

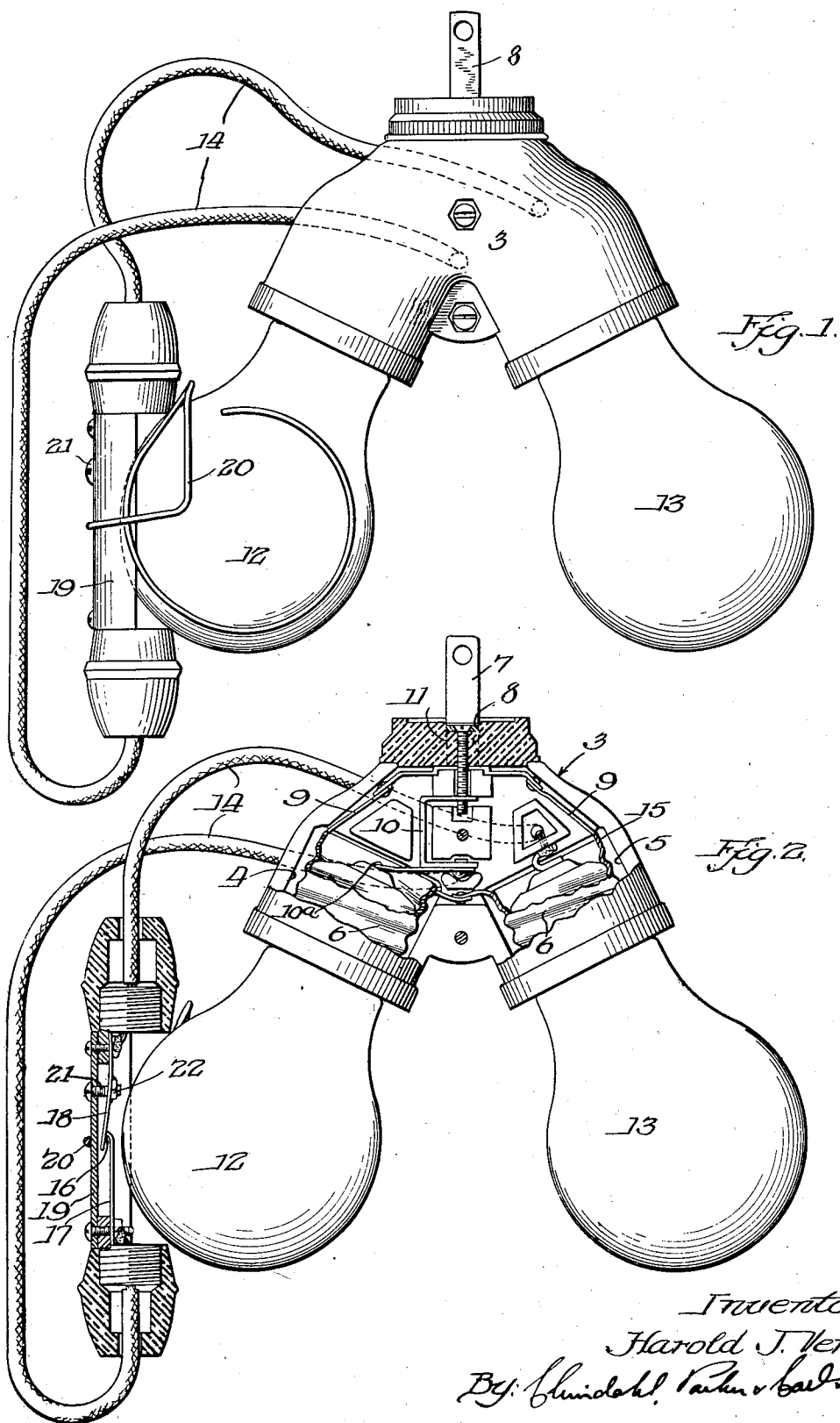
July 24, 1934.

H. J. VENARD

1,967,521

EMERGENCY CONTROL DEVICE

Filed April 13, 1931



Inventor:
Harold J. Venard;
By: *Cluidahl, Parker & Carlson*
Attys

UNITED STATES PATENT OFFICE

1,967,521

EMERGENCY CONTROL DEVICE

Harold J. Venard, Chicago, Ill.

Application April 13, 1931, Serial No. 529,585

7 Claims. (Cl. 176-10)

This invention relates generally to emergency control devices operative to assume temporarily the function of a primary electric element in the event of failure of such element to perform its intended function.

