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J. L. BLALACK

1,734,071

CIRCUIT CONTROLLING DEVICE

Filed July 18, 1927

Fig. 1

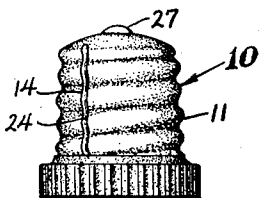


Fig. 2

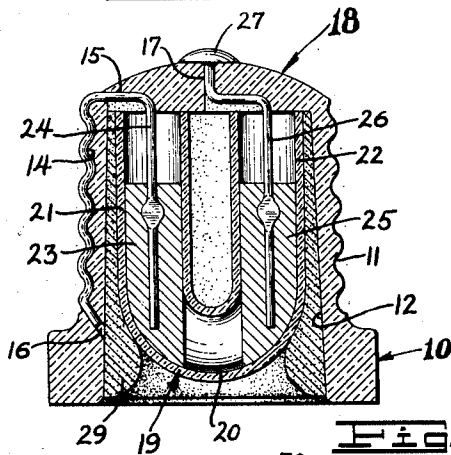


Fig. 3

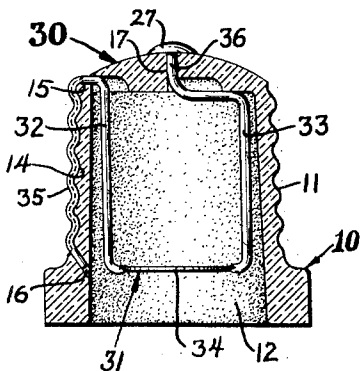


Fig. 4

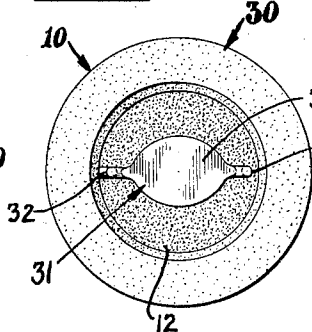


Fig. 7

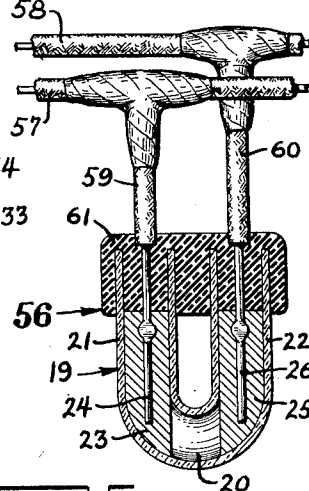


Fig. 6

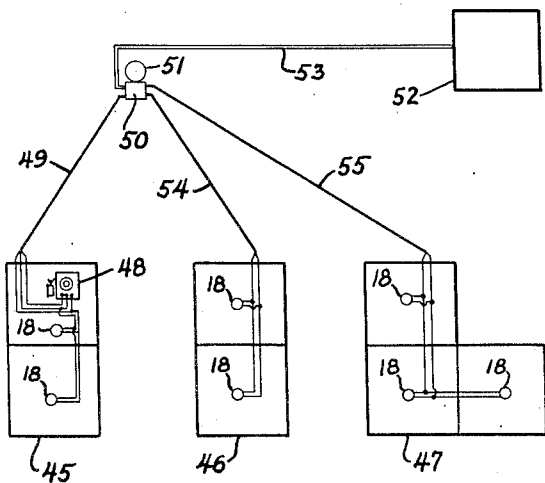
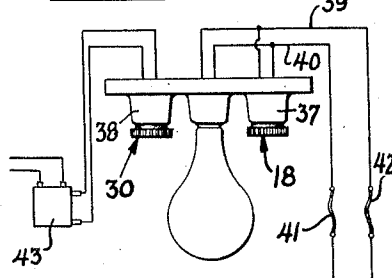


Fig. 5



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CIRCUIT-CONTROLLING DEVICE

Application filed July 18, 1927. Serial No. 206,401.

This invention relates to improvements in circuit controlling devices.

The general object of this invention is to provide a simple and efficient circuit controlling device which is adapted to various uses.

Another object of this invention is to provide a device which may be inserted and used in an ordinary electric light socket for causing the main fuses of the light circuit to be "blown" or to cause an alarm to be actuated when there is a fire in the vicinity of the device.

A further object of this invention is to provide a novel form of plug which is adapted to form a receptacle for containing various types of circuit controlling elements.

A still further object of this invention is to provide a novel type of circuit controlling element which may be used either in a plug or as a self-contained unit.

Another object of the invention is to provide a novel signaling system actuated by my improved circuit controlling device.

Other objects and advantages of this invention will be apparent from the following description taken in connection with the accompanying drawing wherein:

Fig. 1 is a side elevation of my improved circuit controlling device.

Fig. 2 is an enlarged central longitudinal section view of my device.

Fig. 3 is an enlarged central longitudinal section of the plug shown in Figs. 1 and 2 showing a modified form of circuit controlling element arranged therein.

Fig. 4 is a bottom plan view of the plug shown in Fig. 3.

Fig. 5 is a view, partly diagrammatic, showing a plurality of my devices in use.

