June 29, 1926. 1,590,355

J. ERICKSON ET AL

SUBSTATION TELEPHONE INSTRUMENT

Filed April 5, 1922 5 Sheets-Sheet 1

Fig: 2

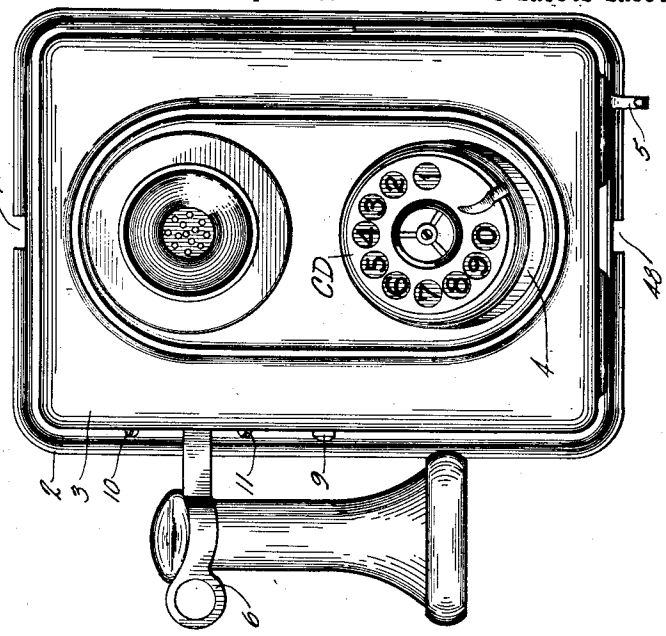
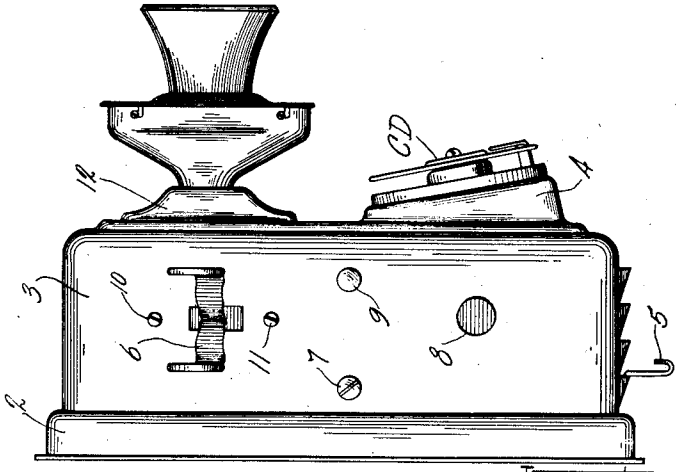


Fig. 1



— Inventors —

Herbert F. Obergfell — John Erickson

Chas. Tu. Cauby. Atty.

