requirements in this work. Test Sets should be so complete as to avoid any possibility of their not working satisfactorily. This Set contains Magneto complete, Hunning's or Carbon Ball Transmitter, Watch-case Receiver and dry Batteries. We can guarantee a complete instrument in Set No. 9, and all Exchanges should use it.

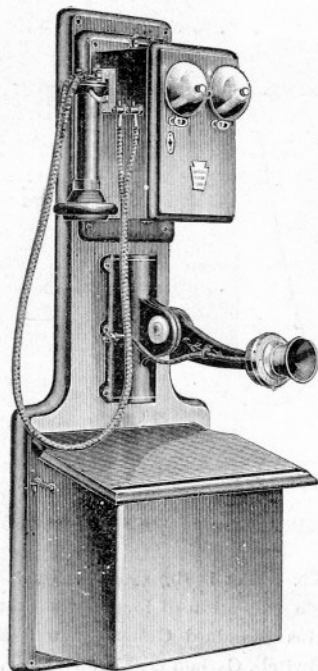
## SET No. 10.



PRICE, . . . . \$20.00.

OUR No. 10 Set is the same as No. 1, with the single exception of location of Transmitter. It contains Standard Generator and Receiver, Gravity Switch, Carbon Ball Transmitter, and one cell of Battery. This instrument is carefully put together and is guaranteed to be exceedingly efficient for ordinary line work and in small Exchanges.

## SET NO. II.



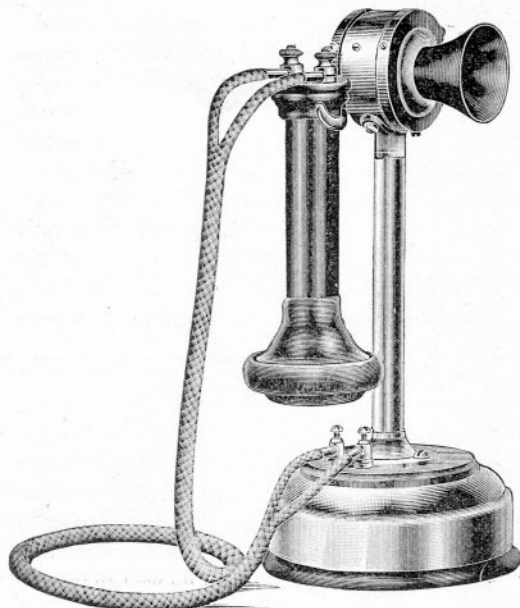
PRICE, . . . \$25.00.

## SET NO. II.

WE take particular pride in presenting our No. 11 instrument and can recommend it as the best all around Telephone manufactured. We are forced into this broad statement through the many testimonials we receive daily from users of this instrument. We think that a majority of the Exchanges in the country are using this Telephone for their increased business and they all acknowledge it to be superior to all others. This Telephone is fitted with standard Generator and Receiver, Gravity Switch, Extra Long Distance Transmitter, two cells of Batteries, and is complete in all its part.

The Transmitter is acknowledged to be the most sensitive, positive and most durable in the market. Frequent conversations to New York, Chicago, and St. Louis satisfy us that these Telephones are as good as the Bell Long Distance. Every attention is given to details in the construction to make this instrument the most durable manufactured, and Telephone purchasers will do well to investigate it before purchasing elsewhere.

## SET NO. 12.



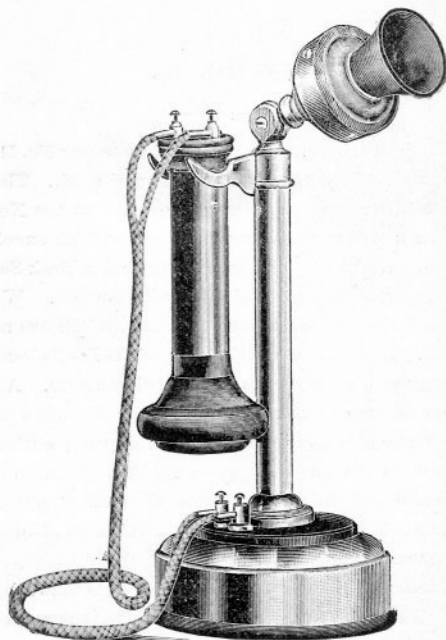
**PRICE, . . . . \$25.00.**

## SET NO. 12.

THIS instrument is a companion to our No. 11, and is largely used in Exchange work. The Transmitter is built on the same lines as the No. 11 Transmitter and possesses the same high excellence. We call especial attention to this Desk Set to the arrangement of the Gravity Switch. We think we are safe in saying that this Switch has no equal. Its action is quick and positive, as its location gives it plenty of room for spring action. All other makes of Desk Sets have their Switches in the standards and being in a cramped position they soon give out altogether. The Magneto is placed under the desk at some convenient place. This Set is highly finished and make a handsome appearance.

Exchanges should use more Desk Sets than they do. They are attractive and are often the means of getting subscribers where wall telephones will not be considered.

