July 20, 1943. C. M. HANNAFORD 2,324,696

TELEPHONE SUBSCRIBER'S RINGER CONTROL

Filed July 25, 1941 2 Sheets-Sheet 1

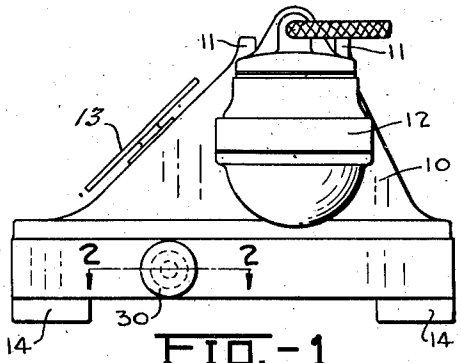


FIG.-1

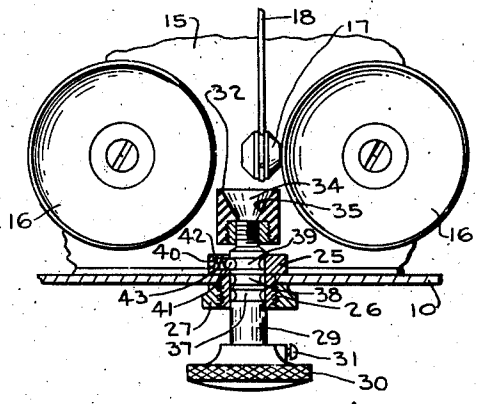


FIG.-4

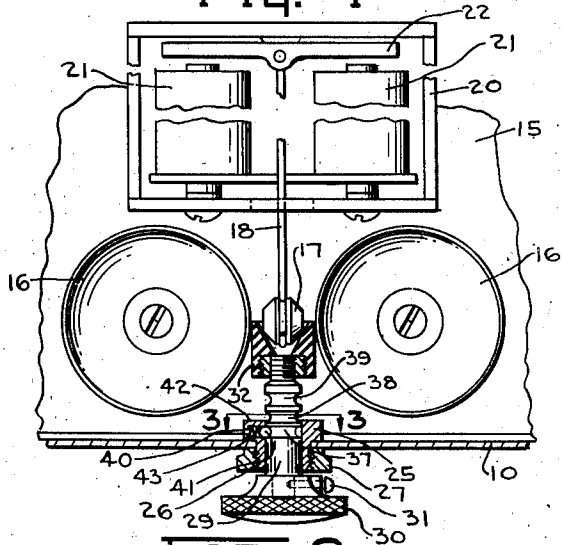


FIG.-2

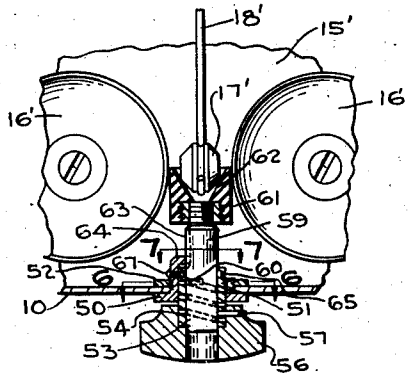


FIG.-5

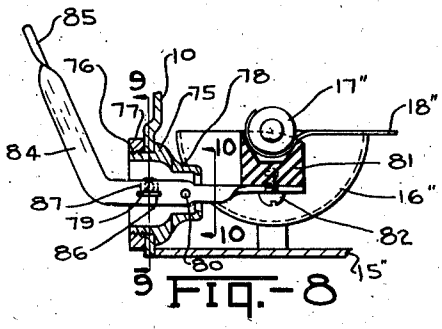


FIG.-8

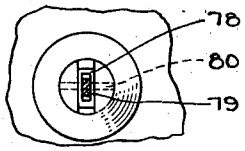


FIG.-10

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TELEPHONE SUBSCRIBER'S RINGER CONTROL

