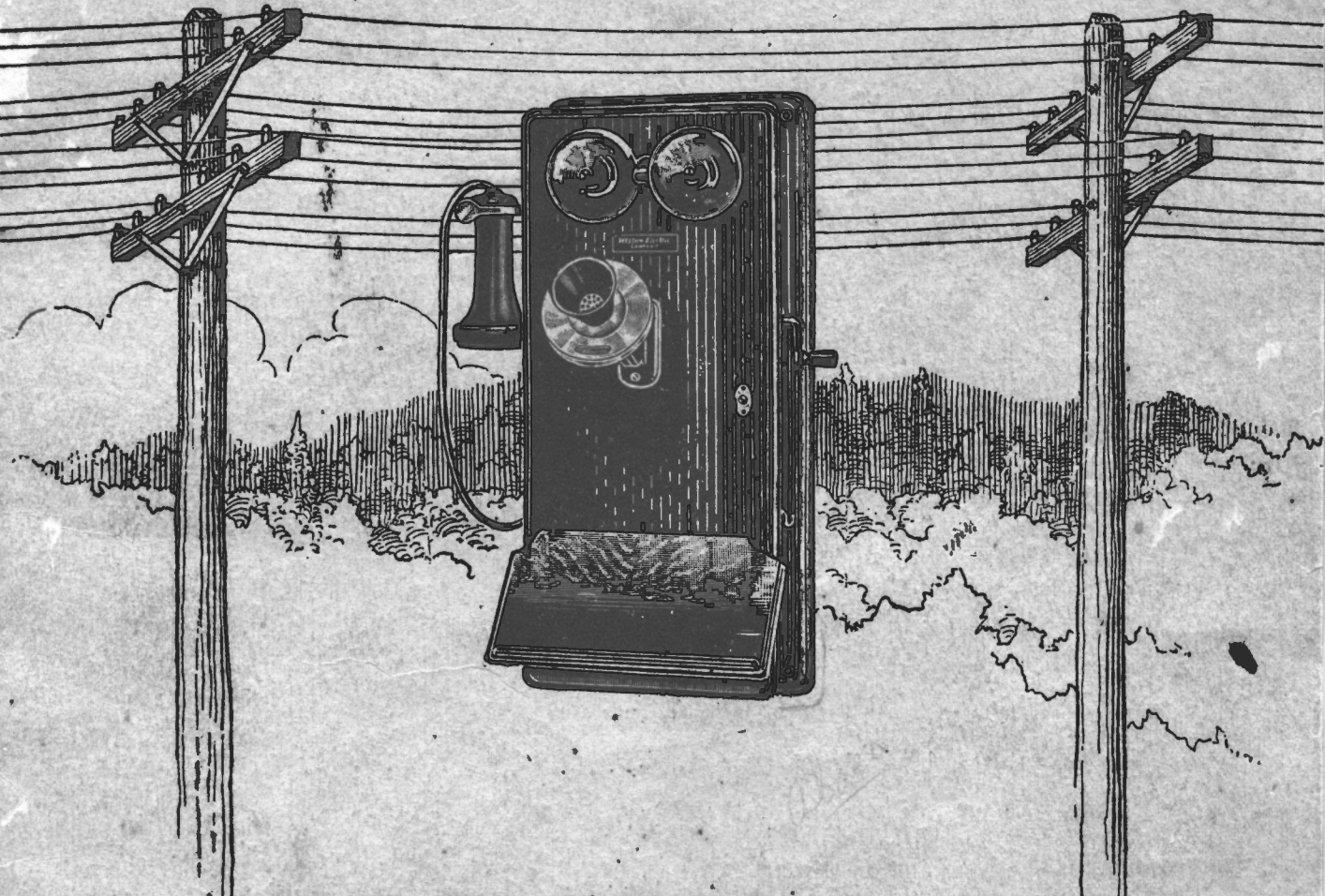


Western Electric



MAGNETO
TELEPHONES
AND
SUPPLIES

2200
2200
1340
3070
12

Magneto Telephones and Supplies

GENERAL

This catalog lists only such standard telephone apparatus and supplies as are generally used by a telephone company using magneto equipment and having about 200 telephones or less.

Other Equipment. In case your requirements cover other classes of telephone apparatus or telephone supplies not listed in this catalog, write us stating your conditions and we will send you a catalog or bulletins describing the class of material referred to.

The Western Electric Company. The Western Electric Company has been engaged in the manufacture of telephone apparatus for more than thirty-eight years, and during this period its equipment has been considered standard by the leading telephone authorities throughout the world. Each Western Electric distributing house, of which there are thirty-two in the United States, carries a complete stock of telephone apparatus, construction material and tools from which immediate shipments can be made.

Equipment for Every Electrical Need. In addition to manufacturing and marketing a complete line of telephone equipment, lead-covered cable and supplies, the Western Electric Company furnishes equipment for every electrical need. Information and prices on your requirements will be cheerfully furnished upon request, whether it be for a simple electric door bell or a large electric-lighting plant.

Prices. Western Electric prices are as low as possible consistent with high quality material and expert workmanship.

On account of the fluctuation in market value of the various raw materials used in the manufacture of telephone equipment and supplies and the many possible alternatives such as in switchboard equipment, it has been decided to omit all prices from this catalog and issue at frequent intervals a Net Price List covering all material herein listed. If you have not received a copy of this price list, write our nearest house at once

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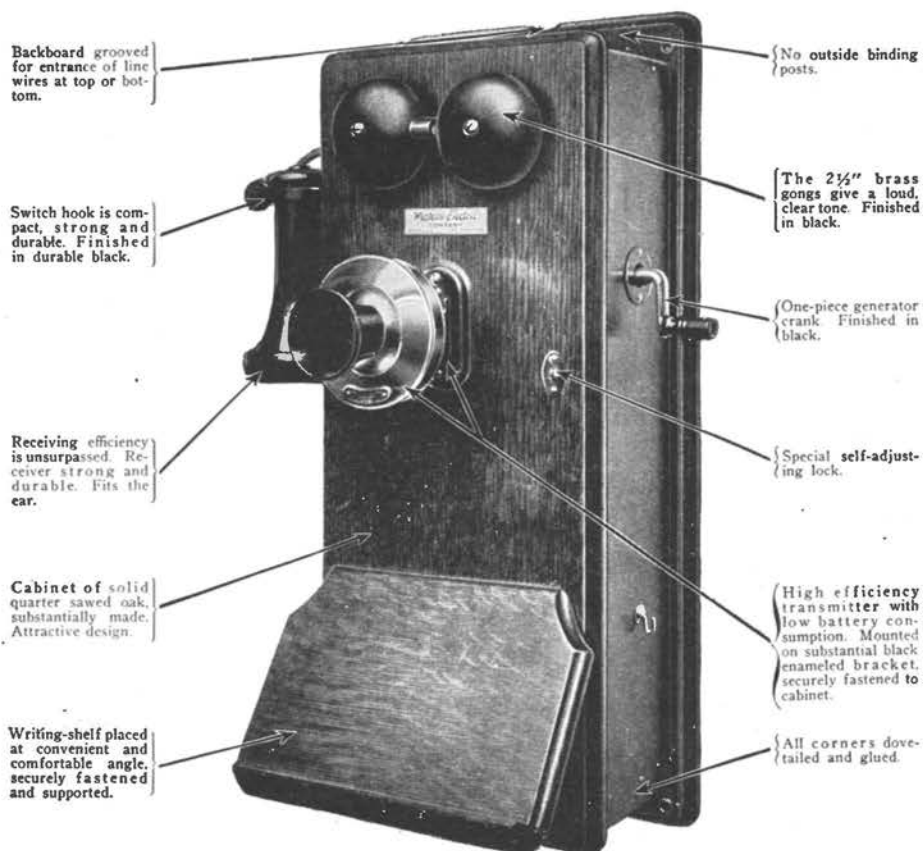
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ANOTHER LEADER—THE

Western Electric

No. 1317—Type C—Magneto Telephone

The new compact and serviceable set with the powerful and efficient No. 50 three bar generator.



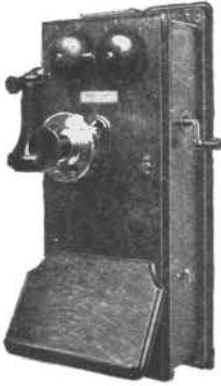
An exceptionally compact telephone with depth, height and width reduced to a practical minimum.

**These Sets are Shipped Completely Assembled—
In Individual Boxes**

MAGNETO TELEPHONES

(For Rural and Town Service)

General



Magneto Wall Telephone The magneto telephones herein listed will satisfactorily meet practically all requests for rural and town service.

For central battery service and for all special requirements we have telephones which will satisfy every need.

Western Electric telephones can be relied upon to give perfect satisfaction. Our valuable and extensive experience in the manufacture of telephone equipment covers a continuous period of more than 38 years and enables us to offer equipment which has proven its efficiency and reliability under the most severe conditions, and Western Electric telephones are now recognized by the leading telephone authorities throughout the world as standard.

Our large output enables us to purchase raw material under rigid specifications in large quantities at the lowest market prices. This, together with unequalled manufacturing facilities makes it possible for us to offer standard telephones at reasonable prices.

Every telephone, and in fact every part, is subjected to rigid inspection both in the raw material and during manufacture, as well as before shipment. No expense is spared to make these telephones give perfect service during a long and useful life.

Large and complete stocks are carried in our numerous distributing houses, which are located in thirty-two principal cities of the United States and are so situated as to make possible the delivery of goods in most cases within twenty-four hours of the receipt of the order. This system of locating distributing houses in the various commercial centers throughout the country insures prompt filling of orders together with a considerable saving in transportation, as our prices are F. O. B. the distributing houses.

CONDENSERS

On rural lines, trouble sometimes occurs due to parties "listening in" whenever their bells ring regardless of whether the call is for them or not. Whenever this is done, it is usually impossible to ring on the line after the receiver is off the hook. To overcome this feature it is customary to furnish telephones equipped with a condenser wired in the receiver circuit.

The Nos. 1317CR, CS, R&S wall telephones are so equipped and nearly all other Nos. 1317 and 1305 wall telephones and the corresponding desk telephones have terminals provided so that a condenser can be connected at any time. Screw mounting holes are provided so that no drilling is necessary. Condensers are listed elsewhere in this catalog.

BATTERIES

Western Electric Blue Bell dry batteries are furnished with and included in the price of certain of the following listed telephones and not in others. Further mention regarding batteries will be made under each type of telephone listed on the following pages.

PROTECTORS

We recommend our No. 12A protector for use with magneto telephones wherever there is danger of the telephone line coming in contact with power circuits. When lightning protection only is necessary, we recommend our No. 60A protector.

Protectors are furnished with and included in the price of the No. 1317 type telephones listed on the following pages. Additional information is given under each telephone listing.



Magneto Desk Telephone

Definitions of Terms

The following definitions of terms used in connection with our telephone sets later described may be helpful.

Bridging. When two or more telephone instruments each having one line terminal or binding post connected to one wire or conductor of the line, and the other terminal or binding post connected to the remaining line wire or ground (in the case of a grounded or common return circuit), they are said to be bridged across the line and are called bridging telephones.

Series. When two or more telephone instruments are so connected to a line that the current, both ringing and talking, flowing in the circuit must pass through each instrument in succession, they are said to be connected in series, and are called series telephones.

Series telephone systems are seldom used in present day service and their use is not recommended. The use of bridging equipment is recommended as being much more satisfactory.

Code Ringing. When two or more telephones are connected to a line (either series or bridging) it is necessary to use a different ring for each, such as two short, three short, one long and a short, two long and two short or other combinations, so that each party will know when he is wanted and will not have to answer the telephone each time the bell rings. Such a set of prearranged signals or rings is called a code and telephones for this service are known as Code Ringing Sets.

Four-party Selective Ringing Using Pulsating Current. Four telephones arranged for this service can be connected to a metallic (two wire) circuit and the bell of any one of the four rung at the will of the switchboard operator without ringing the others on the line, provided the switchboard is equipped with a generator or other ringing machine delivering pulsating current, such as our No. 48B Hand Generator (page 15) or No. 84E Interrupter (page 16.)

Telephones arranged for this service can only signal the central office and cannot call each other without the assistance of the operator.

Central Office Selective Signaling. Bridging telephones arranged for this service and equipped with a push button, connected to a metallic (two wire) circuit can call each other without signaling the central office, or by pushing the button while turning the generator crank, signal the central office without ringing the bells of the other telephones on the line.

This is accomplished by bridging the telephones across the line and wiring them so that the generators are normally connected to the two wires of the line, but when the push button is operated they are connected between one side of the line and ground. The switchboard drop is also permanently connected between the line and ground and of course is only operated when the generator is turned while the button is pushed.

Signaling Central Secretly. In addition to the push button these telephones are equipped with a special generator, which delivers both pulsating and alternating current. Operating the push button while turning the generator crank throws pulsating current out over the line, which operates the switchboard drop without ringing the other telephone bells connected to the line. In order to operate this system satisfactorily all the telephones on the line must be equipped with biased ringers and so connected as to have the armature biasing spring pulling in the same direction as the direction of the pulsating current flow, thus preventing their "tapping" when "central" is rung.

When the generator is operated without pressing the push button it sends out alternating current over the line which rings all the telephone bells on the line and also operates the switchboard drop or signal.

With this equipment "central" is signaled on every call, secretly or not, as desired.

Center Checking. Telephones arranged for this service are equipped with a special generator which delivers pulsating current only, and standard alternating current ringers. When the generator is operated central is signaled secretly, that is, none of the other telephone bells on the line are rung. When it is desired to call any other telephone on the line it is necessary to call the central operator and ask to have the telephone desired rung. This scheme gives the central operator control over the line and prevents calls being made without her knowledge. This is sometimes desirable when the telephone is connected to a toll or pay station line running between two exchanges located in different districts, where the calls should all go to one exchange and not to the other.

Service. The number of telephones that can be connected on the same line varies, ranging from 1 to 40 or more. However, a line having more than 20 or 30 telephones connected is usually very unsatisfactory from a service standpoint, except in case of necessity or for temporary service, the reason for this being that a line carrying so many instruments is bound to be in use almost continuously, the bells ringing at very frequent intervals and the user almost sure to be "rung in the ear" or otherwise interrupted during the conversation.

The following definitions of what may be considered a lightly loaded, medium or heavily loaded line are submitted with the thought that its limits are conservative enough so that under all but extreme conditions the figures given can be relied upon. On the following pages will be found a complete catalog of telephones and opposite the listing of each type is specified the kind of loaded line upon which the particular telephone will give best service. Telephones should never be used on lines loaded heavier than indicated as the maximum for each type.

The telephone lines referred to are assumed to be well insulated and free from high resistance joints.

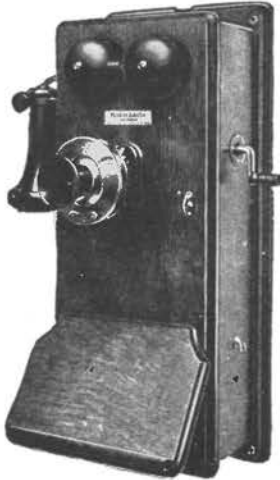
Light Loaded Lines. A light loaded line is one of less than 15 miles in length and not equipped with more than 12 telephones.

Medium Loaded Lines. A medium loaded line is one between 10 and 30 miles long and equipped with from 10 to 30 telephones.

Heavy Loaded Lines. A heavy loaded line is one up to 40 or 50 miles long or equipped with up to 40 telephones. Lines loaded with this number of telephones are rapidly going out of use and being broken up into shorter lines with fewer number of telephones. Lines of this length or loaded with this great number of telephones should be discouraged in all cases except as before stated, in cases of extreme necessity or for temporary service.

MAGNETO TELEPHONES

No. 1317 Type



No. 1317C Type (2 Cell)
Magneto Telephone



No. 1317 (3 Cell)
Magneto Telephone

General

The No. 1317 wall type magneto telephones listed herein represent the highest development yet attained in magneto telephone design and construction.

This result is due to the exceptional engineering skill employed and to our forty years' experience in the manufacture of telephones and telephone apparatus, which has enabled us to produce an instrument simple, yet pleasing in design, compact, yet with every part accessible for instant inspection, rugged, yet light in weight and more efficient than any other magneto telephone on the market.

Cabinet and Assembly

Finish and Appearance The design of this telephone is such that it is simple and pleasing in appearance, the dimensions being of good proportion and a durable high polished, hand rubbed finish is given the woodwork, which adds greatly to the appearance, while the interior of the cabinet is also given a protective finish.

Woodwork Carefully quarter-sawed oak is used and the construction is strong and durable. All joints are tongued and grooved, the best quality of glue being used. The backboard is slotted its full length to permit the telephone wires entering either from the bottom or top of the instrument.

Compactness and Accessibility These telephones are constructed with the aim of producing an instrument which will occupy a minimum of wall space yet with every part easily accessible for inspection.

Door The door is plain without paneling, thus permitting a better finish, and is hinged at the left by three electro-galvanized hinges so that when opened the operation of the ringer and generator can be observed while the generator crank is turned, without inconvenience and scratching of the door finish, which is likely to be the case when the door is hinged at the right side. The door is locked when closed by a self-centering screw of substantial design.

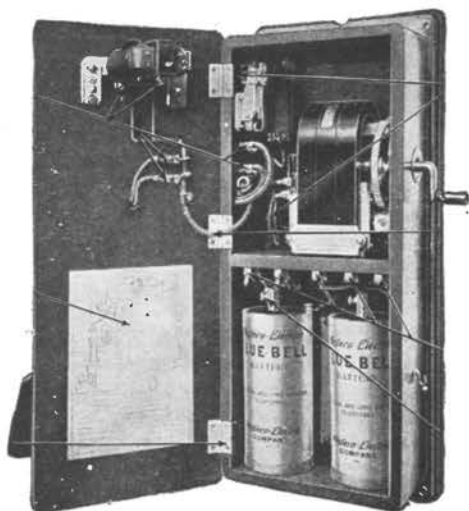
Wiring All interior wire is in cable form, the conductors in this way being rendered less liable to damage and at the same time making a much neater appearance.