## SET No. 13.



**PRICE, - - - - \$25.00.**

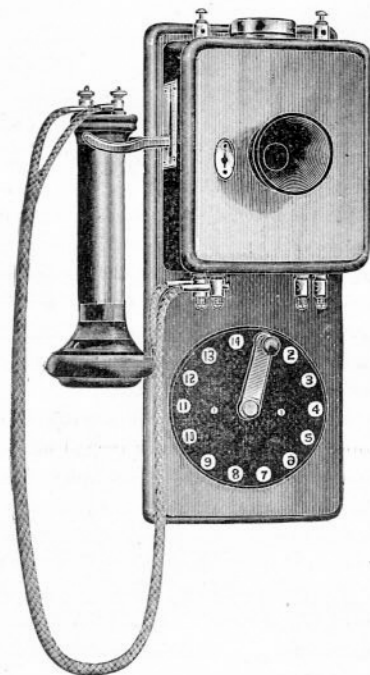
THIS Desk Telephone is fitted with the same excellent form of Transmitter as is No. 12, the only difference being that Transmitter on No. 13 may be moved up and down, while No. 12 is stationary.

## INTERCOMMUNICATING SYSTEMS.

ALL business houses having two or more departments and offices, cannot afford to be without a system of Intercommunicating Telephones. For the heads of departments to be able to sit at their desks and communicate with their different departments, is a convenience and necessity that should not be overlooked. So great has been the advantage of systems of this nature, that we do not think, of all our customers, any one of them would do without their system for double the original cost. Many of them claim they are as essential to their business as other conveniences, such as elevators, electric lights, etc.

There has, however, been more mistakes made and more unsatisfactory work turned out in the Intercommunicating branch of the Telephone business than in all others put together. It is a very difficult work to construct an instrument and install a system of this nature that will at all times give satisfaction to the users, and we therefore, think we have accomplished a great deal, in installing something over three hundred systems, using about 4,500 Telephones, all of which are giving excellent satisfaction. In this work, we have taken out systems of almost all other manufacturers in this line, none of which have given satisfaction. We can recommend the KEYSTONE INTERCOMMUNICATING SYSTEM as being complete and

## SET NO. 14.



**PRICE, . . . \$12.00.**

Intercommunicating Switch Extra.

durable and as being the only system of this kind that can be depended upon to give good service.

Telephones Nos. 14, 15, 16, and 17 are the instruments we use for this work. They are put together in the most substantial manner and present a very handsome appearance.

We give herewith a partial list of systems installed in this city:

Bindley Hardware Co.	Park, Bro. & Co., Ltd.
W. J. Gilmore & Co.	J. B. Haines & Son,
Taylor, Son & Co.	B. Gloekler,
Oil Well Supply Co.	Thos. Carlin Sons,
N. Y. & Clev. Gas Coal Co.	Wm. Clark's Son & Co.
P. Duff & Sons,	Allegheny City Home,
Brace Bros.	Central High School,
Philadelphia Co.	Western Penitentiary,
Peoples Natural Gas Co.	Mercy Hospital,
National Transit Co.	Bailey, Farrell & Co.
Boggs & Buhl,	W. H. Watt & Co.
Wm. M. Laird,	H. Sproul & Co.
H. Childs & Co.	Rochester Tumbler Co.
L. H. Smith Woodn'wr Co	Latrobe Steel Works.
Duff Manufacturing Co.	Excelsior Ex. & S. Cab Co.
Westingh'se Air Brake Co.	Pennsylvania Co.
Crescent Steel Co.	Allegheny Valley Ry. Co.
Weaver, Costello & Co.	Pbgh. Public Safety Bldg.
Standard Mfg. Co.	Squires' Roof'g & S'ply Co.
Duff Business College,	J. Painter & Sons Co.
Equitable Life Ins. Co.	Monon. Incline Plane Co.
City Savings Bank,	Spang, Chalfant & Co.
Dilworth Bros.	Pittsburgh Plate Glass Co.
Rauh Bros. & Co.	Penn'a Salt Mfg. Co.
Mohn Bros.	Rea & Co.
Marshall-Kennedy Mfg. Co.	Wainwright Brewing Co.
Wilson, Snyder Mfg. Co.	Crystal Ice Co.
Avenue Theatre,	C. A. Verner,
Grand Opera House,	L. Glesenkamp & Sons,
C. G. Hussey & Co.	Latrobe Steel Works,
Carnegie Steel Co.	J. Groetzinger & Co.
Lockhart Iron & Steel Co.	Riter & Conley,
Apollo Iron & Steel Co.	Allegheny High School,
Ger. Sav. & Dep't B'k, S. S.	Lincoln Hotel,
R. & W. Jenkinson Co.	East Pittsburgh Imp. Co.
Morris & Brown,	Allegheny Heating Co.

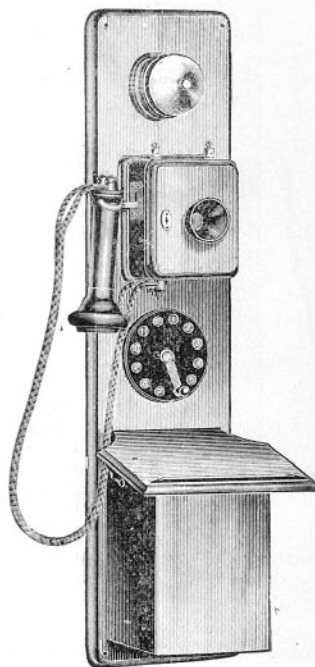
SET No. 15.



