April 14, 1931. C. WEIGAND 1,800,710

CIRCUIT BREAKER

Filed Feb. 3, 1930

FIG. 1

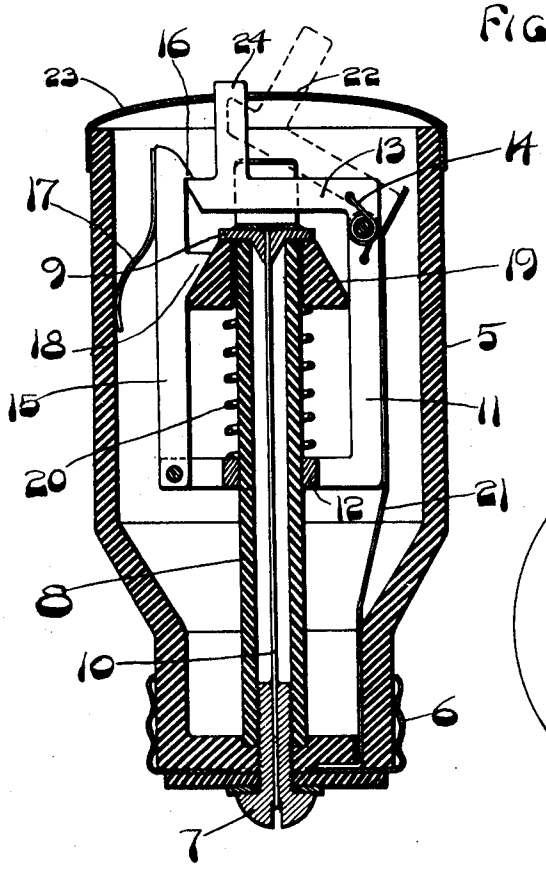


FIG. 2

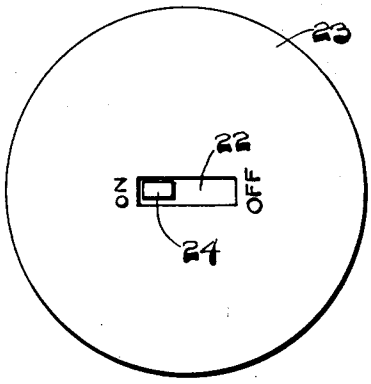
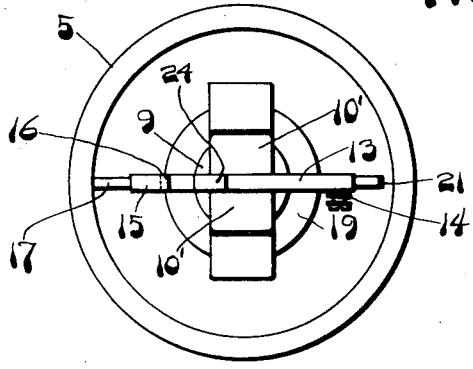


FIG. 3



Inventor

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UNITED STATES PATENT OFFICE

CARL WEIGAND, OF CINCINNATI, OHIO

CIRCUIT BREAKER

Application filed February 3, 1930. Serial No. 425,400.

This invention has for an object to produce a circuit breaker which is designed to be used in lieu of the usual or universal fuse plug with which electric fuse boxes are equipped, and especially to be used in such fuse boxes as are equipped with the screw type of plug of standard size and designed to occupy sockets of the size of lamp bulb bases.

An object of my invention is also to produce such a circuit breaker as will permit of restoration to normal conditions the moment a condition causing short circuit has been removed from the line, without having to change the entire or any portion of the circuit breaker after it has functioned to prevent damage to the line following a condition of short circuit.

These and other objects are attained in the circuit breaker described in the following specification and illustrated in the accompanying drawing, in which:

Fig. 1 is a sectional elevation of my improved circuit breaker, disclosing the breaker in the condition it occupies when set to carry the line load.

Fig. 2 is a plan view of the breaker disclosing its "on" or load carrying "set" condition.

Fig. 3 is a plan view similar to Fig. 2, but with the protecting cap or top of the breaker removed.

My breaker in preferred form has a body 5 of cup shape and made of insulating material. At the constricted closed end of the body is mounted a metal screw base 6, which forms one terminal of the breaker. This is held in position by a screw 7 which forms the opposite terminal of the breaker and is insulated therefrom in the usual manner. This screw holds a centrally located tubular rod, standard or support 8 upon and within which the vital elements of the breaker are mounted. At the top of the support a washer 9 is located and held thereon by being connected, as by soldering, with the upper end of an expansion element 10 extending from screw 7 to which it is attached. Upon and fastened to washer 9 are the spring fingers 10′, of the contact terminating the upper end of element 10. This element 10 is preferably a wire of such material as German silver which will heat and expand readily as to length when forced to carry a load above normal for which the line is designed.

Upon support 8 the bracket 11 is fastened as at a point 12, so that a knife 13 may be pivoted thereto for movement between the fingers of contact 10′ as shown in Fig. 1. This knife is controlled by a spring 14 which would hold it away from contact 10′, as indicated in dotted lines in Fig. 1, were it not for latch keeper or trigger 15 which is pivoted at its lower end to bracket 11 and has a detent 16 which holds knife 13 in engagement with contact 10′ as shown. A spring 17 holds trigger 15 yieldingly in position to close the circuit. However, there is a lug 18 on trigger 15 which engages a conical collar 19 loosely mounted on support 8, which functions movement of the knife 13 to dotted line position and to disengage the knife for breaking the circuit. This movement at trigger 15 is caused by upward movement of collar 19 in response to pressure of a spring 20 when the expansion element 10 is heated. A metal connection 21 which is connected with bracket 11, connects with screw base 6 to complete the circuit therefrom, through bracket 11, knife 13, contact 10′, element 10 and screw 7. A slot 22 in closure cap 23 of the breaker is occupied by extension 24 of knife 13, whereby, in one position, the "on" position of the breaker will be indicated, and, in the opposite position, the "off" condition will be shown. Of course, this extension 24 will also permit the breaker to be reset by merely moving said extension manually from "off" to "on" position as soon as the cause of a short circuit has been removed from the line.

Having thus described my invention what I claim is:

1. A circuit breaker comprising a shell, terminals at the base of the shell, a support within the shell, a heat expansible element within the support, a collar movable on the support, a knife pivoted on the support, a contact on the support to be engaged by the knife, a trigger pivoted on the support to

retain the knife in contact-engaged position, a spring to move the knife from the contact when released by movement of the trigger, and means on the support to cause the collar to release the trigger, functioned by expansion of the element upon passage of excess current through the element.

2. A circuit breaker comprising a shell of insulating material, terminals at the base of the shell, a support of insulating material within the shell and held therein by one of the terminals, a heat expansible metal element within the support and connected with one of the terminals, a collar of insulating material movable on the support, a knife of metal pivoted on the support, a metal contact on the support to be engaged by the knife, a metal trigger pivoted on the support to retain the knife in contact-engaged position, a spring to move the knife from engaged position with the contact when it is released by the trigger, and a spring on the support to move the collar upon expansion of the element, said collar and trigger being associated whereby movement of the collar will release the trigger.

In witness whereof, I affix my signature.

CARL WEIGAND.