Connections between the apparatus on the door and in the cabinet are made by means of a flexible cable. This obviates the necessity for soldered connections and minimizes the chances for trouble. The cable is held in place by a steel wire spiral.

The main binding posts are inside the cabinet, thus preventing tampering with the connections, accidental short circuits, etc. All terminals including those for the transmitter and receiver cords are screw terminals, and are plainly marked so that there can be no possible mistake when making connections or tests. The various cords, such as those for the transmitter or receiver, and the flexible leads running to the condenser, ringer and battery are all furnished with cord tips.

Miscellaneous Each telephone is equipped with a directory hook and the four mounting screw holes are bushed with metal sleeves, thus enabling the installer to put up or take down an instrument without marring the woodwork. A complete and explanatory circuit label or wiring diagram is also pasted on the inside of the door of each telephone.

No. 1317C Type (2 Cell)



No. 1317C Type

The new No. 1317C type magneto telephone is the result of a demand by many of our customers for a more compact type of telephone. The principal features of this new type telephone are as follows:

1. It is more compact, smaller and more pleasing in appearance than any telephone of this type.
2. The writing shelf is placed on a more perpendicular angle, which makes it more convenient for writing and also decreases the over-all outside depth of the cabinet. This also makes it impossible for the user to lean on the shelf hard enough to pull the instrument from its fastenings.
3. A short black finished transmitter bracket is provided.
4. Telephones of this type are shipped with the transmitter and writing shelf assembled and attached. Even with these parts attached, the shipping box is approximately the same size as the box used to ship the larger type instruments, which are furnished with the transmitter and writing shelf detached.
5. The new C type has been designed with a battery compartment only large enough to accommodate two cells, thus making possible a smaller and neater cabinet.
6. The No. 50 type 3 bar generator furnished with all C type telephones recommended for moderate and heavy loaded service is exceptionally efficient and powerful, it being capable of giving satisfactory ringing service over at least 95 per cent. of existing magneto lines now in use; for example, this generator will ring at least thirty 2500 ohm ringers connected on a No. 12 B.B. iron metallic telephone line, 15 miles in length, assuming, of course, that the line is in good electrical condition, that is, if it is properly insulated and free from high resistance joints. This generator will operate more telephones on one line than many of the 4 and 5 bar generators now in the field. For other use, as indicated in the following listings, our well-known No. 22 type 3 bar generator is employed, the service in these cases requiring that a generator which is not so powerful be used.
7. The transmitter bracket, gongs, switchhook, generator handle and lock escutcheon are given a permanent and pleasing black finish, which prevents tarnishing of the metal parts, which is the case when these parts are nickel plated.

SERVICE DATA

Code No.	Ringer Resistance Ohms	Generator	Push Button	Con-denser	Service
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RINGERS OPERATED BY ALTERNATING CURRENT

Code Ringing

1317CN	1600	50 type (3 bar A.C.)	Medium loaded lines
1317CR	1600	50 type (3 bar A.C.)	.....	1 m. f.	Medium loaded lines
1317CP	2500	50 type (3 bar A.C.)	.....	.....	Heavy loaded lines
1317CS	2500	50 type (3 bar A.C.)	.....	1 m. f.	Heavy loaded lines
1317CH	1000	22 type (3 bar A.C.)	.....	.....	Light loaded lines
1317CG	1000	50 type (3 bar A.C.)	.....	.....	Light loaded lines
1317CA	1600	50 type (3 bar A.C.)	1006A	.....	Central office selective signaling
1317CB	2500	50 type (3 bar A.C.)	1006A	.....	Central office selective signaling
1317CE	1600	50 type (3 bar A.C.)	1002A	.....	Central office selective signaling
1317CT	1600 (biased)	50 type (3 bar A.C. and pulsating)	1004A	.....	Signaling central secretly
1317CU	2500 (biased)	22 type (3 bar pulsating)	.....	.....	Center checking
1317CK	2500 (biased)	50 type (3 bar pulsating)	.....	.....	Center checking

RINGERS OPERATED BY PULSATING CURRENT

Four-Party Selective Signaling

1317CJ	2500 (biased)	22 type (3 bar A.C.)	Any one of four parties
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No. 1317 (3 Cell) Type

The No. 1317 wall telephones listed below are equipped with our standard long distance transmitter, concealed binding post hand receiver and cord, induction coil, and two battery connecting cords.



No. 1317N

All of these telephones are wired for a 1 m.f. condenser to be inserted in the receiver circuit. If condensers are desired, however, it should be so stated in the order excepting in the case of the No. 1317R and No. 1317S telephones, which are furnished equipped with a condenser as standard. This equipment should not be confused with the telephones for harmonic ringing service, which are furnished equipped with a 1 m.f. condenser wired in the ringer circuit.

The battery compartments in these telephones provide space for three standard $2\frac{1}{2} \times 6$ inch dry cells. This number is recommended and usually employed on extremely long distance connection or under severe service conditions where maximum obtainable transmission is absolutely necessary. However, for local exchange and moderate toll service two standard Blue Bell dry cells have been found entirely satisfactory.

SERVICE DATA

RINGERS OPERATED BY ALTERNATING CURRENT

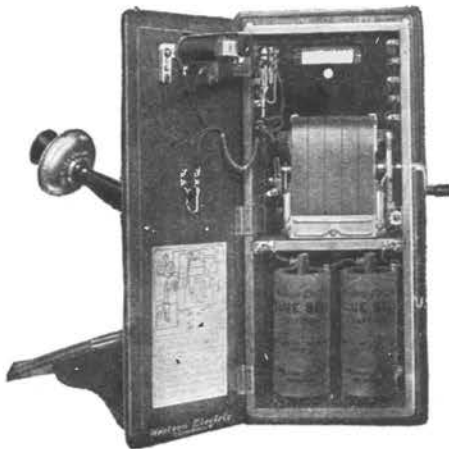
(Code Ringing)

Code No.	Ringer Resistance Ohms	Generator	Con-denser	Service
†1317N	1600	48 type (5 bar A.C.)	.....	Medium loaded lines
†1317P	2500	48 type (5 bar A.C.)	.....	Heavy loaded lines
†1317R	1600	48 type (5 bar A.C.)	21 type	Medium loaded lines
†1317S	2500	48 type (5 bar A.C.)	21 type	Heavy loaded lines
†1317AH	1000	22 type (3 bar A.C.)	.....	Light loaded lines
1317AK	2500 (biased)	48 type (5 bar pulsating)	.....	Center checking

RINGERS (BIASED) OPERATED BY PULSATING CURRENT

Four-party Selective Signaling

1317BS	(a)	22 type (2 bar A.C.)	Any one of four parties
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No. 1317N

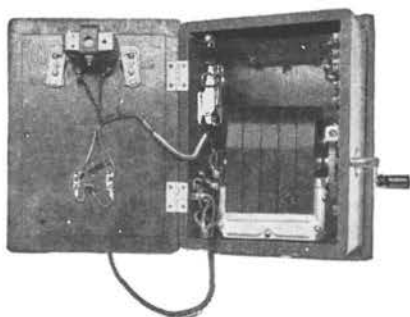
(a) The ringer furnished with this telephone has an inductive winding of approximately 1000 ohms and a non-inductive winding of approximately 3000 ohms, wound over the inductive winding of the spool. These two windings are connected in series and the junction brought out to an extra terminal for use in connecting an extension instrument or bell.

†These code ringing telephones can be arranged for "Central office selective signaling," by ordering a No. 465D key for each telephone to be so equipped. These keys are intended for mounting on the side of the telephones and can be easily wired into the circuit.

No. 1305 Type



No. 1305R



No. 1305R—Open

The No. 1305 type magneto telephones listed below are intended for use in places where a smaller telephone than the No. 1317 type is desired or made necessary on account of available space, the approximate dimensions of the backboard being $7\frac{1}{2}$ inches wide by $10\frac{5}{8}$ inches long.

This telephone has no space for batteries, nor is a writing shelf provided. The batteries in this case are supposed to be mounted in some out of the way place, either in a battery box or on a shelf.

The woodwork of the cabinet and the associated parts is of the same high standard as that of the No. 1317 telephone, the transmitting, receiving and ringing apparatus and efficiency of the two types being the same.

Our recommendation regarding batteries is the same as referred to under the No. 1317 (3 cell) type telephone, that is, when it is desired to secure the very highest transmission for long distance service or over lines where transmission conditions are very poor, three dry cells are recommended, but for all average local service and over all but the long toll lines, two Western Electric Blue Bell dry cells have been found to give perfectly satisfactory results.

The gongs of these telephones have a pleasing black finish which prevents tarnishing of the metal.

SERVICE DATA

RINGERS OPERATED BY ALTERNATING CURRENT

(Code Ringing)

Code No.	Ringer Resistance, Ohms	Generator	Service
*1305R	1600	48 type (5 bar A.C.)	Medium loaded lines
*1305AS	1600	50 type (3 bar A.C.)	Medium loaded lines
*1305M	2500	48 type (5 bar A.C.)	Heavy loaded lines
*1305AT	2500	50 type (3 bar A.C.)	Heavy loaded lines
*1305P	1000	22 type (3 bar A.C.)	Light loaded lines
1305N	50	22 type (3 bar A.C.)	Series lines

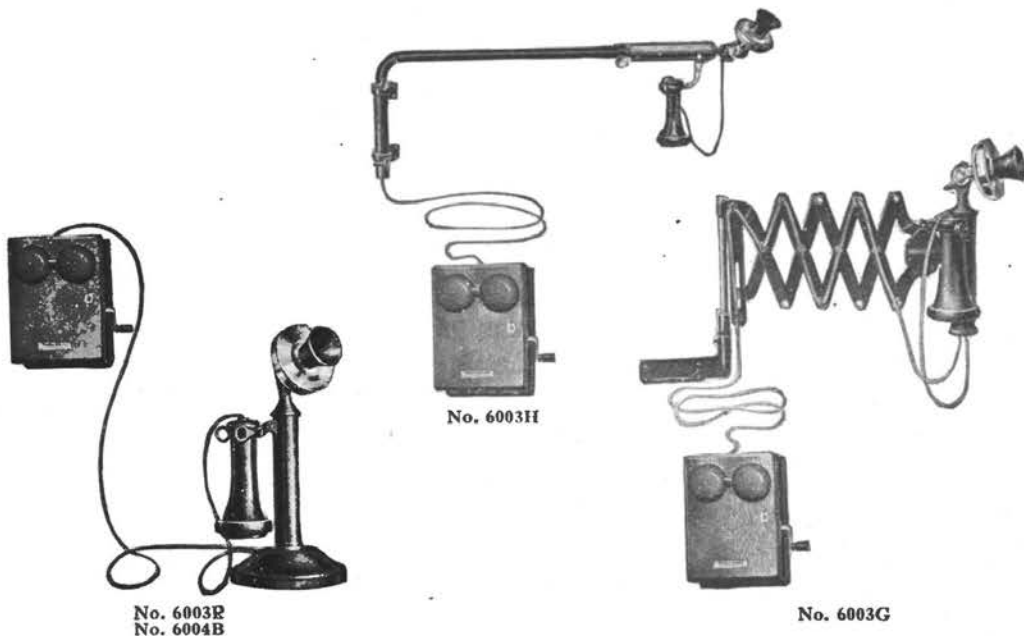
RINGERS OPERATED BY PULSATING CURRENT

(Four-party Selective Signaling)

1305U 2500 ohms (biased) 22 type (2 bar A.C.) Any one of four parties

*Arranged for a 1 Mf. condenser to be wired in the receiver circuit, but not so equipped unless specified on order

Desk and Arm Types



Desk telephones or those with extension arms are usually very popular, and, in the case of desk telephones, are used almost exclusively for business service, this probably being due to the convenience of this type of telephone over a wall instrument, and, being portable, can be placed on a desk, table or shelf within easy reach of the user.

The transmitting and ringing efficiency of these telephones is the same as of the corresponding wall telephones previously described.

DESK STANDS

The finish of the desk stands furnished with these telephones is our standard black, nickel finished stand being furnished only on a special order and at an advanced price. These desk stands are equipped with our well known standard long distance transmitter and concealed binding post receiver, and is standard Western Electric apparatus for this class of service.

TELEPHONE ARMS

The No. 1020AC adjustable arm is furnished for use on flat top desks or tables and has a radius adjustment of from approximately 35 to 48 inches.

The No. 1048AC arm is a collapsible, swinging arm mounted on top of a desk or table.

Length of arm closed, $9\frac{3}{4}$ inches.

Length of arm extended, $24\frac{1}{2}$ inches.

As in the case of desk stands, these arms are equipped with our well-known standard long distance transmitter and concealed binding post receiver.

The finish of both these arms is our standard black.

NOTE: For brackets for holding regular desk stands see page 26.

DESK SET BOXES

The woodwork of these boxes is of the same high quality and workmanship as that employed in the construction of our wall telephones. They contain a standard generator, ringer, induction coil and the necessary terminals for connecting the line and battery wires and the desk stand cord. In the case of the Nos. 6004B, C, D and E telephones, provision is also made for inserting a No. 21 type condenser which can be connected in series with the receiver. Condensers, however, are not furnished unless so specified.

Desk and Arm Type (Continued)

SERVICE DATA AND LIST PRICES

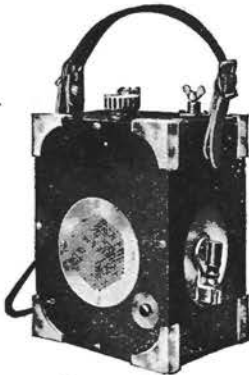
RINGERS OPERATED BY ALTERNATING CURRENT

(Code Ringing)

Code No.	Desk Stand	Telephone Arm	Desk Set Box	Ringer Resistance, Ohms	Generator	Service
6003B	1020AL	.....	315H	1000	22 type (3 bar A.C.)	Light loaded lines
6003G	.....	1048AC	315H	1000	22 type (3 bar A.C.)	Light loaded lines
6003H	.....	1020AC	315H	1000	22 type (3 bar A.C.)	Light loaded lines
‡6004B	1020AL	.....	300K	2500	48 type (5 bar A.C.)	Heavy loaded lines
‡6004C	1020AL	.....	300L	1600	48 type (5 bar A.C.)	Medium loaded lines
‡6004D	1020AL	.....	300AA	2500	50 type (3 bar A.C.)	Heavy loaded lines
‡6004E	1020AL	.....	300AB	1600	50 type (3 bar A.C.)	Medium loaded lines
6025A	1320CN	.....	315G	50	22 type (3 bar A.C.)	Series lines

‡Arranged for a No. 21 type condenser to be wired in the receiver circuit, but not so equipped unless specified on order.

MAGNETO TEST SETS



No. 1017 Test Set

NO. 1017 TYPE

A wooden box telephone test set equipped with a regular local battery talking circuit consisting of a No. 266W transmitter, No. 13 induction coil, No. 145W receiver and a special three-cell dry battery unit.

Code No.	Service	Weight including Battery	Size of Case Inches	Finish
1017B	For lightly loaded lines—it will ring 15 2500-ohm bells over a 15 mile No. 12BB iron metallic line.	8 lbs.	$4\frac{3}{4} \times 6\frac{3}{4} \times 7\frac{3}{4}$	Birch Mahogany
1017C	For moderately loaded lines—it will ring 33 2500-ohm bells over a 15 mile No. 12BB iron metallic line.....	8 lbs.	$4\frac{3}{4} \times 6\frac{3}{4} \times 7\frac{3}{4}$	Birch Mahogany

NOTE: The No. 1017C test set differs from the No. 1017B only in that it is equipped with a specially designed high efficiency generator. The No. 1017B will, under ordinary conditions, be found entirely satisfactory, but in case a more powerful set is required to meet unusual conditions, the No. 1017C set has been developed.

MAGNETO SWITCHBOARDS

General

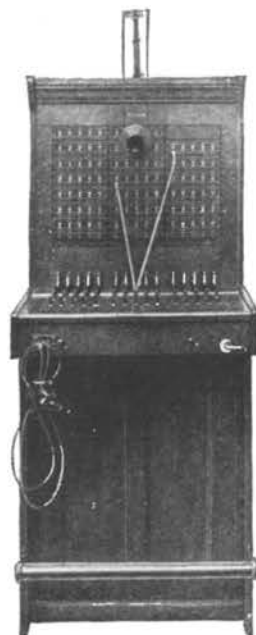
Western Electric switchboards have been the recognized standard of the leading telephone companies throughout the country for the past thirty-five years and have satisfactorily met every operating condition.

All lumber used in their construction is thoroughly seasoned and kiln dried, which prevents warping and cracking. All joints are tongued and grooved and securely fastened with a superior quality of glue. All joints between the sides, front and top are re-enforced with steel angles.

The exterior surface is given a very pleasing golden oak finish and the interior an ample coat of shellac to completely fill all pores.

All boards are equipped with a standard transmitter, head receiver, hand generator and night alarm.

Western Electric switchboards are entirely free from "crosstalk," on account of the fact that all signal and drop windings are enclosed in soft Norway iron shells and all wiring done with twisted pair wire. All keys, cords, plugs, jacks, signals, etc., are standard apparatus the same as used in the largest exchange switchboards.



No. 1220D Switchboard

No. 1200 Type

These switchboards are designed for the medium-sized magneto exchange. The smallest board—the No. 1220 has an ultimate capacity of 105 lines, and the largest—No. 1250—a capacity of 330 lines.

