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## TELEPHONE INSTRUMENT

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The general object of the present invention is to provide improvements in telephone apparatus. A specific and important object of the invention is to provide a portable telephone apparatus unit adapted for use in lieu of, and to serve the purposes of the ordinary or standard so-called French telephone subscriber's set including a dialing mechanism through which the user mechanically calls the number wanted.

The said ordinary or standard set, as is well proven, comprises a weighted base member and a separate arm or part. The latter carries at one end a transmitter and a receiver at its other end, and is connected to the base member by a cord or flexible cable including the conductors connecting the receiver and transmitter to terminals within the base member which is connected by a separate cord or cable to the line wires and bell box, the latter being independently mounted on a desk, wall baseboard, or other convenient support. The base member of such a set has mounted in it the dial mechanism and the main telephone switch mechanism. The latter includes a vertically movable switch operating member formed at its upper end with a cradle-like support on which the above mentioned arm is supported when the telephone is not in use, the weight of the arm then holding the switch in one of its two operating positions against the action of a spring which moves the switch into the second of its operating positions when the arm is lifted off the base.

For the attainment of the above mentioned specific object of my invention, I preferably employ a single hollow supporting part comprising an arm portion in which the receiver and transmitter are mounted as in the arm part of the standard set, and comprising a second portion rigidly, and preferably integrally, connected with the arm portion in which the dialing mechanism and main telephone switch are mounted, and adapted to rest on a desk or table when the telephone is not in use and to be lifted off that support and held in the hand of the operator when the telephone is in use.

Advantageously, the main telephone switch of my improved unit comprises a vertical movable switch operating member having a portion which is spring pressed outwardly from the desk engaging or normally bottom side of the base portion when the instrument is lifted off the table or support but is retracted into the base portion by the weight of the unit when the latter rests on a table. The switch of my unit is thus automatically moved between its two operating positions

when the unit is picked up for use and after being used is put back on its support, exactly as the switch of the standard set is operated when the arm is lifted off of, and returned into engagement with the cradle support of the separate base member of the standard set.

My improved unit, having the above described characteristics, requires less material and weight, and is inherently less expensive to manufacture than the standard two part set, and possesses an important practical operating advantage over the standard set in respect to the dialing operation. The saving in weight obtainable with the present invention is primarily due to the fact that the base member of the standard set is made heavier than would otherwise be necessary, so as to weight the base member and thereby minimize its tendency to skid or slide around on the desk or other supporting surface, under the force applied to it in the dialing operation. In ordinary practice, however, as is well known, the weight of the base member of the standard set, while substantial, is insufficient to prevent objectionable sliding movement of the base, even when the latter is provided with the most approved anti-skidding material to increase the frictional action between the base on the table or other support on which it rests. In the ordinary use of the standard set, it is frequent and indeed usual, rather than unusual, for the user to lift the arm off the base and lay it down during the dialing operation so that the base member may then be held stationary with one hand while the dial is manipulated by a finger of the other hand. With my invention, no otherwise unnecessary weight is required to facilitate the dialing operation, which may be quickly and easily effected while the single supporting member of the unit is held in the user's hand by which the unit is, or may be held during the subsequent telephonic conversation.

The dialing mechanism may be mounted in or on my unitary support in various ways. In the form now preferred by me, the dialing mechanism is wholly received within the base portion of the support with the dial adjacent but somewhat above the desk or table engaging surfaces of the support so that the unit will normally be inverted, wholly or partially, by the user during the dialing operation. This requires no extra operation or movement of the user other than a turn of the hand holding the support. The receiver, transmitter, and dialing instrumentalities mounted in the unitary support of my improved unit, may be identical with those now employed in

the two part standard set. A second important specific object of the present invention is to provide a portable unit which not only includes receiver, transmitting and dialing elements, but also includes the instrumentalities required for the performance of the signalling mechanism mounted in or on the usual bell box separate from, but associated with the above mentioned standard two piece set. In the preferred form of my present invention the signalling instrumentalities are mounted in the base portion of my improved unit and their weight gives additional stability to the unit when resting on a table but need not be great enough to interfere with the ready portability of the unit.

