Feb. 29, 1944. J. A. HALL 2,343,009

DOORBELL SWITCH, ANNUNCIATOR, AND CHIME

Filed Oct. 6, 1941 2 Sheets-Sheet 1

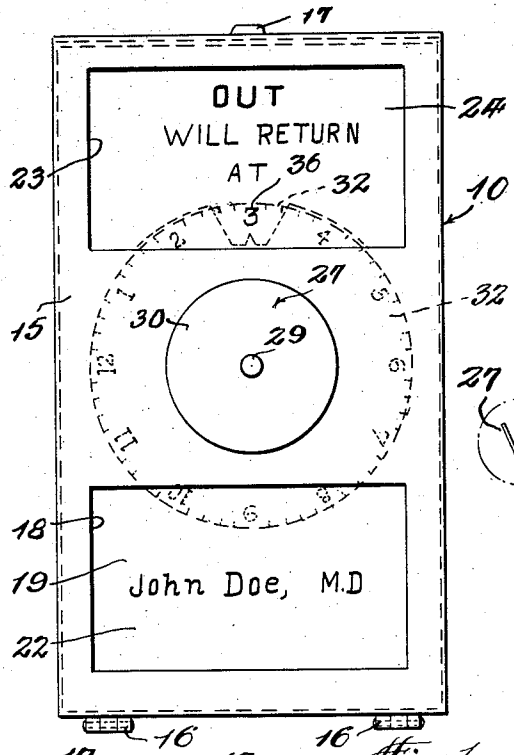

Fig. 1.

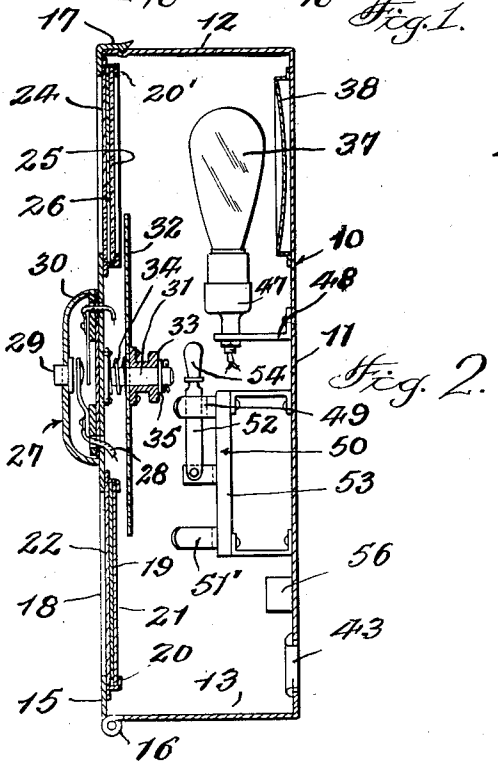

Fig. 2.

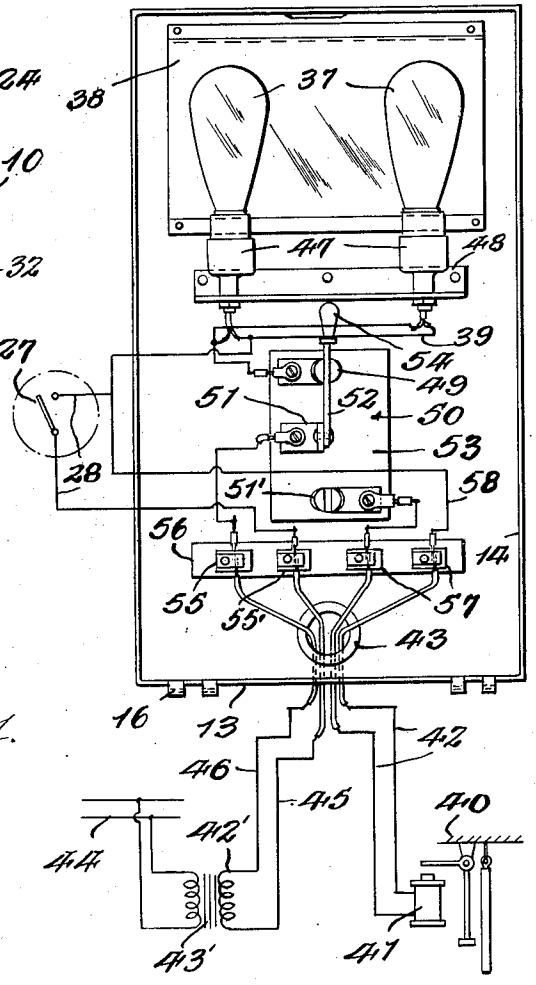

Fig. 3.

