Feb. 13, 1934. F. E. BEIDLER 1,946,570

SAFETY EXIT LIGHT

Filed Sept. 30, 1930

Fig. 1.

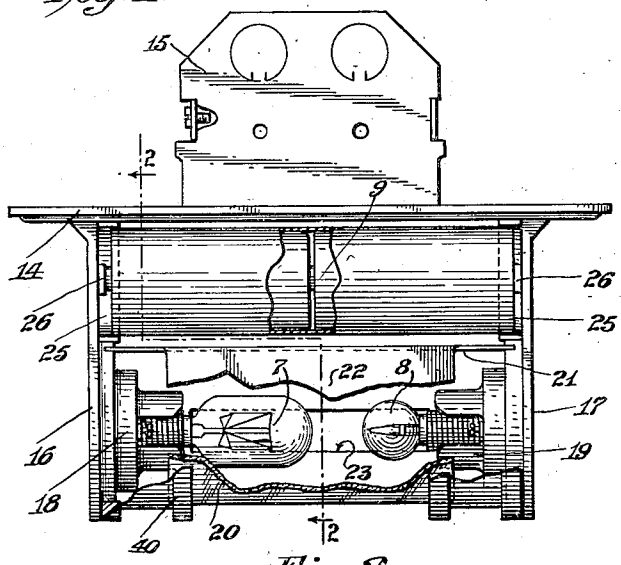


Fig. 2.

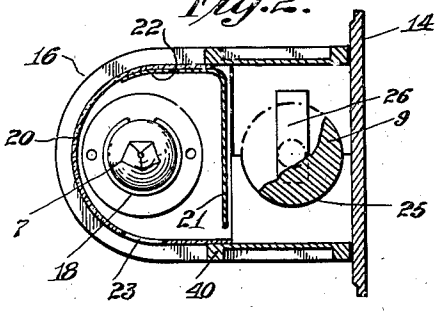


Fig. 4.

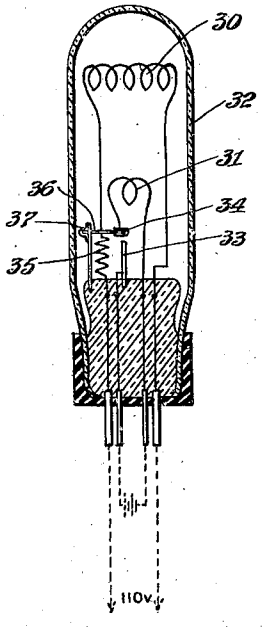
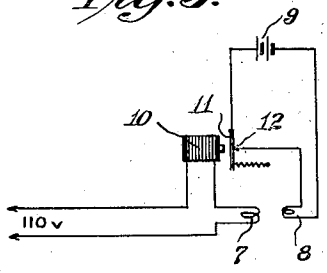


Fig. 3.



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SAFETY EXIT LIGHT

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Serial No. 485,380

2 Claims. (Cl. 240—37.1)

My invention relates to signalling devices and particularly to lamps suitable for use at fire exits where it is essential that light be available at all times.

Modern fire department and underwriters' regulations require that exit lights shall be on at all times and in order to insure this it is customary to employ supplemental installations or duplicated sources of current so that the auxiliary or supplemental supply is brought into play when the main supply fails. Such systems, however, make no provision for failure of individual lamps. One of the objects of my invention is to provide for a supplementary source of light which can be embodied in individual lamp installations without requiring duplicated wiring systems. Another object is to provide a simple and inexpensive but reliable construction for utilizing individual batteries or dry cells adapted to be automatically connected in circuit upon failure of the individual primary light source. Another object is to provide a simple and easily accessible means for inserting and removing the secondary battery. Another object is to provide a construction which will normally indicate the exit and also illuminate the floor adjacent thereto. Another object is to provide a secondary source of light which is automatically actuated upon failure of the main lighting current or failure of the individual primary lamp.

For carrying out the invention I have shown two arrangements: One in which there are two lamps with independent sources of power, and the other in which there is a single lamp with two filaments for high and low voltage respectively. In the first instance an electro-magnetically actuated relay under normal conditions holds the secondary lamp and battery circuit open. In case of failure of the main current supply, or a breakdown in the local lamp, the magnet is de-energized and the battery circuit completed through the secondary lamp or filament. In the other form the two filaments are arranged in the single bulb and provided with a thermally actuated switch which, when current is flowing through the main filament, holds the circuit through the secondary filament open. Upon failure of the current through the primary filament, the thermally actuated device cools off quickly and a circuit is automatically established through the secondary filament.

Fig. 1 is a plan view and partial section of one form of construction embodying my invention, with two lamp bulbs.

Fig. 2 is a transverse section and side view.

Fig. 3 is a schematic drawing showing a typical circuit for the device of Figs. 1 and 2.

Fig. 4 is a sectional view largely diagrammatic showing a single bulb with a thermally actuated switch and two filaments.

In the form shown in Figs. 1 and 3 there are two lamp bulbs 7 and 8 adapted respectively to an ordinary household lighting circuit and an ordinary dry battery. The lighting system of course is usually 110 volts, but the same circuit would apply regardless of the particular voltage. The battery 9 is shown as consisting of two cells which furnishes a convenient potential for such purpose, but this amount may also be varied to suit conditions required. This secondary battery may be of any type, either dry cell or continuously charged storage battery although for convenience in installation a dry cell type is preferred.