The apparatus on the face of the switchboard is supported by a rigid steel framework to which it is fastened with machine screws.

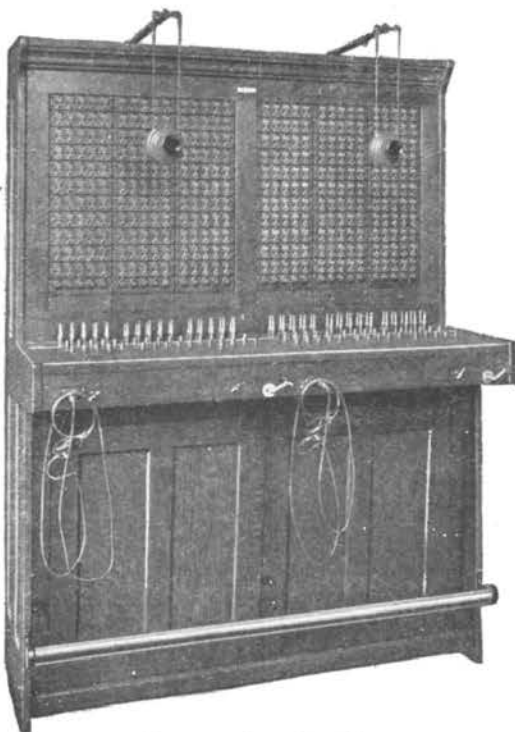
The plug shelf is covered with $\frac{1}{8}$ inch selected sole leather to afford protection to the woodwork from the impact of falling plugs when a connection is taken down by the operator.

All the switchboards are fitted with removable rear doors.

The No. 22 combined jack and line signals furnished with these boards on account of the exacting requirements made on them, are the most important pieces of apparatus in the switchboard. The signal when operated by a ring on the line causes the shutter to fall forward and expose a white surface which attracts the operator's attention. When a plug is inserted in the associated jack to answer the call, the shutter is automatically restored.

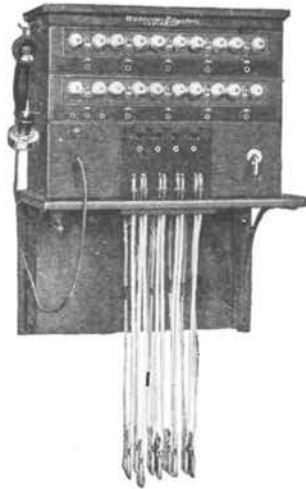
Each coil winding is covered with a soft Norway iron shell, which prevents any crosstalk to adjacent lines.

All No. 1200 types of switchboards can be equipped with 15 pairs of cords if desired.



No. 1250D Switchboard

No. 1800 Sectional Unit Type



Wall Type—20 Lines

Consists of:

- 1—AA-1 Top Unit
- 1—BA-7 Line Unit
- 1—BB-7 Line Unit
- 1—CA-1 Cord Unit
- 1—D-1 Supporting Unit

This type of switchboard corresponds in general design to the familiar sectional unit bookcase, and is offered for installations that are comparatively small at the start but are expected to grow rapidly, and where the needs for the future are indefinite. An ultimate capacity of 50 lines has been set arbitrarily as the maximum that should be used with this type of switchboard. With a low calling rate, however, it is safe to assume that as many as 70 or 80 lines can be accommodated.

The No. 1800 sectional unit type switchboard has these features:

All the operating features, electrical and mechanical, of the large Western Electric switchboards are retained.

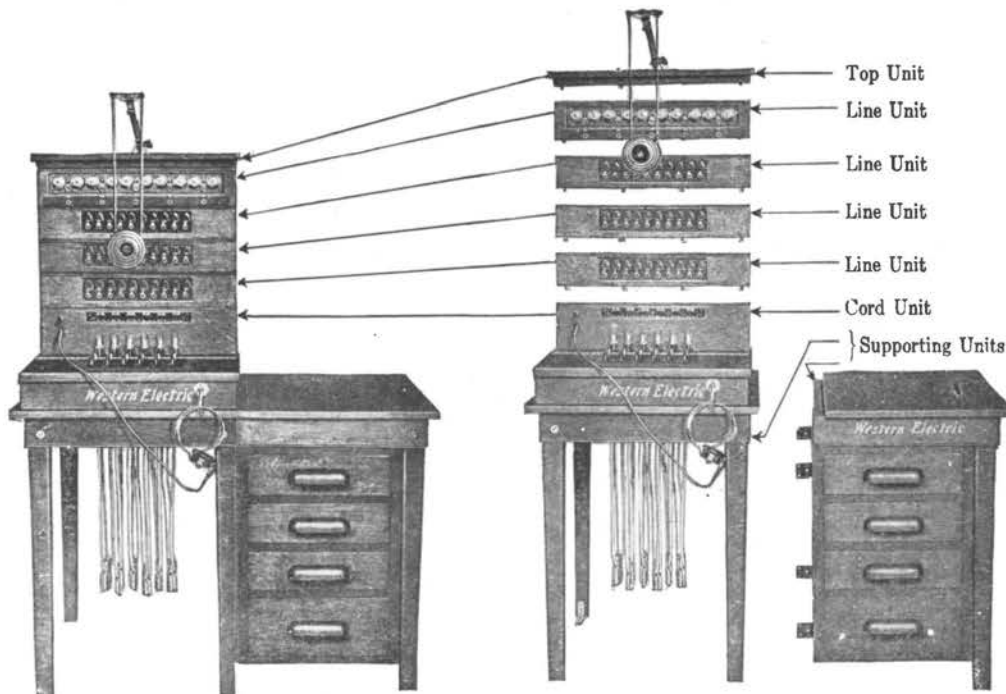
Easy to assemble a switchboard for any line or operating condition.

Necessary to buy only as much equipment as needed, switchboard capacity readily increased (by adding line units) as business grows, no investment lying idle.

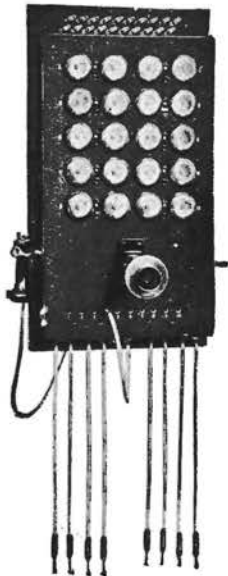
All terminals and apparatus instantly accessible.

Apparatus, material, construction and finished product are standard Western Electric Quality Products, the best that can be produced.

To meet various requirements, there are different types of base or supporting units, cord units, line units and top units. To assemble a board it is then necessary to select, first, a base unit; second, a cord unit; third, one or more line units, and finally a top unit. These assemble readily in the order given, and provide a perfectly practical switchboard to which additional line units may be added at any time.



Method of Enlarging No. 1800 Switchboard—Capacity up to 50 Lines



No. 1012 Switchboard

No. 1012 Switchboard

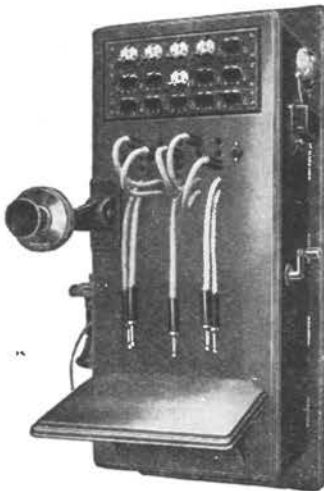
This switchboard is entirely satisfactory for small exchanges of 10 lines or less, where the switchboard is without a regular attendant, such as when located in a store. The cord circuits are not provided with "ring-off" signals. If rapid operating is required the use of the No. 1800 switchboard is recommended.

The light finish quarter-sawed oak cabinet is hinged in front to allow of easy inspection of the apparatus and wiring. A five-bar hand generator, No. 252W transmitter and No. 143AW receiver are furnished. The ringers are of 1000 ohms resistance, unless otherwise ordered, and are equipped with indicators to show which line is calling. The operator answers, listens in, and rings with a cord provided for that purpose. Connections are made by the other cords without the use of keys.

CAPACITY

Line circuits.....	10
Cord circuits.....	4

Dimensions of cabinet: Height, 2 feet 5 $\frac{1}{8}$ inches; width, 1 foot 3 $\frac{1}{2}$ inches; depth, 6 $\frac{7}{8}$ inches.



No. 106 Switchboard

No. 106 Type Switchboard

The cabinet is made of black walnut and the front is hinged to allow of easy access to the apparatus. The cabinet has a capacity of 10 subscriber lines, 1 toll line, and 4 cord circuits with supervisory drops. A five-bar hand generator, night alarm circuit, No. 250W transmitter and No. 143AW receiver are furnished. The drops are 500 ohms resistance and are bridged across the line. The operator answers, listens in, and rings with either of two duplicate cords provided for that purpose; connections are made by the other cords without the use of keys. Two boards are made, differing only in the equipment.

Code No.	Equipment
106A	Ten subscriber lines equipped with No. 19 drops, no toll lines, and four cord circuits.
106B	Ten subscriber lines equipped with No. 19 drops, one toll line, and four cord circuits.

In Ordering, Specify Only the Code No.

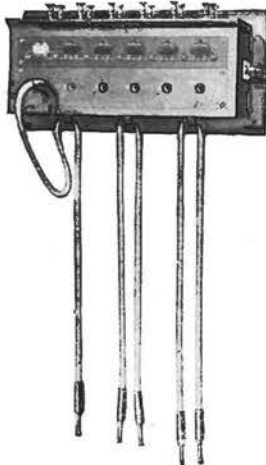
Pony Switchboards

The Pony switchboards, made in sizes from two to twenty lines, are very simple and inexpensive. They are designed for use where it is desired to connect only a few lines, and where the initial expense is an important consideration.

The cabinet is made of black walnut, and is equipped with binding posts on the top, to which the line wires are to be connected.

Suitable for either grounded (one wire) or metallic (two wire) circuits.

The board is equipped with a night alarm circuit, but not with an operator's outfit, as it is intended for use with a separate telephone for which a cord and plug are provided.



No. 1023 Pony Switchboard

Code No.	Capacity	No. of Pairs of Connecting Cords
1023	6 lines	3
1025	10 lines	5

In ordering these boards it will be necessary to specify only the Code No.

TELEPHONE APPARATUS AND SUPPLIES

Western Electric Blue Bell Dry Battery

For Telephone Work

There are no conditions under which dry batteries are used where reliability, high efficiency and long life are of greater importance than those met in telephone service.

A general service battery will not stand up under the severe conditions required of a battery for telephone use.

The Blue Bell was designed by the best telephone engineers in the country, especially for telephone service.

*Sizes of	Description	No. in Bbl.	Wt. of Bbl. Lbs.
Zinc Cans			
2½ x 6	‡Standard Fahnestock clip top.....	125	300

*Add 1 inch to the height of cells having extended carbon plugs, and ½ inch for other styles of connection.

‡Screw binding posts will be furnished when specified without extra charge.

Delivery F. O. B. Cleveland, Cincinnati, Brooklyn and New York. For warehouse deliveries write nearest house.



Regular

Edison Primary Batteries—BSCO Type

RENEWALS AND SEPARATE PARTS



Type No. 305

Description	305	305	403
Mfr's. No.	Porc.	Glass	Porc.
Type of jar	300	300	400
Capacity, ampere hours.....			
Complete cell			
Complete renewal			

Renewal Parts

- Zinc-oxide, assembled
- 1 can caustic soda
- 1 bottle special battery oil

Permanent Parts

- Porcelain jar, round
- Heat resisting glass jar, round
- Porcelain cover

One set nuts and washers for binding post per cell.

Dimensions

Miscellaneous Separate Parts

- Large wing nuts
- Brass washers
- Hexagon jamb nuts
- Double connectors

	Size Overall	Jar Only, Inside
	Inches	Dimensions
Type 305	6¾ x 10¼	6 x 8
Type 403	7½ x 10¾	6⅝ x 8¾



Type No. 403

Standard Gravity Batteries

5x7	6x8
Cell, complete	Cell, complete
Jar, glass, 5 x 7	Jar, glass, 6 x 8
Zinc	Zinc
Copper	Copper

Blue vitriol not included in above.



No. 1A Battery Box

Battery Boxes

Black finish pressed metal box lined with insulating material. Removable cover.

FOR HOLDING STANDARD No. 6 DRY CELLS

Code No.	Capacity	Dimensions
	Dry Cells	Inches
1A	3	3¼ x 7⅜ x 9⅞
2B	9	5⅜ x 7⅞ x 14⅜



Gravity Battery

Battery Testers—"Eveready"

Used for testing batteries in connection with telephones, gasoline automobiles, launches, and for any other use of like capacity.

A flexible cord is provided with each instrument.

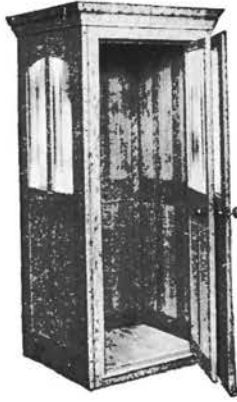
These meters have a small number of working parts and are not liable to get out of order. The hand comes to an instant and positive stop without vibration, giving a quick reading and saving the battery. Will work in either direction of current. Each instrument furnished in a chamos leather case.

List No.

1003

Voltammeter, 0-35 amperes, 0-11 volts.





Telephone Booths

Telephone booths are installed at the exchange, railway stations, stores, hotels, or wherever a telephone is located for the use of the public, as they provide privacy that usually cannot be secured in any other way. They also are desirable in factories or other noisy places.

Western Electric booths have double interchangeable walls, and are made of selected kiln-dried lumber. Various styles are furnished to meet different conditions and tastes.

Doors are made to swing to right or left or fold in on themselves, the latter type of booth being very desirable where space is very limited. Glass can be furnished in one, two, or three sides, as ordered.

Full description and prices on request.

Cable

The Western Electric Company is the largest manufacturer of lead-covered telephone cable in the world.

LEAD CABLE FOR TELEPHONE LINES

Cable construction requires no cross arms, insulators, pins, brackets or other material used when open wire lines are built.

Many companies spend thousands of dollars annually rebuilding and repairing lines damaged or destroyed by the winter storms of snow, sleet and wind. This expense and trouble can be avoided by installing cable, and the initial cost will be found to be actually less than open wire construction when the number of wires exceed twenty-five pair, while the yearly maintenance expense is many times less. In addition to these financial advantages, interruption to service and consequent dissatisfied subscribers are prevented.

We are prepared to furnish cable in sizes from 5 to 600 pairs, and will be pleased to furnish full information and quote prices on request.



CENTRAL OFFICE CABLE

Lead cable for use between the office pole and the switchboard protector rack in the central office can be supplied in any size and with the conductors insulated either with silk and cotton or wool.

SWITCHBOARD CABLE

The conductors are provided with double silk and single cotton insulation, which is colored in such a way that each pair and each single wire can be easily identified. The cable is protected from moisture and injury by a layer of lead tape and a heavy braid and is given a thick coat of fireproof paint over all.



Switchboard Cable

Code No.	No. of Pairs	Size of Conductor B.&S. Gauge	
81	5	} No. 22	
79	10		
24	20		
35	25		
62	30		
60	36		
70	40		
116	20		} 19
65	25		

Cable Terminals

NO. 18 TYPE



It is very important that all cables be protected at each end from lightning and crosses with electric light and power wires, as well as all open wire lines at a point just outside the central office or exchange building, as an extra protection to the switchboard apparatus.

The No. 18 cable terminal is recommended for this service, and is intended for mounting on poles. It has a galvanized iron black finish cover attached to the base by a short chain to prevent it falling to the ground or being mislaid.

It is equipped with standard No. 7A (7-ampere) fuses and carbon blocks, and is furnished complete with a 6 foot lead cable stub unless otherwise ordered. This stub, however, will not be required when single or twisted pair wires are used instead of cable between the central office pole and the switchboard protector rack or distributing frame.

Code No.	Line Capacity Pairs	Size	
		Height	Diameter
18A	10	19 $\frac{9}{32}$	} 9 $\frac{7}{16}$
18B	15	22 $\frac{1}{32}$	
18C	25	28 $\frac{3}{32}$	
18D	30	33 $\frac{1}{32}$	
18E	50	46 $\frac{3}{32}$	

Coin Collectors or Pay Stations

Coin collectors are used at public pay stations or wherever it is desired to collect the toll charge on a cash basis.

No electrical connections are necessary, it only being necessary to fasten the coin collector to the telephone by means of two or three screws.

The signals are given the operator automatically when the coins are deposited in the proper slot, there being no levers to push nor pull.



No. 11 Coin Collector

Code No.	Type	Slots for	Size, Inches
11	Wall telephone	{ Nickel, dime, and quarter	9 x 4 $\frac{1}{2}$ x 3
14	Desk telephone	{ Nickel, dime, and quarter	11 x 4 $\frac{1}{2}$ x 3 $\frac{1}{2}$

Condensers

Used in telephones on party lines where ringing trouble often occurs, due to parties "listening in" or leaving their receivers off the hook.

Telephones equipped with one of these condensers wired in series with the receiver overcome this difficulty, and it is possible to ring satisfactorily on a line with several receivers off provided the telephones are so equipped.



No. 21W Condenser

Code No.	Use	Capacity
21W	Magneto telephones, for wiring in series with receiver	1 Mf.

Cords

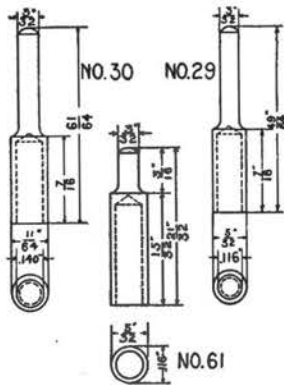
FOR TELEPHONE SETS AND SWITCHBOARDS

There is a Western Electric cord to fit any telephone set or switchboard. If none of the cords described below meet your requirements, write us, sending if possible a sample cord (an old one will do) or a sketch, paying particular attention to the kind of tip required.