Filed July 25, 1941 2 Sheets-Sheet 2

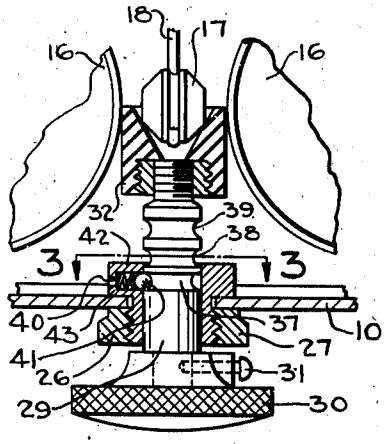


FIG-11

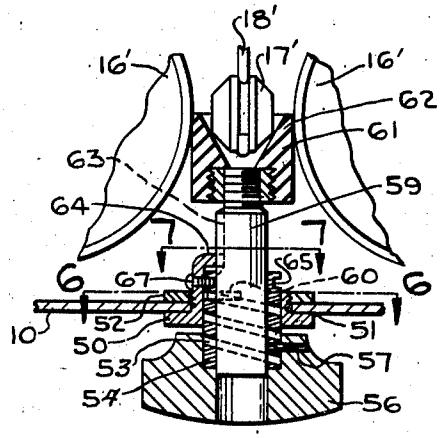


FIG-12

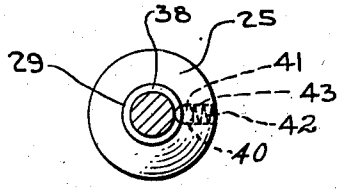


FIG-3

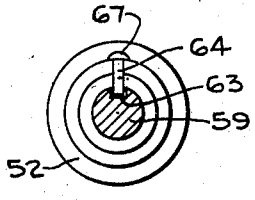


FIG-7

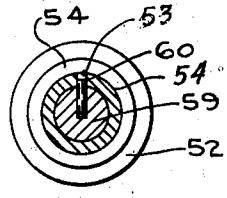


FIG-6

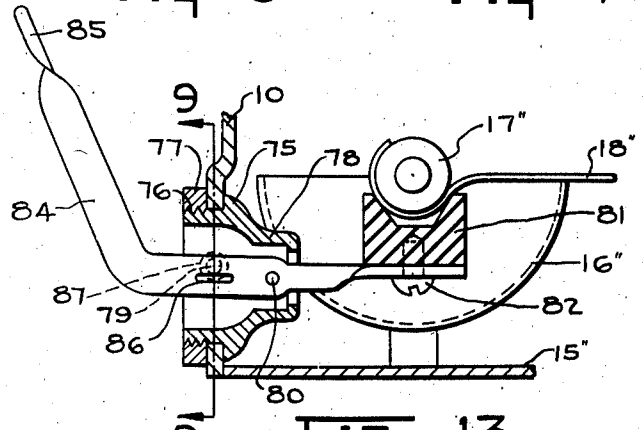


FIG-13

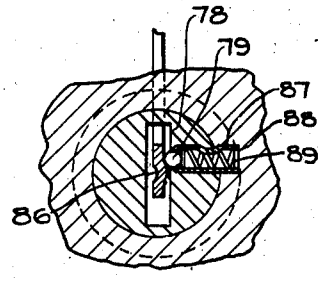


FIG-9

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UNITED STATES PATENT OFFICE

2,324,696

TELEPHONE SUBSCRIBER'S RINGER CONTROL

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Application July 25, 1941, Serial No. 404,062

12 Claims. (Cl. 116—149)

This invention relates to subscribers' telephone sets and more particularly to incoming ringer service control for telephone receiving sets.

The invention embraces an arrangement incorporated in a telephone set of conventional design whereby the telephone subscriber or user maintains control of incoming ringer service whenever the subscriber or user does not wish to be disturbed by incoming telephone calls.

The invention comprehends the provision of means adaptable for use with the conventional subscriber's telephone set and solely under control of the user of the telephone set for damping or silencing the audible ringer service incident with each incoming telephone call.

The invention has for an object the provisions of means arranged for incorporation in a subscriber's telephone set of conventional design for damping or silencing the ringer device in the set without interfering or disrupting telephone wiring circuits and without interfering in any way with either incoming or outgoing telephone calls.

