Aug. 16, 1932. C. B. BARTLEY 1,871,650

SIGNALING MECHANISM

Filed Dec. 30, 1930

Fig. 1.

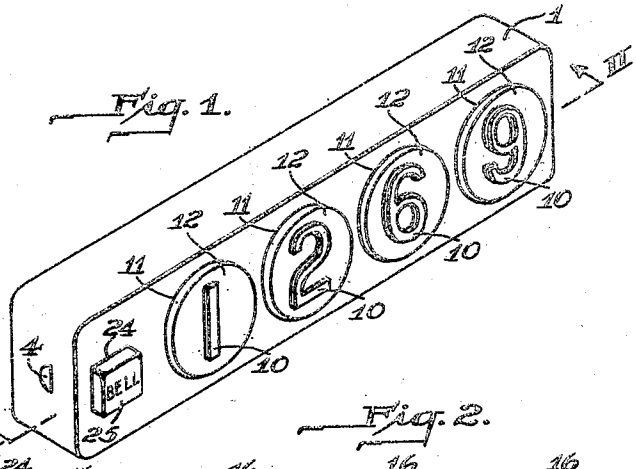


Fig. 2.

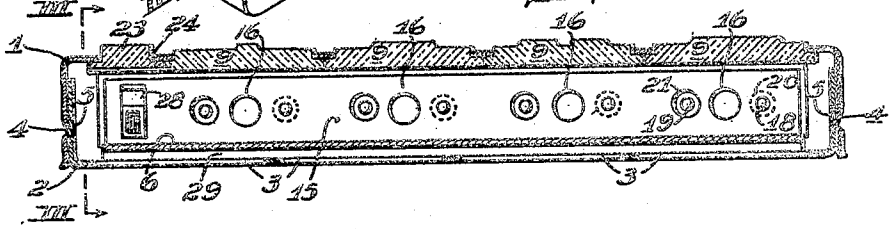


Fig. 3.

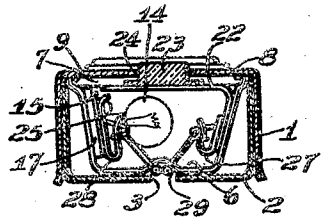
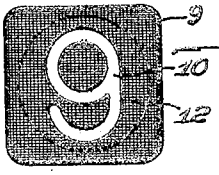


Fig. 4.



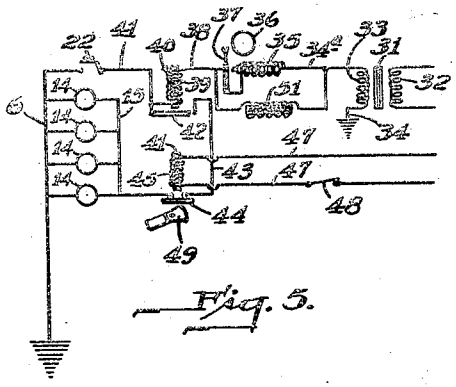


Fig. 5.

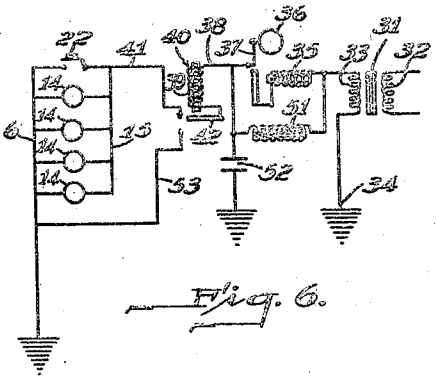


Fig. 6.

WITNESSES

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Patented Aug. 16, 1932

1,871,650

UNITED STATES PATENT OFFICE

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SIGNALING MECHANISM

Application filed December 30, 1930. Serial No. 505,475.

My invention relates to an improvement in house numbering and signaling devices, and more particularly to a device of such character adapted to be arranged in the ordinary electric door bell current supplying circuit.

The primary object of my invention is to provide a signaling device of the character referred to which is inexpensive to manufacture, dependable in operation, and adapted to be installed with comparative ease.