More particularly, the invention is adapted for use in connection with electric elements which in operation generate heat, such as lamps required to furnish illumination continuously, such as beacon, emergency or exit lights; and the primary object of the invention is to provide an emergency control device including a thermally responsive switch controlled by the primary electric element and operative upon the failure of the latter to render operative a secondary or auxiliary element of similar character until such time as the main element is caused to resume its normal operation.

A further object of the invention is to provide an electric lighting device having main and auxiliary lamps or bulbs in combination with a thermostatically actuated switch for controlling the operation of the auxiliary bulb.

Another object of this invention is the direct control of the circuit of the auxiliary bulb by means responsive to the radiation of heat from the main bulb.

A further object of this invention is to adapt a thermostatically controlled device of the character described to bulbs of varying capacity by the provision of means for adjusting the thermostatic control means.

Other objects and advantages will become apparent from the following detailed description taken in connection with the accompanying drawing, in which:

Figure 1 is an elevational view of a device embodying the features of this invention.

Fig. 2 is a view partially in section and partially broken away to show the circuit of the device and the construction of the thermostatic switch.

While the invention is adapted for a variety of installations of varying type and size, it is here shown and will be described in an exemplary embodiment adapted for use in exit lights required in public buildings, theatres and the like. City ordinances usually require that exit lights should be maintained burning continually and compliance with the ordinance when an electrical lighting system is employed is here accomplished by the provision of a device having a plurality of bulbs with thermo-responsive means exposed to the heat of the bulbs and connected directly in the circuits of the bulbs in a

manner to maintain but one bulb lighted at all times. Such direct control of the circuits insuring proper operation of the device under all conditions and materially simplifying the construction.

In the exemplary embodiment illustrated in the drawing, the body of the device consists of an insulating casing 3 shaped to form a pair of bulb receiving sockets 4 and 5 having a conducting lining 6 similar to the ordinary two-bulb attachment plug. Projecting from the base of the casing 3 are two contact prongs 7 and 8 adapted to be inserted in a wall outlet for connection with the supply lines. The prong 7 extends through the base of the casing (see Fig. 2) into contact with strips 9 which are an integral part of the linings 6 of both sockets. The prong 8 is in electrical contact with a strip 10, terminating in the center of the socket 4 to form a contact 10*, by means of a bolt 11 projecting through the base of the casing.

Turned into the socket 4 into engagement with the contact 10* is a bulb 12, hereafter designated as the main bulb, which is thus permanently connected in circuit with the prongs 7 and 8 through the strip 9, the lining 6 and the strip 10. The bulb will thus always be supplied with current whenever the plug is inserted into the wall outlet or other termination of the supply wires and as long as the bulb is in good condition will be lighted.

Turned into the socket 5 is a bulb 13, hereafter designated the auxiliary bulb, which is to be connected to the supply lines in case of failure of the main bulb. The auxiliary bulb 13 is connected to the prong 7 through the lining 6 and strip 9 just as is the main bulb, but is connected to the prong 8 by means of a lead 14 outside of the casing connected at its ends to a contact 15 and the strip 10. It is thus apparent that the main and auxiliary bulbs are connected in parallel and may be lighted independently.

To insure a lighting of the auxiliary bulb at the proper times means responsive to the heat of the main bulb is employed to control directly, that is, without the aid of other mechanical or electrical devices, the circuit of the auxiliary bulb. In the present instance this means consists of a thermostatic switch 16 positioned adjacent the main bulb and connected in series with the auxiliary bulb. The switch 16 is herein formed by two bimetallic thermal elements 17 and 18 connected in the lead 14 and disposed in linear relationship in a semi-tubular protecting casing 19 of insulating material so that sub-

stantially the entire length of both is exposed directly to the heat of the bulb. The thermal elements are rigidly secured at their extreme ends to the casing 19 in a manner to contact at
 5 their inner ends with a degree of tension when cold and to flex away from each other when exposed to heat. Thus when the light is first turned on both the main and the auxiliary bulb will burn. However, after a short time the heat
 10 from the main bulb will flex the thermal elements sufficiently to open the switch 16 thereby breaking the circuit of the auxiliary bulb. Should the main bulb burn out the elements will cool and return to normal position thereby com-
 15 pleting the circuit through the auxiliary bulb and causing it to light.

The casing 19 enclosing the thermal elements 17 and 18 is preferably removably attached to the bulb 12 by means of a spring clip 20 to facilitate replacement of the bulb.

