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2,264,680

COMBINED DOORBELL AND LIGHT MECHANISM

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Fig. 1.

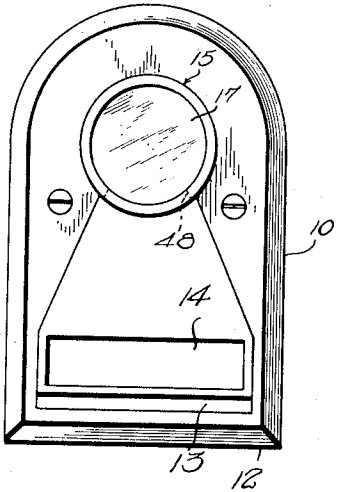


Fig. 2.

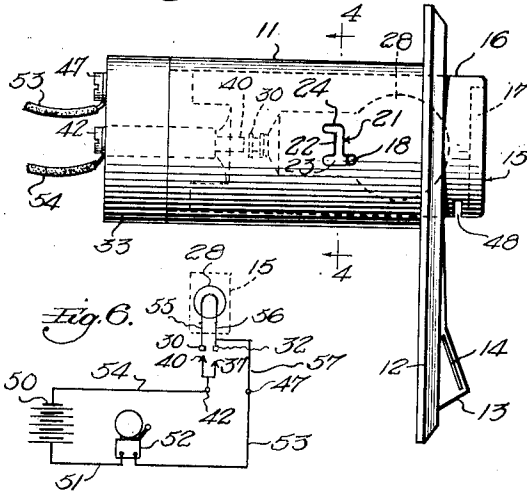


Fig. 6.

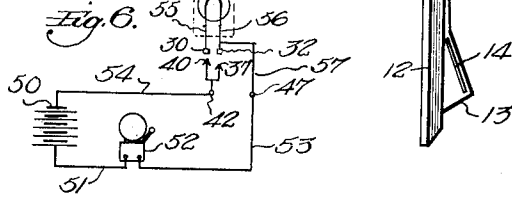


Fig. 3.

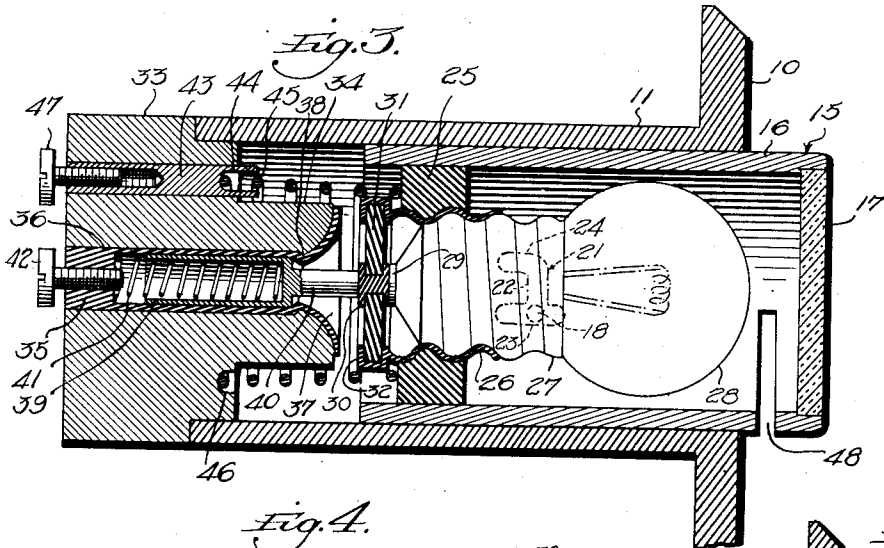


Fig. 4.