A further object is to provide a house numbering device having therein illuminating units which may be connected in a simple fashion in the ordinary door bell current supplying circuit, and, in addition, is equipped with detachable and adjustable numbering elements whereby adapting the device to be mounted either vertically or horizontally and at the same time permitting the user thereof to readily change the numbers at will.

Another object is to provide for automatically and effectively indicating to the user when the lamps employed for illuminating the sign are burned out.

Numerous other objects as well as other novel features and advantages of the invention will become more apparent when the following detailed description is read in conjunction with the accompanying drawing, wherein Fig. 1 is a perspective view of one embodiment of the invention; Fig. 2 a longitudinal cross section of the same taken on the line II—II of Fig. 1; Fig. 3 a vertical section taken on the line III—III of Fig. 2; Fig. 4 a plan view of a number unit; Fig. 5 a schematic wiring diagram of the lamps and bell circuits; and Fig. 6 a diagram similar to that shown in Fig. 5 of a modified circuit.

Referring more particularly to the drawing, the modification of the invention illustrated comprises an outer metallic housing consisting of a pair of telescopically fitting outer and inner sections 1 and 2. The inner of these sections forms the base of the device, and, in addition to being adapted to be secured to or in the side of a building, has a plurality of elongate openings 3 cut in its center for the reception of the electrical conductors employed in the bell and lamp circuits and arranged in alignment through the center of the bottom of the section to facilitate the entering of the conductors into the housing. The outer or cover section 1 of the housing fits over the inner section and is provided at its opposite ends with indents 4 which are adapted to register with and engage in slots 5 cut in the ends of the base when the cover is in position and positively hold it in place. By reason of this arrangement it is difficult to remove the cover without the aid of a tool developed for that purpose.

Inside of the base section 2 there is arranged a trough-like channel section 6 which is made of any suitable metal adapted to resiliently resist deformation from its normal shape, and is either highly polished on its inner surface or coated with a suitable light-reflecting material to function as a reflector for the lamps employed in the device. The upper edges of this channel section are provided with grooves 7 and 8 which are utilized for the reception of the numbering units 9. These units, as is shown particularly in Fig. 4, are preferably made square in contour and slightly wider than the top of the trough 6. To arrange them in the sign, their edges are inserted in the grooves 7 and 8 and they are then forced edgewise into the trough, forming thereby a cover over its upper side, and by reason of their greater width than the top of the trough and the resilient character of the trough, when the sides of the trough are forced apart by the insertion of the numbering elements, the latter are firmly held in place in the trough. When in place, as indicated in Fig. 2, by reason of the width of each of the numbering units they are adapted to register with openings 11 provided in the top of the outer section 1 of the housing for their reception. These openings preferably are round in shape, as shown, and the numbering elements are provided with a circular raised portion 12 which just fits into the opening.

On the face of the raised section 12 there is provided a visible number 10 formed in each unit, and this is preferably of a translucent character while the remainder of the element is rendered opaque by either being made of opaque material, or coated with such ma-

terial, so that light produced inside of the signaling device will pass through the numbers and render them conspicuously visible. The numbers are also preferably made to appear white or some other attractive color from the outside so that they may be visible from the exterior in the daytime, particularly without the aid of inward illumination.

By reason of the number units being made square in shape and the number-supporting portion of the units being circular in form, as is obvious, the numbers may be arranged in the sign to read either crosswise or lengthwise and accordingly permit the sign to be mounted either vertically or horizontally.

For illuminating the numbers of the sign a plurality of lamps 14 are mounted within the trough 6. For securing these lamps in place, a metallic strip 15 is provided and attached to one side of the trough. At spaced intervals along the length of this strip threaded openings 16 are struck out of the strip and adapted to receive the threaded sleeves forming the base of the lamps. Between the strip 15 and the side of the trough there is arranged a strip of insulating material 17 for insulating the conductor strip 15 from the body of the trough. This piece of insulation and the conductor strip are both secured to the side of the trough in the particular embodiment of the invention shown by means of a plurality of rivets 18 and 19. The rivets 18 are extended through the strips 15 and 17 and the two strips thereby rigidly held together. Rivets 19 are extended through the strip 17 and the side of the trough to rigidly hold the united strips in place.