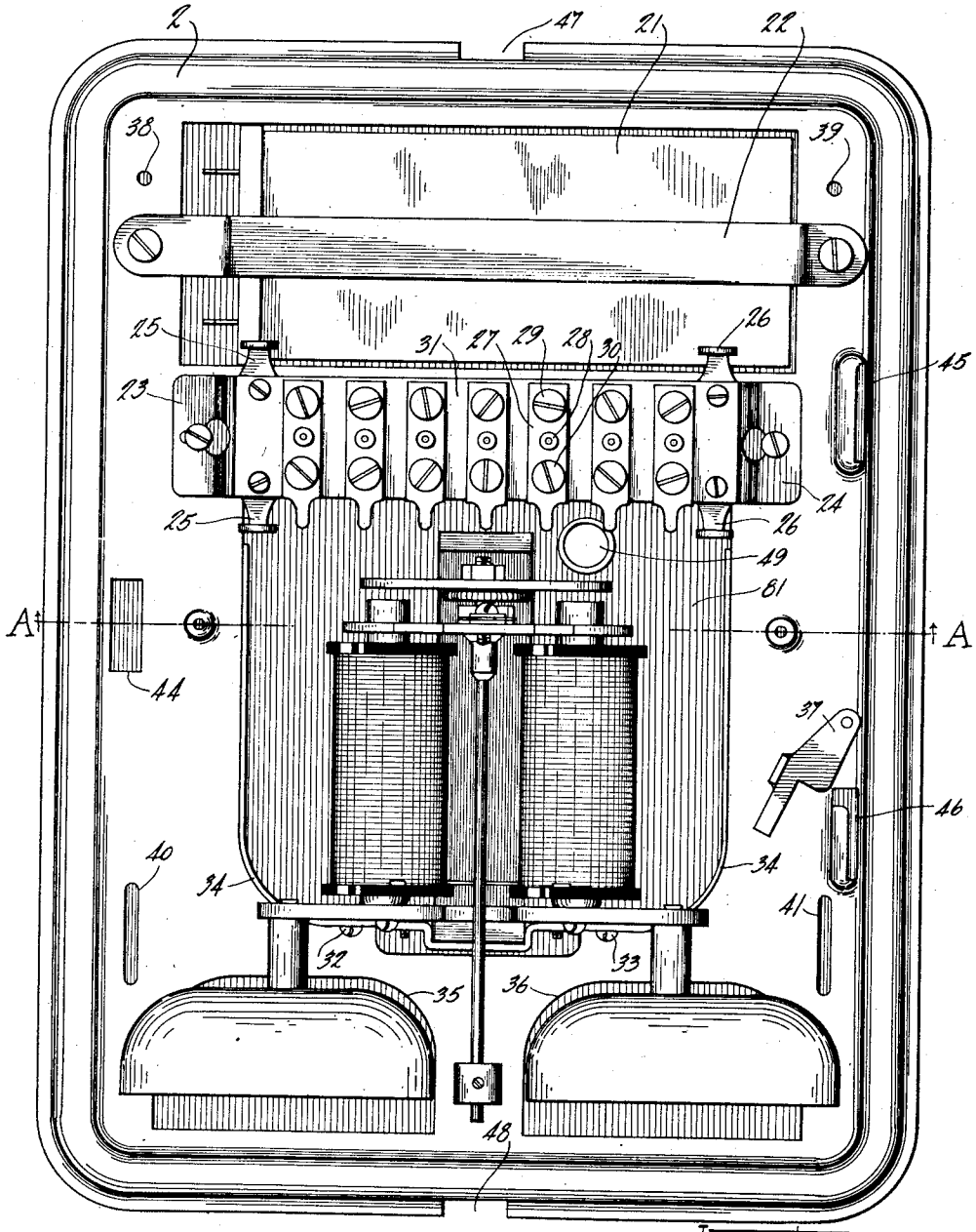
June 29, 1926. 1,590,355

J. ERICKSON ET AL

SUBSTATION TELEPHONE INSTRUMENT

Filed April 5, 1922 5 Sheets-Sheet 2

Fig. 3



Inventors

Herbert F. Obergfell—John Erickson

Chas. Th. Candy. Atty.