Fig. 6 is a diagrammatic view of a signalling system using a plurality of my improved circuit controlling devices, and

Fig. 7 is a central longitudinal section through the circuit controlling element shown in Fig. 2, showing it used as an independent unit.

Referring to the drawings by reference characters I have indicated at 10 an improved screw plug for containing my im-

proved circuit controlling elements. This plug 10 as shown in the accompanying drawing is preferably made of porcelain but may be made of any suitable insulating material.

The plug 10 is provided with external screw threads 11 and a central cavity or recess 12 (see Fig. 2). The threads 11 are in the form of electric light socket threads and may be formed at the time the plug is made.

A slot 14 preferably conforming to the shape of the threads is provided on the threaded portion of the plug and communicating with the slot 14 and the recess 12 I provide apertures 15 and 16. An aperture 17 in the closed end of the plug 10 also communicates with the central recess 12.

In Fig. 2 I have shown my improved plug 10 as embodied in a circuit controlling device indicated generally at 18. The circuit controlling element shown in Fig. 2 and indicated generally at 19 comprises a tube 20 which may be of glass bent to a U-shape to form two legs 21 and 22. A fusible metal plug 23, which may be made of an alloy, e. g. Wood's metal, having a wire 24, preferably of copper, molded therein and extending therefrom is positioned in the leg 21 and a similar fusible plug 25 having a wire 26 projecting therefrom is positioned in the leg 22.

The wire 24 in the leg 21 passes through the aperture 15 of the plug and is positioned in the slot 14 and formed to comply to the contour of the threads 11 on the plug. As the slot 14 is of less depth than the wire 24, the wire will project slightly beyond the outer surface of the threads 11. The free end of the wire 24 is inserted in the aperture 16 to retain the wire in position in the slot 14. The wire 26 of the fusible plug 25 in the leg 22 is positioned in the apertures 17 and soldered or otherwise secured to a center contact 27. By positioning the wire 24 in the groove 14 and shaping it to conform to the screw threads, it is not necessary to provide a metal shell on the plug 10 as is now commonly the practice, thus the manufacturing cost of my improved plug 10 is considerably reduced.

When the device 10 is inserted in an electric light socket the wire 24 will contact with the

shell of the socket and the wire 26 will be in contact with the center contact of the socket.

The circuit controlling element 19 is preferably secured in the recess 12 of the plug by a suitable composition cement 29 such as is generally used for cementing articles to porcelain.

When the plug 10 is provided with the circuit controlling element 19 as shown in Fig. 2, it is adapted to be used to close an electric circuit when excessive heat occurs in the vicinity of the device. When this device is subjected to an excessive degree of heat the fusible plugs 23 and 25 will melt and run together. As the plugs 23 and 25 are of electrical conducting material the wires 24 and 26 will be connected and form a closed circuit.

In Fig. 3 I have shown a circuit breaking device indicated generally at 30 as comprising the plug 10 and a modified form of circuit controlling element 31. This element comprises a fusible U-shape member which includes two legs 32 and 33. The bottom of the U which joins the legs 32 and 33 is preferably flattened as at 34 to provide a larger exposed area. This flattened portion 32 is preferably constructed of a different fusible alloy than the legs 32 and 33 and is adapted to be melted by external heat, while the legs 32 and 33 are adapted to be melted by an electrical short or overload. An extension 35 on the leg 32 extends through the aperture 15 and is positioned in the groove 14 and the aperture 16 similar to the wire 24 in Fig. 2. An extension 36 on the leg 33 extends through the aperture 17 and is connected to the center contact 27 similar to the wire 26 in Fig. 2.

When the device 30 is inserted in an electric light socket the extension 35 of leg 32 will contact with the shell of the socket and the extension 36 on the leg 33 will be in electrical contact with the center contact of the socket, thus a closed circuit is formed between the socket shell and the center contact of the socket.

When the device 30 is exposed to excessive heat the flattened portion 34 will melt and thus break the circuit from the socket shell to the center contact of the shell, thereby forming an open circuit, and when either of the legs 32 or 33 is melted by an electrical short or overload an open circuit will also be formed.

In Fig. 5 I have shown my devices 18 and 30 as operatively positioned in electric light sockets 37 and 38. In this view the device 18 shown in Fig. 2 is adapted to short circuit the electric light wires 39 and 40 and "blow" the fuses 41 and 42 when excessive heat occurs in the vicinity of the devices, and the device 30 as shown in Fig. 5 is adapted to break the circuit of a closed circuit signalling device indicated at 43 when excessive heat oc-

curs in the vicinity of the device. From this description it will be seen that the device 30 may be used as an ordinary electric circuit controlling fuse or for a fire alarm signal actuator.

In Fig. 6 I have indicated at 45, 46, and 47 a plurality of buildings equipped with my improved circuit controlling devices 18. The building indicated at 45 is shown as provided with a telephone 48 which is shown as connected by wiring 49 to a sub-terminal 50 which is located on a pole 51 or underground as the case may be. The sub-terminal 50 is shown as connected to the main terminal 52 by a cable 53.