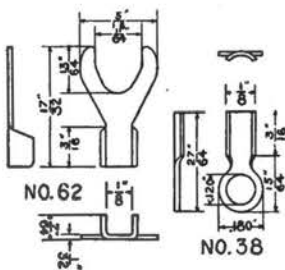
Always specify length of cord when ordering.

Cords (Continued)

TELEPHONE RECEIVER CORDS



Code No.	Description	Used With	Standard Length	Cord Tip
10	Two conductor tinsel cord, green silk covering.	Receiver on wall set	3 and 6 ft.	No. 29 (receiver end) No. 62 (set end)
92	Two conductor tinsel cord, red and blue twisted covering.	Receiver on wall set	2½ ft.	No. 62 (set end) No. 30 (receiver end)
454	Same as No. 92, except for tips.	Receiver on wall set.	3 ft.	No. 30 (both ends)



Cord Tips

DESK STAND CORDS

549	Two conductor tinsel cord, green silk covering.	Receiver on No. 1020 desk stand.	2½ ft.	No. 62 (stand end) No. 29 (receiver end)
390	Single conductor tinsel cord, green silk covering.	Transmitter on No. 1020 desk stand.	9½ ins.	No. 62 (stand end) No. 61 (transmitter end)
550	Three conductor tinsel cord, green silk covering.	No. 1020 desk stand to connect it with desk set box.	5½ ft.	No. 62 (both ends)

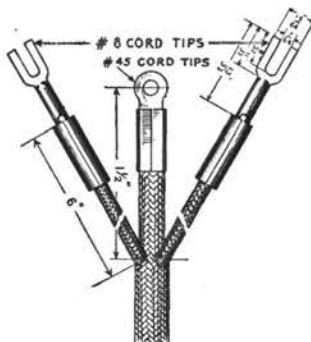
SWITCHBOARD CORDS (No Plugs Included)

It is customary to use 4 ft. switchboard and 6 ft. operator's telephone cords on small magneto and private exchanges, and 6 ft. switchboard and operator's telephone cords on other boards.

These lengths are carried in stock, but others will be furnished on request. The switchboard cords are regularly made in three colors, red, white and green. The white cords are furnished unless the color is specified.

In ordering, specify the Code No., length color, and if plugs are to be attached, give the Code No. of the plugs. No extra charge is made for attaching plugs to cords.

If possible, when ordering cords for use with other than apparatus of Western Electric manufacture, send sample of cord now in use.



No. 493 Cord Switchboard End

Code No.	Description	Used With	Standard Length	Cord Tips
493	Two conductor tinsel cord. Furnished in white, red or green covering, as specified.	No. 47 plugs on switchboards.	4 ft. or 6 ft. 3 ins.	Specify No. 8 cord tips
87	Four conductor tinsel cord, green silk covering.	Operator's head receiver and chest transmitter when attached to No. 103 or No. 137 plug.	6 ft.	No. 38 (plug end) No. 29 (receiver end) No. 38 (transmitter end)
436	Single conductor tinsel cord, green silk covering.	Swinging type switchboard transmitter.	6 ft.	No. 62 (swbd. end) No. 29 (transmitter end)
30	Two conductor tinsel cord, green silk covering.	Switchboard head receiver when attached to No. 85 plug.	4½ or 6 ft.	No. 47 (plug end) No. 29 (receiver end)
369	Two conductor tinsel cord, green silk covering.	Switchboard head receiver when attached to No. 136 plug.	4½ ft. or 6 ft. 3 ins.	No. 38 (plug end) No. 29 (receiver end)

DESK SET BOXES (Magneto)

For Use with Desk Stands, Telephone Arms, etc., on Magneto or Local Battery Lines



Nos. 300 and 315 Type Desk Set Boxes



No. 295 Type Desk Set Box

Nos. 300, 315 and 354 Types

Oak boxes equipped with induction coil, and with ringer, generator and condenser as indicated below.

RINGERS OPERATED BY ALTERNATING CURRENT

Code No.	Ringer Resistance Ohms	Generator	Condenser	Service	Used With
315H	1000	22 type (3 bar A.C.)		Light loaded lines	No. 1020AL desk stand and Nos. 1020AC, 1048AA, AB and AC telephone arms.
300K	2500	48 type (5 bar A.C.)	*	Heavy loaded lines	
300N	2500	48 type (5 bar A.C.)	1 Mf.	Heavy loaded lines	
300L	1600	48 type (5 bar A.C.)	*	Medium loaded lines	
300M	1600	48 type (5 bar A.C.)	1 Mf.	Medium loaded lines	
300AA	2500	50 type (3 bar A.C.)	*	Heavy loaded lines	
300AB	1600	50 type (3 bar A.C.)	*	Medium loaded lines	
315G	50	22 type (3 bar A.C.)		Series service	
				Grounded block wire circuits in railway block towers.	
*354H	1000	22 type (3 bar A.C.)				No. 1320CN desk stand

*Arranged for a No. 21 type condenser but not equipped unless so ordered.

RINGERS OPERATED BY PULSATING CURRENT

Four-party Selective Ringing

315J	2500 (Biased)	22 type (2 bar A.C.)	{ Any one of four parties.	{ No. 1020AL desk stand and Nos. 1020AC, 1048AA, AB and AC telephone arms.
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No. 1020AL

Desk Stands

WITH TRANSMITTERS, RECEIVERS AND CORDS

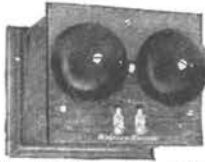
Code No.	Description	Finish
1020AL	For regular bridging magneto service. Includes 1 No. 329W transmitter, 1 No. 143AW receiver and cords.	Black

Distributing Frames

(See Page 24)

Extension Bells

These extension bells are intended for auxiliary use in connection with wall, desk, or telephone arm telephones. They consist of a ringer on a suitable mounting and two line terminals or binding posts.



No. 127 Extension Bell

NO. 127 TYPE

Ringer mounted in an oak box. Approximate dimensions, width 6½ inches; height 4⅞ inches; depth 4⅝ inches.

Code No.	Ringer No.	Condenser No.	Resistance Ohms	Use
127A	6AG	21D	1000	Bridging selective service
127E	38AG		1000	Bridging non-selective service
127F	38BG		2500	Bridging non-selective service
127G	38FG		1600	Bridging non-selective service



No. 392 Extension Bell

NO. 392 LOUD RINGING TYPE

Moisture-proofed loud ringing bells having a black finish metal cover and base with galvanized finish gongs.

When the extension bell is to be used on a central battery line a condenser must be connected in series with the ringer coils.

Base is arranged for mounting a No. 21D condenser. Condenser is not furnished, however, unless so ordered. The connecting leads to the ringer coils are so arranged that the condenser can be easily connected in series with the ringer without disturbing the line wires when desired.

Code No.	Resistance Ohms	Diameter Gongs	Use
392A	1000	6 ins.	*Bridging non-selective service
392B	2500	6 ins.	Bridging selective service
392C	1000	6 ins.	*Bridging non-selective service
392D	2500	6 ins.	Bridging selective service
392E	1600	6 ins.	*Bridging non-selective service
392G	1000	8 ins.	*Bridging non-selective service
392H	2500	8 ins.	*Bridging non-selective service

*Biasing attachment for selective ringing can be added if desired.



Mica Fuse, Western Union Style



Mica Fuse, Postal Style



No. 7-A Fuse



No. 11-C Fuse



No. 12-A Fuse

Mica Fuses

These fuses are furnished either with copper or foil tips, and in either Western Union or Postal style. The fuse is mounted on a mica base, or enclosed between two strips of mica.

When ordering, always specify ampere capacity desired and it is best to send sample of fuse wanted (an old one will do). If this is not possible, be sure and give the following information:

Length.

Style (whether Western Union or Postal).

Kind of terminals or tips (copper or tin foil).

Use (whether for exchange or telephone protection).

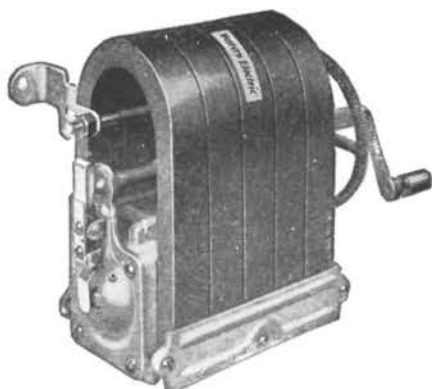
Tubular Fuses

FOR WESTERN ELECTRIC PROTECTORS With Fiber Shell

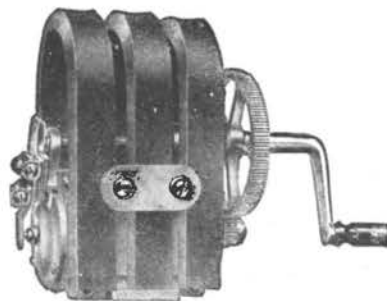
These fuses are regularly furnished in 7 amperes capacity unless otherwise specified, although fuses of from 1 to 8 amperes capacity can be furnished if so ordered. The No. 12 fuse contains a heat coil.

Code No.	Used With Protectors Nos.
7A	7, 61, 77 types
11C	58A, 58B, 59A, 79A
12A	12A

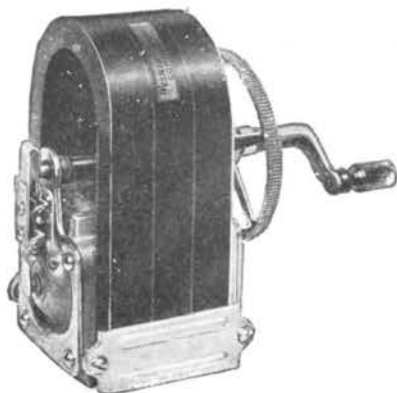
Hand Generators



No. 48A



No. 22A



No. 50F

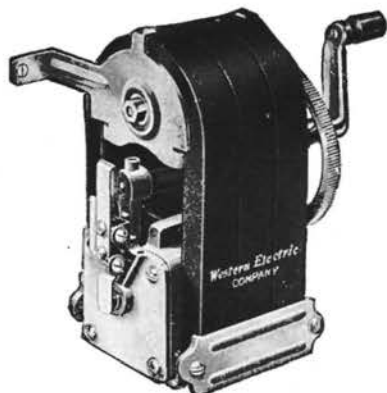
Code No.	No. of Bars	Current	Armature Normally	Use
22A	3	Alternating	Open	Magneto telephone sets and switchboards.
48A	5	Alternating	Closed		Magneto telephones
48B	5	Alternating and pulsating	Closed	Magneto telephones
48H	5		Open	Switchboards
50A	3	Alternating	Closed	Magneto telephones
50C	3	Pulsating	Closed	Magneto telephones
50E	3	Alternating and pulsating	Closed	Magneto telephones
*50F	3		Alternating	Closed	Magneto telephones
*50G	3	Pulsating	Closed	Magneto telephones
*50H	3	Alternating and pulsating	Closed	Magneto telephones

*The Nos. 50F, G and H differ from the Nos. 50A, C and E in that the rear mounting bracket is omitted and a black finished handle is used.

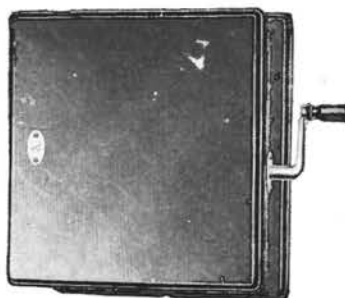
Hand Generator Boxes

Regularly furnished in oak.

- 299F 5 bar A.C. generator No. 48A mounted in box 8 x 9 x 5 $\frac{3}{4}$ inches.
- 299G 5 bar pulsating and A.C. generator No. 48B mounted in box 8 x 9 x 5 $\frac{3}{4}$ inches.
- 303G 3 bar A.C. generator No. 50A mounted in box 6 $\frac{3}{4}$ x 8 $\frac{9}{16}$ x 5 $\frac{1}{2}$ inches.

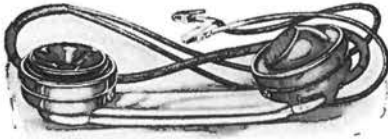


No. 50A



No. 299F

Hand Sets



No. 1001A

Code No.	Description
1001A	For use as a lineman's test set on central battery lines. Equipped with No. 244W transmitter, No. 131W receiver and 3 ft. No. 348 cord which has two spring clips.



No. 1002AC

1002AC	For use in place of a regular local battery bridging or central battery desk stand or transmitter arm. Equipped with No. 141W receiver, No. 267W transmitter, 4½ ft. No. 318 core.
--------	--



No. 40 Heat Coil



No. 67 Heat Coil



No. 70A Heat Coil

Heat Coils

Code No.	Description	Used With Protector Nos.
40	Cylindrical brass dummy coil	4, 51, 65, 78, 84, 87, 89, 1168 and 1169 types.
67	For central or local battery equipments.	
70A	Cylindrical black fiber dummy	



No. 13 Induction Coil



No. 23

Induction Coils

Code No.	Dimensions Inches	Used In
13	1 x 3¼	All standard bridging magneto telephones.
23	4¼ x 1 11/16	No. 1200G types of switchboards.

Interrupters or Pole Changers

NO. 84 TYPE



No. 84-A. Closed



No. 84-A. Open

- *84A An electrically operated pole changer producing alternating and positive and negative pulsating current. Used for supplying ringing current in small exchanges for four party selective and straight ringing. Operating coil is wound for direct current from a 24 volt storage battery. Ringing current is taken from a battery of dry cells. Size of base, 8 x 8 inches.
- *84C Same as No. 84A, except that the operating coil is wound for current from a 36 volt storage battery.
- *84D Similar to No. 84A except that it is arranged to deliver alternating current only. Operating coil is wound for current from one Edison BSCO primary battery.
- *84E Same as No. 84A except that the operating coil is wound for current from one Edison BSCO primary battery.

*Batteries not included in Code No.

Protectors

FOR TELEPHONES

No. 12 Type

Code No.	Protection Against	Consists of
12A	Lightning, crosses with electric circuits and sneak currents.	2 No. 12A 7 ampere fuses with heat coils, 2 carbon blocks and mountings.

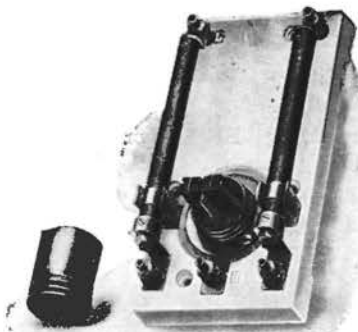
No. 53 Type

58A	Lightning and crosses with electric circuits.	2 No. 11C 7 ampere fuses, 2 carbon blocks and mountings.
58B	Lightning and crosses with electric circuits.	2 No. 11C 7 ampere fuses, 2 copper blocks and mountings.

No. 60 Type

60A	Lightning.	2 carbon blocks and mountings.
60B	Lightning.	2 copper blocks and mountings.

NOTE: The No. 12A is recommended in all cases except where the entire telephone system is entirely removed from all other electric lines. In these cases the No. 60 can be used.



No. 12-A Protector



No. 58-A Protector



No. 60-A Protector

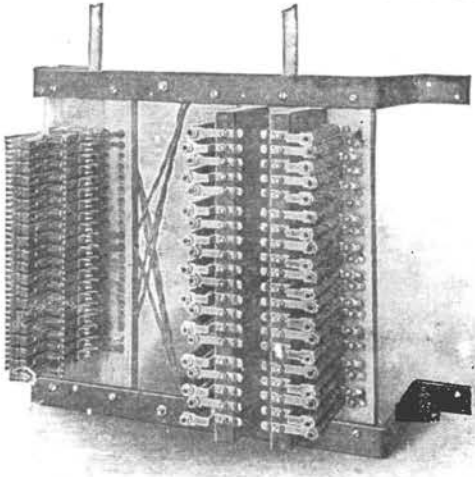
Protector or Distributing Frames

A distributing frame is an iron framework intended for supporting switchboard protective apparatus and terminal strips. It is usually located near the point where the outside wires enter the exchange building, and provides a satisfactory method of terminating such wires, as well as a very flexible means of cross connecting any outside line to any switchboard drop without interfering with the wiring inside the switchboard.

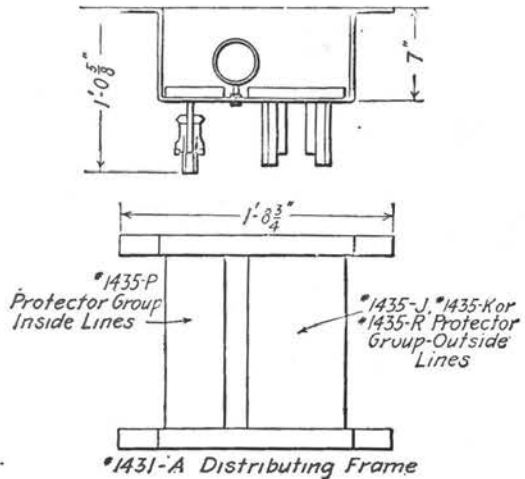
These distributing frames have been designed to meet the requirements of small central offices where simple and compact protective equipment is desired.

They are constructed of steel and given a coat of black metallic paint to prevent rust and give them a pleasing appearance.

No. 1431—20 LINE TYPE



No. 1431-A—20-Line Main



This frame has been designed to satisfy a demand for a small capacity, inexpensive, and yet sturdy distributing and protective equipment.