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DOORBELL SWITCH, ANNUNCIATOR, AND CHIME

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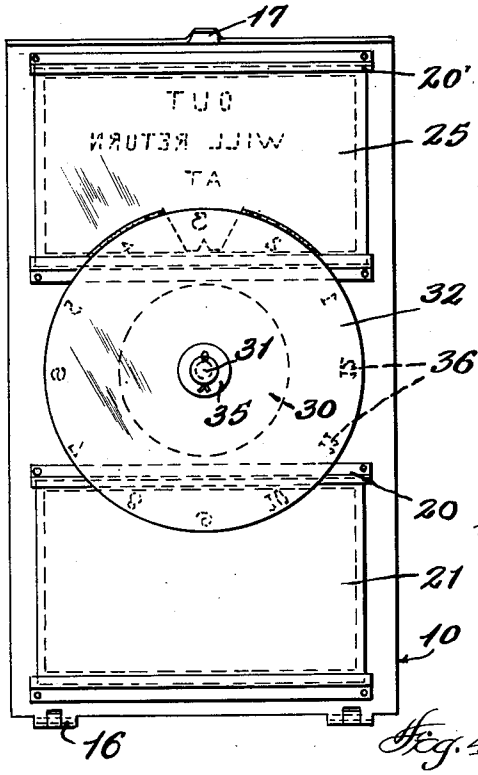
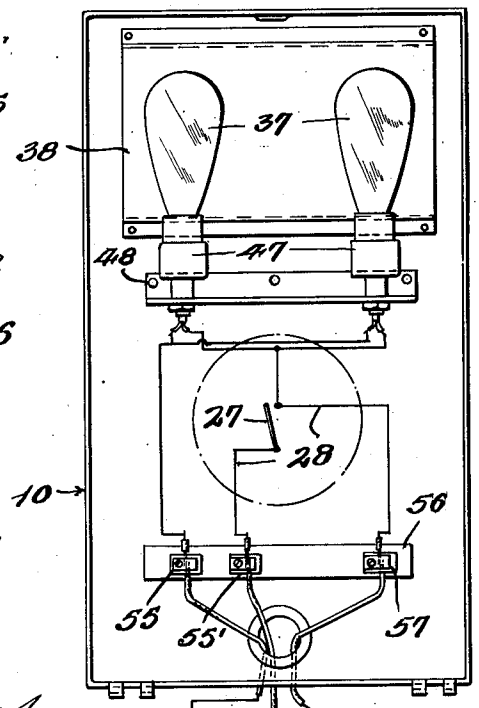
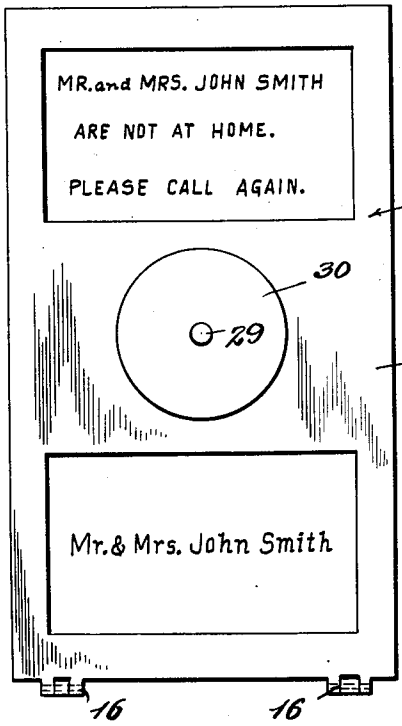


Fig. 4.