To prevent the strip 15 from being electrically connected to the side of the trough, openings 20, indicated by the dotted lines in Fig. 2, are struck out of the side of the trough opposite these rivets, and, in the same manner, openings 21 are struck out of the strip 15 about the rivets 18 so that these rivets will not make contact between the strip and the side of the trough. With this arrangement the stride of the trough itself when grounded functions as one side of the circuit employed for lighting the lamp and the strip 15 as the other placing the lamps in parallel circuit relation therebetween. The lamps when arranged in place for illumination are screwed into the strip 15 and through openings in the strip 17 registering with the openings in the strip 15 into engagement with the side of the trough, placing them in parallel circuit relation along the length of the sign.

For providing a ringing circuit for the door bell, a switch is employed which is provided in the housing of the numbering device. This switch comprises a resilient metallic strip 22 which is secured to one side of the trough 6 and carries upon it a push button 23 which is adapted to extend through an opening 24 in the cover 1, and, as shown in Fig. 1, may bear the letters "BELL" upon it which in turn may be arranged to be illuminated by the light in the trough 6 in the same manner that the numbers 10 are illuminated. One end of the strip 22 is arranged to move freely when the bell push button is depressed or released and to make engagement when depressed with a contact member 25 mounted upon the end of the strip 15, as shown in Fig. 3. For attaching the conductors employed in the electrical circuit-supplying current to the door bell and lamp, a pair of snap-type wire-engaging elements 27 and 28 are mounted one on the side of the trough 6 and the other upon the end of the strip 15 opposite thereto. This latter, as shown in Fig. 3, may be equipped with an upwardly extending projection functioning also as the contact member 25 for engaging the bell switch.

In order to facilitate the wiring of the device, an inwardly projecting groove 29 is preferably formed in the bottom of the trough 6 in such a fashion as to form a tunnel over the slotted openings 3 in the bottom of the base 2, whereby the conductors may be readily carried through the bottom of the housing to the end thereof where they are attached to the contactors 27 and 28.

For illuminating the lamps and providing current for the door bell, an ordinary door bell transformer 31, as shown in Figs. 5 and 6, may be employed. The primary windings 32 are connected in the customary fashion to the house supply line, while the secondary windings 33 may have one of their ends 34 grounded and the other connected by means of a conductor 34*a* to the magnetic windings 35 of a bell 36. From the bell magnet the current is carried through the vibrator 37 and thence by conductor 38 through the actuating coil 39 of an underload relay 40. From the magnetic windings of this relay a conductor 41 is connected to one side of the bell switch 22. From the other side of the bell switch the circuit is connected to the ground, or, in other words, to the side of the trough 6.

The object of the underload relay 40 is to provide means for indicating when one or more of the lamps 14 are burned out. To attain this objective the current supply to the lamps is provided by a circuit extending from the windings 39 of the relay 40 through its armature 42, which is normally held in a circuit closing position when the lamps are all inserted, through a conductor 43 and a switch 44 to the conductor strip 15, the connection being made by connecting the conductor 43 to the contacting member 28 attached to the strip 15.

The switch 44 arranged in the lamp circuit is provided for either manually or automatically closing or opening the lamp circuit. For automatic operation an actuating winding 45 is provided to operate upon a core 46

to which the bridging member of the switch 44 is attached. These windings are in turn connected by conductors 47 through a manually operable switch 48 with the house lighting circuit, not shown, whereby when the switch 48 is closed the switch 44 will be automatically closed when the lights are turned on in the house, and allowed to fall open when they are turned off, and by means of which arrangement the lamps in the switch would be disconnected in the daytime when the house was not lighted, and connected in the night time when the lights were on.

If it is desired to dispense with the automatic feature provided by the solenoid 45 and the circuit connected to it, switch 48 may be opened and bridging member 44 forced closed by a cam device 49 pivotally mounted below the bridging member 44, which, when rotated to its central position, forces the bridging members into contact with the contactors of the switch 44.