Advantageously, I may provide my unit in some cases, with a switch controller manually adjustable at will into one or another of three operative positions. When the controller is in one or another of two of those positions, the main switch is locked in one or the other of its two operative positions. In the third position of the controller, the main switch is free to move between its two operative positions just as it would be if the switch controller were omitted.

The various features of novelty which characterize my invention are pointed out with particularity in the claims annexed to and forming a part of this specification. For a better understanding of the invention, however, its advantages, and specific objects attained with its use, reference should be had to the accompanying drawing and descriptive matter in which I have illustrated and described a preferred embodiment of the invention.

Fig. 1 is an elevation of the unit partly broken away and in section; and

Fig. 2 is an inverted plan view of the unit with a portion of the removable bottom wall of the unit broken away.

In the preferred form of the invention shown in the drawing, the unit support A of my improved unit comprises an arm portion projecting away from an enlarged base portion A' adapted to rest on a desk, table or other support when the unit is not in use, the arm portion then extending upwardly from the base portion. The latter is suitably extended to give the unit adequate stability against being accidentally knocked over when resting on a desk or table, and also to provide a chamber space B in the base suitably large for the convenient mounting therein of the main switch D and its actuating mechanism, the actuating and controlling mechanism for the switch D, and the dialing mechanism E including a dialing switch C. The transmitter F is mounted in the portion of the support in which the arm and base portions merge into one another, and the receiver G is mounted at the free end of the arm portion of the support. As shown, the relative position of the transmitter and receiving units is precisely the same as in the arm of the standard two part set, and the outline of the base portion at its desk or table engaging side is identical with that of the corresponding side of the base member of the standard two part set. The main switch D, and the dialing mechanism and transmitter and receiver units, E, F, and G, may be of any known or suitable form, and in particular they may be and are shown as identical with the corresponding parts of the standard two part set.

The automatic actuating means for the main switch D may also be and as shown is identical in principle with the main switch operating

mechanism of the standard two part set. As shown in the drawing, the main switch actuating mechanism comprises a vertically disposed and vertically movable plunger H mounted in a supporting bracket h and carrying an arm H' which supports a disc H<sup>2</sup> of insulating material adapted to engage a flexible spring blade part D' of the switch D, when the plunger H is retracted into the chamber B, as shown in full lines in Fig. 1. The plunger is so retracted in the normal non-use condition of the apparatus, as a result of the engagement of a foot portion H<sup>3</sup> of the plunger engaging the table or support and the weight of the unit which is adequate to then compress the spring H<sup>4</sup> acting on the plunger H and moving the latter into the dotted line position shown in Fig. 1, when the unit is lifted off of the surface by which it is supported during conditions of non-use. The bracket h may be suitably connected directly to some integral post or projection of the part A extending into the chamber space B, but as shown, the bracket h is screw connected to a removable bottom plate part I detachably connected to the part A and extending across and closing the side of the chamber B which is lowermost in the position of the apparatus shown in Fig. 1. The bottom member I may be removably secured to the part A in any suitable manner as by means of clamping screws threaded into suitably disposed posts or lug portions A<sup>2</sup> of the part A extending into the chamber B. As shown, the bottom member I is formed at its inner side with a cylindrical guide flange I' for the flange head H<sup>3</sup> surrounding the aperture through which the head is projected under the action of the spring H<sup>4</sup>, when permitted so to do.

As shown, the revolvable dial member E' which formed with the usual finger apertures E<sup>2</sup>, is mounted for rotation about an axis which is vertical in the position of the unit shown in Fig. 1, and the member E' is parallel and adjacent to, but at the inner side of the plate member I, and in register with an aperture I<sup>2</sup> formed in the latter to permit access to the member E' for finger actuation of the latter in the usual manner. As shown, the member I is formed with a cylindrical flange I<sup>3</sup> at its inner side surrounding the opening I<sup>2</sup> and telescopically receiving the cylindrical casing body of the dial mechanism E. As shown, that casing body is detachably secured by screws to a connecting ring member e, and the latter is detachably connected by screws e' to projections A<sup>4</sup> from the unitary supporting part A, which are suitably disposed in the space B.