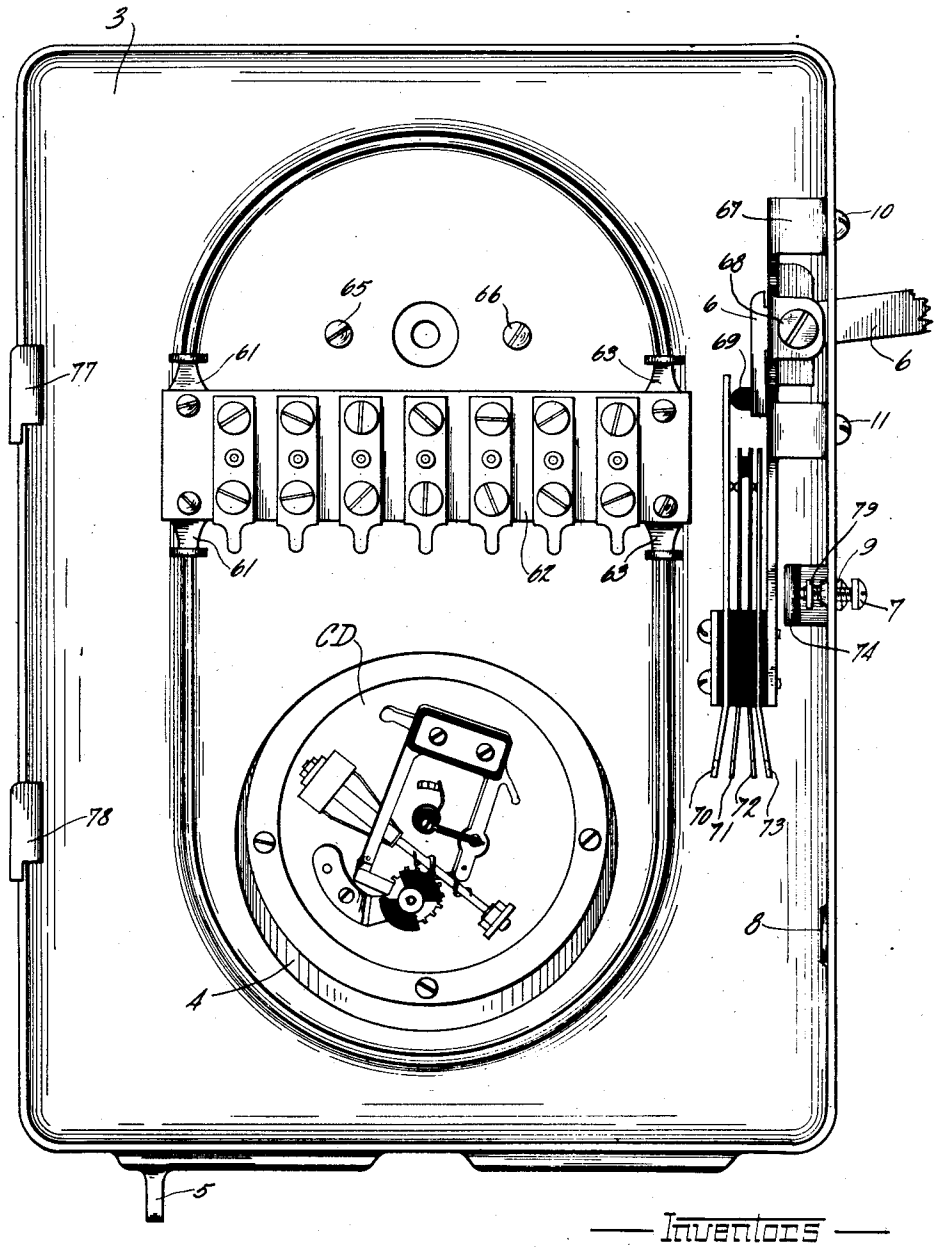
June 29, 1926. 1,590,355

J. ERICKSON ET AL

SUBSTATION TELEPHONE INSTRUMENT

Filed April 5, 1922 5 Sheets-Sheet 3

Fig. 4



Inventors

Herbert F. Obergfell—John Erickson

Chas. Tie. Candy. Atty.

