

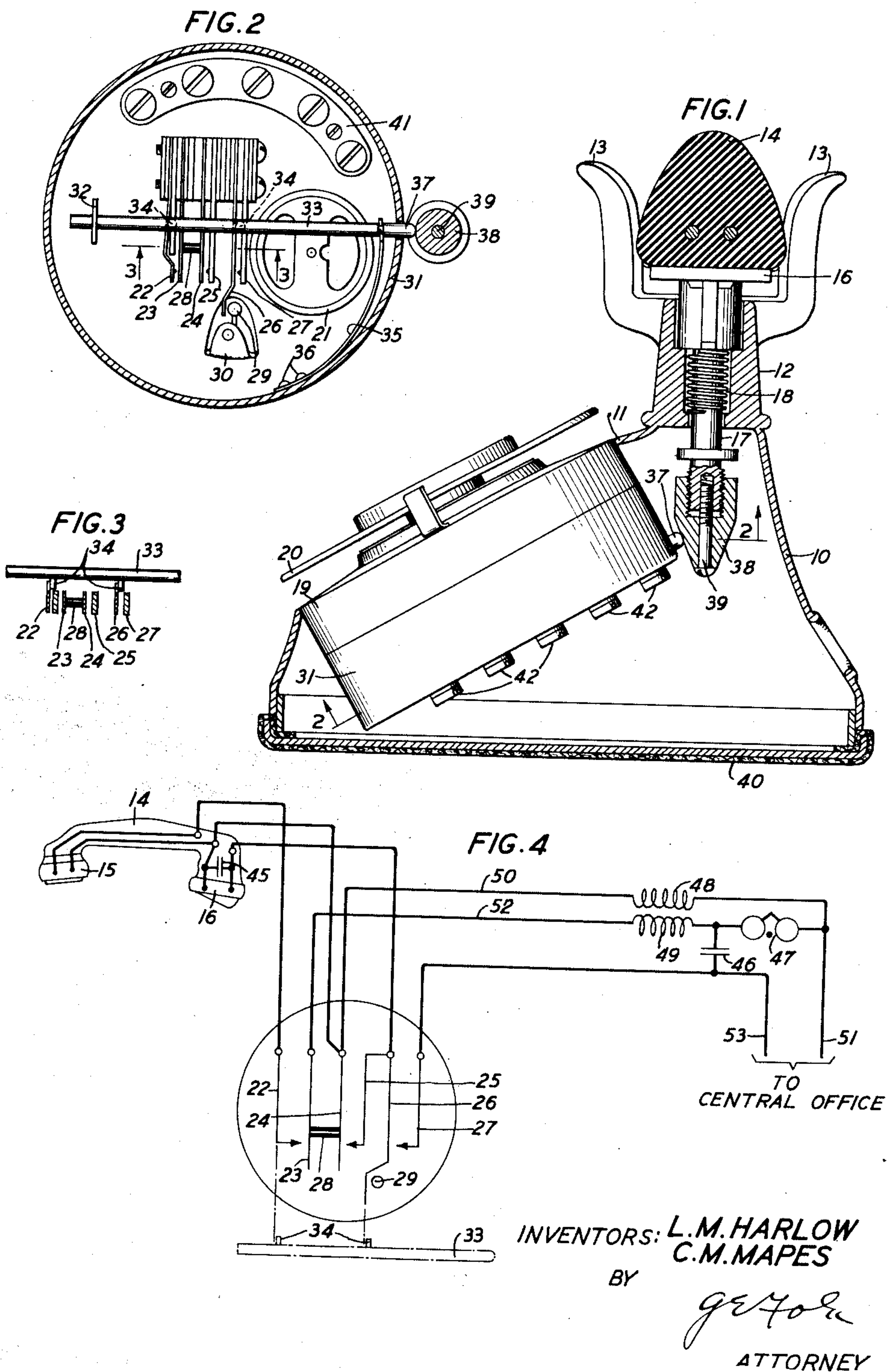
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TELEPHONE SUBSTATION APPARATUS

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TELEPHONE SUBSTATION APPARATUS

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This invention relates to telephone substation apparatus, and more particularly to hand telephone mountings for automatic systems.

One object of this invention is to simplify the structure, and thereby to reduce the manufacturing and maintenance cost of mountings for hand telephones.

In one illustrative embodiment of this invention, a mounting for hand telephones comprises a desk stand having a cradle for accommodating the hand telephone, a reciprocable plunger having a portion disposed in the cradle, and a dialing mechanism. The dialing mechanism may be of the general design disclosed in Patent No. 1,161,854 granted November 30, 1915 to Oscar F. Forsberg, and includes a plurality of contact members, certain of which are associated with the receiver and transmitter of the hand telephone, and one of which is adapted to be actuated by operation of the dialing mechanism to produce a desired number of impulses in the circuit connecting the substation with a central office.