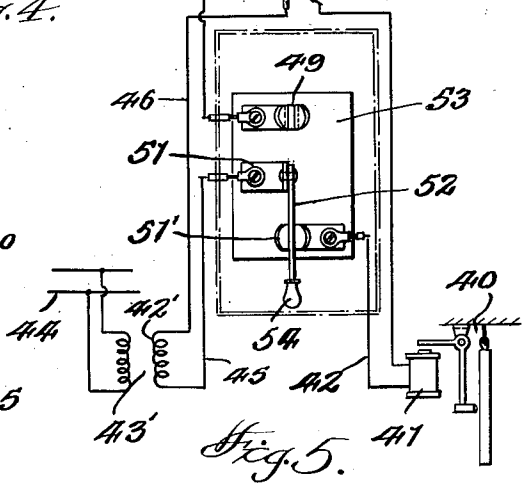


Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE

2,343,009

DOORBELL SWITCH, ANNUNCIATOR, AND CHIME

John Albert Hall, West Pittston, Pa.

Application October 6, 1941, Serial No. 413,886

1 Claim. (Cl. 177—339)

The invention relates to signal devices, particularly adapted to use in the situation of ordinary front door bell push-buttons, and arranged to convey information to a person operating the push-button, or to operate a signal, such as a bell or chimes.

An important aim of the invention is to arrange the device so that it may be set so as to give information of the absence of an occupant of a dwelling or apartment when the push-button is operated, so that information of absence will not be displayed otherwise, but will not operate the bell signal or chimes, and at its alternate set position will operate the bell or chimes when the button is pushed, but will not illuminate the annunciator or information device.

A further aim is to arrange the device in a simple and novel way so that the device may also be utilized to give information of the probable return of absentees by a simple dial device manually set at will.

Another important aim of the invention is to present a construction of a unit of this device especially adapted to be mounted upon a doorway frame, or in a situation of the push-button in the grouping ordinarily followed in apartments at the entrance, and utilizing the conventional openings for the mounting of the switch buttons or to accommodate the wires leading to the device.

A further important object of the invention is to so arrange the device that it may be quickly opened for change of setting, and so that the setting of the device cannot be changed except by opening the front of the case.

A further important aim also is to provide a novel mounting of a dial device conveniently for operating when the casing is opened and coordinated with a switch device for closing the circuit to the annunciator in a novel way.

A further important aim of the invention is to enable its embodiment as a complete changeable circuit device for operating the annunciator or chimes, or the like, or, permitting the removal of the setting switch and mounting of the same at a distance from the casing containing the annunciator and push-button devices, without requiring change of manufacture of the setting switch.

It is an important aim of the invention to arrange the elements so that when the device is set to indicate the absence of an occupant, it will automatically function to prevent an inoperative position of the control device. It is also an important aim to enable the illuminated indicator device to be operated upon ordinary call circuits of low voltage.

Additional objects, advantages, and features of invention reside in the construction, arrangement and combination of parts involved in the embodiment of the invention, as will be more readily understood from the following description and accompanying drawings, wherein:

Figure 1 is an elevational view of a simple bracket unit adapted to be mounted upon a door or other situation where a push-button is ordinarily used.

Figure 2 is a vertical cross section of the device of Figure 1.

Figure 3 is a front elevation of the device with the cover removed, the wiring circuits being diagrammatically indicated.

Figure 4 is an elevation of the inner side of the cover or closure of the case.

Figure 5 is a view similar to Figure 3, with the setting switch located exteriorly of the case, and corresponding to location of the setting switch within an entrance while the case portion is mounted exteriorly.

Figure 6 is a front elevation of the case unit with the time dial omitted.

All of the foregoing described views are actual size of the device as embodied in one form, although it may be reduced in size, if desired.

Referring more particularly to the drawings, there is illustrated in Figures 1 to 5, inclusive, a case 10, adapted to be stamped from sheet metal, although it may also be formed from a suitable plastic or other material, preferably adapted to afford an insulation of electrical energy. The case, in the present instance, is a rectangular structure, having a planiform back wall 11, adapted to be secured to the face of the door-frame or the like, with top and bottom walls 12 and 13 and side walls 14, a cover or closure 15 being hinged as at 16 on the front edge of the bottom wall 13, a suitable lug or other means for holding the cover in closed position being provided at 17, adapted to either yieldingly hold the cover in closed position, or some lock device may be substituted, if desired.