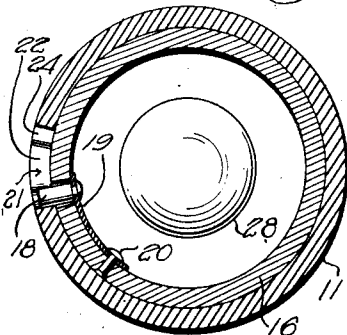
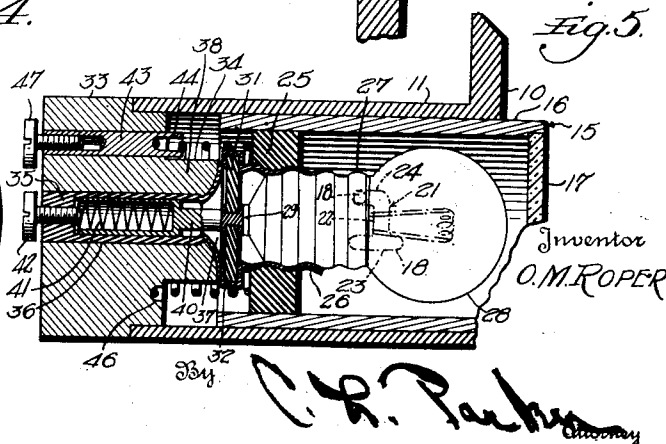


Fig. 5.



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COMBINED DOORBELL AND LIGHT
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7 Claims. (Cl. 177—339)

This invention relates to a combined door bell and light mechanism, and more particularly to a push button construction embodying a light source therein and connected with respect to a door bell or similar circuit whereby a name plate or the like is adapted to be illuminated upon the pressing of the button.

It frequently happens that a person calling at a house or apartment at night will be uncertain as to the number of the house or apartment or the name of the occupant thereof, there usually being no adequate illuminating means for indicating the number or name.

An important object of the present invention is to embody with a door bell or similar circuit a light source so arranged that when it is energized it will illuminate a suitable name or number plate in conjunction with the ringing of the bell so as to indicate whether a call is being made at the proper house or apartment.

A further object is to provide such a device wherein the illumination of the name or number plate, upon the pressing of the button, takes place ahead of the operation of the bell or other signal to permit the person calling to release the button without operating the signal in the event he has called at the wrong house or apartment.

A further object is to provide a device of the character referred to wherein the push button is adapted to occupy either of two normal positions, one for daylight use wherein the light bulb is not illuminated and the other for night use with the bulb remaining illuminated so that a caller may determine the number of the house or the apartment or the occupant thereof without having to press the button.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing I have shown one embodiment of the invention. In this showing—

Figure 1 is a face view of the push button and the name plate associated therewith,

Figure 2 is a side elevation of the same,

Figure 3 is an enlarged central vertical sectional view through the push button structure and the associated name plate,

Figure 4 is a transverse section on line 4—4 of Figure 2,

Figure 5 is a view similar to Figure 3 on a somewhat reduced scale showing the push button in its second operative position, and,

Figure 6 is a diagrammatic representation of the electric system associated with the device.

Referring to Figures 1 and 4, inclusive, the

numeral 10 designates a suitable preferably ornamental name plate from the rear face of which projects a tubular member 11 which may be formed integral with the name plate 10. The name plate may be provided with a depending portion 12 across which extends a raised portion 13 the angular outer face of which is adapted to support a card or plate 14 on which may be placed the name of the occupant of the house or apartment or the number thereof.

A push button indicated as a whole by the numeral 15 comprises a tubular body 16 slidable in the tube 11 and provided at its outer end with a cap 17 preferably in the form of translucent glass or similar material. A pin 18 is secured at its inner end to one end of a spring member 19 the other end of which is connected at 20 to the tube 16. The pin operates in a slot indicated as a whole by the numeral 21 and formed in the tube 11. The slot includes a straight portion 22 extending transversely of the tube 11, a second straight portion 23 extending longitudinally of the tube 11 on opposite sides of the slot portion 22, and a third portion 24, parallel to the slot portion 23 and extending only to one side of the straight slot portion 22, as clearly shown in Figure 2. The pin 18 is depressible to permit the insertion and removal of the tube 16 as will be apparent.

Within the tube 16 and adjacent the inner end thereof is fixed an insulating block 25 which supports a metal lamp socket 26 to receive the base 27 of the electric light bulb 28. The center contact 29 of the lamp engages a contact 30 carried by an insulating disk 31 formed by the flanged portion 32 carried by the inner end of the socket 26.