Another object of the invention is the provision of means arranged for application to the telephone set housing whereby the bell striker may be quickly and effectively biased to a non-operative or non-ringing position whereby audible sounds of the telephone receiving set ringer device are rendered inaudible.

Still another object of the invention is the provision of means of this character arranged to hold the bell striker in a position where it is prevented from movement or in a position where it is permitted limited cushioned movement to render a vibratory audible sound in lieu of the audible ringing bell sound.

Further objects and advantages are within the scope of this invention such as relate to the arrangement, operation and function of the related elements of the structure, to various details of construction and to combinations of parts, elements per se, and to economies of manufacture and numerous other features as will be apparent from a consideration of the specification and drawings of a form of the invention, which may be preferred, in which:

Figure 1 is a side elevational view of a telephone receiving set;

Figure 2 is a fragmentary sectional view taken substantially on the line 2—2 of Figure 1 showing one form of my invention;

Figure 3 is a sectional view taken substantially on the line 3—3 of Figure 2;

Figure 4 is a view similar to Figure 2 showing the control device in inoperative position;

Figure 5 is a view similar to Figure 2 showing a modified form of the invention;

Figure 6 is a sectional view taken substantially on the line 6—6 of Figure 5;

Figure 7 is a sectional view taken substantially on the line 7—7 of Figure 5;

Figure 8 is a sectional view showing a further form of my invention;

Figure 9 is a sectional view taken substantially on the line 9—9 of Figure 8;

Figure 10 is a sectional view taken substantially on the line 10—10 of Figure 8;

Figure 11 is an enlarged sectional view showing the portion of the arrangement of Figure 2;

Figure 12 is an enlarged sectional view showing the portion of the arrangement of Figure 5;

Figure 13 is an enlarged sectional view showing the portion of the arrangement of Figure 8.

While I have illustrated the arrangement of my invention as embodied in a subscriber's telephone set of conventional design, it is to be understood that I contemplate the use of my invention with any mechanism where it may be found to have utility.

Referring to the drawings in detail and particularly Figures 1 through 4 inclusive and Figure 11, I have illustrated a subscriber's telephone set of the conventional "cradle type" wherein numeral 10 designates the base or housing which surrounds and encloses mechanism forming part of the telephone mechanism. The housing 10 is formed with integral upwardly extending prongs or projections 11 arranged to accommodate a "hand set" 12 comprising a mouthpiece and ear receiving portion. Positioned adjacent the prongs is a vertically movable member (not shown) upon which the "hand set" rests when supported upon the housing as shown in Figure 1. The member being associated with a switching means for connecting the "hand set" in service when the latter is removed from the base or housing 10. Positioned on the forward portion of the housing 10 is the conventional indexing dial 13. The lower portion of housing 10 is closed by means of a base plate 15 forming with the housing 10 a complete enclosure for the telephone mechanism, the base plate having supporting pads 14.

As particularly shown in Figures 1, 2 and 11, the base plate 15 supports a ringer mechanism which is inclusive of a pair of spaced gongs or bells 16 between which is positioned a striker 17 carried upon the extremity of a rod 18 which is

pivoted upon a frame 20 for vibratory or oscillatory movement. The frame 20 carries a pair of electromagnets 21 which cooperate with an armature 22 carried upon the end of the rod 18 for vibrating rod 18 and striker 17 to cause the striker to move between and alternately strike the bells 16.

In the form of the invention shown in Figures 1 to 4, inclusive, and 11 a wall of the housing 10 is bored to receive a circular fitting 25, the fitting 25 having a threaded portion 26 to receive a locking nut 27 for securing the fitting in the wall of the housing 10. The fitting is centrally bored to receive a cylindrical member 29 which is slidably positioned in the fitting and is provided at the extremity projecting exteriorly of the housing 10 with a manipulating knob 30 which is held in place by a screw 31 or other suitable means. The cylindrical member 29 terminates adjacent the bell striker 17 and is provided with an element 32 preferably formed of sound damping material, as for example, rubber, cork, or the like. The element 32 is preferably formed with a cylindrical exterior and a cone shaped interior recess 34 which form tapered wall portions 35, the recess being of sufficient size to receive and substantially surround the striker 17 with the wall portions 35 arranged to urgently engage between the exterior wall of each bell 16 and the exterior portion of the striker 17 when the element is in complete engagement with the striker 17 as shown in Figure 2.