PRICE, . . . . \$20.00.

Intercommunicating Switch Extra.

SET No. 16.

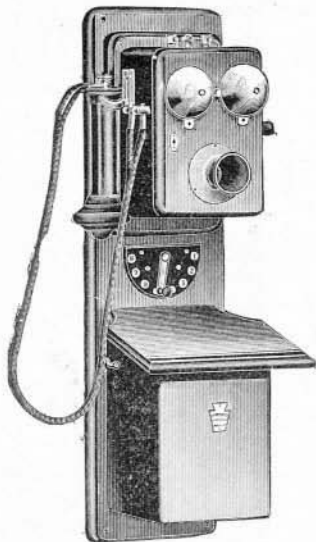


PRICE, . . . . \$15.00.

Intercommunicating Switch Extra.



SET No. 17.

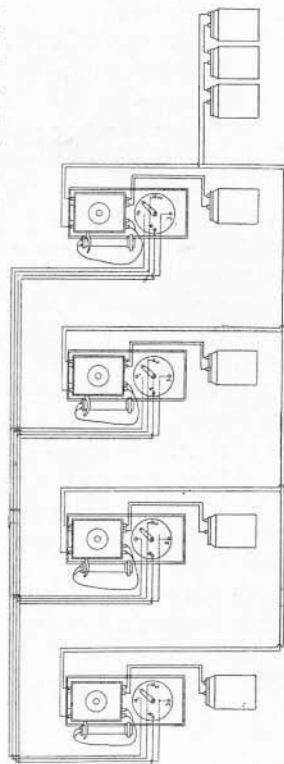


PRICE, . . . . \$20.00.

Intercommunicating Switch Extra.

## HOW TO INSTALL INTERCOMMUNICATING SYSTEMS.

This sketch shows the wiring for Intercommunicating Systems. You will notice that it is necessary to run in these circuits two more wires than the number of Telephones in the system. The two additional wires being used for the separate calling circuit, one wire of the calling circuit being used for the return wire of the talking circuit. Wire No. 1 is attached to point No. 1 in the circular Intercommunicating Switch on all Telephones; wire No. 2 to point No. 2 of the circular Intercom-



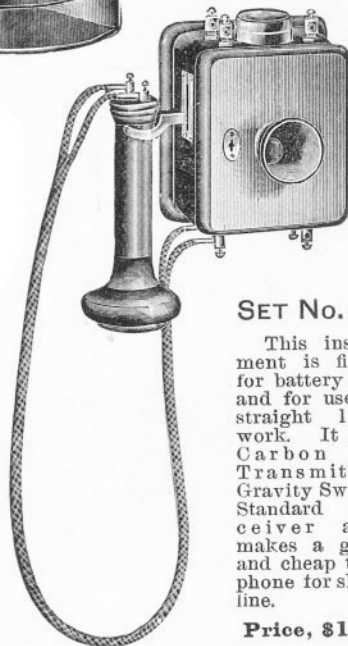
municating Switch on all Telephones, etc. The talking Batteries are placed in some concealed place as near the Telephones as possible, except in Nos. 16 and 17, when they are put in battery box. The calling Batteries are all in one place at some convenient point. When No. 1 wishes to talk with any one in the circuit, he turns the lever to number wanted and presses the calling button; this calls party wanted and no others. The conversation is strictly private, no other Telephones being connected on the line; any other two Telephones may converse at the same time without interruption. It is often desirable to use a Magneto instead of a Battery to call with, as calls in this way are louder and more substantial. The wiring for Magneto call is the same as for Battery, with the exception that one of the circuit calling wires is omitted, the other being used for return talking circuit. Telephones Nos. 14, 15, and 16 are used in this system with Battery call; Telephone No. 17 with Magneto call. No. 15 may also be used for Magneto call by putting Generator under desk.

We have close connections with good electrical houses in all large cities of the United States, and are in position to offer prices on systems installed, complete and guaranteed.

## BATTERIES.

We manufacture all our own Batteries and special care is taken with all parts to make them the most complete and durable in the market. Telephone companies needing Batteries will do well to try the KEYSTONE and get our lowest prices.