In the lower part of the cover, a rectangular opening or slot 18 is formed, of a size suitable to disclose the face of a visiting card or business card 19 when set in registry therewith inside the case cover, and at the inner side of the cover, guide devices 20 are provided to hold a mounting board 21 and cover glass 22, the card being set between the pieces 21 and 22. The cover is preferably formed without side flanges, for a

reason to become clear hereinafter, and preferably comprises a simple planiform plate with parts of the hinge 16 thereon. The slot 18 is preferably located below the center of the cover, and in the present instance, a similar slot or opening 23 is formed in the upper part of the cover, of similar size and shape, and inwardly of this upper opening guide devices 20' are provided in which there is removably mounted a front transparent cover glass or plate 24, and an inner opal or light-diffusing plate 25. There are on the latter, or on a simple photographic film 26 interposed between the two last mentioned light-transmitting pieces, a message or other information, special, personal, or general, which will be readable only when illuminated from within the case, as will be subsequently described.

The slots 18 and 23 are spaced sufficiently apart to afford room for mounting a standard type of bell-ringing push-button switch 27, the pole elements of which may be of conventional construction, the usual wiring 28 leading therefrom, the switch being operated by the conventional push-button 29 which is exposed through the case element 30 of the switch, the case element being secured upon the cover of the case 10 in any usual way. A stud pin 31 is fixed upon the inner side of the case, concentrically with the switch 27, and upon this there is revolubly mounted a dial 32 having a manual operating knob 33 fixed thereon and exposed at the inner side of the dial around the pin 31, a spring 34 being confined between the dial and the front of the cover, so as to hold the dial rearwardly against the washer 35 held adjacent the end of the pin by means of a cotter-pin, as shown. The dial 32 is of such diameter as to extend above the lower edge of the slot 23, so that it may be seen when illuminated from within the case, the dial being of a suitable transluscent or transparent material, with numbers 36 thereon in opaque ink or other material close to the edge of the dial, and extending in sequence all around, corresponding to the numerals on the dial of a clock and with other scale markings, if desired, as formally indicated in Figure 1. The dial is in a plane close to the guide devices 20' so that it will be in close relation to the plate 25 for proper viewing of the numbers on the dial when the annunciator is illuminated. The spring 34 serves to hold the dial clear of the guide devices 20', and also to supply sufficient friction to hold the dial in set position, preventing casual disturbance of time indications which it may be adjusted for.

Within the case body 10, two lamps 37 may be mounted, behind which a suitable reflector 38 may be fixed upon the back wall 11 of the case. These lamps are wired in parallel in the circuit, to be subsequently described, as illustrated in Figure 3 and Figure 5. The lamps 37 and reflector are at such level that when the lamps are energized illumination therefrom will be projected and focused through the slot 23, as will be understood. While the lamp is described as being of the 12-volt type, this is to enable the device to be operated on the ordinary bell circuit, but if desired, lamps of other potential rating may be employed, where corresponding potential is available for the lamp circuit. A sounding signal 40 is formally indicated in Figures 3 and 5, corresponding to a chime device such as is used in circuits with door bell push-button switches, although other forms of signal devices may be substituted, if desired. This signal device is conventionally shown as including a magnet 41 from which wires 42 are led into the case 10 through a suitably bushed opening 43, formed in the back wall 11 of the case, and when the case is mounted upon a door frame or the like, the opening 43 is adjusted in registry with the usual opening in the door frame through which wires are led to the door bell push-button switch, the wires 42 being brought through such opening in the door frame, the latter not being illustrated, as being well understood in the trade and the art. The system is adapted to be energized from the secondary 42' of a conventional type transformer 43', the primary of which is connected to a usual service circuit 44, such as a 110-volt alternating current service, the transformer being constructed so as to supply a secondary induced current of a desired lower voltage.

The wires 45 and 46 from the transformer are likewise led in with the wires 42 through the opening 43 of the case 10.

