

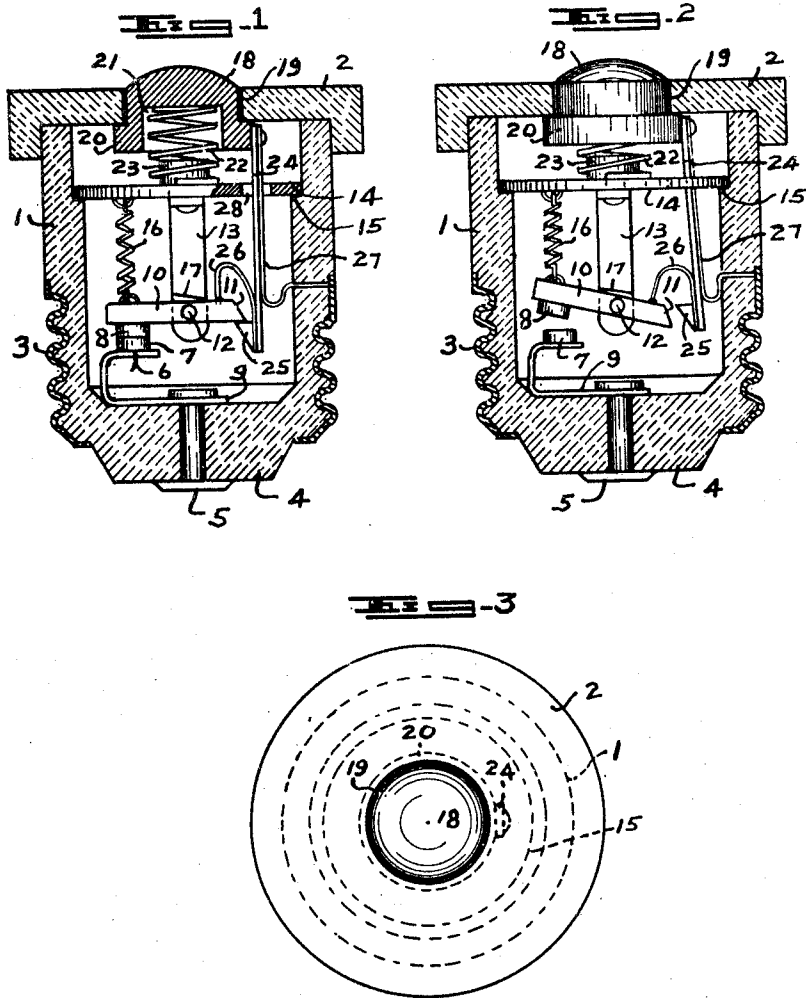
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THERMAL CIRCUIT BREAKER

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THERMAL CIRCUIT BREAKER

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1 Claim. (Cl. 200—116)

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This invention relates to an electric circuit control, and important objects and advantages thereof are to provide a circuit control of the character described, which is designed and intended to supersede a fuse plug of the conventional type commonly used in branch circuits carrying the smaller currents, which will operate automatically to break a circuit when the current strength reaches a certain predetermined value, which need not be discarded after functioning to break the circuit but may be manually reset for repeated use, which is simple in its construction and arrangement, durable and efficient in its use, positive in its action, and comparatively economical in its manufacture.

With the foregoing and other objects in view which will appear as the description proceeds, the invention resides in the novel construction, combination and arrangement of parts herein specifically described and illustrated in the accompanying drawing, but it is to be understood that changes in the form, proportions and details of construction may be resorted to that come within the scope of the claims hereunto appended.

In the drawing wherein like numerals of reference designate corresponding parts throughout the several views:

Figure 1 is a side elevational view, partly in cross section, of the improved circuit control, with the embodied mechanism in the operative position.

Figure 2 is a similar view with the mechanism in the inoperative position.

Figure 3 is a top plan view of the device.

Referring in detail to the drawing, the improved circuit control comprises a hollow plug body 1 including a top cover 2, which is fixed to the plug body by cementing or in any other suitable manner. The lower exterior portion of the plug body is surrounded by a fixed metallic thread shell 3, and the bottom 4 of the plug body carries a fixed contact pin 5 disposed centrally of the bottom.

The plug body 1 and the top cover 2 are constructed of any suitable insulating material, and the assembly of the plug body and the top cover, together with the embodied thread shell 3 and contact pin 5, provide a plug structure which has a general contour identical to the conventional type of fuse plug, and which is designed and intended to be screwed into the conventional type of electrical socket.

A thermostatically controlled switch 6 is mounted in the plug body 1, and comprises a pair of vertically opposed contact members 7 and 8.