The cylindrical member 29 is provided with spaced peripheral grooves 37, 38 and 39, and the fitting 25 has a lateral bore 40 in which is positioned a ball 41 which is at all times urged toward the cylindrical member 29 by means of a coil spring 42, the latter being held in the bore by swaging a portion of the fitting as shown at 43.

The operation of this form of the invention is as follows: When the parts are in the position shown in Figure 4 with the manipulating knob 30 moved to its outermost position, the ball 41 is resiliently urged into the groove 39 and holds the element 32 completely out of engagement with the bell striker 17. In this condition incoming service rings are not prevented and the telephone ringer mechanism functions in the normal manner. Should the telephone subscriber not wish to be disturbed by telephone ringer service, it is only necessary for him to move the manipulating knob 30 and cylindrical member 29 inwardly until the striker is received in the recess 34 in the element 32 as shown in Figure 2, in which position the ball 41 is resiliently urged into engagement with groove 37 in the cylindrical member 29 to hold the element 32 in full and complete engagement with the bell striker so as to prevent movement of the striker and hence prevent audible bell ringing. This elimination of movement of the bell striker does not interfere with the incoming telephone service as energization by the central telephone station of the subscriber's ringer mechanism will function in the normal manner but the subscriber has prevented audible sound of the bell mechanism through the engagement of the bell striker by means of element 32.

In this form of the invention should the subscriber wish to merely reduce or partially damp out the audible sound produced by a striker and bell mechanism, the manipulating knob 30 and cylindrical member 29 may be moved to the position in which the third groove 38 is in engagement with the ball 41 which movement partially withdraws the element 32 from complete engagement with the bell striker. In this position the tapered walls 35 of the element 32 do not completely engage the striker, and in the event of an incoming call, the central service station energizing the electro-magnets 21 of subscriber's ringing mechanism, actuates the armature 22 and rod 18 consequently causing a limited movement of the bell striker against the walls 35 of element 32, the vibratory movement imparted to the walls of element 32 under the oscillatory action of the striker results in a buzzing sound in lieu of the normal sharp audible ring of the bells. Thus, in accordance with this form of the invention, the telephone subscriber has complete control of the audibility of the telephone ringer service without interfering with the normal telephone circuits. The subscriber may thus have unrestricted bell ringer service, a limited audibility of this service, or the complete elimination of audible sound of the ringer mechanism.

In the form of the invention shown in Figures 5 through 7, inclusive and Figure 12, the wall of the housing 10 is bored to receive a fitting 50 having a threaded portion 51 which receives a locking nut 52 to hold the fitting securely to the housing wall. The fitting 50 is centrally bored to receive a thin walled sleeve 54 having a thread-like or spiral slot 53 formed therein. A portion of the sleeve projects exteriorly of the fitting 50 and is secured to a manipulating knob 56 by a pin 57 or other suitable means. Slidably arranged within the sleeve 54 is a cylindrical member 59 provided with a laterally projecting pin 60 which extends into the spiral slot 53 formed in the sleeve 54. Secured to the inner extremity of the cylindrical member 59 as by means of a threaded fitting 61 is an element 62 of substantially the same configuration as the element 32 described in connection with the form of the invention shown in Figures 1 to 4, inclusive, and which is arranged for engagement with the striker 17' as shown in Figure 5. The cylindrical member is provided throughout a portion of its length with a longitudinal groove 63 and the fitting 50 is formed with a projection 64 which extends into the longitudinal groove in the cylindrical member so as to prevent rotation of the cylindrical member. The sleeve 54 is provided with a circumferential groove 65 and the fitting 50 is provided with a projection in the form of a screw 67 arranged to extend into the circumferential groove 65 to prevent relative longitudinal movement of the sleeve but permitting rotational movement thereof.