It is especially suitable for the small rural exchange owning and operating a No. 1800 or other switchboard, equipped for from 10 to 40 lines, with little prospect of immediate growth.

Where more than 20 lines are to be accommodated, two of these frames can be lined up, one above the other. Cross connection facilities are provided by rings on the back of the frame.

This frame is designed for mounting against the wall. The drilling is so arranged that our standard protector groups can be used.

In ordering this frame it will be necessary to specify the protector groups desired, consulting the following table:

Information and Price

Code No.	Used With	Capacity		Protector Groups Used	
		Inside Lines	Outside Lines	Inside Lines	Outside Lines
1431A	Any small switchboard.....	20	20-25	1435P	1435J or R

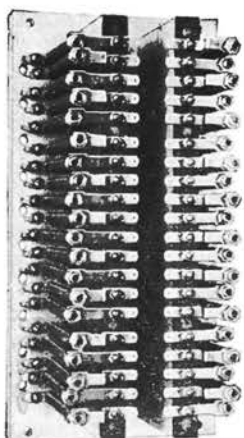
Nos. 1420 AND 1430—100 LINE TYPES

These frames are recommended for all No. 1200 type switchboards.

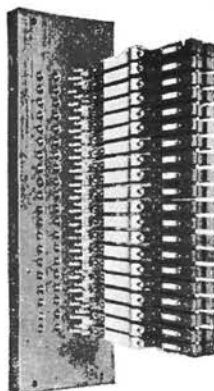
They consist of units of 100 lines capacity each. Any number of units can be assembled together to provide accommodations for any number of lines. They differ only in the supporting bracket, the No. 1430 type frames being designed to attach to the switchboard, and the No. 1420 being arranged to secure to the wall and thus be independent of the switchboard for support.

There is a Western Electric distributing frame for any size exchange. Write us your conditions and we will suggest suitable equipment.

Protector Groups



No. 1435J



No. 1435P



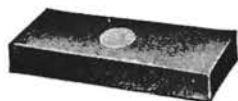
No. 1435R

These protector groups may be used for either central battery or magneto telephone lines and are intended to mount on Nos. 1420B, 1430D, E, F and 1431A distributing frames and cabinets.

They consist of a mounting of proper size, for attaching to the frame, on which the protector apparatus as listed below is assembled.

Code No.	Protects	Consists of
1435J	20 metallic outside lines against abnormal current.	20 protectors equipped with No. 7A fuses and mounted on a base which serves as a fanning strip.
1435P	20 metallic inside lines against high potential and sneak currents.	20 No. 1169A protectors mounted on a base which serves as a fanning strip.
1435R	25 metallic outside lines where fuse protection is unnecessary.	A terminal strip mounted on a base which serves as a fanning strip.

Protector Blocks



No. 1



No. 2



No. 19



No. 20

Code No.	Description	Used With		Protectors
		Protector Blocks	Protector Micas	
1	Plain carbon block with fuse metal.	No. 2	No. 3	Nos. 12A, 58A, 60A and 1435P protector groups.
2	Grooved carbon block without fuse metal.	Nos. 1 and 5	Nos. 3 and 12	Nos. 12A, 58A, 60A, and 1435P protector groups.
9	Paraffined wood dummy.			No. 1435P protector group.
19	Plain copper block with two pins.	No. 20	Nos. 10 and 11	Nos. 58B, 60B.
20	Grooved copper block with two bushings.	Nos. 19 and 21	Nos. 10 and 11	Nos. 58B, 60B.

Protector Micas



No. 3



No. 10

Code No.	Protector Blocks	Used With
		Protectors
3	Nos. 1 and 2	Nos. 12A, 58A, 60A and 1435P protector groups.
10	Nos. 19, 20 and 21.	Nos. 58B and 60B.

Receivers



No. 128W



Nos. 143AW and 144AW

Code No.	Description	Used With
*143AW	Concealed binding post hand receiver, composition case.	Telephone sets, desk stands, telephone arms, etc.
*144AW	Same as No. 143AW, excepting the case is hard rubber.	Telephones, desk stands, telephone arms, etc.
*128W	Standard bipolar head receiver, hard rubber case.	Operator's telephone set, all switchboards.

*Cord not included, must be ordered separately.

Ringers

The ringers listed below have gong posts suitable for either 1/2 or 3/8 inch woodwork, as indicated; spacers can be furnished, however, to adapt the No. 53 type to 3/8 inch woodwork and the No. 38 or 51 types to either 3/8 or 1 1/2 inch woodwork. Black finish gongs are furnished as standard, but nickel finish gongs can be supplied if desired.



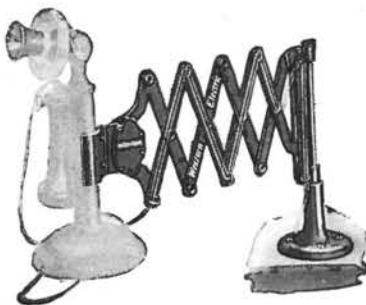
No. 51 Type

Code No.	Approx. Resistance Ohms	Gongs		Mounts in Woodwork Ins.	Use
		Code No.	Diam. Ins.		
38AG	1000	26A	3	5/8	Local battery (magneto) telephones.
38BG	2500	26A	3	5/8	
38FG	1600	26A	3	5/8	
51AG	1000	25A	2 1/2	5/8	
51BG	2500	25A	2 1/2	5/8	
51FG	1600	25A	2 1/2	5/8	
53AG	1000	25A	2 1/2	1 1/2	
53BG	2500	25A	2 1/2	1 1/2	
53FG	1600	25A	2 1/2	1 1/2	

Telephone Brackets

Black finished, adjustable folding arm arranged with a clamping device for holding a desk stand telephone.

The desk stand is not included in the price of the bracket and must be ordered separately.

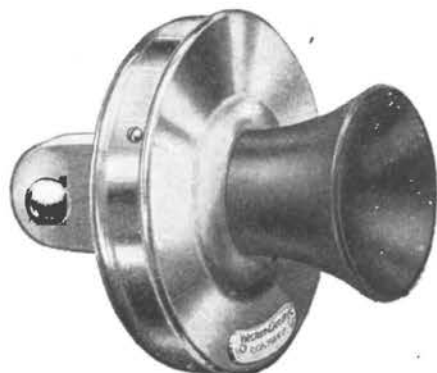


No. 147AC

Code No.	Mounts On	Length, Inches	
		Closed	Extended
147AA	Side of roll top desk.	8 1/4	24
147AB	Wall or side of flat top desk.		
147AC	Top of flat top desk.		
147CA	Side of roll top desk.	10	36
147CB	Wall or side of flat top desk.		
147CC	Top of flat top desk.		

Transmitters for Telephones

Code No.	Description	Use
329W	High resistance, insulated transmitter. Provided with mounting lug and clamping bolt. Nickel plated case. Similar to No. 311W except provided with clamping bolt.	Magneto and central battery desk stands and telephone arms.
350W	High resistance, insulated, bracket type transmitter. Equipped with two cords. Nickel plated case with black finished bracket and arm.	Magneto and central battery wall telephones, requiring a bracket type transmitter.
355W	High resistance, insulated transmitter. Arranged to mount on an iron bracket of the type which forms a part of the No. 350W transmitter. Not provided with mounting lug. Nickel plated case.	Magneto and central battery wall type telephones.



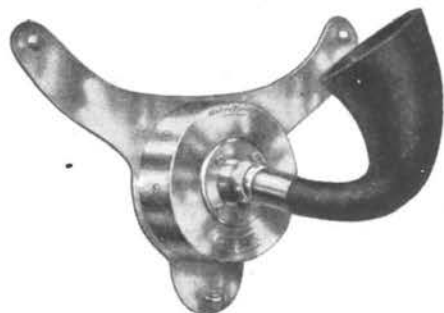
No. 329W



No. 350W



No. 232W



No. 234W

Transmitters for Switchboards

232W	High resistance, non-insulated transmitter. Arranged to be suspended by two cords. Black finish.	In connection with small switchboards as an operator's transmitter.
234W	High resistance, insulated transmitter. Arranged to be supported by a band around the operator's neck. This attachment is not furnished with the transmitter.	Magneto or central battery switchboards as an operator's transmitter. No. 3 type transmitter attachment is used as a support.

Transmitter Parts

MOUTHPIECES

No.	Transmitters Used On
P-84570	Nos. 232W, 267W, 280W, 282W, 284W, 286W, 291W, 297W, 301W, 311W, 317W, 325W, 329W, 350W and 355W.
P-91818	No. 234W.
P-91425	No. 283W.
P-106561	No. 312W.

RIM SCREWS

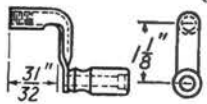
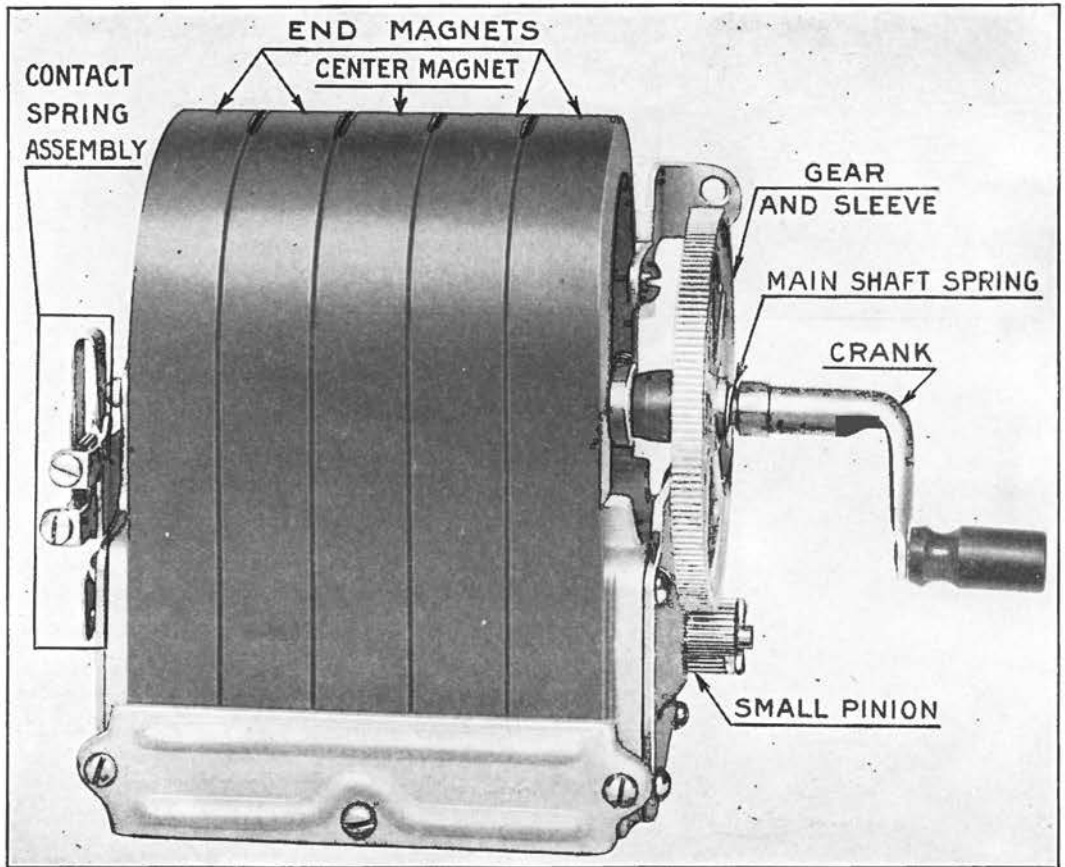
P-91278	No. 280W.
P-91811	Nos. 282W, 283W, 284W, 291W, 301W, 311W, 317W, 329W, 350W and 355W.
P-180658	No. 267W.

Transmitter Attachments

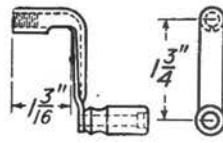
Used to support the No. 234-W chest transmitter. Consists of two nickel buckles and a tape strap.

Code No.	Color of Strap
3A	Slate
3B	Black
3C	White

Generator Piece Parts



P-131285
P-136810

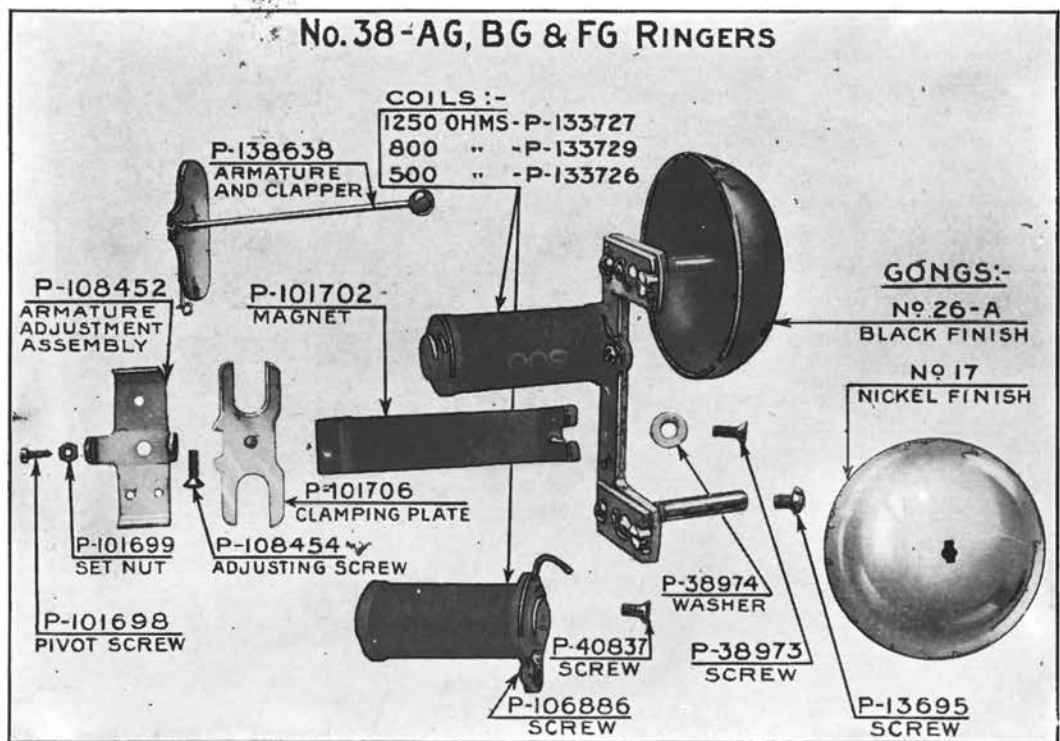
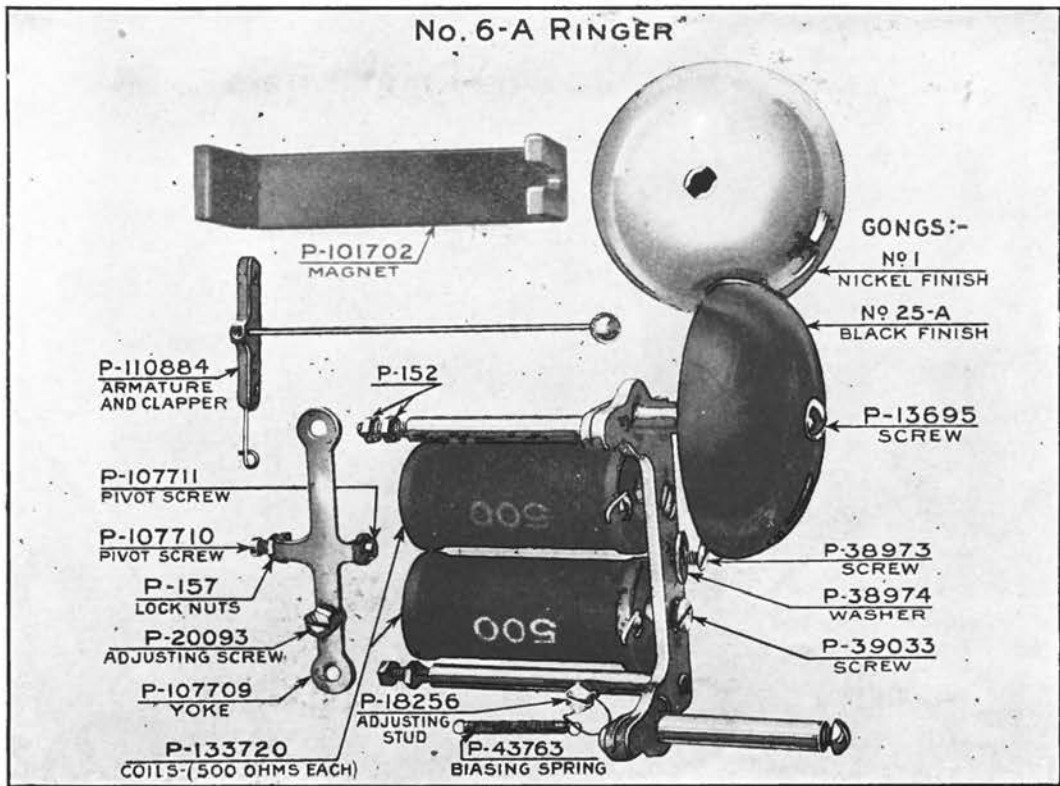