**Price, 70 cents.**

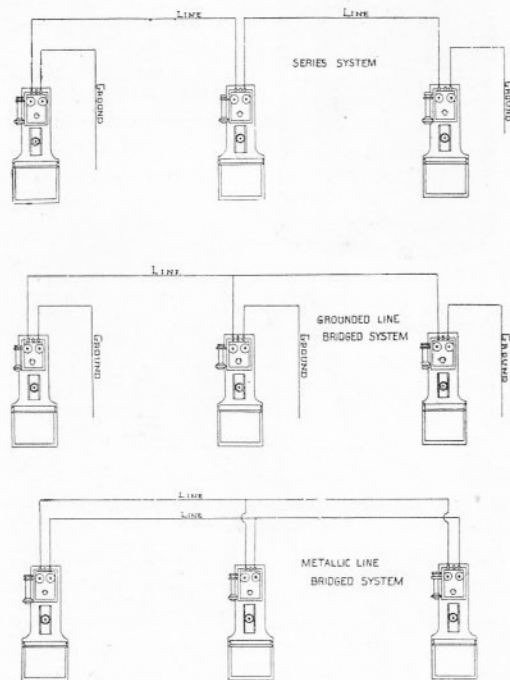


## SET No. 18.

This instrument is fitted for battery call and for use on straight line work. It has Carbon Ball Transmitter, Gravity Switch Standard Receiver and makes a good and cheap telephone for short line.

**Price, \$16.**

### CUTS SHOWING DIFFERENT WAYS OF RUNNING TELEPHONE LINES.

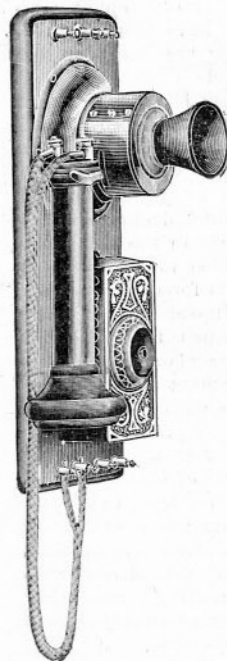


### BRIDGING BELLS.

TO run a system of a number of telephones attached to one line and have them ring perfectly, it is necessary to use the Bridging Bell system, as herewith illustrated.

The Metallic Circuit System is far better than the Grounded Circuit and should be adopted wherever possible. To explain this system, we would say, that electricity, like water, seeks the path of least resistance and by special winding and wiring of Magnetos on the Telephones in circuit we throw more resistance in the Telephone than there is in the line, and therefore, the current generated in one Telephone is forced through the complete line, before it goes into and rings a single Telephone bell. After the line is filled with this current, it goes into all Telephones simultaneously and rings the last instrument on the line as loudly as the first. In series wiring, the current goes through the first Telephone strong, the next weaker and the last usually not at all, because it has to overcome the resistance of all the ringers; this resistance is avoided in Bridging Bell work. To construct a Telephone to do this kind of work is a difficult task. How well we have accomplished the work, is shown by the fact that 24 of our instruments of this class are working satisfactorily on a line 150 miles long, and where no other Telephones have been able to give service. We have given this branch of the business particular attention and can guarantee to give satisfaction where others fail. We show on another page how to run bridging metallic, and single lines and series lines.

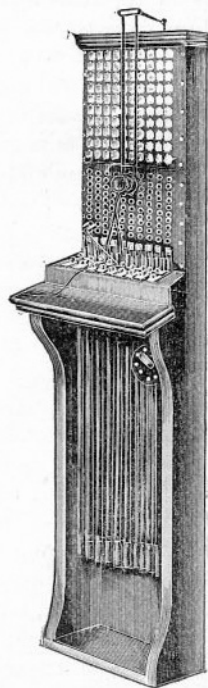
## SET No. 19.



PRICE, - - - - \$20.00.

We have devised our No. 19 Set for hotel purposes—that is to be used in communication between office and rooms. This telephone may be attached to the regular return call hotel system and is a convenience that up to date hotels can not do without. We have installed a considerable number of these systems and can guarantee that they are far superior to any other means of communication yet known. This set is highly finished and makes a pretty ornament for a room. We will estimate to furnish entire work of this nature complete and in working order.

## SWITCHBOARD.



## SWITCHBOARDS.

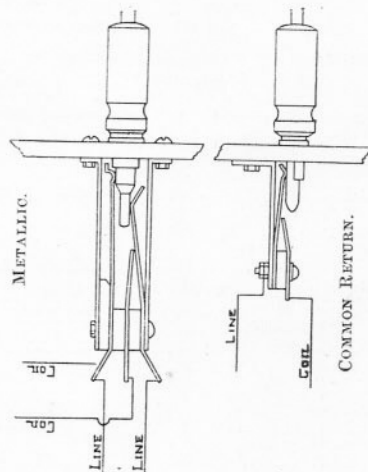
IN devising plans for and constructing Telephone Switchboards, it has been our aim to present to our customers an apparatus that is complete and substantial in all its parts; that will not easily get out of order, and a Board so arranged that it may be easily taken care of. We have not planned to see how small we could make this Board, but have endeavored to make it as large as possible, without letting the size interfere with its efficiency.

Our Board of 100 Drops is 17 x 30 inches, and we claim that Boards occupying smaller space than this, economizes room unnecessarily and to the detriment of the apparatus; that is, that length and width are not as essential as having room enough in the Board to get all its different parts arranged so they may not be crowded in such a way as to be a detriment to good service.

We wish to call particular attention to the Operator's Keys on the Switchboard, as illustrated on page 38. We claim for this part of our Switchboard that it is the most perfect arrangement of Operator's Keys being used. We provide sufficient room to allow the use of extremely heavy and positive spring connections, and as most of the work in operating a Board is done with Operator's Keys, the necessity of strong and positive spring connections can readily be appreciated.