In this form of the invention, rotation of the knob 56 causes rotation of the thin walled sleeve 54 and through the medium of the spiral slot 53 and the pin 60 causes longitudinal slidable movement of the cylindrical member 59 and the element 62. Thus by rotating the knob in one direction the element 62 may be moved into complete engagement with the bell striker 17' and prevent audible sound of the ringer mechanism. Rotation of the manipulating knob in the opposite direction completely withdraws the element 62 out of the locus of movement of the striker to permit normal audible bell ringing service.

A further form of the invention is shown in Figures 8 through 10, inclusive and Figure 13, wherein the wall of the housing 10 is bored to receive a circular fitting 75 which has a threaded portion 76 arranged to receive a lock nut 77 to hold the fitting in the telephone housing wall. The fitting 75 is provided with a vertical slot 78

through which extends a sheet metal member 79 of the bell crank lever formation and which is pivoted upon the fitting by means of a pin or shaft 80. A portion of the sheet metal member 79 extending within the housing has secured at its extremity an element 81 of substantially the same configuration as elements 32 and 62 in connection with the forms of the invention hereinbefore described which is secured to member 79 by means of a screw 82 or other suitable means. The portion 84 of the lever member 79 extending exteriorly of the housing preferably extends upwardly and is formed with a manipulating finger piece 85 for convenience of manipulation. As shown in Figure 9 a portion of the lever member within the fitting 75 is formed with a raised central portion 86. The fitting 75 is formed with a lateral bore to receive a ball 87 which is resiliently urged into engagement with the lever member under the influence of a coil spring 88, the latter being held within the fitting by swaging over a portion of the fitting as shown at 89. As shown in Figure 8 the position of the parts in full lines, the element is positioned in engagement with the bell striker 17'' and in this position the ball 87 engages the lever member above the raised portion 86 to resiliently maintain the element 81 in engagement with the striker and thus prevent movement of the striker and eliminate audible bell sounds. When the subscriber desires to establish audibility of his ringer service, he grasps the finger piece 85 and swings the lever member 79 in a clockwise direction as viewed in Figure 8 the ball 87 overriding the raised portion 86 engages lever member below the raised portion which resiliently holds the element 81 out of engagement with the striker mechanism.

It is to be noted that in the forms of the invention herein described the telephone subscriber has complete control of the audibility of his telephone ringer service and that this is attained without interference with any of the telephone circuits or without interfering with any calls that he should wish to make to the outside.

It is apparent that, within the scope of the invention, modifications and different arrangements may be made other than is herein disclosed, and the present disclosure is illustrative merely, the invention comprehending all variations thereof.

What I claim is:

1. A bell ringer control for telephone subscriber's set including a housing, a member carried by said housing and relatively movable thereto, an element carried by said member having a frusto-conical recess arranged to receive and retain the bell striker in non-ringing position, and means arranged exteriorly of said housing for manually manipulating said member.

2. A bell ringer control for telephone subscriber's set including a housing, a supporting means carried by said housing, a member carried by said supporting means and relatively movable thereto, a non-metallic element carried by said member and having a recess formed therein arranged to receive and retain the bell striker in non-ringing position, means arranged exteriorly of said housing for manually manipulating said member, and adjustable means associated with said member for urging said non-metallic means into or out of engagement with said bell striker.

3. A control for a telephone subscriber's ringer service comprising a support, a member carried by and relatively movable with respect to said support; means including a non-metallic element associated with said member having a frusto-conical recess arranged to receive and retain a bell ringer in non-ringing position, said member being manually operable to move said element into or out of engagement with the bell ringer.

4. A control for a telephone subscriber's ringer device in combination with a subscriber's telephone mechanism including an enclosure therefor, a member mounted for slidable movement with respect to said enclosure, means accessible exteriorly of said enclosure for manipulating said member, said member having means associated therewith and engageable with a bell striker for retaining said striker in non-ringing position, and spring means associated with said slidably mounted member for resiliently holding said striker engaging means in striker engaging position.