In accordance with a feature of this invention, means are provided for actuating the one contact when the hand telephone is removed from or placed in the cradle whereby the subscriber's station at which the mounting is situated will be connected or disconnected, respectively, with the line to a central office. More specifically, a mechanical coupling is provided between the plunger and this one contact whereby the contact will be closed when the hand telephone is removed from the cradle and will be opened when the hand telephone is placed in the cradle.

This construction obviates the use of the usual circuit controlling members separate from the contacts on the dialing mechanism and thereby simplifies the structure of mountings for telephones and substation circuits associated therewith. Furthermore, it eliminates maintenance of contacts separate from the dialing mechanism and enables the use of a single assembly of contacts in a variety of systems requiring different contact arrangements.

The invention and the features thereof will be understood more clearly and fully from the following detailed description with reference to the accompanying drawing, in which

Figure 1 is a side elevational view, partly in cross-section, of a telephone desk set including a desk stand constructed in accordance with this invention, and a hand telephone shown partly in cross-section resting thereon;

Fig. 2 is a plan view, partly in cross-section, of

the dialing mechanism embodied in the desk stand shown in Fig. 1;

Fig. 3 is a detail view showing the association of the circuit controlling members in the dialing mechanism and an actuating rod therefor;

Fig. 4 is a diagrammatic view showing the electrical association of the receiver and transmitter of the hand telephone and elements of substation apparatus with the circuit controlling members in the dialing mechanism.

Referring now to the drawing, the telephone desk set illustrated comprises a desk stand, which may be of the general structure disclosed in Patent 1,508,424, granted September 16, 1924, to George K. Thompson, including a base 10 having a sloping front wall 11, a pedestal 12, and a cradle portion having tines 13 and adapted to receive the handle 14 of a hand telephone. The hand telephone, as indicated in Fig. 4, may include a receiver 15 at one end of the handle 14 and a transmitter 16 at the other end of the handle, the transmitter having a condenser 45 in shunt therewith. The desk stand includes also a reciprocal plunger having an arm 16 disposed in the cradle and a spindle 17 extending through the pedestal 12 and within the base 10. The plunger is adapted to be depressed against the action of a spring 18 when the hand telephone is placed in the cradle and, conversely, is adapted to be raised by the spring 18 when the hand telephone is removed from the cradle.

Mounted upon the sloping wall 11 of the base 10 is a dialing mechanism 19, which may be of the general construction disclosed in Patent 1,161,854, granted November 30, 1915 to Oscar F. Forsberg, and which includes a finger wheel 20. The dialing mechanism, as shown more clearly in Fig. 2, includes a governor 21, and a plurality of rigid circuit controlling or contact members 25 and 27 and leaf spring contact members 22, 23, 24 and 26. As shown in Figs. 2 and 4, the contact springs 23 and 24 are mechanically coupled by an insulating spacer 28 and the contact member 25 and contact spring 26 are electrically connected. As shown in Fig. 2, the contact spring 26 is extended and adapted to be engaged by an actuating member 29 pivotally supported on a bracket 30. The actuating member 29 is reciprocable in accordance with the characters and digits of the exchange and number dialed so that as described hereinafter the circuit controlled by the contact members 26 and 27 is interrupted a corresponding number of times and the requisite number of impulses is produced in the circuit.

The outer parts of the dialing mechanism within the base 10 may be enclosed within a dust-proof cover 31 which carries a guide bracket 32 and has a guide aperture in one wall thereof. A push rod 33 of insulating material extends slidably through the bracket 32 and the guide aperture and, as shown clearly in Fig. 3, is provided with depending lugs 34 for engaging the spring contacts 22 and 26. The rod 33 is engaged by a bowed spring 35 which is suitably secured, as by rivets 36, to the cover 31 and tends to move the springs 22 and 26 into engagement with the circuit controlling members 23 and 27, respectively. The outer or projecting end 37 of the push rod 33 is engaged, as shown clearly in Fig. 1, by a tapered tip 38 threaded upon the spindle 17 and locked thereto by a screw 39 threaded into the spindle. The tip 38 may be moved relative to the spindle 17 and the travel of the push rod thereby adjusted.

As illustrated diagrammatically in Fig. 4, a desk stand in accordance with this invention, may be associated with the usual substation apparatus, such as a condenser 46, a ringer 47 and an induction coil having windings 48 and 49. The winding 48 is connected to the contact member 24 by a conductor 50 and to one of the line conductors 51 to the central office and the other winding 49 is connected to the contact member 23 by conductor 52. The other line conductor 53 is connected to the contact member 27.

When the hand telephone is in the cradle of the desk stand, the plunger 16, 17 is depressed and the push rod 33 holds the contact springs 22 and 26 away from the contact members 23 and 27, respectively, so that the hand telephone and the dialing mechanism are disconnected from the lines 51 and 52 to the central office. When the hand telephone is removed from the cradle, the plunger rises under the action of the spring 18, the tip 38 slides along the projecting end 37 of the push rod 33 and the push rod moves outwardly, e. g., to the right in Fig. 4, so that the spring contacts 22 and 26 engage the contact members 23 and 27, respectively. Thus, the transmitter 16 is connected in circuit with the lines to the central office through a path including conductor 53, contact member 27, spring contact 26, transmitter 16, and conductor 50 and the receiver 15 is connected in circuit with the lines to the central office through a path including conductor 51, winding 48, receiver 15, contact member 22, contact spring 23, conductor 52, winding 49, condenser 46 and conductor 53.