A further feature of the circuit is the provision about the actuating windings 35 of the bell 36 of a reactance coil 51 that has a value of impedance of such a character that it will permit sufficient current to flow through it normally to properly light the lamps 12 while at the same time preventing sufficient current to flow through the windings 35 to vibrate or in any way actuate the vibrator 37. The value of this impedance, however, is made such that when the bell switch 22 is depressed, and, as will be observed, the lamps thereby shunted, it will permit sufficient current to pass through the bell circuit to effect the operation of the bell.

In operation, when current is applied to the primary windings of the transformer 31, a circuit through the signal lamps is provided by closing the switch 44 either electrically or by means of the cam actuator 49 and manually moving the armature 42 of the relay 40 to its circuit-closing position or else by depressing the switch 22 to energize the windings 39 of the relay 40 and thereby move the armature 42 into its closed position. When these switches are closed, a circuit extends from the secondary windings 33 of the transformer through the bell 36 and the reactance coil 37, the windings 39 of the relay 40, the armature 42, conductor 43, switch 44, conductor strip 15 and through the lamps, and thence by way of the trough 6 to the ground and the lamps are thus lighted.

To ring the bell the switch 22 is depressed, and, as referred to hereinbefore, the depression of this switch forms a shunt circuit about the lamps 12 inasmuch as the windings 39 of the relay are connected directly to one side of the switch, and the resistance of the circuit thereby reduced to such an extent that sufficient current will be drawn through the actuating windings 35 of the bell to effect the vibration of the vibrator 37 and cause the bell to ring. At the same time, by reason of the shunt circuit, the strain produced in the circuit by excess amounts of current produced by the ringing of the bell are prevented from affecting the lamps, and hence their life is considerably enhanced. Through the provision of the underload relay 40 which is preferably set to open whenever one of the lamps 12 burns out, the burning out of one or more of the lamps will allow the armature 42 to fall open, which, in doing so, will break the circuit to all of the lamps and thereby darken the sign.

In the modification of the invention illustrated in Fig. 6, a condenser 52 is connected between the lamp side of the reactor 51 and the ground, and is provided with such a value that it will normally have no effect upon the operation of the circuit whatever. But upon the occurrence in the secondary windings 33 of a voltage value in excess of that which may be safely applied to the lamps, it will function as a shunt circuit for protecting the lamps such as may be particularly desirable when the current is first applied to the primary transformer 31, or a short circuit may occur in that circuit, thereby causing an undesirable fluctuation of the current and voltage value in the system.

A further feature of the modification shown in Fig. 6 is that the automatic connecting equipment is dispensed with and in place thereof a circuit comprising a conductor 53 is provided which constitutes a shunt about the switch 22 and is adapted to cause the bell to ring whenever the underload relay 40 falls open. With such arrangement, whenever one of the lamps 12 burns out and thereby due to the reduction in current caused by it allows the relay 40 to fall open, the bell will be continuously rung and indicate very effectively that one or more of the lamps in the signal has been burned out.

It will be appreciated by those skilled in the art that I have provided a very simple inexpensive construction which is adapted to form a very effective and attractive numbering device, and that by reason of the novel circuits provided in the ringing and illuminating circuits of the bell and lamps that I have adequately protected the lamps in such a way as to afford long life as well as effective means for indicating the presence in the device of any faults such as are incurred by the burning out of any of the lamps.

According to the provisions of the patent statutes, I have explained the principle and mode of operation of my invention, and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claims, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

1. A house numbering device comprising a housing formed by a pair of telescopically fitting sections, the upper or cover member of said sections having therein a plurality of spaced uniformly shaped openings, a supporting member detachably positioned in said housing, and a plurality of adjustable and removable interchangeable character bearing elements mounted in said support and fitted in the spaced openings in said housing cover.

2. A house numbering device comprising a housing formed by a pair of telescopically fitting sections the upper of which constitutes a cover for the device and has a plurality of spaced uniformly shaped openings provided therein, a channel shaped supporting member detachably mounted within said housing, a plurality of adjustable and interchangeable character bearing elements detachably mounted in said support member and fitted in said cover openings, a lamp mounted in said support, and means for supplying illuminating current to said lamp to light up said character bearing elements.