June 29, 1926. 1,590,355

J. ERICKSON ET AL

SUBSTATION TELEPHONE INSTRUMENT

Filed April 5, 1922 5 Sheets-Sheet 4

Fig: 5

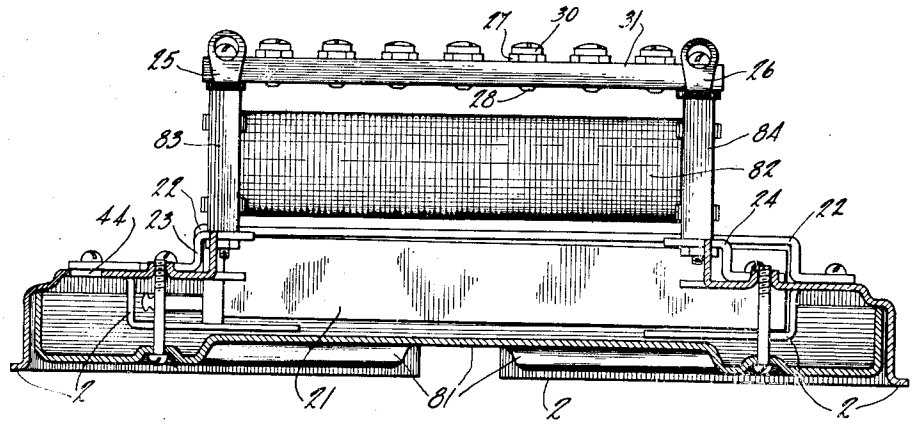


Fig: 6

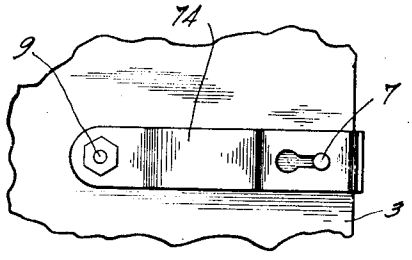


Fig: 7

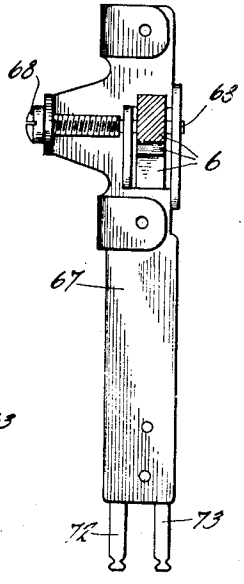
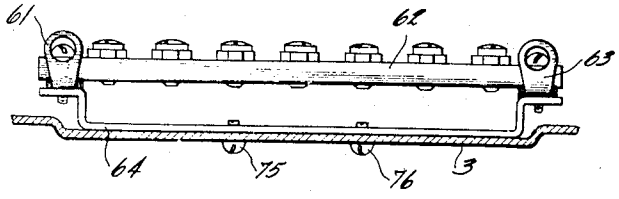


Fig: 8



Inventors

Herbert F. Obergfell—John Erickson

Chas. Tu. Candy Atty:

June 29, 1926. 1,590,355

J. ERICKSON ET AL

SUBSTATION TELEPHONE INSTRUMENT

Filed April 5, 1922 5 Sheets-Sheet 5

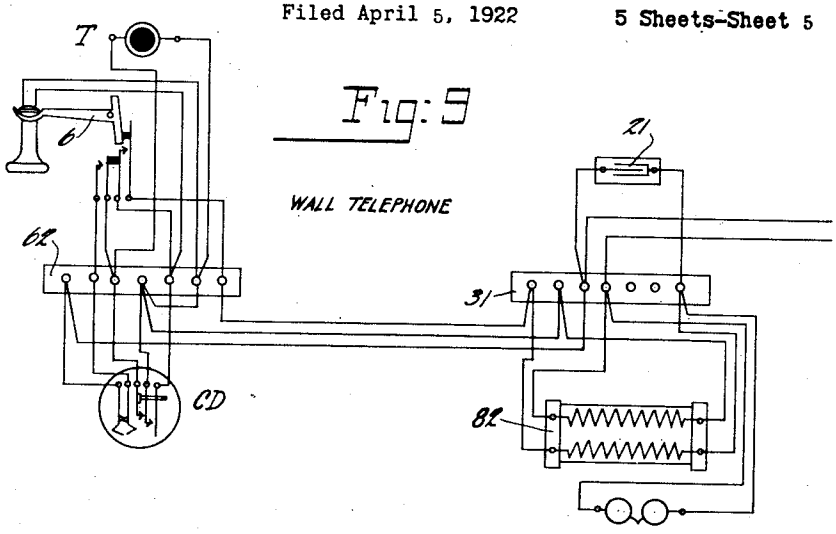


Fig: 9

WALL TELEPHONE

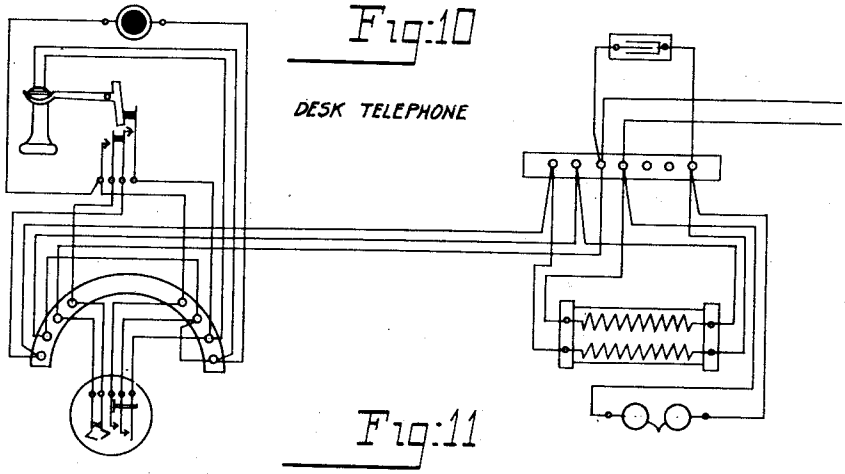


Fig:10

DESK TELEPHONE

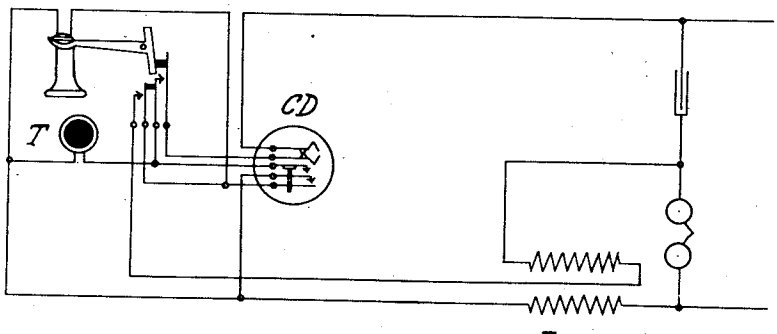


Fig:11

—Inventors—

Herbert F. Obergfell—John Erickson

Chas. Tu. Landy. Atty.

Patented June 29, 1926. 1,590,355

UNITED STATES PATENT OFFICE.

JOHN ERICKSON, OF CHICAGO, AND HERBERT F. OBERGFELL, OF RIVER FORREST, ILLINOIS, ASSIGNORS, BY MESNE ASSIGNMENTS, TO AUTOMATIC ELECTRIC INC., OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE.

SUBSTATION TELEPHONE INSTRUMENT.

Application filed April 5, 1922. Serial No. 549,733.

The present invention relates to substation telephone instruments; and the principal object is the provision of a unitary structure which may be used as a base for a complete wall telephone, and which may be used without change as a base for a bell box used in connection with a desk telephone.

Another feature relates to an improved switch hook mounting for a wall telephone.

Still another feature relates to an improved fastener for the cover of a wall telephone or a bell box.

Other features will become apparent upon a further perusal of the specification and, together with the features pointed out, will be explained fully hereinafter, reference being had to the accompanying drawings comprising Figs. 1–11, inclusive.

The drawings, Figs. 1–8, inclusive, show various views of an automatic wall telephone embodying the interchangeable base and the other features of the invention, while Figs. 9–11, inclusive, are automatic substation circuit drawings.

Referring now particularly to Figs. 1–8, inclusive, Fig. 1 is a view of the wall telephone as seen from the left side; Fig. 2 is a view of the same telephone as seen from the front; Fig. 3 is a front view of the base and parts attached thereto with the cover removed; Fig. 4 is a rear view of the removed cover together with the parts attached thereto; Fig. 5 is a cross section of the base taken on the line AA of Fig. 3 with the ringer removed; Fig. 6 is a view of the improved cover fastener as seen from the right and in the position it assumes in Fig. 2; Fig. 7 is a view of the improved switch hook support as seen from the left and in the position it assumes in Fig. 1; and Fig. 8 is a detailed drawing showing how the terminal strip 62, Fig. 4 is secured to the cover 3. It may be stated that Figs. 1 and 2 are drawings having dimensions one-half those of the original model, while Figs. 3–8, inclusive, are full size.

Referring now particularly to Figs. 9, 10, and 11, which, as before stated, are circuit drawings of an automatic telephone substation, Fig. 9 is a wiring diagram of a wall telephone, the parts which are located on the base being shown on the right and the parts which are mounted on the cover being shown on the left; Fig. 10 is a wiring diagram of an automatic desk telephone, the parts shown on the right being mounted on the base of the bell box and the parts shown on the left being located in the desk stand; and Fig. 11 is a schematic drawing showing more clearly the actual circuit used in Figs. 9 and 10.

Referring now particularly to Figs. 1–4, inclusive, the base 2 is a box shaped sheet metal stamping and is provided with the necessary slots and openings as can be seen most readily in Fig. 3. The cover also is made of sheet metal and has a box like shape open in the rear into which a raised portion of the base fits. The base 2 may be secured to a support, a wall for example, by means of screws which pass through the holes 38 and 39 and the slots 40 and 41, Fig. 3. The cover 3 is hinged on the base 2 by means of the hinges 77 and 78 which are secured to the cover 3 by rivets. These hinges 77 and 78 fit into the corresponding slots 45 and 46 punched in the base 2, Fig. 3. When the cover is in place and is standing open, it is prevented from being lifted off the base by the catch 37, Fig. 3, which catch, when pushed to a vertical position, prevents the hinge 78 from being moved up. When the cover 3 is swung shut, the tongue 74, Fig. 4, which is secured to the cover 3 by the bolt 9 and the associated nut, Fig. 6, comes into the slot 44 in the base, Fig. 3. When the screw 7 is turned in the proper direction, the tongue 74 is moved towards the center of the base and the end catches the right hand edge of the slot 44, holding the cover firmly shut. The tongue 74 is seen most clearly in Fig. 6. It may be mentioned that the end of the tongue 74 is bent so as to form an angle with the main part thereof which is slightly greater than a right angle. This construction provides for drawing the cover closer to the base as the screw 7 is turned further in and prevents any looseness that might otherwise be present. The washer 79, Fig. 4, prevents the tongue 74 from being retracted far enough to strike the opposite side of the slot 44, Fig. 3, when the cover is unlocked preparatory to opening it.