Our Switchboards are wired with the best grade of rubber-covered wire; all other manufacturers use annunciator or office wire, and a great deal of

Switchboard trouble can be traced to cheap wiring. The Coils in the Board are wired to about 150 ohms. For special Bridging work, we wire these Coils to 1,500 ohms, and we can put these heavy Coils on a Switchboard with the 150 ohms.

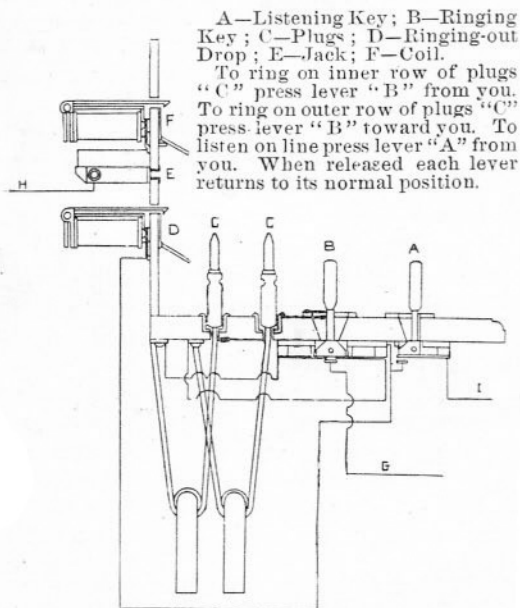


JACKS AND PLUGS.

By close examination it will be seen that the Jacks used in this Board (both Common return and Metallic,) are designed for simplicity and strength. The spring connections are all of the best quality of german silver, and we guarantee they will not get out of adjustment. Both the Jacks and the Drops may be easily removed from the Board and without interrupting any other numbers, and the Drops may be taken out without unsoldering a single wire.

We make this Board in all sizes and can fit them in cabinets to suit the ideas of purchasers.

## DESIGN OF OPERATING KEYBOARD ON SWITCHBOARD.



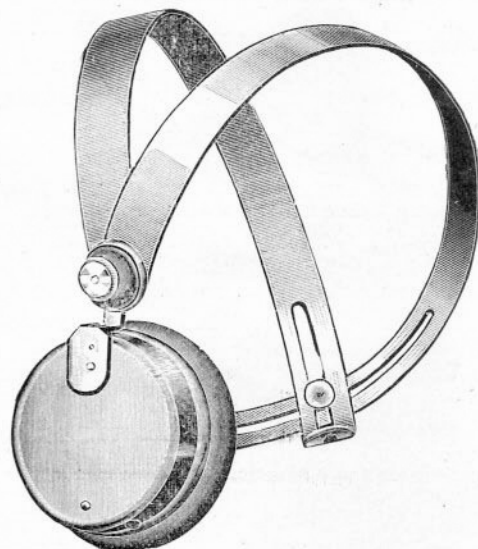
A—Listening Key; B—Ringing Key; C—Plugs; D—Ringing-out Drop; E—Jack; F—Coil.

To ring on inner row of plugs "C" press lever "B" from you. To ring on outer row of plugs "C" press lever "B" toward you. To listen on line press lever "A" from you. When released each lever returns to its normal position.

As explanation: No. 1 rings Exchange, his drop falls, operator inserts plug "C" and also presses lever "A." No. 1 asks for No. 2, operator places other plug of the pair in Jack 2 and presses "B" and connection is made.

Any practical electrician can readily see by reading a description of the working of this Board, that it is extremely rapid in operation. This is a very important point in a Board, as a rapid operating Board is essential to satisfactory service to your subscribers, and also economy in operating expenses.

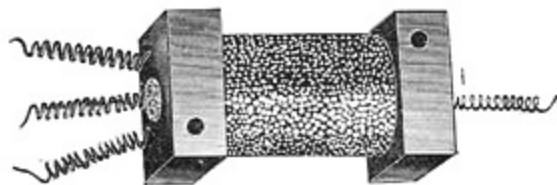
## WATCH-CASE RECEIVER.



PRICE, \$10.00.



PRICE, \$2.00.



INDUCTION COILS, 250 OHMS.

Price, - - - - 40 cents.



BRACKETS.

Price per M, - - - - \$20.



INSULATORS.

Price per M, - - - - \$20.

PINS.

Price per M, - - - - \$15.

## TESTIMONIALS.

THE NASSAU ELECTRIC RAILROAD CO.,  
BROOKLYN, N. Y., Jan. 30, 1897.  
THE KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—Replying to your inquiry regarding the service of your telephone system recently installed by your company, would say that the same is entirely satisfactory.

We have tested a number of telephones of different manufacturers, and consider your No. 11 instrument superior to any we have tried.

As a practical confirmation of our opinion regarding the good qualities of your telephones, we have just given your Mr. Ihmsen an order for fifteen additional instruments which you will please forward promptly.

