March 23, 1937 H. F. OBERGFELL 2,074,415

DESK TELEPHONE

Filed Dec. 21, 1934 2 Sheets-Sheet 1

FIG. 1

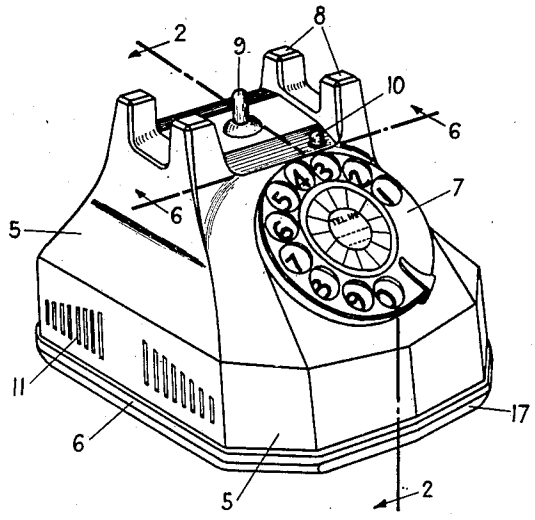
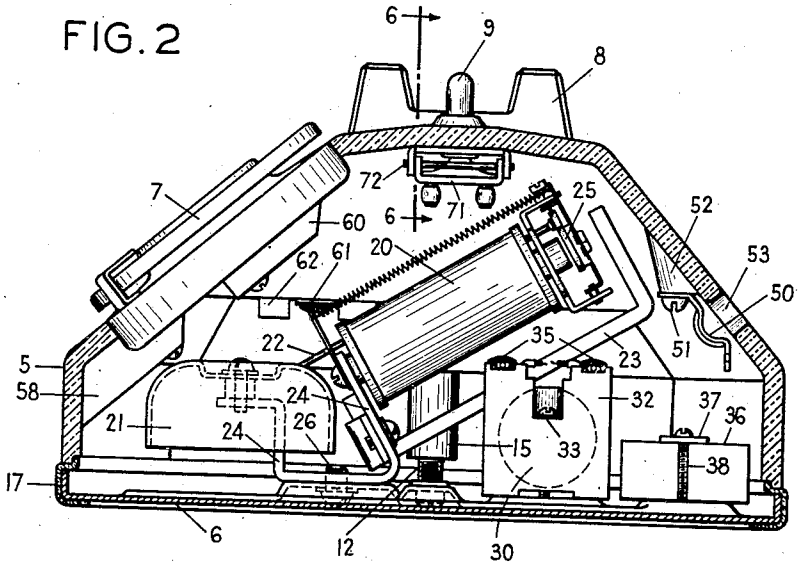