A switch is provided in the circuit of the secondary lamp 8 adapted to be automatically actuated, depending upon the conditions in the primary circuit. In this case I have shown a relay including a coil 10 having an armature 11 and stationary contact 12. The armature constitutes a movable contact which forms, in conjunction with the contact 12, the switch in the secondary circuit. Under normal conditions the magnetic coil 10 holds the armature 11 in the open circuit position of the switch so that the secondary circuit is open. The failure of the primary power supply or breakage of the filament 7 or other circuit failure in the primary circuit de-energizes the magnet coil 10 and allows the armature 11 to close the circuit through the secondary battery 9 and thus light up lamp 8.

The construction shown in Figs. 1 and 2 for supporting the various parts of typical apparatus includes a frame 14 which is adapted to be secured in a suitable manner to an outlet box 15 which contains the relay. This frame has side arms 16 and 17 which carry sockets 18 and 19 for the lamps 7 and 8 respectively. The lamps are enclosed by a suitable colored translucent or transparent member 20 such as ruby glass, held in a detachable cover 40.

I also preferably provide reflecting means which may consist of a plate having a rear portion 21 and an upper portion 22. The lower part of the glass 20 is preferably open at 23 so as to permit a direct light from the lamps to fall upon the floor. The presence or the size of this opening will depend upon the conditions of use. Of course the bulbs 7 and 8 might themselves be colored to denote the desired signal. The side arms 16 and 17 are provided with sockets 25 preferably open

at the top and adapted to support the ends of the battery. Spring contacts such as 26 may be provided to electrically engage the ends of the battery and automatically engage it in circuit as it is inserted in the frame.

In some cases it may be desirable to employ an automatic flasher in the secondary circuit so as to indicate when the main circuit has failed. Something of this sort may be desirable in some cases because on account of the automatic and instantaneous action of the relay a person would not know when the circuit had failed and consequently the battery might be allowed to remain in service until it was discharged before anyone would know if there was anything wrong with the main circuit.

It should also be understood that an audible signal device such as a buzzer might be connected in the secondary circuit to call attention to the failure of the main circuit.

In the construction shown in Fig. 4 the main filament 30 and the secondary filament 31 are both enclosed in the same envelop 32 and the lamp is provided with suitable prongs or terminals for engagement with a suitable socket. The circuit of the secondary filament is provided with an automatic switch including a stationary contact 33 and a movable contact 34, the latter being actuated thermostatically. As an example of one method of construction I have shown a resistance 35 which serves as a heater in series with the filament 30. A somewhat flexible insulating strip 36, for instance of mica, has one end supported at 37 and the other end connected to the movable switch contact 34. An intermediate portion of this strip 36 is connected to the expansible and contractable heater element 35. When current is flowing through the primary circuit and the filament 30 the heat developed by the passage of the current through the coil 35 expands it sufficiently to hold the switch member 34 in the open circuit position. Opening of the primary circuit permits the heater 35 to cool and close the secondary circuit through the filament 31. While this serves as a convenient means for mounting the thermostatic switch in conjunction with the two filaments, it should be understood of course that the two filaments might be independently mounted and that the thermostatic device might be independently constructed and mounted to be actuated by the changes and conditions in the primary circuit and to itself close the secondary circuit in case of failure in the primary.

In the form of Fig. 1 and Fig. 2 the colored glass is shown held by a detachable cover thus giving ready access to the interior elements of this device upon its removal, but other means of holding the glass can readily be devised, and will be apparent to those skilled in the art.

In case that it is desirable for the light to be visible directly at the sides of my invention, it is possible for the lamp mountings to be changed so that they will be visible through the end pieces, provided that the latter have transparent openings therein. Another way to secure this result is by giving the transparent member 20 a bulge at its middle portion.

The form of Fig. 4 lends itself to the employment of a colored bulb, thus obviating the necessity for the special housing structure of the form of Fig. 1. This would leave only the secondary source of energy and a suitable socket as external ancillary devices. These two exterior devices may readily be incorporated in a single unit adapted to fit into the usual outlet box.

I claim:

1. A safety exit electrically lighted device including a frame having side arms, aligned pairs of sockets on said arms, a battery detachably mounted in one pair of sockets, two illuminating filaments removably mounted in the other pair of sockets, one of said filaments being supplied with current from said battery, the other filament being supplied from a house system, reflecting means positioned between said battery and filaments and a glass casing protecting said filaments.

2. A safety exit lighting device comprising a frame having a back plate adapted to be secured to a wall and end plates secured thereto and projecting therefrom, a dry battery detachably mounted between the end plates, two electric light bulbs independently carried by the respective end plates, one of said bulbs having terminals for connection to a house current lighting system, the other bulb having connections to the dry battery, an automatic switching device for connecting the latter bulb in circuit with the dry battery in case of failure of the house lighting current, and reflecting means positioned between the battery and the bulbs for reflecting light from both bulbs outwardly and downwardly.

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