When a fire occurs in the building 45 in the vicinity of any one of the devices 18 in the building, the fusible plugs 23 and 25 will melt and form a closed circuit, thereby causing the telephone 48 to be actuated in the same manner as when the receiver is lifted off the hook. This will signal the operator in the terminal 52 and when the telephone 48 in the building 45 is not answered the operator will know that the device 18 has actuated the telephone, whereupon the operator will notify the fire department that there is a fire in building 45.

The devices in the building 46 which is not provided with a telephone are shown as connected directly to the sub-terminal 50 by wiring 54.

The devices 18 in the building 47 which is also not provided with a telephone are also connected directly to the sub-terminal 50 by wiring 55.

From the sub-terminal 50 the wiring 54 and 55 communicate with the main terminal 52 through the cable 53 in the same manner as a telephone. When excessive heat in either of the buildings 46 or 47 cause the devices 18 to actuate to form a closed circuit, a signal will be actuated in the terminal 52 in the same manner as when a telephone receiver is removed from the hook, whereupon, as the operator knows that there is no telephone in the building from which the signal is coming, the operator will immediately notify the fire department.

In Fig. 7 I have indicated generally at 56 another application of my circuit controlling unit. In this arrangement I employ the element 19 shown in Fig. 2 without the plug 10 and connect the wires 24 and 26 directly to the wires which are connected to the telephone wires 57 and 58. When the element 19 is used as an independent unit as indicated at 56 the wires 24 and 26 are covered with insulation as at 59 and 60 and the open ends of the legs 21 and 22 are closed by suitable insulating material as indicated at 61.

This device 56 although not adapted for as wide use as the device 18 is much cheaper and is particularly adapted for use in basements, lofts, and attics, or in any other locality where

appearances are not taken into consideration.

My devices are, in addition to the uses mentioned above, also adapted for other purposes among which I might mention use in the main feed line to a house or other place and in which my plugs may take the place of the usual fuse plugs.

It will thus be apparent that I have provided an improved circuit controlling device which is highly efficient, easily installed and which can be economically manufactured.

Having thus described my invention, what I claim is:

1. In a circuit controlling device, a body portion, screw threads molded integral with said body portion, a groove in said body portion traversing said threads, a recess in said body portion, said body portion being provided with an aperture in one end communicating with said recess, said body being provided with another aperture communicating with said recess and with said groove, said body being provided with a third aperture, an electrical conductor element in said recess, a portion of said electrical conductor element extending through said first mentioned aperture and connected to a center contact member, another portion of said element extending through said second mentioned aperture and having a part positioned in said groove and having another part inserted in said third aperture.

2. In a circuit closing device, a hollow tubular member of insulating material shaped to form two communicating portions, a fusible electrical conductor plug in each of said portions, said plugs being out of engagement with one another, an electrical conductor element connected to one of said plugs, and another electrical conductor element connected to the other of said plugs.

3. In a circuit closer, a body portion including a center contact portion, a recess in said body, said body having a central aperture in one end communicating with said recess, said body having a second aperture communicating with said recess, an element in said recess, said element comprising insulating material shaped to form two leg portions, a fusible electrical conductor plug in each of said legs, said plugs being out of engagement with one another, an electrical conductor element connected to one of said plugs and extending through said first aperture and another electrical conductor element connected to the other of said plugs and extending through said second aperture.

4. In a socket plug, a body portion including a center contact, screw threads molded integral with said body portion, a groove in said body traversing said threads, a recess in said body, one end of said body being provided with a central aperture communicating with said recess, said body being provided with a second aperture communicating with said re-

cess and said groove, said body being provided with a third aperture, an element in said recess, said element comprising a tube of insulating material bent upon itself in U-shape to form two leg portions, a fusible electrical conductor plug in each of said legs, said plugs being out of engagement with one another, an electrical conductor element connected to one of said plugs and extending through said first aperture and being connected to said center contact, another electrical conductor element connected to the other of said plugs and extending through said second aperture and being positioned in said groove and said third aperture.

5. In a socket plug, a body portion having a closed end and a hollow recess, screw threads formed integral with said body portion, a groove in said body portion traversing said threads, an electrical conductor arranged in said groove and having a portion projecting above the said threads, a fusible member surrounding one end of said conductor, a contact on said closed end and means to place said contact in electrical communication with said conductor when said fusible member is heated.

6. In a socket plug having a central contact thereon, a body portion, screw threads molded integral with said body portion, a groove in said body portion traversing said threads, a recess in said body portion, an electrical conductor element having a portion thereof in said recess, a second electrical conductor having a portion connected to said contact, said portions being out of engagement and means to electrically connect said portions when said plug is heated.

7. In a socket plug, a body portion, external screw threads molded integral with said body portion, a groove in said body portion traversing said threads, a recess in said body portion, an electrical conductor element having a portion thereof in said groove, another electrical conductor element having a portion connected to a center contact member, said two electrical conductor elements being out of contact with one another, and means in said plug whereby excessive heat will cause said two elements to be electrically connected and thereby "blow" the circuit controlling fuses.

In testimony whereof, I hereunto affix my signature.

JACOB L. BLALACK.

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