P-131286

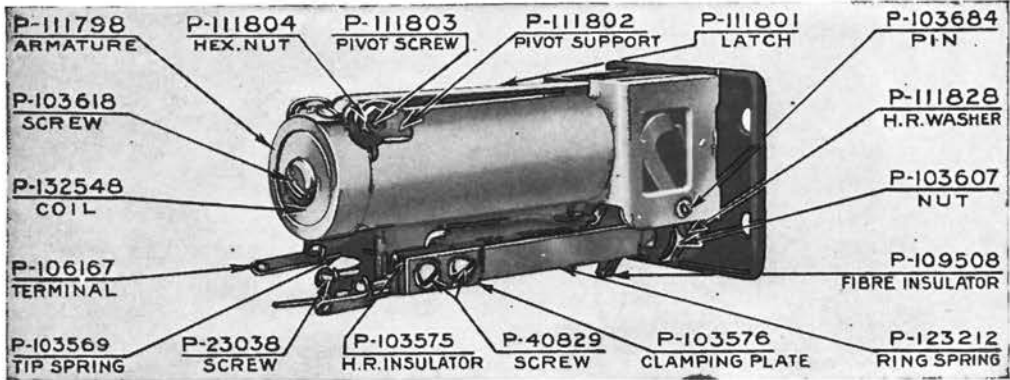
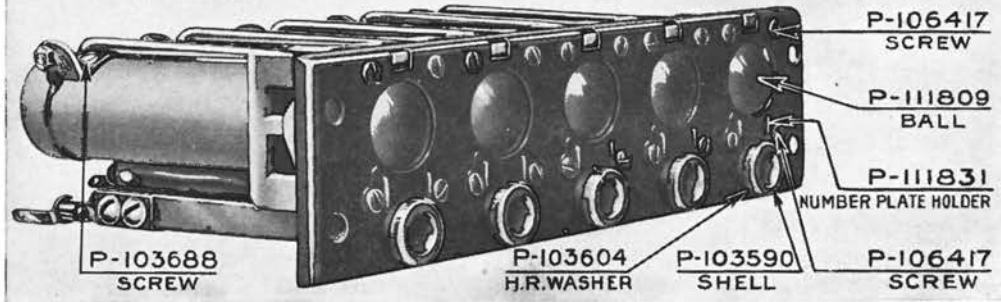
Name of Part	Part Number	Generators
Contact spring assembly	See footnote † P-18383 See footnote * P-41533	Nos. 22A, B, D, T, BA, BD and BT Nos. 22E and BE No. 47A No. 48A
End magnets	P-106117 P-136786 P-42979 P-136790 P-136793	Nos. 50A, C, E, F, G and H Nos. 22A, B, D, T, BA, BD and BT No. 47A No. 48A
Center magnet	P-136793 P-18376 P-20036 P-129359	Nos. 50A, C, E, F, G and H Nos. 22A, B, E, T, BA, BE and BT Nos. 22D and BD No. 47A No. 48A
Gear and Sleeve	P-126838	Nos. 50A, C, E, F, G and H Nos. 22A, B, E, T, BA, BE and BT No. 47A No. 48A
Main shaft spring	P-18377 P-19671 P-131285 nickel finish P-136810 black finish	Nos. 22A, B, E, T, BA, BE and BT No. 47A No. 48A Nos. 50A, C, E, F, G and H Nos. 22D and BD Nos. 22A, B, D, E and T Nos. 22BA, BD, BE and BT
Crank—see footnote (a)	P-36263 nickel finish P-131286 nickel finish	Nos. 50F, G and H No. 47A No. 48A
Pinion	P-21624 P-42970 P-101493 P-44621 P-44625 P-44626 P-129835 P-113415 P-113434 P-138552	Nos. 50A, C and E Nos. 22A, B, D, E, T, BA, BD, BE and BT No. 47A No. 48A Nos. 50A, C, E, F, G and H Nos. 22A, B, E, T, BA, BE and BT Nos. 22D and BD No. 47A No. 48A Nos. 50A and F Nos. 50C and G Nos. 50E and H
Armature (wound)		

†Order as follows: Example: 1 contact spring assembly for No. 22A generator.
*The Nos. 22E and BE generators have only two magnets; P-18383 on the contact spring end and P-136786 on the crank end.
(a) Cranks P-131285 (nickel finish) and P-136810 (black finish) are the same except for finish and are interchangeable.

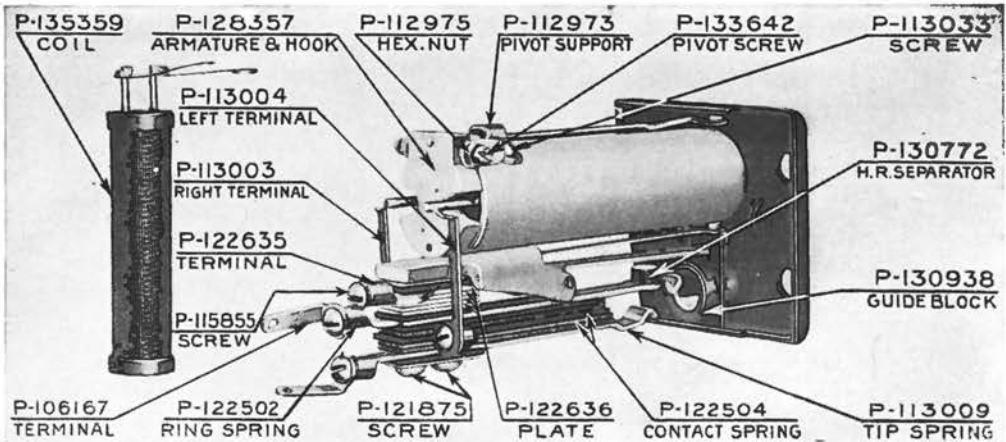
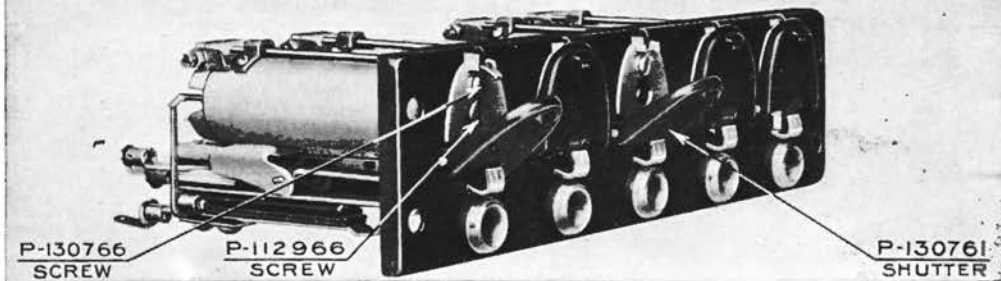
Repair Parts for Nos. 6-A and 38 Types



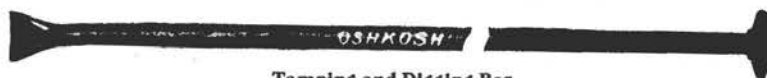
No. 2-C COMBINED JACKS & SIGNALS



No. 22-C COMBINED JACKS & SIGNALS



TOOLS



Tamping and Digging Bar



Plain Digging Bar



Regular
Spoon

Long Handle
Shovel

Wood
Tamper

Digging Bars

Plain, or with tamping head
6, 7 or 8 ft. lengths

Long-handled Shovels

6, 7 or 8 ft. long-handled shovels

Long-handled Spoons

6, 7 or 8 ft. long-handled spoons

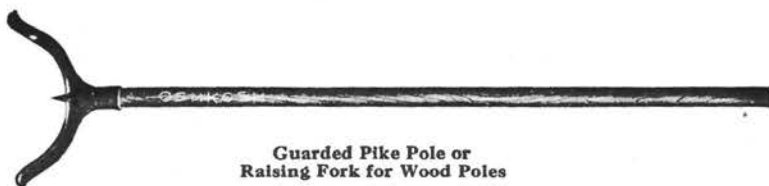
Wood Tamping Bars

7 ft. wood tamper with iron shoe

NOTE.—In ordering shovels, spoons or digging bars, be sure to specify length wanted.



Plain Pike Pole



Guarded Pike Pole or
Raising Fork for Wood Poles

Plain Pike Poles

12, 14, and 16 ft. lengths

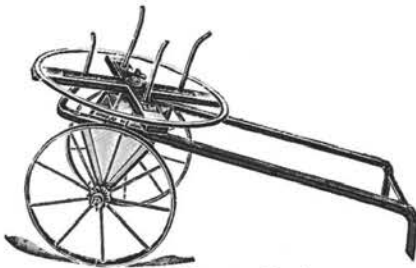
Handles made of Washington Fir, and Pikes of
Crucible Steel.

Raising Fork

(or Guarded Pike Pole)
12, 14 and 16 ft. lengths

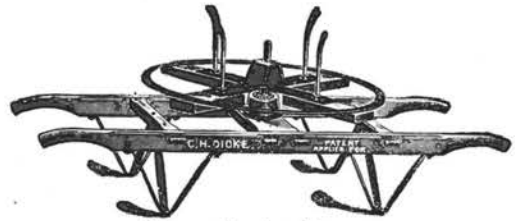
Handles made of Washington Fir, and Pikes of
Crucible Steel.

Wire Pay-out Reels



Wasson Pay-out Reel

List No.
760209
760202



Pay-out Reel on Barrow

Description
Wasson Pay-out Reel and Cart.
Pay-out Reel on barrow.

Buffalo Grips



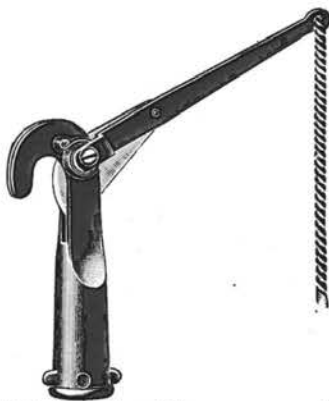
Buffalo Grip Without Pulley



Buffalo Grip With Pulley

List No.	No.	Description	Weight, Lbs.
760213	1	Grip, extreme opening .22 in. for all sizes of wire up to No. 6 inc.	1 1/4
760214	1	Same, with pulley for 3/8 in. rope	1 1/2
760216	2	Grip, extreme opening .35 in. for all sizes of wire up to No. 0 inc.	1 3/4
760217	2	Same, with pulley for 1/2 in. rope	2 3/4

Telephone Tree Trimmer



Telephone Tree Trimmer



Standard Tree Trimmer

List No.	Description	Approx. Wt., Each
760280	Head only, without pole and rope	1 1/2 lbs.

Standard Tree Trimmer

List No.	Description	Approx. Wt., Each	Lbs.	Oz.
760275	4 ft. Standard	2		8
760276	6 ft. Standard	3		2
760277	8 ft. Standard	4		0
760278	10 ft. Standard	4		4
760279	12 ft. Standard	5		0

Pole Climbers—Eastern Type



Eastern Climber

Length 15 to 18 Inches

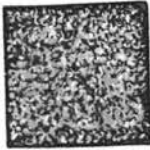
List No.	Description	No straps.
1900	Riveted strap loops.	No straps.
1901	Punched strap loops.	No straps.

NOTE: When ordering climbers, always specify length wanted.

Climber Straps and Pads



Eastern Climber Straps



Soft Pads

- | | |
|----------|---|
| List No. | Straps for Eastern climbers. |
| 5301-1 | Straps for Eastern climbers, with sheep-lined pads. |
| 5301-2 | Straps for Eastern climbers, with felt-lined pads. |
| 5301-3 | Strap pads, sheep-lined. |
| 8200 | Strap pads, felt-lined. |
| 8201 | |

Each set consists of two upper straps and two lower straps.

Belts and Safety Straps



Combined Safety and Jack Strap



Belt and Safety Strap



Belt with Rings



Plain Tool Belt

List No.	Description	Approx. Weight, Lbs.
5206-1A	2 1/4 in. belt, including safety strap	3 1/2
	The safety strap is 1 3/4 inches wide and 6 feet long, and provided with a snap at each end.	

BELT AND SAFETY STRAP

5250	1 3/4 in. x 6 ft. safety strap with japanned snaps.	2 1/2
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SAFETY STRAP

5202	2 1/4 in. belt with rings for attaching safety strap.	2
5204	3 1/2 in. extra wide belt (no safety strap included).	2

BELT WITH RINGS

COMBINED SAFETY AND JACK STRAP

5308	1 3/4 in. strap, fixed snap on one end, roller snap at other.	2 1/4
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PLAIN TOOL BELT

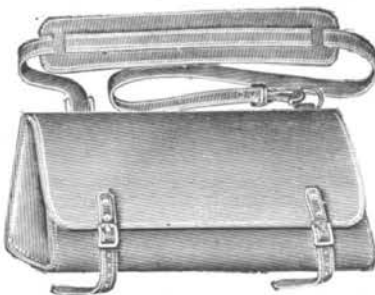
760400	Plain tool belt, 2 1/4 in.	1
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Leather Pouch

List No.	LEATHER POUCH	Weight, Oz.
5106	Made with loop to slip into belt for holding screws, etc.	6

NOTE: When ordering belts, please state if wanted for 38, 40, 42, 44 or 46 inch waist.



Leather Tool Bag

List No.	Lineman's Tool Bags	Weight, Lbs. Each
5108-16	16 x 8 in. harness leather.	4 1/8
5108-18	18 x 8 in. harness leather.	4 1/2
5108-20	20 x 8 in. harness leather.	5 1/8
5108-22	22 x 8 in. harness leather.	6
5108-24	24 x 8 in. harness leather.	7 1/4
5102-24	24 in. long canvas.	4 1/2
5102-22	22 in. long canvas.	4
5102-20	20 in. long canvas.	3 7/8

Also furnished in 18, 16, 14 and 12 inch lengths.

Linemen's Pliers



"World Special" Side Cutting Pliers



With Sleeve Twister

"WORLD SPECIAL" SIDE CUTTING PLIERS

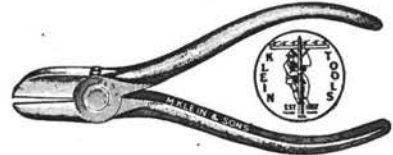
List No.	Length, Inches	List No.	Length, Inches
200-5	5	200-8	8
200-6	6	200-9	9
200-7	7		

With Sleeve Twister

List No.	Length, Inches	Description
213-7	7	With sleeve twister for No. 12 wire
213-8	8	With sleeve twister for No. 10 wire
213-9	9	With sleeve twister for No. 10 wire



Extra Long Nose Pliers without Side Cutters



Oblique Diagonal Cutting Pliers

EXTRA LONG OVAL NOSE PLIERS

List No.	Length	Description
301-5	5	Without side cutter
301-6	6	Without side cutter
301-7	7	Without side cutter

OBLIQUE DIAGONAL CUTTING PLIERS

List No.	Length	Description
202-5	5	Diagonal cutting pliers
202-6	6	Diagonal cutting pliers

Splicing Clamps

The splicing clamp is one of the most important tools in the lineman's kit, and as electrically and mechanically good joints are of the most importance in a line, it is evident that the tools selected to do this work should have careful consideration. The following illustrations show our different styles and the sizes of wire for which they are fitted. The handles have a spring temper and will not bend out of shape after being closed on the wire.



No. 102-1



No. 102-3

BABY PATTERN FOR TELEPHONE WORK

List No.	Description	Length, Inches
102-1	For Nos. 10, 12, 14, and 16 copper wire; 12, 14, 16, 18 iron wire.....	7
102-3	For Nos. 6, 8, 10, 12 and 14 iron wire; 4, 6, 8, 10 and 12 copper wire.....	10½



Nos. 105-6 and 105-7



No. 132-2

List No.	Description	Length, Inches
105-6	For sleeves Nos. 8, 10, 12 and 14 B.&S. gauge or 10, 12, 14, 16 B.W.G.....	10½
105-7	For sleeves Nos. 6, 8, 10 and 12 B.&S. gauge or 8, 10, 12, 14 B.W.G.....	10½

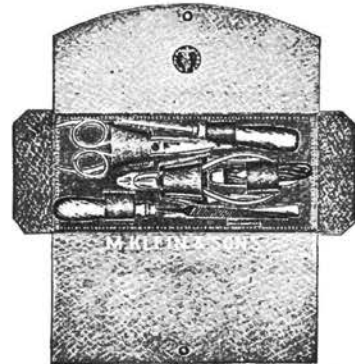
COMBINATION CLAMPS

List No.	Description	Length, Inches
132-2	Has 4 round holes for Nos. 8, 10, 12 and 14 iron wire; 6, 8, 10 and 12 copper wire and 3 double holes for Nos. 10, 12 and 14 B.&S. sleeves; or 12, 14 and 16 B.W.G. sleeves..	9
132-5	Has 6 round holes for Nos. 6, 8, 9, 10, 12, 14 and 16 iron wires, or Nos. 4, 6, 8, 9, 10, 11, 12 and 14 copper wires. Five double holes for twisting sleeve joints Nos. 6, 8, 9, 10, 11, 12 and 14 B.&S. copper sleeves; or Nos. 8, 9, 10, 11, 12, 14 and 16 iron sleeves....	11¼

Tool Kits



No. 1304-2



No. 1301-2

These tool kits are recommended especially for every electrician, mechanic, repairman, inspector, lineman, signalman and supervisor.

List No.
1304-2

Genuine leather case, contains a selection of Klein tools such as have been found particularly desirable by electricians and wiremen on switchboard and telephone work. It is of convenient pocketbook style, with firm metallic clasp, and measures 4 x 9 ins. It contains the following tools: One single blade "Xela" electrician's knife, one 5 in. Klein special side cutting pliers, one 5 in. Klein oblique diagonal pliers, one 6 in. Klein long nose side cutting pliers, one 3½ in. blade nickel-plated screw driver and one pair 5½ in. "Xela" electrician's scissors, and one 3½ in. file and handle. Weight, 1¾ lbs.