Yours very truly,

F. S. DRAKE, Gen'l Supt.

THE OBERLIN TELEPHONE COMPANY.  
OBERLIN, O., March 5, 1897.  
KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—We have four desk 'phones and one wall 'phone in use in our exchange system, and they are giving such satisfactory service that I consider them by far the clearest and best 'phone we have yet tried. As evidence of our good faith in this matter, we shall at early date place an order with you for a dozen new 'phones.

With our best wishes for your success in bringing before the public your fine instruments,

We remain, yours respectfully,

OBERLIN TELEPHONE CO.  
N. C. BENSENOTEN, Mgr.

CITIZENS TELEPHONE COMPANY,  
FLORENCE, LAUDERDALE CO., ALA., Jan. 28, 1897.  
KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

DEAR SIRS:—The 'phones shipped us by you for trial, have been in use about two weeks. We have found them, so far, as perfect as any thing could be. We are very much pleased with them. Please ship us two (2) more at once by express.

Yours very truly,

CITIZENS TELEPHONE CO.  
J. W. WALKER, Supt.

**McKEESPORT TELEPHONE COMPANY,**  
McKEESPORT, Pa., March 2nd, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

DEAR SIR:—In reply to your communication of recent date, would say, that the Telephones purchased from The Keystone Telephone Co. for our system in this city, are giving satisfactory service, and we are well pleased with them.

Very respectfully yours,  
McKEESPORT TELEPHONE CO.  
By E. W. FITTS, Sec'y & Treas.

**THE JAYNES ELECTRICAL CO.,**  
BUFFALO, N. Y., March 4, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—In the past two years we have covered a great many manufacturers, stores, &c., with your Keystone Telephone and they have given universal satisfaction. Yours very truly,

THE JAYNES ELECTRICAL CO.  
W. C. JAYNES, Mgr

**BURLINGTON, IOWA.,** March 3, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—Replying to your favor of the 27th ult., I beg to say that I have been in active telephone service for ten years. For the last three years I have been connected with nearly all of the opposition companies, and beg leave to say that I consider your 'phones superior to any that I have handled, both in point of workmanship and as good "talkers," and can cheerfully recommend them to all. Another pleasing point is the gentlemanly way you treat all who may have dealings with you.

I beg to remain, yours truly,  
HARRY MILES.

**GREENVILLE, PA.,** March 5, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—Your favor of a few days since at hand. I have used your telephones for some time and find them entirely satisfactory. I have a Keystone Long Distance in my house and would not ask for a better telephone.

Yours truly,  
T. E. CRESSON.

**HOME TELEPHONE COMPANY,**  
KENTLAND, IND., March 3, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—I have at the present sixty-six telephones in service in my exchange and sixty-four of them are Keystone instruments, so that this is practically a Keystone exchange. I consider them the least liable to get out of repair of any phone on the market to-day and enclose you an order herewith.

Yours truly,  
WM. K. McCRAY.

**PEOPLES TELEPHONE CO.,**  
BUTLER, PA., March 2nd, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—We are using a number of your Keystone Telephones, and they are giving us entire satisfaction. Yours very truly,

PEOPLES TELEPHONE CO.  
J. E. FORSYTHE, Sec'y & Mgr.

**BINDLEY HARDWARE CO.,**  
PITTSBURGH, Oct. 16, 1896.

KEYSTONE TELEPHONE CO.  
City.

DEAR SIR:—The fifteen interior telephones furnished us some months since, have been working very satisfactorily up to this time and we have every faith that they will continue to do so.

Yours very truly,  
BINDLEY HARDWARE CO.  
City.

**ALTOONA PHOENIX TELEPHONE COMPANY,**  
ALTOONA, PA., March 12, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—In reply to your letter of recent date, I take great pleasure in recommending your latest improved transmitter with the extended arm. We have now placed fifty (50) of these on our longest lines and they are giving us entire satisfaction.

Respectfully,  
WILLIARD P. BEARDSLEY, Gen'l Mgr.



# THE WASHINGTON COUNTY TELEGRAPH & TELEPHONE CO.

GREENWICH, N. Y., March 15, 1897.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—It affords us great pleasure to testify to the merits of your telephone instruments. After a careful examination and trial, we find the workmanship first-class, the material A No. 1, and the operation perfect. Very respectfully yours,

THE WASHINGTON CO. TEL. & TEO. CO.  
Per J. SIMES McCLELLAN, Sec'y.

# HESEL, LEWIS & CO., LIMITED,

WILKES-BARRE, PA., March 3, 1897.

KEYSTONE TELEPHONE CO.,  
Pittsburgh, Pa.

GENTLEMEN:—Replying to your inquiry of recent date, we beg to make the following statement: We have installed at least 200 of your instruments, principally on private lines, which are giving perfect satisfaction. These instruments embrace all of the various types which you manufacture, and the conditions under which some of them are working, would render useless any telephone which was not of superior material and construction, for instance, we have twenty-five sets of style eleven, also six extension bells, all connected in series working with perfect results, over thirty-eight miles of line. This we consider a wonderful showing, testing both the power of your generator, and the talking qualities of the transmitters.