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The lower contact member 7 is carried by a contact bracket 9 which is fixed to the contact pin 5. The upper contact member 8 is carried on the lower face of the outer end of a horizontally disposed contact bar 10. The contact bar has a tapered inner end 11 and is pivotally connected by a pivoting pin 12 to the lower end of a supporting bracket 13. The latter is secured to and depends from a supporting disk 14 which is seated upon an annular shoulder 15 formed adjacent to the upper end of the inner wall of the plug body.

A spiral compression spring 16 is connected with the supporting disk 14 and with the outer end of the contact bar 10, and normally functions to shift and hold the latter to an angular position from the horizontal to open the switch 6, as clearly shown in Figure 2. The angular shiftable movement of the contact bar is limited by a shoulder 17 formed in the supporting bracket 13.

A push button 18, having a rounded top, is mounted for vertical movement in a centrally disposed opening 19 in the top cover 2. The push button is formed with an annular flange 20 at its lower end to limit the upward movement thereof in said opening 19. The push button is provided with an inwardly opening pocket 21 for the reception of the upper end of a spiral spring 22, the lower end of which latter is seated on the supporting disk 14 and surrounds a boss 23 fixed on said supporting disk. The action of the spring 22 normally tends to force the push button to its maximum upward position.

A thermostatically actuated, bimetallic latch arm 24 is normally disposed vertically in the plug body 1, and extends through an aperture 28, provided therefor in the supporting disk 14. The latch arm 24 has its upper end fixedly secured against the flange 20 of the push button 18, and a tapered latching element 25 is secured against the inner side of the lower free end thereof, and normally engages the tapered end 11, of the contact bar 10, for holding the latter in the horizontal position against the pull of the spring 16 to maintain the switch 6 in the closed position, as shown in Figure 1. A flexible conductor 26 connects the inner end of the contact bar 10 with the lower end of the latch arm 24, and a flexible conductor 27 connects the upper end of the contact arm 24 with the thread shell 3.

When the improved circuit control is screwed into an electric socket in the manner of the ordinary fuse plug, which latter it replaces, the circuit is completed through the contact pin 5, the contact bracket 9, the closed switch 6, the contact bar 10, the conductor 26, the latch arm 24, the

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conductor 27, and the thread shell 3. Under normal conditions the switch 6 is always closed to maintain the circuit, by the engagement of the contact bar 10 by the latching element 25.

The construction of the bimetallic latch arm 24 is such that if the current strength reaches and exceeds the predetermined value, the latch arm 24 will be thermostatically actuated to release the latching element 25 from the tapered end 11 of the contact bar 10, whereby the latter will be shifted by the action of the spring 16 to open the switch 6 and thereby break the circuit.

To reclose the circuit, the push button 18 is depressed to lower the latching element 25 so that the latter will reengage the tapered end 11 of the contact bar 10. Upon release of the push button, the spring 22 will elevate the again normal latch arm and cause the latching elements 25 to reengage the contact bar and shift the latter to the normal horizontal position to close the switch 6 and thereby complete the circuit.

Due to the inherent resiliency of the latch arm 24 and to the tapered end 11 of the contact bar 10 and of the latching element 25, the reengagements of the latter with said end 11 is readily effected by snap action.

By providing the push button 18 with a rounded top as shown, the former cannot be engaged and pulled in the upward direction, and thus obviates the possibility of holding a closed circuit by exerting sufficient manual pull on the push button to prevent the normal thermostatic operation of the switch 6 to break the circuit when required for safety.

The present invention provides a most efficient device of its kind, which may be cheaply manufactured, and successfully and economically employed for the purposes and in the manner herein set forth.

What I claim is:

A circuit control of the class described, comprising the combination of a hollow plug body

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provided with a top cover, a thread shell surrounding the lower portion of said body, a contact pin secured in the bottom of said body, a shoulder formed on the interior wall of said body, a supporting disk mounted on said shoulder, a supporting bracket depending from said disk, a normally horizontally disposed contact bar having a tapered inner end pivotally connected with the lower end of said supporting bracket, a switch mounted in said body and being connected with said bar, a contact bracket connected with said pin and with said switch, a push button shiftably mounted in said cover, a spring engaging said disk and said button for normally maintaining the latter in the upward position, a bimetallic latch arm depending from said button, a conductor connecting said bar with the lower end of said latch arm, a conductor connecting the upper end of said latch arm with said shell, a tapered latching element carried at the lower end of said latch arm and normally engaging the tapered end of said bar for maintaining said switch in the closed position, said latch arm being thermostatically actuated to release said element from the tapered end of said bar, a spring connected with said disk and with said bar for shifting the latter to open said switch when said bar is released from said element, said element reengaging the tapered end of said bar to reclose said switch when said button is depressed in said cover.

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