The dialing mechanism E may include the usual gear connection between the dial member E' and the usual rotative speed governor and dial switch actuator, but inasmuch as the dialing mechanism, as well as the transmitting and receiving units F and G and the main switch D, may be like, and, in fact, may be interchangeable with the corresponding parts of the standard two piece set now in general use, further description or illustration of those parts is plainly unnecessary herein. The member A is formed with a suitably bushed aperture A<sup>5</sup> for the entrance into the chamber B of the cord or cable K through which the unit is connected to the telephone line. L represents the cord or cable including the cable conductors connecting terminals within the chamber B to the receiver and transmitter units.

The switch controller, which may advantageously be employed in some cases in my improved unit, is shown as including a lever M journalled on a pivot M' supported by the bracket h.

The lever M is telescopically connected to a plunger extension M<sup>2</sup> movable relative to the lever M proper, toward and away from the fulcrum pivot M'. The plunger extension M<sup>2</sup> projects from the chamber B through a slot A<sup>6</sup> in the base portion of the part A and is provided at its outer end with a button M<sup>3</sup> for finger manipulation by the user. Adjacent its outer end, but within the chamber B, the plunger M<sup>2</sup> is provided with a cross pin M<sup>4</sup>, the ends of which are adapted to enter vertically displaced notches A<sup>7</sup>, A<sup>8</sup>, and A<sup>9</sup>, which are provided at the margin of the aperture A<sup>6</sup>, to thereby lock the switch lever in one or another of its three operative positions. A compression spring M<sup>5</sup> surrounding the plunger M<sup>2</sup> and acting between the pin M<sup>4</sup> and the body portion of the lever M, tends to hold the pin M<sup>4</sup> in any of the notches, A<sup>7</sup>, A<sup>8</sup>, A<sup>9</sup>, receiving the pin. When the pin M<sup>4</sup> is received in the notches A<sup>7</sup>, the bracket H' is depressed by the lever M and the switch D is thereby locked in the position in which the receiver and transmitter are connected, so that conversation may be carried on even though the unit resting on a desk in such a position that the retraction of the plunger H would otherwise prevent such use of the apparatus. When the pin M<sup>4</sup> is received in the notches A<sup>9</sup>, the lever M engages a pin H<sup>3</sup> projecting from the plunger H and thereby holds the plunger H in its retracted position so that the switch mechanism D is in the condition rendering the unit inoperative for use in conversation, but leaving the signal circuit in operative condition, regardless of whether the unit is then resting on a desk in its normal position or is held in the hand of the user. In the intermediate position of the unit, in which the pin is received in notches A<sup>8</sup>, the switch D is operated by the movements of the plunger H just as it would be if the controller lever M were omitted, as may be the case when its operative capacity is not needed or desired.

Except in respect to the conductors and terminals within the chamber, and the fact that the cable K will include three conductors in the one case and need include but two conductors in the other, in the cable K the apparatus parts and arrangement already described in detail, are useful alike in a unit associated with signalling mechanism mounted in or on the external bell box customarily employed with a standard two piece French telephone set, and in a unit which includes the signalling instrumentalities as does the unit shown in the drawing. As shown in the drawing, the signalling instrumentalities comprise a signalling element O, an induction coil or element P, and a condenser Q. The signalling element may be an ordinary electromagnetic bell, but I consider it ordinarily preferable to employ for the purpose a so-called electro-magnetic buzzer such as is frequently, though not most usually employed as a telephone signalling device. The induction and condenser units P and Q may be constructed like the corresponding elements of the ordinary telephone signal mechanism, but may be specially designed to economize weight and bulk and to facilitate their disposition in the available space within the chamber B.

While the elements O, P, and Q may be located in various positions within the support of my improved unit, and one or more of those elements may be located wholly or partly within the hollow arm portion of the support, I now prefer to arrange the elements as shown, within

the chamber B and adjacent the bottom plate I, so as to lower the center of gravity of the unit and augment its stability against accidental over-turning when resting on a table or desk. As shown, each of the units O, P, and Q is formed with bracket ears or extensions O', P', and Q', respectively, apertured for screws for detachably connecting the units to the bottom member I.