We have also installed many of your instruments in the mines, all of which are working satisfactorily and are in constant operation every day, being used for oral signals to the engineers. A telephone which will operate successfully in the mines, will give satisfaction wherever placed, for the conditions under which they work is the most severe test to which a telephone could be submitted.

We have just placed an order with your representative for about 125 sets, all of which we will have in successful operation in a short time.

Yours truly,

HESEL, LEWIS & CO., LIMITED,  
Per Wm. F. HESSEL.

# THE BRISTOL TELEPHONE CO.,

BRISTOL, VA.-TENN, April 23, 1896.

KEYSTONE TELEPHONE CO.  
Pittsburgh, Pa.

GENTLEMEN:—At a meeting of the Board of Directors of our Company last night it was unanimously decided, at the suggestion of our manager, to adopt the Keystone telephone exclusively in the future. Of the various different makes we have tried, your instrument is the only one which has given entire satisfaction. They "talk" well, and rarely get out of order; indeed, no repairs whatever have been necessary since they were put in use.

Yours very truly,

THE BRISTOL TELEPHONE CO.  
J. W. READ, Sec. & Treas.

# PLYMOUTH TELEPHONE CO.,

PLYMOUTH, IND., March 2, 1897.

KEYSTONE TELEPHONE CO.,  
PITTSBURGH, PA.

DEAR SIRS:—We have used a great many different kinds of telephones in our exchange but until we began to purchase your Keystone Nos. 2 and 11, we never found any that gave us entire satisfaction. We think your No. 11 Phone cannot be excelled and pronounce it the best long distance telephone in the market. We also think that your latest improved switchboard is superior in substantiability and rapidity of working to any board in the market. With best wishes we remain

PLYMOUTH TELEPHONE CO.,  
C. A. REEVE, Mgr.

# YOUNGSTOWN TELEPHONE CO.,

YOUNGSTOWN, OHIO, March 6, 1897.

KEYSTONE TELEPHONE CO.,  
PITTSBURGH.

DEAR SIRS:—We have a telephone exchange of about 800 subscribers and as all the apparatus was furnished by your company this is distinctively a "Keystone" exchange. We are using your No. 11 long distance telephone entirely and as we have never found a better telephone than this one we can recommend it to any one wanting a first class instrument.

(Signed) YOUNGSTOWN TELEPHONE CO.  
By EVAN J. EVANS.

## JOHNSTOWN TELEPHONE CO.,

JOHNSTOWN, PA., Oct. 30, 1895.

KEYSTONE TELEPHONE CO.,  
PITTSBURGH, PA.

We are using your long distance telephones on our hardest lines and find them very satisfactory, in fact when we have extremely hard lines to work we always use "Keystones."

(Signed) JOHNSTOWN TELEPHONE CO.  
M. J. CARROLL, Sec'y.

## THE ROCHESTER TUMBLER CO.,

ROCHESTER, August 2, 1895.

KEYSTONE TELEPHONE CO.

GENTLEMEN:—We have no hesitancy in saying that your telephone system now in use throughout our works and to the residences of our superintendents is giving very good satisfaction in fact the best telephone service we have had thus far.

Very truly,

H. C. FRY, President,  
THE ROCHESTER TUMBLER CO.

## OIL WELL SUPPLY COMPANY,

PITTSBURGH, PA., Sept. 4, 1895.

KEYSTONE TELEPHONE CO.,  
CITY.

GENTLEMEN:—We are pleased to say that the interior system of telephones which you have put in our offices is very satisfactory, and saves us a great many steps, as well as a great deal of time in communicating from one office to the other.

Yours truly,

OIL WELL SUPPLY COMPANY.  
LOUIS BROWN, 2nd Asst Treas.

## THE CITY &amp; COUNTY MUTUAL TELEPHONE CO.,

N. C. Watts, Manager.

KEYSTONE TELEPHONE CO.,  
PITTSBURGH, PA.

GENTLEMEN:—I have been handling the Keystone Telephone for some time and consider it in many ways superior to the Bell. The farther away from the Central Office, the better results are obtained. We recommend no other.

Yours very truly,

THE CITY & COUNTY MUTUAL TELEPHONE CO.,  
(Signed) N. C. WATTS, Manager.

## THE BROOKLYN HEIGHTS RAILROAD CO.

BROOKLYN, N. Y., Feb. 15, 1897.

KEYSTONE TELEPHONE CO.,  
PITTSBURGH, PA.

DEAR SIRS:—Your letter of the 13th inst. was duly received and contents noted. The telephones working on the guard wires at Ridgewood have worked as well as could be desired; they have worked through the storms as well as they did when you were here. Those at Flatbush are also working in first-class shape. We have not yet received the two extra instruments that you promised, and would like to have you hurry them up.

I expect to make requisition in a few days for a number of telephones, and would like to have you advise me how soon we could get them after the order has been placed.

Yours truly,

IRA A. MCCORMACK,  
General Superintendent.

## WESTMORELAND TELEPHONE EXCHANGE,

GREENSBURG, PA., March 3, 1897.

KEYSTONE TELEPHONE CO.,  
PITTSBURGH, PA.