In the present instance, the lamps 37 are engaged in receptacles 47 fixed upon the bracket 48 which is secured to the back wall 11 of the case, the lamps being removable from the receptacles 47 in any conventional way. One terminal of each receptacle is connected to the wires 28 with one pole of the push-button switch, while the other terminal of the receptacle is connected to the top pole 49 of a two position switch 50 mounted in the case upon the back wall 11 below the bracket 48, and a distance above the lead-in opening 43, as may be seen in Figure 3. In the present instance, this switch is a simple knife-switch having a central terminal mounting 51, called the middle pole of the switch, a switch blade 52 being mounted on this middle pole and engageable alternately with the terminal 49, and a terminal 51' at the lower part of the switch. The base 53 of the switch 50 may be of any usual slate or other insulating body mounted in the conventional way, at a convenient location in the case 10 for operation, as will be described. In the present instance, however, the handle 54 of the switch 52 when engaged in the terminal 49 is located immediately in line with the pin 33, so that if the blade 52 is not fully engaged in the terminal 49, when the cover is closed, the pin 31 will engage the handle 54, and move the blade 52 to full engaged position at its upper part. The terminal 49 is connected to one side of the lamp circuit 39, while the middle pole 51 of the two-position switch is connected to the lead-in wire 46 from the transformer at a switch connector 55 mounted upon a suitable insulator bar 56 secured to the back wall 11 of the case 10. The wire 45 from the transformer is connected at a similar connector 55' on the bar 56 to the remaining wire 28 from the push-button switch, so that when the switch 27 is closed the lamps will be energized. The other connectors 57 are mounted upon the bar 56 to be utilized to connect the wires 42 respectively to the lower pole 51' of the two position switch, and to the lead 58 from the switch 27 to the lamp circuit at 28. From this it will appear that when the blade 52 is in its upper position, engaged with the pole 49, and the switch 27 is operated, the lamps will be energized, but when the blade 52 is in its lower position and engaged with the pole 51', operation of the switch 27 will energize the chimes device 40.

In the use of this device, a person leaving an office or house where the device is installed,

when no attendant remains, and it is desired to give callers information as to the absence and probable time of return of the occupant, the case cover 15 is opened, and the two-pole switch blade 52 is thrust into its upper position. Any message when marked upon the translucent plate 25, or upon the film or other materials 26 between the plates 24 and 25 will be illuminated after closure of the case, when the switch 27 is operated. In case the information conveyed includes a message such as that indicated in Figure 1, "Out—Will return at 3," the dial 32 may be operated to indicate the probable time of return of the party. In other cases, additional informative matter may be incorporated upon the annunciator, as will be readily understood. This is indicated in Figure 6, where the message consists of such phrase as "Mr. and Mrs. John Smith are not at home. Please call again." The card 22 displayed in the opening 18 may be a conventional business or professional card, as indicated in Figures 1 and 6.

The device as arranged in Figures 1 to 4 requires that the party leaving the premises and wishing to set the device, shall open the case 10 in the front door or other situation where a push-button is located, and operate the two position switch 50 to the desired position, moving the switch blade 52 to a desired position. However, it may be preferred to have this two position switch located in concealed position or otherwise, within a building, at a distance from the push-button, and in such cases the base 53 may be removed from within the case 10, and set up elsewhere, as indicated in Figure 5. In this instance, one of the switch connectors 57 may be omitted since the wire 42 leading from the magnet 41 to the lower pole of the two position switch may be connected directly to the pole of the switch, as shown, in Figure 5. In this instance, three wires only are required to be led into the case, and the connectors 55, 55' and 57 are utilized to connect the leads from the armature to the switch 27. The use of the device is otherwise the same as for the arrangement of the switch 50 in the case. The time-dial 32 may be omitted, if desired, under either arrangement of the device, and in such instance, either a special marking for each occasion is provided to be inserted in the opening 23, or some conventional communication may be displayed, as desired.

While I have described and illustrated one form of my invention with great particularity, it will be understood that this nevertheless is purely exemplary, and that various modifications in construction, arrangement and combination of parts, substitution of materials and equivalents, mechanically, may be made without departing from the spirit of the invention, as more particularly set forth in the appended claim.

I claim:

A switch and annunciator device comprising in combination, a case having a hinged cover, a push-button switch on the cover and exteriorly operable, an annunciator device in the case, an electrical illuminating device in the case, a distant electrical signal device, a two position switch in the case having outer terminals connected respectively with the illuminating device and the distant signal device, its middle terminal being connected to one pole of the push-button switch, a knife switch member mounted upon the central pole and movable in a plane at right angles to the plane of said terminal and being movable outwardly toward the normal position of the cover from either extreme position of the switch blade, and a stud on the interior of the cover arranged to lie in close relation to the position of the switch blade when in closed relation to said illuminating circuit, whereby when the cover is closed the knife switch will be held in closed relation.

JOHN A. HALL.