When the dialing mechanism is operated a number of impulses, corresponding to the characters and digits of the exchange and number dialed, are produced in the lines to the central office through a circuit including conductor 53, contact member 27, spring contact 26, contact member 25, spring contact 24, conductor 50, winding 48 and conductor 51. This circuit is interrupted by the pivotally supported member 29 which engages the spring contact 26 and moves it away from the contact member 27 to produce the requisite number of impulses. During the dialing operation, the receiver circuit is broken by a member, not shown, on the dialing mechanism which moves the spring contact 23 away from the spring contact 22 and also moves the spring contact 24 into engagement with the contact member 25.

Replacement of the hand telephone upon the cradle causes inward movement, e. g., movement to the left in Fig. 4, of the push rod 33 so that the engagement between contact springs 22 and 23

and between contact spring 25 and contact member 27 is broken and the hand telephone and dialing mechanism are thereby disconnected from the line conductors 51 and 53.

Although the desk stand has been described hereinabove as utilized in substation apparatus having a sidetone circuit, it will be understood, of course, that it may be utilized also in such apparatus having an anti-sidetone circuit.

This construction, it will be apparent, obviates the use of the usual contact assembly separate from the dialing mechanism and thereby simplifies the structure of telephone substation apparatus. Furthermore, it renders all the contacts readily accessible by removal of the base plate 40 of the desk stand and thereby expedites repair of the desk stand and reduces the maintenance cost thereof.

An insulating block 41 is mounted upon the dialing unit and is provided with terminal screws or lugs 42 which project through the cover 31. Screws or lugs may be electrically connected to the contact members by a cord, not shown, and may be connected to other parts of the substation apparatus by another cord, not shown.

Although a specific embodiment of the invention has been shown and described, it will be understood, of course, that modifications may be made therein without departing from the scope and spirit of this invention as defined in the appended claims. It will be understood also that although the invention has been described with reference to desk sets including hand telephones, it may be embodied equally well in wall sets and in desk sets of the type having a transmitter mounted on a standard and a hook for accommodating a receiver, the hook actuating a plunger akin to the plunger 16, 17.

What is claimed is:

1. A mounting for a hand telephone, comprising a support having a cradle for accommodating the hand telephone, a unitary assembly carried by said mounting and including a dialing mechanism and a circuit controlling member mounted on and actuable by operation of said dialing mechanism, a reciprocable plunger having a portion in said cradle and adapted to be engaged by said hand telephone, and means mechanically coupling said plunger with said circuit controlling member.

2. A mounting for a hand telephone comprising a support having a portion for accommodating said telephone, a reciprocable plunger extending into said portion, dialing mechanism mounted on said support, a circuit controlling member mounted on and actuable by said dialing mechanism, and a push rod adapted to engage said member and actuable by said plunger.

3. A mounting for a hand telephone including a receiver and a transmitter, said mounting comprising a cradle for receiving said hand telephone, a plunger having a portion within said cradle, a dialing mechanism, contact members mounted on said dialing mechanism, one of said contact members being actuable by said mechanism and in circuit with said transmitter, another of said contact members being in circuit with said receiver, and a push rod engaging said contact members and operable by said plunger to actuate said contact members when said hand telephone is placed upon and removed from said cradle.

4. A telephone set comprising a mounting having a portion for accommodating a telephone instrument, a plunger reciprocable in accordance

with the placement of said instrument upon said portion and removal thereof from said portion, a dialing mechanism having a portion within said mounting, a circuit controlling member on said 5 second portion and actuable by said dialing mechanism, a cover for said portion of said dialing mechanism, and a push rod carried by said cover and extending therefrom, said push rod being adapted to engage said circuit controlling mem- 10 ber and said plunger whereby said member is actuated in accordance with the placement of said telephone instrument upon said mounting or removal thereof from said mounting.

5. A mounting for a hand telephone including 15 a transmitter and a receiver, comprising a hollow base and a cradle for accommodating the hand telephone, a reciprocable plunger having a portion in said cradle and a portion within said base, a dialing mechanism having a portion within said

base, a plurality of line contact springs mounted on said mechanism, one of said contact springs being in circuit with said receiver and another of said contact springs being in circuit with said transmitter and actuable by said dialing mechanism, a removable cover enclosing said portion of said dialing mechanism and said contact springs, a push rod slidably mounted within said cover and carried thereby, said push rod engaging said contact springs and adapted to be actuated by 10 said second portion of said plunger to open the circuits in which said springs are included, and a spring member mounted in said cover and coupled to said push rod for urging said push rod in a direction such as to actuate said contact 15 springs to close the circuits in which they are included.

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