An insulating plug 33 is secured in position with respect to the inner end of the tube 11 with a portion projecting thereinto. The axial portion of the plug 33 is extended toward the socket of the lamp as at 34 and a hollow conductor 35 is arranged in an axial opening 36 formed in the plug 33. The conductor 35 has a flared inner end 37 adapted to contact with the flange portion 32 in a manner to be described, and at the inner end of such flared portion the conductor 35 is shaped to form a shoulder 38 for a purpose to be described.

A sleeve 39 is slidable in the hollow conductor 35 and has its inner end engaging the shoulder 38 to limit its movement toward the lamp. The sleeve 39 carries a contact pin 40 engageable by the contact 30 in a manner and for a purpose to be described. A compression spring 41 urges the

pin 40 toward contact 30 as shown in Figure 3. The solid end of the conductor 35 is provided with a threaded opening to receive a screw 42 to form a binding post to which a wire is connected in a manner to be described.

A second conductor 43 is mounted in the plug 33 as shown in Figure 3 and has its inner end slotted as at 44 to receive the adjacent portion of a compression spring 45, this spring having its left hand end as viewed in Figure 3 arranged in the slot 44 and in a corresponding slot 46 formed in the adjacent face of the plug 33. The spring 45 has electrical contact with the plug 43 and its other end surrounds the flanged portion 32 of the lamp socket and is in electrical contact therewith. A screw 47 is threaded in the conductor 43 to form the binding post to which a wire to be described is connected.

As will be described, initial movement of the push button 15 will cause the light 28 to be illuminated while further inward movement of the push button will cause energization of the door bell or other signal, and the purpose of the operation of the bulb 28 is to illuminate the number or name plate 14. To this end the tube 16 is provided with a slot 48 through which sufficient light may pass downwardly to illuminate the number or name plate 14. It will be apparent that the slot 48 must be spaced outwardly from the face of the plate 10 the proper distance so as not to be covered when the push button 15 is moved inwardly sufficiently to engage the contact 30 with the pin 40. In the light-operating position of the parts, as shown in Figure 3, the opening 48 may be in the position shown in such figure. It also will become apparent that the opening 48 should be arranged directly at the bottom of the tube 16 when the pin 18 is in the upper end of the slot portion 22, as viewed in Figure 2, in alignment with the slot portion 24.

In Figure 6 the electrical circuit for the mechanism is shown with the signal indicated therein as a bell, the present invention being particularly intended for use in connection with door bell circuits. Referring to Figure 6 the numeral 50 designates a source of current which may be either a battery or a transformer as will be apparent. One terminal of the source is connected by a wire 51 to one terminal of the bell 52 and the other terminal of the bell may be connected by a wire 53 to one of the binding posts described, such as the binding post 47. The other terminal of the battery is connected by a wire 54 to the other binding post 42.

As previously stated, the pin 40 is adapted to be engaged by the contact 30 upon initial movement of the push button 15, and upon further movement of the push button the flanged portion 32 of the lamp socket will engage the flared portion 37 of the conductor 35. The elements 40 and 37 accordingly may be considered as switch elements which are successively engageable by the elements 30 and 32, and accordingly these four switch elements have been indicated in Figure 6 by the same numerals as in Figures 3 and 5. The element 30 obviously has the conventional electrical connection with one end of the filament of the light 28 and such conventional connection has been indicated by the numeral 55 in Figure 6. Similarly, the socket 26 and lamp base 27 have electrical connection with the other end of the lamp filament, and such connection has been indicated in Figure 6 by the numeral 56. It will be apparent that

the spring 45 acts as an electrical conductor between the flange 32 and conductor 43 when the former engages the contact 37. The spring 45, as a conductor, accordingly has been indicated in Figure 6 by the numeral 57.