FIG. 2



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DESK TELEPHONE

Filed Dec. 21, 1934 2 Sheets-Sheet 2

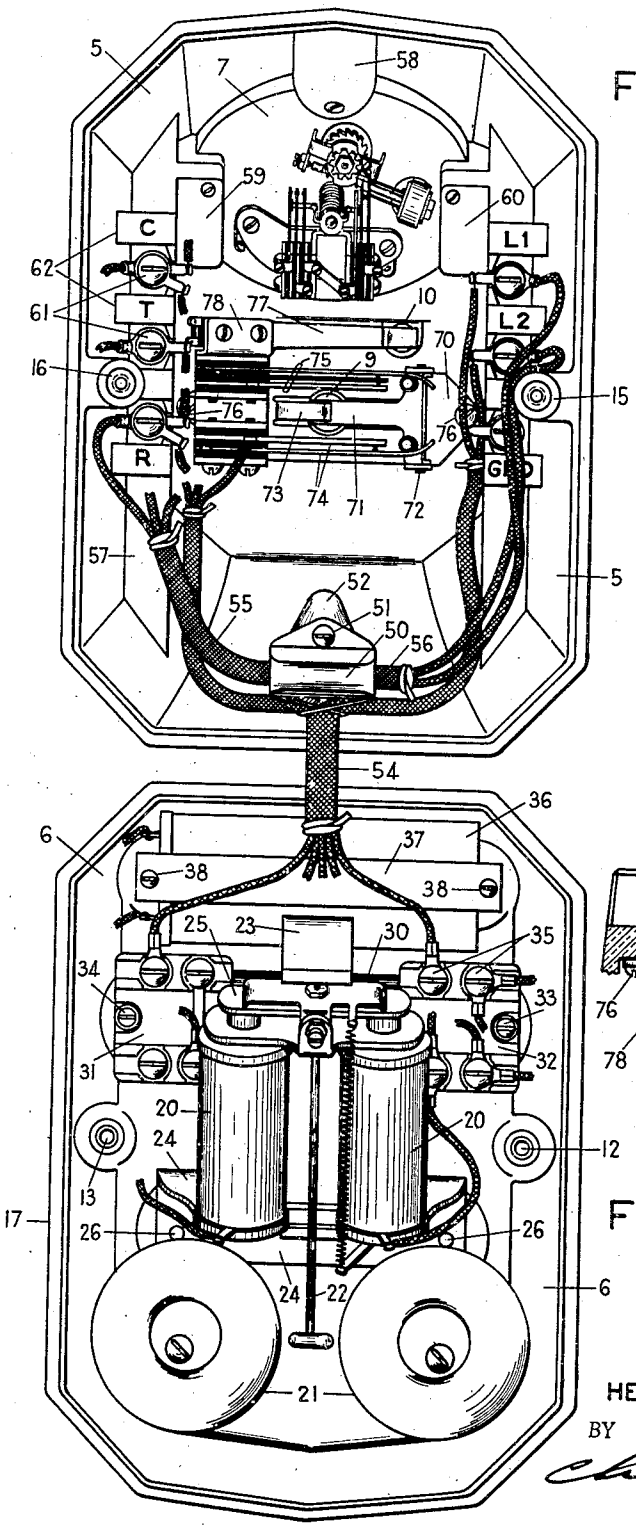

FIG. 3

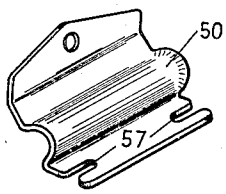

FIG. 5

FIG. 6

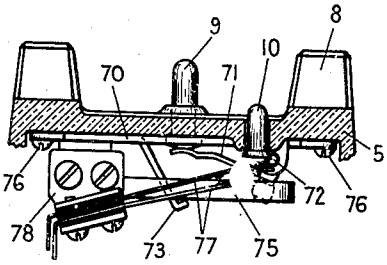

FIG. 4

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UNITED STATES PATENT OFFICE

2,074,415

DESK TELEPHONE

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Application December 21, 1934, Serial No. 758,577

4 Claims. (Cl. 179—100)

This invention relates in general to telephone sets but more particularly to an improved desk telephone set of the self-contained type, and the principal object of the invention is to provide a desk telephone set in which all of the apparatus associated with a subscriber's substation telephone set is contained in a single unit. It is an object of the invention to provide a casing for a desk telephone set in which all of the pieces of apparatus are compactly arranged to utilize all of the space within the casing to the best advantage. A further object of the invention is to provide a desk telephone set of improved appearance, combined with practical utility and economic construction.

A further object of the invention is to arrange all of the parts within the telephone set so that they are easily accessible for inspection, repair or adjustment. A further object is to provide a casing in which standard pieces of telephone apparatus may be used, and in arranging these pieces of apparatus within the telephone casing to use the least possible space with the best advantage.

A particular feature of the invention resides in the provision of a novel combination cord holder and cable tie block for supporting the conductors or cords within the telephone set.

A further feature resides in the arrangement of the various pieces of telephone apparatus in the case of the desk telephone in such a manner as to utilize all of the existing space on the base without interfering with other pieces of apparatus either on the base or that mounted upon the cover. Similarly the apparatus mounted on the cover or top portion of the telephone is arranged to utilize a minimum amount of space and so as not to interfere with the apparatus mounted on the base portion.

Another feature of the invention resides in the novel operating arrangement and support for the switching contacts in combination with the supporting arrangement for the ringing push button and associated contacts.

An important novel feature of the invention is concerned with the general shape of the desk telephone so that it may be easily molded of some plastic composition; the general appearance of the desk set being in the form of a truncated pyramid having vertical and flat sloping sides with a set of pillars for holding the hand set formed in the top of the set.

Certain features of my invention are being claimed in the divisional application, Serial No. 47,864, filed November 1, 1935.