1301-2

Genuine leather case, durable and compact, 8 ins. long, 3½ ins. in width and 2 ins. high when closed. Furnished in either russet or black leather. The kit contains seven tools, all of which are in constant use. Each one is of superior quality and will give excellent service. They are Klein's 7 in. special side cutting pliers, hand forged, with knives of guaranteed quality; 5 in. nickel-plated "Xela" scissors, double-bladed knife screw driver and wire scraper combined, 3 in. half-round mill file and handle, 2½ in. "Xela" screw driver, 3½ in. nickel-plated tweezers and 2 ft. 4 fold boxwood rule. Weight 1½ lbs.



No. 106 Torch



No. 108 Torch

Gasoline Torches
NOS. 106 AND 108 TORCHES

List No.	Size	Description	Weight Lbs.
106	1 pt.	With soldering iron attachment	3¾
108	1 qt.	With soldering iron attachment	5¼

A perfect fire indoors or out, in wind or extreme cold. A steady, perfect blue flame is generated by this powerful burner, using very little gasoline. These torches are strong, well built, and handsomely finished.

Soldering Coppers

With Black Handles

Specially adapted for electrical work. Made of pure copper, tinned.



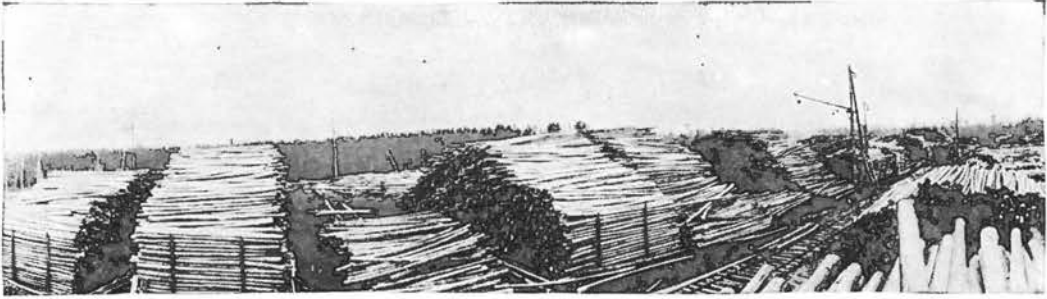
Soldering Coppers

List No.	Mfr. No.	Description	Length of Handle, Ins.	Weight Oz.
760919	51	No. 1 copper with black handle	12½	5½
760920	52	No. 2 copper with black handle	11½	3
760921	53	No. 3 copper with black handle	9½	1¾
760922	54	No. 4 copper with black handle	8¾	1
760923	55	No. 5 copper with black handle	8¾	¾

CONSTRUCTION MATERIAL AND SUPPLIES

Poles

The Western Electric Company is noted for the quality of the poles it handles and the service it renders. Our facilities for securing stock, and our large and numerous concentrating yards, make it possible for us to meet any demand at a moment's notice. Our record has given us an enviable reputation in the pole business throughout the United States and Canada.



Section of One of Our Many Pole Yards

We carry large stocks of Northern cedar, chestnut and Washington and Idaho cedar poles for prompt shipment from our large pole yards.

NORTHERN CEDAR POLES

Diameter, top, 4 to 7 inches; length, 20 to 65 feet.

CHESTNUT POLES

Diameter, top, 5 to 7 inches; length, 25 to 65 feet.

WASHINGTON AND IDAHO CEDAR POLES

Diameter, top, 6 to 9 inches; length, 25 to 65 feet.

The minimum number of poles per carload is based on the railroad tariffs covering the minimum weight per car effective in the territory to which the poles are consigned. We can also furnish poles under special specifications.

Prices on application.

Wood Crossarms



WASHINGTON FIR

Washington fir is recommended for crossarms owing to its clear, straight-grained quality and its freedom from defects. The life of these arms is greater than of other wood. Washington fir arms have been adopted by the American Telephone and Telegraph Co., the Western Union and Postal Telegraph Companies, and many electric light companies.

Size $2\frac{3}{4} \times 3\frac{3}{4}$ Inches—Unpainted

Bored for $1\frac{1}{4}$ inch pins, $1\frac{5}{8}$ inch machine bolt and $2\frac{3}{8}$ inch brace bolts.

List No.	Length Inches	Number of Pins	Spacings			Weight Each Lbs.
			End, Inches	Center, Inches	Side, Inches	
740101	24	2	$3\frac{1}{2}$	17	...	5
740102	30	2	$3\frac{1}{2}$	23	...	6.2
740104	42	4	$3\frac{1}{2}$	16	$9\frac{1}{2}$	8.7
740106	62	6	$3\frac{1}{2}$	16	$9\frac{3}{4}$	12.9
740108	82	8	$3\frac{3}{4}$	16	$9\frac{3}{4}$	17
740110	102	10	4	16	$9\frac{3}{4}$	21.2

Wood Crossarms (Continued)

YELLOW PINE, LIGHT WEIGHT

Size 2 3/4 x 3 3/4 Inches

Bored for 1 1/4 inch pins, 1 5/8 inch machine bolt and 2 3/8 inch brace bolts.
Two to ten feet long, bored for from two to ten pins.

YELLOW PINE, STANDARD

Size 3 1/4 x 4 1/4 Inches

Bored for 1 1/2 inch pins, 1 5/8 inch machine bolt and 2 3/8 inch brace bolts.
Three to ten feet long, bored for two to ten pins.

We can furnish crossarms in fir, cypress, spruce, long leaf yellow pine, short leaf pine, standard sizes and jumbo sizes, plain, painted, creosoted and with special borings and spacing.

Commercial grade crossarms are not recommended. Furnished on order only.
Prices on application.

Wood Crossarm Pins

LOCUST

- 74139 1 1/4 x 8 inch standard locust pins, not painted
- 741152 1 1/2 x 9 inch standard locust pins, not painted

NOTE: In some sections of the country rock elm creosoted pins are quite extensively used. We are prepared to furnish this class of pins on order in such localities.



Locust Pin

Wood Pole Brackets

Oak, Painted Red

- | List No. | Description |
|----------|---|
| 740148 | 1 1/2 x 2 x 12 inches, standard telephone |
| 740151 | 1 1/2 x 2 x 10 inches, pony telephone |



Wood Bracket

Crossarm Braces

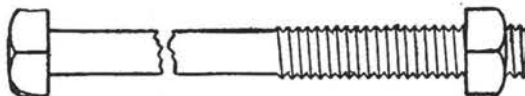
Plain or Galvanized



List No.	Size, Inches	Approx. Weight	
		in Lbs. per 1000	
740311	1 x 3/16 x 20	1125	
740312	1 x 3/16 x 22	1230	
740313	1 x 3/16 x 24	1335	
740314	1 1/32 x 7/32 x 20	1510	
740315	1 1/32 x 7/32 x 22	1645	
740316	1 1/32 x 7/32 x 24	1780	
740317	1 1/32 x 7/32 x 26	1915	
740318	1 1/32 x 7/32 x 28	2050	
740319	1 1/32 x 7/32 x 30	2185	
740324	1 1/4 x 1/4 x 26	2350	
740325	1 1/4 x 1/4 x 28	2520	
740326	1 1/4 x 1/4 x 30	2690	

Machine Bolts

Plain or Galvanized



With long thread and square head, used as a through bolt to fasten crossarm to pole.

List No.	Size, Inches	Weight in Lbs. per 100	
		Plain	Galv.
74248	5/8 x 10	102	152
74249	5/8 x 11	110	160
74250	5/8 x 12	118	168
74251	5/8 x 13	126	176
74252	5/8 x 14	133	183
74253	5/8 x 15	141	191
74254	5/8 x 16	149	199

Carriage Bolts

Plain or Galvanized

Used for bolting braces to crossarms.
Can be furnished in any length desired.
 $\frac{3}{8}$ x $3\frac{1}{2}$ inch bolts are the ones most commonly used.

Round Washers

Plain or Galvanized



Round Washer

For use with carriage bolts.

List No.	Diameter	Size Hole	Size Bolt
740343	1 in.	$\frac{1}{16}$ in.	$\frac{3}{8}$ in.

When ordering, specify plain or galvanized.

Square Washers

Plain or Galvanized

For use with machine bolts when bolting crossarms to poles.



Square Washer

List No.	Description	Weight per 100	
		Plain	Galv.
740350	2 x 2 x $\frac{1}{8}$ in. for $\frac{1}{2}$ and $\frac{5}{8}$ in. bolt.....	15 lbs.	17 lbs.
740351	$2\frac{1}{4}$ x $2\frac{1}{4}$ x $\frac{1}{8}$ in. for $\frac{5}{8}$ and $\frac{3}{4}$ in. bolt.....	25 lbs.	28 lbs.
740353	4 x 4 x $\frac{1}{16}$ in. for $\frac{5}{8}$ and $\frac{3}{4}$ in. bolt.....	82 lbs.	90 lbs.

Galvanized furnished unless otherwise ordered.

Lag Screws or Bolts

Plain or Galvanized



Used for fastening braces to the poles, and are sometimes called heel bolts.
 $\frac{1}{2}$ x 3 ins., $\frac{1}{2}$ x $3\frac{1}{2}$ ins. and $\frac{1}{2}$ x 4 ins. are the sizes most commonly used.



Pole Steps

Plain or Galvanized

For use on poles frequently found necessary to climb, and prevents scarring by the lineman's climbers.
Size commonly used, $\frac{1}{8}$ x 9 inches.

Anchor Rods or Guy Rods

Plain or Galvanized



List No.	Size	Weight per 100	
		Plain	Galv.
740416	$\frac{1}{2}$ in. x 6 ft.....	420 lbs.	460 lbs.
740419	$\frac{5}{8}$ in. x 6 ft.....	645 lbs.	710 lbs.
740421	$\frac{5}{8}$ in. x 8 ft.....	880 lbs.	990 lbs.

Galvanized Guy Thimbles

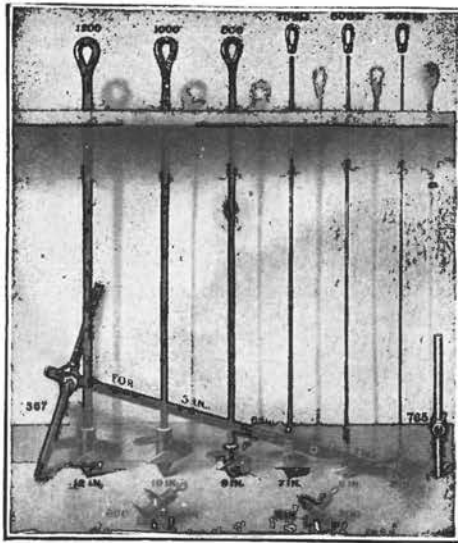
Used on guy strand when it passes through the eye of the guy rod and enables it to withstand a more severe strain by equalizing the strain on the individual wires comprising the strand.



Thimbles

List No.	Size, Strand, Inches	Approx. Wt. in Lbs. per 100	List No.	Size Strand, Inches	Approx. Wt. in Lbs. per 100
740380	$\frac{1}{4}$	20	740385	$\frac{3}{8}$	32
740381	$\frac{5}{16}$	20	740386	$\frac{5}{8}$	32
740382	$\frac{3}{8}$	20	740387	$\frac{3}{4}$	32
740383	$\frac{7}{16}$	20	740388	$\frac{7}{8}$	32
740384	$\frac{1}{2}$	20	740389	1	32

Matthews' Scrulix Guy Anchors



Matthews' Scrulix Guy Anchors

The great advantage of this anchor is that it eliminates the need for a "dead man" and therefore the great expense attached to its installation. It is screwed into the solid ground without disturbing it, each turn of the helix causing it to feed further into the ground, and as it goes down the upper half again compresses the earth so that it is solid above the anchor.

The manufacturer absolutely guarantees the ungalvanized 5, 6 and 7 inch Matthews Scrulix Anchors to outlast any other anchor using galvanized steel rods of the same cross section.

Anchors can be furnished either galvanized or plain as desired.

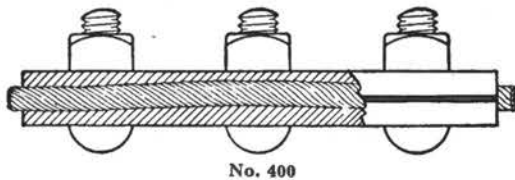
Twelve or more Matthews Scrulix Anchors and one No. 567 wrench will be sent on 30 days free trial. If not found satisfactory they may be returned freight charges collect.

List No.	Diameter of Anchor	Size of Rods	Length of Rods	Use
502R	5 ins.	1/2 in. round	6 ft.	Light strains
603R	6 ins.	5/8 in. round	6 ft.	Medium strains
704R	7 ins.	3/4 in. round	6 ft.	Heavy strains
567	Wrench for installing anchors.			
765	Ratchet handle for use with No. 567 wrench where it is desired to put anchors down next to walls, fences, etc.			

Prices on request.

Guy Clamp

For splicing or securing guy and messenger strand instead of twisting.



Galvanized—W. U. Standard Specifications

List No.	Bolts	For Strand	Weight in Lbs. per 100
403	2	1/8 to 5/16	125
400	3	1/4 to 1/2	200

Matthews' Boltless Guy Clamps



"Baby" Guy Clamp

This guy clamp is made in two sizes, known as the "Giant" and the "Baby." The "Giant" is designed to fit 1/8, 3/8, and 1/2 inch guy strand. The smaller or "Baby" size is adapted for 1/4 and 5/16 inch strand, and is designed for all light guying.

In installing, the end of the strand is passed through the sleeving, wrapped around the pole or anchor and brought back through the sleeve. The wedge is then driven home by means of an ordinary hammer. The clamp cannot be removed without first slacking the guys.

List No.	Weight in Lbs. per 100	List No.	Weight in Lbs. per 100
740510	"Baby" guy clamp..... 40	740511	"Giant" guy clamp..... 130

Galvanized Steel Strand



STANDARD COMMERCIAL GRADE

For guying poles, etc. Composed of seven steel wires twisted together. Not suitable for supporting cables.

Diameter Inches	Weight per 1000 Feet in Lbs.	Approximate Breaking Strain in Lbs.
1/2 in.	510	8500
7/16 in.	415	6500
3/8 in.	295	5000
5/16 in.	210	3800
1/4 in.	125	2300

EXTRA GALVANIZED, HIGH STRENGTH STRAND

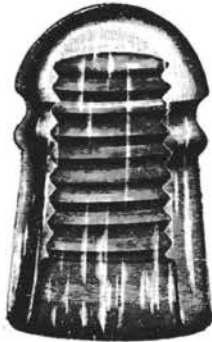
Manufactured under Western Electric specifications. For supporting aerial cables, or for use wherever a high-grade, high-strength strand is required.

Diameter Inches	Approximate Breaking Strain in Lbs.	Size of Wires	For Cables	
			No. 19 Gauge	No. 22 Gauge
5/16 in.	8100	12 B.W.G.	50 pair	100 pair
3/8 in.	10000	11 B.W.G.	100 pair	200 pair

SINGLE STEEL GUY WIRE

On light lines it is sometimes satisfactory to use a single steel wire for guying instead of using strands.

Size, B.W.G.	Diameter Inches	Approximate Breaking Strain in Lbs.	Length Coils
6	.203	1770	1 1/3 mi.
8	.165	1170	1/2 mi.



No. 9. Pony Insulator

Glass Insulators

NO. 9 PONY

Pony Telephone Size, Standard Thread

Dimensions: Height 3 1/2 inches; diameter 2 5/16 inches; groove 1/4 inch.

Weight, Each	Approximate Weight per 1000, Packed	Std. Bbl. Quantity
Without drip points 10 oz.	750 lbs.	350

Dimensions: Height 3 3/4 inches; diameter 2 1/4 inches; groove 3/8 inch.

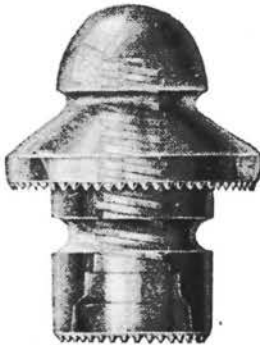
Weight, Each	Approximate Weight per 1000, Packed	Std. Bbl. Quantity
With drip points 9 oz.	675 lbs.	400

NO. 31 PONY, DOUBLE GROOVE

Pony Telephone Size, Standard Thread

Dimensions: Height 3 1/2 inches; diameter 2 inches; groove, top, 1/4 inch; bottom 1/4 inch.

Weight, Each	Approximate Weight per 1000, Packed	Std. Bbl. Quantity
10 oz.	760 lbs.	340



No. 51. Transposition Insulator

PERFECT TRANSPOSITION NO. 51

Standard Screw Thread

Dimensions: Height 5 1/2 inches; diameter 4 1/4 inches; bottom diameter, 2 5/8 inches; groove, top 3/8 inch; bottom 1/2 inch.

Weight, Each	Approximate Weight per 1000, Packed	Std. Bbl. Quantity
34 oz.	2500 lbs.	100

WIRE

The following table may be of assistance in deciding just what kind of wire should be ordered for any given service:

Service	Wire Recommended
Lines: 1. Rural lines.	Galvanized iron, copper clad steel, or hard drawn copper.
2. Town lines (open wires).	Galvanized iron, copper clad steel, or hard drawn copper.
3. Toll or other long lines where the best transmission is very important.	Hard drawn copper.
4. Lines running through trees where it is impracticable to trim.	Weatherproof iron or copper to correspond with other wire used on the line.
Subscribers' Wiring: 1. Drops or loops (pole to protector).	No. 17 twisted pair copper clad steel wire, No. 14 B.&S. twisted pair copper or No. 18 B.W.G. twisted pair ironite.
2. Interior (protector to instrument).	Interior copper telephone wire (twisted pair or triple).
3. Ground (protector to ground rod or other ground connection).	Ground wire.
Miscellaneous: 1. Pot heads (for making lead cable pot heads).	Pot head wire.
2. Switchboard and telephone wiring.	Switchboard wire.
3. Cross connecting on distributing frames.	Flameproof jumper or cross connecting wire.