It is desirable that the auxiliary bulb be lighted within a minimum period of time after failure of the main bulb and to accomplish this the elements of the switch 16 are adjusted to
 25 be flexed by the heat of the bulb just sufficiently to open the switch 16. Only a slight cooling of the elements is thus necessary to close the switch 16 which will occur immediately upon failure of the main bulb. With a permanent ad-
 30 justment of the elements of the switch 16 it is apparent that the switch would be adapted for satisfactory use only with a bulb of a certain capacity; a smaller bulb being incapable of opening the switch and a larger bulb flexing the
 35 elements so far as to cause undesirable delay in the lighting of the auxiliary bulb upon failure of the main bulb.

To facilitate the initial positioning of the elements and to adapt the device for use with bulbs
 40 of different capacity means for adjusting the switch to open at different intensities of heat is provided. This means consists simply of a bolt 21 projecting through the casing 19 and thread-
 45 ed into a nut 22 rigid on the element 18. By turning the bolt 21 to flex the element 18 in a manner to decrease the tension between the two elements, that is toward the casing 19, less heat
 50 will be required to open the switch while if the bolt 21 is turned the other way more heat will be required. The device may thus be conveniently adjusted for use with any size of
 bulb.

I claim as my invention:

1. In an electric lighting device, a main bulb
 55 adapted to be normally lighted, an auxiliary bulb in parallel with said main bulb, a socket for each of said bulbs, and a thermo-responsive switch in series with said auxiliary bulb, said switch being
 60 adapted to be maintained open by the heat of the lighted main bulb but closing the circuit through said auxiliary bulb when said main bulb fails to light.

2. An electric lighting device comprising, in
 65 combination, a main bulb, sockets wherein said bulbs are mounted, an auxiliary bulb, an electric circuit connecting each of said bulbs to a source of energy, means including a bimetallic thermal element forming a switch connected in series
 70 with said auxiliary bulb, and a protecting casing carrying said elements removably mounted on the main bulb, said elements when cold being in

contact to close the circuit through said auxiliary bulb and flexing in opposite directions to break the circuit when exposed to the heat of said main bulb.

3. An electric lighting device, comprising, in
 80 combination, a main bulb, an auxiliary bulb, sockets wherein said bulbs are mounted, an electric circuit connecting each of said bulbs to a source of energy, a thermo-responsive switch positioned so as to be exposed to the heat of said
 85 main bulb and connected in series with said auxiliary bulb, said switch being adapted to break the circuit when said main bulb is burning, and means for adjusting said switch to adapt it for use with bulbs of different electrical capacity.

4. An electric lighting device, comprising, in
 90 combination, a main bulb, an auxiliary bulb, sockets wherein said bulbs are mounted, an electric circuit connecting each of said bulbs to a source of energy, and thermo-responsive means
 95 mounted adjacent said main bulb controlling the circuit of said auxiliary bulb comprising a pair of bimetallic thermal elements mounted to form a switch and connected in series with the aux-
 100 iliary bulb, said elements being normally in contact but flexing in opposite directions upon exposure to heat from said main bulb to break the circuit of said auxiliary bulb, and means
 105 for adjusting said elements to vary the intensity of heat required to open the switch.

5. An electric lighting device comprising, in
 110 combination, a main bulb, an auxiliary bulb, sockets wherein said bulbs are mounted, an electric circuit connecting each of said bulbs to a source of energy, a pair of bimetallic thermal
 115 elements forming a switch connected in series with said auxiliary bulb, and a mounting for said elements supporting them adjacent said main bulb, said elements being arranged in linear relationship to increase the sensitivity of
 120 the switch by exposure of both elements directly to the heat of said main bulb.

6. The combination with main and auxiliary
 125 lamps, of means providing two circuits respectively including said lamps for connecting them with a source of electric energy, one of said circuits being constantly closed and operative to effect a continuous supply of energy from
 130 said source to the main lamp, said other circuit including a switch, and a thermal device responsive to the heat of the main lamp and operative to open said switch when the main lamp is in operation and to close said switch auto-
 135 matically upon failure of the main lamp.

7. The combination with main and auxiliary
 140 lamps of a casing structure of insulating material providing sockets for respectively receiving said lamps and having two terminals adapted for connection with a source of electric energy, means in said casing structure providing
 145 two circuits respectively including the main and auxiliary lamps for connecting them to said terminals, one of said circuits being constantly operative to effect a continuous supply of energy to the main lamp when said terminals are con-
 150 nected with said source, and the other one of said circuits including a switch, and a thermal device responsive to the heat of the main lamp and operative to open said switch when the main lamp is in operation and to close said switch
 155 automatically upon failure of the main lamp.

HAROLD J. VENARD.