Other objects and features not enumerated will be pointed out more in detail in connection with the detailed description which, together with the accompanying two sheets of drawings, illustrates in detail a preferred embodiment of the desk telephone set constituting the invention.

Referring to the drawings, Fig. 1 illustrates in perspective the general appearance of the desk telephone; Fig. 2 is a cross sectional view along the line 2—2 of Fig. 1; Fig. 3 is an underside view of the cover illustrating the arrangement of the apparatus therein; Fig. 4 is a plan view of the base of the desk telephone showing the arrangement of the apparatus thereon; Fig. 5 is a perspective view of the cord holder; while Fig. 6 is a slightly fragmentary cross-sectional view along the line 6—6 of Fig. 1 illustrating the switching and push button contact operating arrangement and support.

Referring now more particularly to Fig. 1, the cover portion of the desk telephone indicated as 5 is formed of some suitable plastic insulating compound which lends itself well to molding so that all the parts may be formed into the desirable shape. This cover is formed generally in the shape of a truncated pyramid having a sloping front upon which the calling device 7 is mounted, a set of pillars 8 are formed in the cover 5 between which the usual well known combination transmitter and receiver handset is supported in its normal position in contact with the switching button 9 protruding midway between the pillars 8. Slightly forward of the switching button 9 and between the front pair of pillars 8a ringing button 10 is arranged. The bottom or skirt portion of the cover 5 is formed with nine sides which extend vertically for a short distance, then slope inward at an angle to the cradle portion or top of the desk set, where the pillars 8 are formed. By converging to the top of the cover in this manner the cover may be easily formed and then withdrawn from the mold. By forming the cover portion in this shape a pleasing appearance is imparted to the design of the desk telephone, combined with sturdiness and low center of gravity so that the instrument is not easily tipped over. A series of slots or openings 11 are formed on opposite sides of the vertical portion of the cover 6 which serve as sound openings for the signalling apparatus.

The base portion 6, which may be formed of metal, is fastened to the cover portion 5 by means of screws 12 and 13 threaded into the pillars 15 and 16 formed inside of the cover portion 5. A rubber ring 17 expanded over the rim of the base

6 prevents the telephone instrument from damaging the desk or surface it is set upon.

Referring now more particularly to Figs. 2 and 4, the apparatus mounted and arranged upon the base 6 will be described in detail. Centrally located on the base 6 and supported at an inclined angle is the usual pair of ringer coils 20 for actuating the ringer gongs 21 by means of the clapper rod 22. Both the ringer coils 20 and the gongs 21 are fastened by means of screws as indicated to an irregular shaped bracket member 24 which is in turn fastened to the base 6 by means of the pair of screws 26. The clapper rod 22 is secured to the armature 25 pivotally mounted opposite the ends of the coils 20. A permanent magnet 23 is fastened at its lower end by means of a strap member to the bracket 24. Except for its mounting support on bracket 24 the ringer apparatus is of standard construction usually employed in previous types of telephone sets. The induction coil 30 is mounted on the base 6 by means of screws 33 and 34 in a position directly below the elevated end of the ringer coils 20. This induction coil 30 has combination spool heads and terminal blocks 32 and 31 at either end so arranged that the terminal screws 35 are easily accessible on the outside edges of the ringer coils 20 and are not obstructed by them. An induction coil of the foregoing type is disclosed more in detail in Patent No. 1,878,800, isued Sept. 20, 1932 to H. F. Obergfell. All of the wires and circuit connections extending from the base 6 terminate on the terminals 35. A condenser 36 is secured by a strap 37 and screws 38 to the base 6 in a position immediately above the induction 30.

The particular arrangement of the ringer, induction coil and condenser on the base 6 is such that a minimum amount of the available space is utilized while at the same time each one of the pieces of apparatus may be individually removed, replaced, inspected, or repaired without disturbing the others. Wiring changes are likewise effectively performed without the necessity of soldering or unsoldering any of the connections; each piece of apparatus having its wires extended to the terminals on the blocks 31 and 32 of the induction coil.