Galvanized Iron Telephone Wire


There are three grades of galvanized wire, classified as follows: Extra Best Best (E. B. B.), Best Best (B. B.), and Steel. Specify grade desired.

Extra Best Best (E. B. B.) is made from a special stock, producing wire of absolutely uniform quality, in which the elements of softness and elongation are combined with low electrical resistance to a marked degree. It is largely employed in long lines or service where low electrical resistance is both desirable and necessary.

Best Best (B. B.) wire is made from a stock of high quality, producing a wire somewhat less uniform and of higher resistance than E. B. B., but of greater tensile strength. This grade is used almost exclusively for the construction of subscribers' lines in exchanges, and on account of its great tensile strength is best adapted for rural or farmer lines.

Steel wire has a greater tensile strength than either E. B. B. or B. B., but on account of its greater electrical resistance is not very generally used.

The different grades of wire are Extra Galvanized, i.e., the wire is protected from atmospheric action by a heavy uniform coating of spelter.

	B.W.G. Gauge	Diameter in Inches	Weight in Lbs. per Mile	Length Coils Miles	Resistance Ohms per Mile
Galvanized Wire	10	.134	258	1/2	22.04
	12	.109	170	1/2	33.3
	14	.083	99	1/2	57.44

Lowest market prices on application.

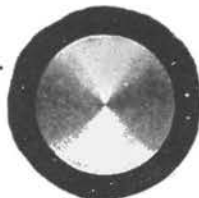
Hard-drawn Copper Wire

Copper wire for telephone lines is highly desirable where climatic conditions are unfavorable, such as salt air or where a great deal of dampness is present, which would, of course, corrode or rust out iron wire in a few years, no matter how well galvanized. Copper wire is unaffected by moisture, smoke or other gases, and will last practically indefinitely. Further, it has a definite junk value of approximately 80 per cent. of the original cost should it ever be taken down for any cause, which is not true of iron wire.

Size on Gauge	Approximate B.&S. Gauge Equivalent	Diameter Inches	Weight per Mile	Put up in Coils
12 N.B.S.	10	.104	172	1 1/4 mile
14 N.B.S.	12	.080	103	2/3 mile

Copper-clad Steel Wire (C.C.C.)

This wire consists of a steel core having a permanently welded copper film or coating. It is made in all standard sizes, either bare or insulated, the insulated wire being furnished in singles, twisted pairs, and triples.



Enlarged Cross Section of Copper-clad Wire

The No. 17 B.&S. gauge insulated twisted pair is the standard for drop wire work of nearly all the large operating telephone companies.

The bare wire is not intended to displace pure copper wire for long and important toll lines. It will be found entirely satisfactory for medium length local lines where a longer life, greater conductivity, and tensile strength are desired than secured by the use of galvanized iron wire.

In addition to a considerable saving in first cost over copper, copper-steel wire will effect a saving of from 50 to 75 per cent. in maintenance charges, due to its much greater tensile strength.

It is particularly adapted to Municipal Fire and Police Telegraph, and Railroad Signal service, or wherever medium conductivity and great tensile strength are the principal requirements. Prices on application.

Average Conductivity 40 Per Cent. of Copper Comparative Characteristics—Bare Wire

Size B.&S. Gauge	—Approx. Weight per Mile—		—Approx. Breaking Weight—		—Av. Resistance Int.—	
	Copper Clad	Copper	Copper Clad	Copper	Ohms per Mile at Copper Clad	60°F. Copper
10	154	165.8	751	506	12.91	5.278
11	122	131.3	613	403	16.25	6.665
12	97	104.2	499	318	20.49	8.398
14	61	65.5	333	202	32.80	13.35

Weatherproof Tree Wire



This is sometimes called tree wire. Its use is advised where branches of trees interfere with line and it is impracticable to trim for some reason.

These wires are extensively used in telephone and telegraph work, and have the same insulation as regular weatherproof line wires. They are finished with the same smooth polish as all other wires, and are put up for shipment in coils only, thoroughly wrapped in burlap.

Nos. 8, 9, and 10 double braided are made up on special order only.

IRON WIRE

Size Iron Wire Gauge (B.W.G.)	Double Braided Approximate Lbs. per Mile	Triple Braided Approximate Lbs. per Mile	Length of Coils
10	350	400	½ mile
12	230	260	½ mile
14	150	175	½ mile

COPPER WIRE

Size B.&S. Gauge	Triple Braided Approximate Weight Lbs. per Mile	Length Coils Mile
10	280	½
12	185	½
14	130	½

The use of triple braided wires is recommended.

Weatherproof Tree Wire (Continued)

COPPER CLAD WIRE

Size B.&S. Gauge	—Double Braid Weight in Lbs.—		Size B.&S. Gauge	—Triple Braid Weight in Lbs.—		Approx. Wt. of Coils Lbs.
	1000 Feet	Mile		1000 Feet	Mile	
10	44	229	10	50.75	238	150-200
12	28.7	151	12	33.75	178	80-120
14	19	102	14	24.00	127	50-75
16	15.25	80	16	19.25	102	.....
18	11.75	62	18	15.75	83	.....

Copper-clad Twisted Pair



No. 17 B.&S. Distributing or Drop Wire

This is the standard wire for making the drop from the pole to the house, and is used by nearly all the large operating telephone companies. It replaces No. 14 B.&S. twisted pair copper distributing wire on account of its light weight, great tensile strength, and lower cost.

Insulated to a diameter of $\frac{7}{8}$ inch over rubber, and covered with a cotton braid saturated with black weatherproof compound.

Prices on application.

Twisted Pair Iron

Distributing or Drop Wire

This is a special conductor, much lighter than copper, and just as flexible.

The conductor is tinned by a special process to prevent rust. It is then rubber-covered, the braid is saturated and waxed and then twisted in pairs.

A raised thread on one of the conductors is used as a tracer.

Twisted pair iron drop wire is made in the following sizes:

No. 19 B.W.G. or No. 18 B.&S., $\frac{7}{8}$ inch insulation.

No. 18 B.W.G. or No. 16 B.&S., $\frac{3}{4}$ inch insulation.

No. 16 B.W.G. or No. 14 B.&S., $\frac{5}{8}$ inch insulation.

No. 14 B.W.G. or No. 12 B.&S., $\frac{1}{2}$ inch insulation.

Also furnished in single and triple conductors.

Prices on application.

Ground Wire—Single Conductor Copper



This wire is used to run from the protector to the ground connection at subscribers' stations, and is also used for cross connecting and inside wiring in connection with ground return systems where only one wire is used.

It consists of a No. 18 B.&S. copper wire, insulated to a diameter of $\frac{7}{8}$ inch over rubber and covered with a cotton braid saturated with black weatherproof compound.

Prices on application.

Twisted Pair Copper Bridle Wire



The standard wire for this use is No. 18 B.&S. twisted pair, insulated to a diameter of $\frac{7}{8}$ inch over rubber and covered with a cotton braid saturated with a black weatherproof compound, one conductor having a raised tracer.

This wire is used largely for block wiring or in ring construction work where a number of pairs of wires are suspended from a messenger by means of galvanized cable suspension or Locke rings.

Prices on application.

Interior Copper Telephone Wire



Twisted Pair and Triple Conductors

The wire most commonly used for this purpose is No. 19 B.&S. gauge, insulated to a thickness over the rubber of $\frac{3}{8}$ inch or $\frac{4}{8}$ inch. The conductors are braided with a dry glazed braid and then twisted together.

Olive green braid or oak color braid, in each case with a tracer thread in one conductor, is standard, but various color combinations can be furnished.

Prices on application.

Size B.&S. Gauge	Approximate Weight per 1000 Feet Lbs.	Diameter over Rubber Inches	Put up in Coils of Feet
19	22	$\frac{3}{8}$	200-1500

Annunciator Wire



Insulated with two winds of cotton yarn applied in opposite directions, saturated with a special wax compound and highly polished. This makes a very compact insulation. Furnished either on spools containing about 8 lbs. or exactly 1 lb. and in 1 lb. coils, and packed in cases containing approximately 200 lbs. Furnished in colors and styles as follows—either plain copper or tinned; copper furnished unless otherwise ordered; red, blue, red and white, brown, white, olive, yellow, blue and white.

Single Conductor		Twisted Pairs	
Size B.&S. Gauge	Lbs. per 1000 Feet	Size B.&S. Gauge	Lbs. per 1000 Feet
14	15	14	30
16	9.5	16	19
18	6.5	18	13
20	4.5	20	9

Pothead Wires



The standard wire for pothead work is No. 19, No. 20, or No. 22 B.&S. gauge, either single conductor or twisted pair, insulated to a diameter of $\frac{3}{8}$ inch over rubber, without other braid or covering.

In the case of twisted pair, one conductor is usually made with a raised tracer in order to distinguish it from the other.

Prices on application.

Switchboard Wire



Copper wire with double silk and single cotton paraffined insulation of assorted colors. Wound on spools; furnished by the pound.

Size, B.&S. Gauge

No. 19
No. 22
No. 19
No. 22

Single Conductor
Single Conductor
Twisted pair
Twisted pair

Prices on application.

Cross Connecting or Jumper Wire

This wire is used for cross connecting work on main distributing frames, and is made in singles, twisted pairs, and triples. It is made in No. 20 and No. 22 B.&S. gauge, insulated to $\frac{1}{32}$ inch with a flameproof braid.

The twisted pair is furnished having one red and one white conductor.

Prices on application.

Sleeve Wire Connectors

FOR COPPER AND IRON WIRE

These connectors are the double tube type, made accurately and very close to the size of the wire for which they are intended. When twisted the sleeve is drawn snugly around the wire, forming an absolutely solid joint which air and moisture cannot penetrate. Furnished in all sizes.

Half sleeves, split and combination sleeves can be furnished.



Copper

Length
4 ins.
4 ins.
4 1/2 ins.

Size
No. 18 B.&S. gauge
No. 14 B.&S. gauge
No. 14 N.B.S. gauge

Length
4 1/2 ins.
4 3/4 ins.
4 3/4 ins.

Size
No. 12 B.&S. gauge
No. 12 N.B.S. gauge
No. 10 B.&S. gauge

Tinned Copper

No. 10 B.W.G. gauge
No. 12 B.W.G. gauge
No. 14 B.W.G. gauge

Tinned Steel For Splicing Iron Wire

No. 10 B.W.G. gauge
No. 12 B.W.G. gauge
No. 14 B.W.G. gauge

Ground Rods

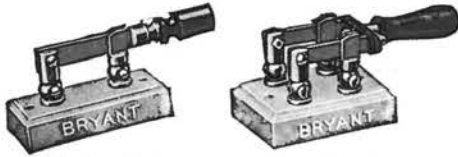


Lbs. per 100
Plain and Galv.

3/8 in. x 5 ft., without ground wire	181
3/8 in. x 6 ft., without ground wire	218
1/2 in. x 6 ft., without ground wire	319
1/2 in. x 7 ft., without ground wire	394
5/8 in. x 6 ft., without ground wire	600
5/8 in. x 8 ft., without ground wire	800
1/2 in. x 5 ft., with ground wire	322
1/2 in. x 6 ft., with ground wire	388
5/8 in. x 6 ft., with ground wire	605

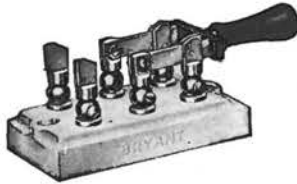
Tie Wires

Soft copper tie wires are necessary for fastening hard-drawn copper line wire to the insulators. They are cut to the proper length and put up in bundles.



No. 1001

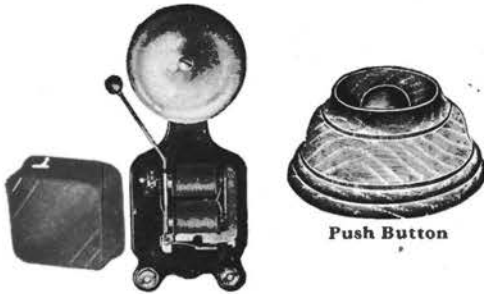
No. 974



No. 1041



No. 108



"No. 10A"

Push Button

Baby Knife Switches

Single and Double Pole—Porcelain Base

List No.	Description
1001	Single pole, single throw
974	Double pole, single throw
1039	Single pole, double throw
1041	Double pole, double throw

Round Wood Base Switches

List No.	Description
108	1 point switch
108	2 point switch

Vibrating Bells

Code No.	Resistance Ohms	Rated Voltage	Description
10A	2.5	3	2 1/2 in. bell suitable for switchboard "night bell."

Push Buttons

List No.	Description
1341	Wood base push button for door bell or other use.

Blake Insulated Staples

Designed for use on all low voltage circuits of interior wiring, such as telephones, telegraph, messenger call, annunciator, and bell work.



No. 5

- List No.
- 1 For hardwood, for single and twisted pair wire.
 - 3 For general use, for single and twisted pair wire.
 - 5 For hardwood, for twisted 3 wire and extra heavy pair wire.
 - 6 For general use, for twisted 3 wire and extra heavy pair wire.
 - 7 For softwood, for twisted 3 wire and extra heavy pair wire.



No. 15



No. 18

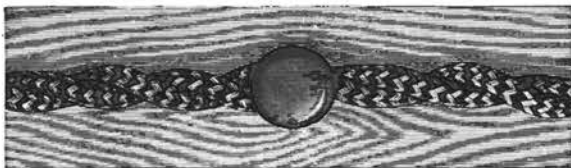


No. 20



No. 22

Milonite Nails



Diameter of head in four sizes. Length of nail to suit. Prevent short circuiting. Color matches wire or wall. Wire can be taken down without cutting or injuring insulation. Furnished in any color.

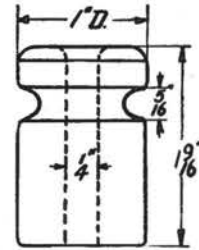
- 15 and 18 nails (plain top.)
- 20 nails (plain top.)
- 22 nails (plain top.)

Porcelain Knobs

NO. 5 KNOB

Height $1\frac{1}{4}$ inches; diameter 1 inch; hole $\frac{1}{4}$ inch; groove $\frac{5}{16}$ inch.

List No.	Std. Pkg.	Weight, Std. Pkg.,
5	6000	Lbs. 430.



No. 5 1/4

NO. 5 1/2 KNOB

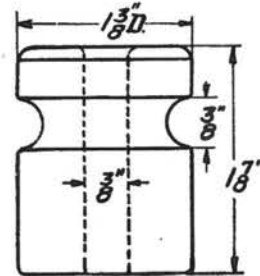
Height $1\frac{5}{8}$ inches; diameter 1 inch; hole $\frac{1}{4}$ inch; groove $\frac{5}{16}$ inch.

List No.	Std. Pkg.	Weight, Std. Pkg.,
$5\frac{1}{2}$	4500	Lbs. 420

NO. 10 KNOB

Height $1\frac{3}{4}$ inches; diameter $1\frac{5}{8}$ inches; hole $\frac{3}{8}$ inch; groove $\frac{3}{8}$ inch.

List No.	Std. Pkg.	Weight, Std. Pkg.,
10	1500	Lbs. 400



No. 10 1/2

NO. 10 1/2 KNOB

Height $1\frac{7}{8}$ inches; diameter $1\frac{1}{2}$ inches; hole $\frac{3}{8}$ inch; groove $\frac{3}{8}$ inch.

List No.	Std. Pkg.	Weight, Std. Pkg.,
$10\frac{1}{2}$	1500	Lbs. 415

Porcelain Tubes



Length
Under Head
1 to 18 ins.

Diameter
Outside
 $\frac{1}{8}$ to $\frac{1}{2}$ in.

Diameter
Inside
 $\frac{1}{16}$ to $\frac{1}{8}$ in.

Bar and Wire Solder

List No.	
460060	Strictly half and half.
460061	Wire solder.
460062	Resin core solder in $\frac{1}{2}$ lb. boxes.
460063	Resin core solder on 1 lb. spools.
460064	Resin core solder on 2 lb. spools.
460065	Resin core solder on 5 lb. spools.
460066	Resin core solder on 10 lb. spools.
460067	Cable solder.

Prices on application.



No. 460060



No. 460061



No. 460062

Soldering Paste

Non-corrosive

A small quantity of this paste applied to the joint with a stick or the finger makes the solder run on the joint immediately upon heating, and results in a perfectly soldered joint.



List No.	
460016	2 oz. tin box.
469017	4 oz. tin box.
460018	8 oz. tin can.

Soldering Stick

Put up in a round stick, 5 inches long. It is applied by rubbing on the heated joint.



List No.	
460052	Western Electric soldering stick.

Insulating Tapes

Western Electric Victor Tape is the best moderately priced friction tape made. It is entirely satisfactory for all general telephone work.

Amazon tape is of exceptional quality, and is recommended for use when high insulation properties and long life are essential.

Victor splicing compound is a good commercial grade of rubber tape, and Amazon splicing compound is made of the very best grade of rubber.



List No.	
460000	Western Electric Victor friction tape, $\frac{3}{4}$ ins. wide, $\frac{1}{2}$ lb. roll.
460002	Amazon friction tape, $\frac{3}{4}$ in. wide, $\frac{1}{2}$ lb. roll.
460001	Western Electric Victor splicing compound, $\frac{3}{4}$ in. wide, in roll.
460003	Amazon splicing compound, $\frac{3}{4}$ in. wide, in roll.



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IN addition to manufacturing and marketing a complete line of telephone equipment, lead covered telephone cable, and supplies, the Western Electric Company, Incorporated, furnishes equipment for every electrical need.

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EQUIPMENT FOR EVERY ELECTRICAL NEED