The operation of the device is as follows:

The parts normally occupy the position shown in Figure 2 with the contact 30 spaced from the contact pin 40. Under such conditions the pin 18 will be arranged in the outer end of the slot portion 23, that is, the end toward the face plate 10. This is the preferred normal position of the parts during the day time. Upon the pressing of the button 15, the pin 18 will move toward the left in the slot portion 23 and when it reaches a position approximately in alignment with the slot portion 22, the contact 30 will engage the pin 40. Referring to Figure 6 it will be noted that under such conditions a circuit will be completed through the light bulb 28 and the bell 52, these elements being connected in a series. The current will flow through wire 54, across contacts 40 and 30, through the lamp filament, wires 57 and 53, through the bell 52 and back to the source through the wire 51. Attention is invited to the fact that the light bulb and bell are selected with relation to the voltage of the source so that when the circuit referred to is completed there will be sufficient potential across the wires 55 and 56 to illuminate the light 28, but the potential across the terminals of the bell will be insufficient to operate the bell. Accordingly the light will operate but there will be no operation of the bell.

Upon further inward movement of the button in the slot portion 23 the pin 40 will be moved toward the left in Figure 3 to compress the spring 41 and the flange 32 will engage the contact 37. Under such conditions the bulb 28 will be shunted out of the circuit whereby the bell 52 will be affected by the potential across the terminals of the source. Referring to Figure 6, the current will flow through wire 54, across contacts 37 and 32, through wires 57 and 53, through the bell 52 and back to the source through wire 51. Accordingly the bell 52 will be operated in the usual manner. The operation of the light in the daytime is of little importance since the name or number on the plate 14 will be visible. The light, however, is useful under such conditions in that it indicates that the bell circuit is complete, since the bulb 28 and the bell are connected in series in the manner described.

For night operation the button 15 is preferably left in its second normal position. To assume this position the button is depressed from the position shown in Figure 2 until the pin 18 reaches a position in alignment with the slot portion 22, whereupon the outer end of the button is rotated in a clockwise direction as viewed in Figure 1 to move the pin 18 to the other end of the slot 22, in alignment with the slot 24. Under such conditions the first operation described above will take place, the contact 30 being brought into engagement with the contact 40 while the contacts 32 and 37 remain separated. Accordingly a circuit will be maintained through the light bulb 28, but the bell 52 will not operate. In such normal position of the parts the light opening 48 will be directly at the bottom of the button to illuminate the plate 14 and this plate will remain illuminated so long as the push button remains in its second normal position referred to.

Accordingly a visitor calling at night may read-

ily determine the number of the apartment or house or the name of the occupant so as to avoid needlessly ringing the bell. From the second normal position referred to the button is operated in the same manner as before to effect operation of the bell. The button is pushed to move the pin 18 toward the left in the slot 24 and when the contact elements 32 and 37 come into engagement with each other, the circuit is completed in the manner previously described to ring the bell, the light source 28 being cut out of the circuit upon engagement of the contact elements 32 and 37. Upon the releasing of the push button it will return to its second normal position in alignment with the slots 21 and 24, at which point the series circuit will be restored to light the bulb 28 and render the bell 52 inoperative. It will be obvious that the first normal position of the parts, that is, the daylight position, may be readily restored merely by rotating the push button 15 in a counterclockwise direction until it is arranged in alignment with the slot 23, and then releasing the push button. Under such conditions the pin 18 will return to the position shown in Figure 2, whereupon all of the electrical devices will be rendered inoperative, the circuits assuming the position illustrated in Figure 6.

From the foregoing it will be apparent that the present device provides a simple and effective means for illuminating a name or number plate in conjunction with a door bell or other similar mechanism to permit the operator to avoid unnecessarily operating the wrong door bell or other signal. The light is useful under any conditions in that it indicates whether the door bell circuit is complete. The light source, however, is particularly useful at night time in that it illuminates the name or number plate which otherwise could not be seen in the dark. It is not necessary for a casual caller to operate the push button in any particular manner, it merely being necessary for him to push the button in accordance with conventional practice regardless of whether the bell is arranged in its first or second normal position.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A signal mechanism comprising a main signal, an auxiliary signal, and electric circuit means for said signals comprising a single switch mechanism, a casing for said switch mechanism, contact means engageable upon initial movement of said switch mechanism to complete a series circuit through both of said signals, contact means engageable upon a further movement of said switch mechanism for shunting said auxiliary signal out of the circuit and completing a circuit through said main signal independently of said auxiliary signal, and a pin and slot connection between said switch mechanism and said casing, the slot of said connection having portions extending transversely of said casing to maintain said switch mechanism in a position engaging said first named contact means to maintain said series circuit in operation.