In respect to the electrical connections included in the unit, the usual practice of the art may be followed, and hence there is no need for illustrating or describing those connections herein. The connections are indicated diagrammatically, however, in the drawing, Fig. 2 of which, shows terminals 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10 provided in the base member of the standard two piece set, the terminals 6-10 inclusive shown in dotted lines being those directly associated with the dialing switch C. In the arrangement the cable K entering the unit includes but two conductors, but when the signaling instrumentalities are external to the unit, the cable K will include three conductors, two of which will correspond to those shown in Fig. 2 as connected to the terminals 2 and 3, respectively, while the third will correspond to the conductor shown in Fig. 2 as connecting one terminal of the inductance element P to the terminal 1.

With the signaling instrumentalities mounted in the unit as shown, the weight of the latter is necessarily greater than when the unit does not include those instrumentalities, but need not be great enough to inconvenience the user holding the unit in one hand, as the arm including the transmitting and receiving elements of the standard two piece set is customarily held when the telephone is in use. Furthermore, the unit can be used while resting on a desk or table under conditions permitting use of the now old-fashioned telephone set with the member of the latter including the transmitter and dialing mechanism resting on a desk or table.

The advantages possessed by my improved unit in either form described, in respect to apparatus compactness and lightness of weight, and the possibility of decreased production and installation costs, over the telephone apparatus now in common use, will be apparent to those skilled in the art. As has been previously pointed out, in respect to the dialing operation, my improved unit possesses an important practical advantage over the standard two piece French telephone set now in wide use.

While in accordance with the provisions of the statutes, I have illustrated and described the best form of embodiment of my invention now known to me, it will be apparent to those skilled in the art that changes may be made in the form of the apparatus disclosed without departing from the spirit of my invention as set forth in the appended claims, and that in some cases certain features of my invention may be used to advantage without a corresponding use of other features.

Having now described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. A telephone instrument comprising a supporting member adapted to be held in the hand of the user when in use and to rest upon a supporting surface when not in use, a transmitter, a receiver, dialing switch mechanism and a switch supported by said supporting member, said switch being biased for adjustment of the instrument into its conversation condition and

including an operating member adapted to engage a supporting surface on which said supporting member rests and be thereby actuated to adjust said instrument into signalling condition, and means manually operable to render said operating member inoperative to adjust said instrument out of condition for conversation when said supporting member rests on said surface.

2. A telephone instrument comprising a supporting member adapted to be held in the hand of the user when in use and to rest upon a supporting surface when not in use, and a transmitter, a receiver, a dialing switch mechanism, and a switch supported by said supporting member, said switch being biased for adjustment of the instrument into its conversation condition and including an operating member adapted to engage a supporting surface on which said supporting member is placed and be thereby actuated to adjust said instrument into its signalling condition, and switch controlling means manually operable to maintain said instrument in either of its said conditions.

3. A telephone instrument comprising a supporting member adapted to be held in the hand of the user when in use and to rest upon a supporting surface when not in use, and including a hollow base portion with a bottom wall formed with an aperture adjacent said surface when said supporting member is resting on the latter, a transmitter, a receiver, dialing switch mechanism supported by said member, said dialing mechanism being mounted in said base portion

and including a dialing member manually operable through said aperture when said supporting member is held in the hand of the user, and a switch including an operating member extending through said bottom wall at one side of said dialing member and operable for adjustment of the instrument between its signalling and conversation conditions.

4. A telephone instrument comprising a supporting member adapted to be held in the hand of the user when in use and to rest upon a supporting surface when not in use, and including a hollow base portion with a removable bottom wall formed with an aperture, a transmitter, a receiver, a dialing switch mechanism, a switch supported by said supporting member and biased for adjustment of the instrument into its conversation condition and including an operating member adapted to engage a supporting surface on which said supporting surface member rests and to be thereby actuated to adjust said instrument into its signalling condition, and a signalling mechanism supported by said member, said dialing mechanism being mounted in said base portion and including a dialing member accessible for manual operation through said aperture when said supporting member is held in the hand of the user, and a portion, at least, of said signalling mechanism being located within said hollow base portion and directly supported by the removable bottom wall thereof.

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