The cover 3 is punched at the bottom so as to form a grating on either side. This grating permits the sound of the ringer to be freely heard.

The hook 5, which is secured to the cover 3 may be used as a hook on which to hang a telephone directory.

Referring now particularly to Fig. 3, the base 2 has the center portion cut away and the stiffening edge 34 turned up. The ringer is secured to the edge 34 by means of the screws 32 and 33. The holes 35 and 36 near the bottom of the base give room for the gongs of the ringer. Just above the ringer, the terminal strip 31 is mounted between the cable supports 25 and 26. The terminal strip 31 is provided with a number of terminals, such as the terminal 27, secured thereto by hollow rivets, such as the rivet 28, and is provided with the terminal screws, such as the terminal screws 29 and 30. This terminal strip 31, together with the cable supports 25 and 26, is mounted above the induction coil 82, as can be seen in Fig. 5. The brackets 23 and 24, which support the induction coil 82, are secured to the base 2 by screws, as shown. The holes in the brackets 25 and 26, through which the screws pass which hold the brackets to the base 2, are so made that the induction coil 82 and the parts secured thereto may be removed as a unit when one of the bracket supporting screws is removed and the other screw is loosened slightly. This can be seen clearly in Fig. 3.

The condenser 21 is mounted above the terminal strip 31 in a box like cavity formed in the base 2 by bending a portion of the same after it is properly cut. This can be seen most clearly in Fig. 5. The bracket 22 is secured by screws over the top of the condenser 21 and holds the latter firmly in place.

Upon referring to Fig. 5, it will be noted that a protecting back 81 is provided for the base 2 and is secured to the latter by two screws as shown. The back 81 fits into the hollow base 2 and in turn has a stamped depression or hollow in the center to permit the line wires that connect with the central exchange to be brought in between the back and the wall or other support to which the base 2 is secured. The line wires may pass behind the base and back, by way of either the upper notch 47 or the lower notch 48 cut in the base 2, and enter the telephone by way of the hole 49, Fig. 3, in the back 81.

Referring now particularly to Figs. 4 and 1, the wedged shaped cylinder or thimble 4, most clearly seen in Fig. 1, is spot-welded to the cover 3. The calling device CD is secured to the outer end of this thimble by three screws, as shown in Fig. 4.

The terminal strip 62, Fig. 4, together with the cable supports 61 and 63 are fastened to the cover 3 by means of a bracket 64, Fig. 8, which bracket is fastened to the cover 3 by the screws 75 and 76. The heads of the screws 75 and 76 fit into a hollowed out portion (not shown) of the transmitter base 12, Fig. 1, and the transmitter base 12 is secured to the cover 3 by the screws 65 and 66, Fig. 4.

The switch hook 6, and the springs 70—73, inclusive, which are controlled thereby are shown in Fig. 4 in the position they assume when the receiver is off the switch hook, the switch hook 6 being held up by the heavy spring 70 through the medium of the insulating bushing 69. The switch hook support 67 is secured to the cover 3 by the screws 10 and 11, and the switch hook 6 is pivoted in the support 67 by the screw 68, as is most clearly seen in Fig. 7. Upon looking at Fig. 7, it will be noted that the extension of the switch hook support 67 into which the pivot screw 68 is screwed is seemingly longer than necessary. This extension, it may be stated, is purposely made long so as to enable the screw 68 to be turned out far enough to permit the removal of the switch hook 6 before all the threads are disengaged. Thus the screw does not have to be entirely removed to dismount the hook and there is no danger of losing it.