2. A signal mechanism comprising a main signal, an auxiliary signal, a source of current, a push button switch having spring means biasing

it to open position, a pair of contacts engageable upon movement of said switch to a first operative position to close a series circuit through both of said signals wherein the potential across said auxiliary signal is sufficient to operate it but the potential across said main signal is insufficient to operate said signal, and contact means engageable upon a further movement of said switch to a second operative position to shunt said auxiliary signal out of the circuit and establish a potential across said main signal sufficient to effect operation thereof.

3. A signal mechanism comprising a main signal, an auxiliary signal, a source of current, a push button switch having spring means biasing it to open position, a pair of contacts engageable upon movement of said switch to a first operative position to close a series circuit through both of said signals wherein the potential across said auxiliary signal is sufficient to operate it but the potential across said main signal is insufficient to operate said signal, contact means engageable upon a further movement of said switch to a second operative position to shunt said auxiliary signal out of the circuit and establish a potential across said main signal sufficient to effect operation thereof, and means engageable with said switch to maintain it in a position corresponding to said first named operative position to maintain said series circuit in operation.

4. A signal mechanism comprising a signal and an electric light bulb, a source of current, a push button switch, guide means for said switch, a pair of contact elements carried by said push button switch, a second pair of contact elements successively engageable by said first named contact elements to first close a circuit from said source to illuminate said bulb and to subsequently close a circuit to operate said signal, and a pin and slot connection between said push button switch and said guide means, the slot of said connection having portions extending longitudinally of the direction of movement of said switch to permit movement thereof for successively closing said circuits and having an intermediate transverse portion in which said pin is engageable upon rotation of said switch to hold the latter in a position closing said first named circuit.

5. A signal mechanism comprising a main signal, a push button switch, guide means for said switch, an electric light bulb arranged within said switch, an indicia-bearing element arranged to be illuminated when said bulb is in operation, a pair of contact elements carried by said push button switch and connected to said bulb, a spring pressed contact element engageable with one contact element of said pair upon movement of said push button switch to a first operative position, an electric circuit connected to be completed upon movement of said switch to said first operative position to illuminate said bulb, a stationary contact element engageable with the other element of said pair upon a further movement of said push button switch to a second operative position, and a circuit adapted to be completed through said signal to operate the latter when said push button switch is in said second operative position.

6. A signal mechanism comprising a main signal, a push button switch, an auxiliary signal in the form of an electric light bulb carried by said push button switch, an indicia-bearing element arranged to be illuminated by said bulb when the latter is in operation, a source of current, contact means engageable upon movement of said switch

to a first operative position to close a series circuit through both of said signals wherein the potential across said auxiliary signal is sufficient to operate it but wherein the potential across said main signal is insufficient to operate such signal, and contact means engageable upon a further movement of said switch to a second operative position to shunt said auxiliary signal out of the circuit and establish a potential across said main signal sufficient to effect operation thereof.

7. A signal mechanism comprising a main signal, an auxiliary signal, and electric circuit means for said signals comprising a single switch mechanism, a casing for said switch mechanism and adapted for rotation with respect thereto, contact means engageable upon initial movement of said switch mechanism to complete a

series circuit through both of said signals, contact means engageable upon a further movement of said switch mechanism for shunting said auxiliary signal out of the circuit and completing a circuit through said main signal independently of said auxiliary signal, and a pin and slot connection between said switch mechanism and said casing, the slot of said connection having portions extending longitudinally of the direction of movement of said switch mechanism to permit movement thereof for successively closing said circuits and having an intermediate transverse portion in which said pin is engageable upon rotation of said switch mechanism with respect to said casing to hold the former in a position closing said first named circuit.

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