GENTLEMEN:—I desire to say that we have found your Phones first-class in every respect. They are mechanically perfect, and their speaking quality is unsurpassed. We have had your Phones in use over a year, and they have not cost us one cent in repairs, nor have they lost any of their speaking qualities.

While we have tested a great number of Phones, we have found none of them superior to yours, and but very few come up to their standard of excellence.

Respectfully yours,

WESTMORELAND TELEPHONE EXCHANGE.

## WAYNE TELEPHONE CO.,

CLYDE, N. Y., Aug. 20, 1895.

KEYSTONE TELEPHONE CO.,  
PITTSBURGH, PA.

GENTLEMEN:—We have decided to adopt the Keystone Telephone for use throughout our exchange. We have come to this decision after a year's experience in testing the best telephones in the market. We have given a pair of these instruments, (Keystone) a test extending over several months constant use, and over a distance of from one mile to two hundred and fifty miles. In a comparison of the Keystone with "solid back" long distance Bell, the Keystone was admitted by an operator of the Bell Telephone to be far superior in clearness and distinctness of articulation. In sensitiveness it is a marvel. Talk anywhere in the vicinity of the transmitter is carried perfectly.

Yours truly,

(Signed) WAYNE TELEPHONE CO.

## TIMELY HINTS.

**I**N PLANNING for a Telephone Exchange be sure to arrange for almost double the capacity that you anticipate needing; that is, have your poles large enough for all possible future work.

Always employ a superintendent who has had experience in work of this nature; his services will save you many dollars later on.

Use the very best wire your means will allow. Copper is always preferable to any other kind, and is cheaper in the long run, as it will last indefinitely.

Good galvanized iron wire will last about ten years and is worth about one-third as much as copper.

Buy telephones and switchboards from manufacturers making high grade goods and not from firms advertising cheap grade instruments at cheap prices.

You will find KEYSTONE apparatus as highly efficient as goods of any other manufacturer.

Before buying Switchboards, allow us to submit working models of our Boards for your inspection.

We will furnish you with expert superintendents to lay out and build your Exchanges, or we will contract for and build them ourselves, turning Exchange over to you in complete working order. We will furnish you with estimate as to cost on all materials used in constructing work of this kind, and are in position to quote you low prices on wire, poles, cross-arms, insulators, pins, etc.

## FAULTS.

1. CAN HEAR BUT CANNOT BE HEARD.—This fault is frequently caused by leaving the receiver off the Switch-hook, after the conversation is ended, the neglect resulting in the premature exhaustion of the battery.

2. CAN HEAR AT BOTH ENDS BUT CAN RING ONE WAY ONLY.—This may result from a weak battery at one end, or the bell at the faulty end may be out of adjustment.

3. CAN RING IN BOTH DIRECTIONS, BUT CANNOT HEAR AT EITHER STATION.—This may result from a broken receiver-cord, or from a disconnected wire in some other part of the secondary or speaking circuit, at one end only.

4. RINGING AND SPEAKING ALIKE UNSATISFACTORY.—This may result from weak batteries at both ends, or from a bad joint or bad earth connection.

5. HEARING BAD, WITH RASPING NOISES.—This may result from either of several causes—a loose joint, rust or buckled diaphragm, or excessive battery power in microphone circuit.

6. NOISES IN ONE RECEIVER ONLY.—This will probably result from one or more particles of iron having been attached to the poles of the magnet, the diaphragm's vibrations being interfered with in consequence. To remedy this, unscrew receiver cap and wipe off magnet tip.

Badly soldered joints, loose terminals, dirty contacts, broken battery jars, and terminals short circuited, are also frequent causes of local faults.

Line faults may be caused by two or more lines in contact, by the line making partial or dead earth, or by a broken wire or insulator.

LINES IN CONTACT will result in cross talk, and bells ringing when not required.

LINES MAKING PARTIAL EARTH will cause ringing and speaking to be alike unsatisfactory.

# SUPPLIES.

Standard Receivers.....	\$ 1 25
Watch Case Receivers.....	1 25
Receiver Cords, 36 in.....	20
Extension Bells .....	2 50
"    "    Bridged.....	4 00
Induction Coils, 250 ohms.....	35
"    "    500 ohms.....	75
Lightning Arresters.....	15
Carbon Batteries.....	35
Dry    "    .....	30
Zincs.....	05
Sal ammoniac, per lb.....	25
Gravity Batteries for switchboard use.....	1 00
Power Generators.....	30 00
Cross Arms, 4, 6, 8 and 10 pin, per ft	04
Pins, 1 1/2 or 1 1/4 in. oak, per 1000.	15 00
Brackets, oak, per 1000.....	20 00
Insulators, glass, per 1000.....	20 00
"    porcelain, per 1000...	10 00
Galvanized wire No. 12 BB, per lb	03 1/2
"    "    No. 14 "    "    "	04
Cross arm braces, iron, per 100...	6 00
Pole steps, iron, per 100.....	4 00
Lag screws, 1/2 x 7, per 100.....	2 50
"    "    1/2 x 4, "    "    .....	2 00
Office wire No. 18, per lb.....	30