Referring now particularly to Figs. 9, 10 and 11, in which Fig. 9 is a wiring diagram of a wall telephone and Fig. 10 is a wiring diagram of a desk telephone, it will be seen that the wiring of the base of the wall telephone is the same as the wiring of the base of the bell box of the desk telephone. Consequently, when a wall telephone is desired, a cover, such as shown in the present drawing, is placed on a base, such as is shown in the present drawings, and the two are wired in accordance with Fig. 9. If a desk telephone is desired, a base identical with the one used for the base of the wall telephone, is equipped with a blank cover, and a desk stand, wired as shown in Fig. 10, is connected thereto by means of a cord containing the three inter-connecting conductors shown in Fig. 10. This interchangeableness of the base is made possible by the placing the parts of the wall telephone, that correspond to the parts located on the desk stand of a desk telephone, on the cover of the wall telephone, leaving on the base only the parts that are found in the bell box of a desk type telephone.

With reference to the circuit used, it may be stated, that the one shown is given merely as an example and that any other suitable circuit may be used.

The circuit shown in Fig. 11, as before stated, is a simplified diagram which applies equally well to Figs. 9 and 10, and is of the so-called booster type. When the receiver is removed, the transmitter T is bridged across the line conductors through the impulse springs of the calling device CD and the lower winding of the induction coil;

upon the closure of the right hand pair of switch hook contacts. When the left hand pair of switch hook contacts close, the receiver is bridged around the transmitter T and the calling device impulse springs, in series with the upper winding of the induction coil and the condenser.

When the dial of the calling device CD is moved from its normal position by the subscriber in calling a number the three lower springs thereof make contact with each other, thereby placing a shunt around the transmitter T and another shunt around the receiver. This is the usual expedient made use of in order to lower the line resistance during dialling and in order to prevent the calling subscriber from hearing any unpleasant noises. The line circuit is interrupted the desired number of times at the upper or impulse springs of the calling device as the dial thereof returns to normal position.

The various features of the invention, having been described and ascertained in the foregoing, will now be pointed out in the appended claims:

What is claimed is:

1. In combination, a base and a cover adapted to form a wall telephone box when assembled together, instrumentalities including all the essentials of a desk telephone mounted on said cover, instrumentalities including all the essentials of a desk telephone ringer box mounted on said base, terminals on the said base and cover, respectively, and a cable temporarily connecting said terminals to form a complete wall telephone but adapted to be removed at will together with the said cover to permit the substitution of a blank cover and a separate desk telephone in order to form a complete desk telephone set.

2. In combination, an instrument base, instruments mounted on said base and adapted to cooperate with a desk stand separate therefrom so as to form a complete desk telephone set, a cover for said base, and instrumentalities mounted on said cover and adapted to cooperate with the instrumentalities mounted on said base to form a complete wall telephone set.

3. In combination, a base, a ringer on said base, a terminal assembly on said base having connections extending to said ringer, said terminal assembly serving to enable said base and ringer to be connected with a desk stand separate therefrom so as to form a complete desk telephone set, a cover for said base, and a switch hook and transmitter mounted on said cover, a receiver supported by said switch hook, said terminal assembly also serving to enable the ringer of said base to be connected into proper relation to the said receiver and transmitter to form a complete wall telephone set.

4. A wall telephone including a base and cover, a desk telephone, the base of the wall telephone having a ringer, an induction coil and a condenser mounted thereon and connected to a terminal strip, the cover of the wall telephone carrying talking equipment comprising a transmitter, receiver, and hook switch; also connected with a terminal strip, and the desk telephone carrying similar talking equipment also connected to a terminal strip, and jumper cables for either connecting the terminal strip of the base and cover to form a wall telephone, or the terminal strip of the desk telephone with the terminal strip of the base to form a combined desk telephone and ringer.

5. In combination, a base carrying a terminal strip and the instrumentalities essential to form the ringer box of a desk telephone connected thereto, a cover therefor carrying a terminal strip and the additional instrumentalities essential to form a wall telephone connected thereto, and cross interconnecting facilities for connecting the base and cover terminal strip to form a wall telephone.

6. As an article of manufacture, a structure comprising a base equipped with signalling equipment usable in common in both desk and wall telephone sets provided with a terminal strip, a cover for said base carrying the talking and switch controlling mechanism of a wall telephone, and also carrying a terminal strip, a desk telephone stand carrying a terminal strip, and means for interconnecting the terminal strip on the base with the terminal strip on the cover to form a complete wall telephone set, or for interconnecting said first terminal strip with the terminal strip of the desk stand to form a complete desk telephone set.

Signed at Chicago, Illinois, this 27th day of March 1922.

JOHN ERICKSON.

Signed at Chicago, Illinois, this 27th day of March, 1922.

HERBERT F. OBERGFELL.