3. A combination house numbering and bell ringing device comprising a housing having a plurality of uniformly shaped openings in its upper face, a supporting member having a light-reflecting surface detachably arranged within it, a plurality of lamps secured to said support, a plurality of translucent adjustable and interchangeable character bearings elements mounted in the support and extended through the openings in the upper face of the housing, means for connecting said lamps to a current supplying circuit, and a door bell ringing switch mounted in said housing and connected to shunt said lamps from their current supply when it is closed.

4. An illuminated house signaling device comprising a combined elongate lamp supporting and light reflecting member having an electric lamp mounted therein, means for connecting said lamp in a current supplying circuit, a cover for said reflector provided with a plurality of uniformly shaped and similarly spaced openings in it for the reception of character bearing units, and a plurality of interchangeable translucent character bearing units constructed to detachably fit in said cover openings for reading either at right angles to or in line with the longitudinal axis of said supporting member.

5. A house numbering device comprising a combined channel shaped lamp support and light reflector having an electric lamp mounted therein, a plurality of interchangeable translucent character bearing units having raised centers and parallel sides slidably engaged in grooves in the edges of said channel member, and a cover for said device constructed to fit over said support and provided with openings in it for receiving the raised portions of said characters, said openings and said character bearing units being so formed as to permit the latter being mounted at either right angles to or parallel with the sides of said channel shaped support.

6. An illuminated house signaling device comprising an elongate channel shaped supporting and light reflecting member, a plurality of character bearing units having parallel edges and round raised translucent centers detachably and interchangeably mounted in grooves provided in the upper edges of said channel shaped supporting member, an electric lamp arranged between the reflector member and said character units, and a cover adapted to fit over said supporting and reflecting member and provided with spaced round openings therein for the reception of the raised portions of said character units.

7. A house numbering device comprising a housing formed by a pair of telescopically fitting sections the upper of which constitutes a cover for the device and has a plurality of spaced uniformly shaped openings provided therein, a channel shaped supporting member detachably mounted within said housing, a plurality of adjustable and interchangeable characters bearing elements detachably mounted in said support member and fitted in said cover openings, a lamp mounted in said support, the base of said channel member being transversely arched inwardly to permit wires to be disposed between it and the base of the housing, and means for supplying illuminating current to said lamp to light up said character bearing elements.

8. A house numbering device comprising a housing formed by a pair of telescopically fitting sections the upper of which constitutes a cover for the device and has a plurality of spaced uniformly shaped openings provided therein, a channel shaped supporting member deteachably mounted within said housing, a plurality of adjustable and interchangeable character bearing elements detachably mounted in said support member and fitted in said cover openings, a lamp mounted in said support, the base of said channel member being transversely arched inwardly to permit wires to be disposed between it and the base of the housing, said housing having a plurality of apertures in its base whereby to admit wires at any desired point, and means for supplying illuminating current to said lamp to light up said character bearing elements.

9. A house numbering device comprising a housing formed by a pair of telescopically fitting sections the upper of which constitutes a cover for the device and has a plurality of spaced uniformly shaped openings provided therein, a channel shaped supporting member detachably mounted within said housing, a

plurality of adjustable and interchangeable character bearing elements detachably mounted in said support member and fitted in said cover openings, a bell switch mounted in said support and having an operating button fitted in one of said cover openings, a lamp mounted in said support in shunt circuit relation with said bell switch, and means for supplying illuminating current to said circuit to light up said character bearing elements.

10. A combination house number and bell ringing device comprising a housing having a plurality of uniformly shaped openings in its upper face, a supporting member having a light-reflecting surface detachably arranged within it, a plurality of lamps secured to said support and having one terminal insulated therefrom, a plurality of translucent adjustable and interchangeable character bearing elements mounted in the support and extending through the openings in the upper face of the housing, a current supply circuit for a door bell and said lamps, a door bell ringing switch mounted in said housing with one contact connected to said support and the other to said insulated lamp terminals whereby to provide means for shunting said lamps from their current supply when the bell switch is closed to prevent excessive amounts of current from passing through them when the switch is opened.

In testimony whereof, I sign my name.

CHARLES B. BARTLEY.