Referring now more particularly to Fig. 3 the apparatus and arrangement thereof which is mounted in the cover part 5 of the desk telephone will now be described. The combination cord holder and cable fastener 50 is secured by means of screw 51 to a pillar 52 formed in the cover 5. It has two notches 57 (see Fig. 5) formed in it to which the connecting cable 54 extending from the base 6 to the apparatus in the cover 5, is secured by means of binding twine. The center portion of the cord holder 50 is formed with a groove in it which is positioned directly opposite the opening 53, (Fig. 2), through which the connecting cord 55 leading to the hand-set unit and the cord 56 leading to the line conductors extend. After passing inside through the opening 53 the cords 55 and 56 extend in opposite directions within the cover 5 to connect with the various terminals 61. The cord holder 50 presses the cords against the inside surface of the cover 5 and holding them in this position, prevents them from being forcibly pulled through the opening 53 or pushed inward, thereby preventing injury to the cord itself and the possible pulling loose of the terminal connections. The ends of the groove in the cord holder 50 are flared slightly to prevent chafing of the cords. The cable 54 connecting the apparatus of the base 6 with the various pieces of apparatus in the cover 5 is split at the point where it is attached to the cable holder 50 so that the individual cords of the cable extend in opposite directions.

The cord holder it is seen keeps the cords and the individual wires forming the cords in a set position so as not to interfere with the apparatus mounted in the base portion 6, and to keep these cords clear of this apparatus when the cover and the base are screwed together. The cords 55 and 56 as well as the cable 54 have their individual conductors terminating on terminals 61 arranged on opposite sides of the cover 5. These terminals are screwed in a ledge 57 on opposite sides of the cover 5, and are separated by raised portions 62 formed on the ledge to prevent the accidental contacting of the various terminal lugs or clips attached to the terminals 61. Appropriate symbols are stamped on the top of the lugs 62. The arrangement of the cords 55 and 56 and the cable 54 is such that disconnection or changing of wiring can be easily made without unsoldering any of the pieces of apparatus. At the same time the cords lie in the cover and base so as not to interfere with the normal working of the pieces of apparatus by contacting with them and when opened up for inspection as shown in Figs. 3 and 4 they do not interfere with or obstruct the equipment.

The calling device 7, which may be of any well known design, is mounted on the sloping front portion of the cover 5 so that it rests on the lugs 58, 59, and 60 formed integral with the cover 5. It is secured to these lugs by means of screws so that the calling device may be easily removed when necessary. The lugs are so formed that the dial may be sunk into the cover 5 in order to present a pleasing appearance as seen in Fig. 2. The working parts of calling device 7 are not interfered with in their normal operation by any of the pieces of apparatus mounted on the base 6, as these parts are mainly positioned between the ringer gongs 21.

Referring now more particularly to Fig. 6 as well as Fig. 3, the switch operating mechanism will be described. This mechanism is mounted on the inside center of the cover 5 and comprises a supporting bracket 70 secured to the inside of the cover by means of screws 76 on each end of the bracket. The plunger 9 which is actuated by the removal and replacement of the handset on the top of the telephone between the pillars 8, extends through an opening in the cover 5 and the bracket 70 to engage the operating lever 71 which is pivoted to the bracket 70 by pivot 72. The downward movement of the lever 71 by plunger 9 is limited by the stop 73 formed out of bracket 70. The lever 71 has a pair of bushings mounted on it adjacent to pivot 72 which engage and operate the sets of contact springs 74 and 75 to control the electrical switching operations of the telephone. By the depression of the plunger 9 when the handset is on the cradle, the lever 71 is moved downward and through the medium of the bushings on the lever the contact springs 74 and 75 are operated. The removal of the handset permits the plunger 9 to move upward and the lever 71 to follow it and due to the tension stored in the armature springs of contacts 74 and 75 sufficient tension is imparted to the lever 71 to hold the plunger 9 in its uppermost position without the necessity of providing additional coil springs or other restoring tension members. The contact spring sets 74 and 75 are held in position between insulated spacers by means of screws

threaded into brackets formed in the supporting bracket 70. A bracket 78 is attached by screws to the supporting bracket 70 and this bracket supports at an angle the set of contact springs 77 which are operated by the ringing push button 10 extending to the outside of the cover 5. The purpose of this push button is so that the person at the telephone set may by suitably manipulating the button 10 signal another party on the telephone line by means of a code. The switch operating mechanism and contact springs as well as the contact spring set of the ringing button are on the inside of the cover in such a manner as not to interfere with their operating and so as not to come into contact with the other pieces of apparatus mounted in the base. Likewise the wiring is so arranged that the conductors connecting the various contact spring sets do not interfere with the operation of any of the pieces of apparatus.