5. A control for telephone subscriber's ringer device in combination with a subscriber's telephone mechanism including an enclosure therefor, a member relatively movable with respect to said enclosure, said member being arranged for manipulation exteriorly of said enclosure, non-metallic means associated with said member and formed with a frusto conical recess arranged to receive a bell striker for retaining the striker in non-ringing position, and adjustable means associated with said member for urging the non-metallic means in striker engaging position.

6. In combination, a control for a telephone subscriber's set including a housing, said subscriber's set including a ringer system embodying a movable bell striker, a supporting means carried by said housing, a member carried on said supporting means and relatively movable with respect thereto; a non-metallic element associated with said member and having a recess formed therein arranged to receive and retain said striker to hold the latter in non-ringing position, manipulating means connected to said member and accessible exteriorly of said housing for actuating said member to ringing or non-ringing position, and spring means cooperatively associated with said member for resiliently holding the same in ringing or non-ringing position.

7. In combination, a control for a telephone subscriber's set including a housing, said subscriber's set including a ringer system embodying a movable striker, a supporting means carried by said housing, a member carried on said supporting means and arranged for longitudinal movement with respect thereto; a non-metallic element carried by said member and having a recess arranged to engage and receive said striker to hold the latter in non-ringing position, manipulating means associated with said member and accessible exteriorly of said housing for moving said member to ringing or non-ringing position, and a spring cooperatively associated with said member for resiliently holding the same in ringing or non-ringing position.

8. In combination, a control for a telephone subscriber's set including a housing, said subscriber's set including a ringer system embodying a movable bell striker, a supporting member carried by said housing, a lever member pivoted upon said supporting member, a non-metallic element carried by said member and having a frusto-conical recess arranged to engage and receive said striker to hold the latter in non-ringing position, said lever member having a portion projecting exteriorly of said housing for manual

actuation of said member to ringing or non-ringing positions.

9. In combination, a control for the ringer device of a telephone subscriber's set including a housing, said ringer device embodying a movable bell striker, a fitting carried by said housing and having a bore therein, a cylindrical member slidably mounted in the bore in said fitting; an element carried by said cylindrical member and having a recess therein, manipulating means for said cylindrical member whereby the latter may be moved to engage the bell striker in the recess in said element, said cylindrical member having a plurality of circumferential grooves, and means selectively engageable in said grooves to hold said cylindrical member in selected positions.

10. In combination, a control for the ringer device of a telephone subscriber's set including a housing, said ringer device embodying a movable bell striker, a fitting carried by said housing and having a bore therein, a cylindrical member slidably mounted in the bore in said fitting; a non-metallic element carried by said cylindrical member and having a recess therein, manipulating means for said cylindrical member whereby the latter may be moved to engage the bell striker in the recess in said non-metallic element, said cylindrical member having a plurality of circumferential grooves, and resiliently urged means selectively engageable in said grooves to hold said cylindrical member in selected positions.

11. In combination, a control for the ringer device of a telephone subscriber's set including a housing, said ringer device embodying a movable bell striker, a fitting carried by the wall of said housing, said fitting having a bore therein, a sleeve mounted in the bore in the fitting, a cylindrical member contained with said sleeve, manipulating means carried by said sleeve, means interconnecting said sleeve and cylindrical member whereby rotation of said manipulating means causes longitudinal movement of said cylindrical member, and means carried by said cylindrical member for engagement or disengagement with the movable bell striker through rotation of said manipulating means.

12. In combination, a control for the ringer device of a telephone subscriber's set including a housing, said ringer device embodying a movable bell striker, a fitting carried by the wall of said housing, said fitting having a bore therein, a sleeve mounted in the bore in the fitting, a cylindrical member contained with said sleeve, said sleeve having a spiral slot therein, a pin carried by said cylindrical member and arranged for cooperation in the slot in said sleeve, manipulating means carried by said sleeve for rotating the same; and means carried by said cylindrical member for engagement or disengagement with the movable bell striker through rotation of said manipulating means.

CLEON M. HANNAFORD.