From the foregoing description of the arrangement of the various pieces of apparatus of the telephone set it is seen that advantage has been taken of all the available space within the cover 5 and that each piece of apparatus is so arranged that it does not interfere with the operation of other adjacent pieces of apparatus and that the conductors and wires connected to the pieces of equipment are so arranged that they do not interfere or become tangled up with any other pieces of apparatus. This is more clearly seen from the side view of Fig. 2. All of the apparatus used in the telephone set is constructed of standard pieces used in previous types of telephones so that it is seen that an entirely new and novel construction of cover and base for a telephone may be easily assembled by the use of standard pieces of equipment which may be new or salvaged from old telephone sets and boxes. By providing a single unit for all of the substation equipment the necessity of providing an extra bell box for the ringer, induction coil and terminal block is entirely eliminated, thus greatly cheapening the cost of the telephone set.

Referring to Figs. 3 and 4 it will be seen that when screws 12 and 13 are removed from threaded engagement with the cover 5 at 15 and 16, the cover may be lifted off the base 6 and laid upside down on top of the base. When opened up in this manner all of the apparatus on the base as well as all of the apparatus on the cover is immediately visible for inspection. Any particular piece of apparatus may be readily removed, replaced, or repaired without interfering with adjacently mounted pieces of equipment, and the cables and cords connecting the base with the cover and those entering the cover from the outside are protected in such a manner that they do not become entangled with the equipment or obstruct it in any manner. The individual wires connecting the contact springs of the switching members and certain other pieces of apparatus on the base have not been shown entirely in order that the equipment may be more clearly illustrated and only short broken off connections extending from the terminals and the cords have been shown. It will be understood, of course, that for different types of circuits the wiring of the telephone will be changed from that shown, although such changes will not necessarily include additional conductors in the cord or cable.

Having described the invention, what is considered to be novel is pointed out in the appended claims.

What is claimed is:

1. In a telephone desk set, a base plate, an induction coil supported on said base, a condenser supported on said base adjacent to said induction coil, signalling apparatus including ringer coils and gongs, an angle-shaped bracket for supporting said ringer gongs and said ringer coils, said bracket secured to said base in such a manner as to support said ringer coils at an angle from said base plate and in a position directly above said induction coil and condenser and supporting said gongs below the ringer and adjacent to the base plate, and a cover for said base fitting over said apparatus without coming into contact with the same.

2. In a telephone desk set of the self-contained type, the combination of a cover and a base plate, an induction coil and a condenser mounted adjacent each other on said base, a ringer mechanism including coils and a set of gongs, means for supporting said gongs adjacent to said base, said means supporting said ringer coils at an angle extending upward from said base and gongs in a position directly above said induction coil and condenser and between the ends of said induction coil, and a set of terminals mounted on the ends of said induction coil and outside the limits of said ringer coil so as to be easily accessible.

3. In a telephone set, the combination of a base and cover therefor, an induction coil having terminals mounted on the ends thereof and supported on said base, a ringer, means for supporting said ringer on said base at an inclined angle so that one end of the ringer projects immediately above the induction coil and between the ends of said coil so as not to interfere with said terminals, a calling device having springs and a switching mechanism having springs, both mounted directly on said cover, a pin projecting through the cover for operating said switching mechanism, terminals for the springs of said calling device and said mechanism mounted on said cover, and cable connections between the terminals on said induction coil and the terminals in said cover for extending circuit connections between the apparatus on said base and said cover.

4. In a cradle-type telephone, a cover and a base, a calling device and a hand telephone operated switching mechanism mounted on the cover, switching springs mounted directly on the underside of the cover and operated by said mechanism, terminals on the cover connected to the calling device and switching springs, an induction coil and a condenser mounted on the back of the base, a bracket having two arms bent to an acute angle, one arm secured to the base, ringer gongs mounted on said one arm at the front of the base under the calling device, a pair of ringer coils mounted on the other arm and extending backward from the gongs and up over the induction coil and the condenser, terminals on the base connected to the parts mounted thereon, and cable connections for interconnecting the terminals on the base and cover.

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