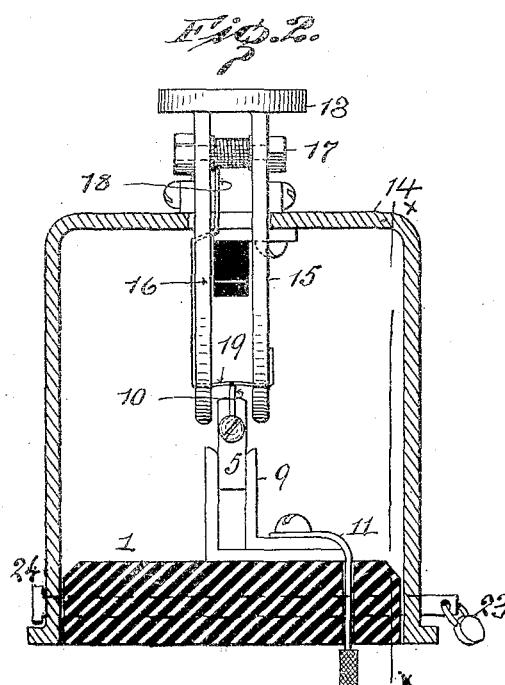
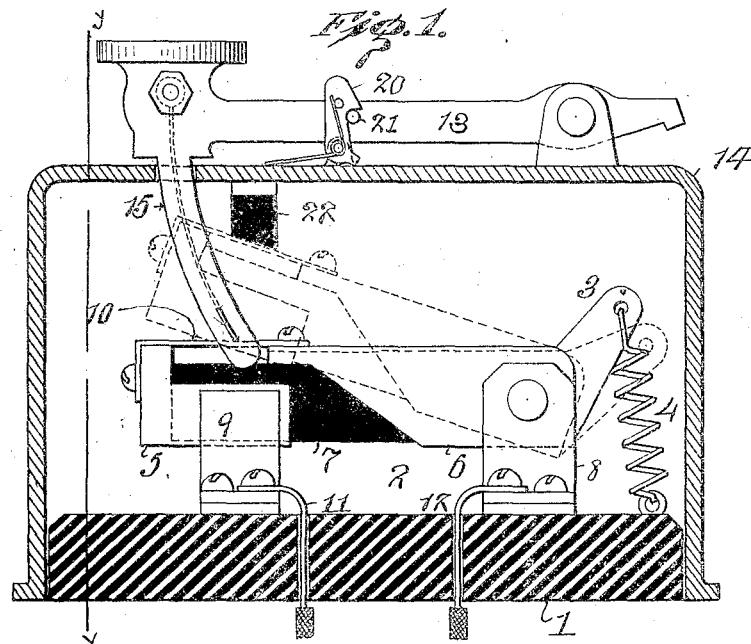


T. E. MURRAY & A. V. A. McHARG.  
PROTECTIVE DEVICE FOR ELECTRIC CIRCUITS.  
APPLICATION FILED DEC. 26, 1913.

1,103,993.

Patented July 21, 1914.



Witnesses:  
C. S. Ashley  
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# UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY AND ARTHUR V. A. MCHARG, OF NEW YORK, N. Y.; SAID MCHARG  
ASSIGNOR TO SAID MURRAY.

## PROTECTIVE DEVICE FOR ELECTRIC CIRCUITS.

1,103,993.

Specification of Letters Patent. Patented July 21, 1914.

Application filed December 26, 1913. Serial No. 808,775.

To all whom it may concern:

Be it known that we, THOMAS E. MURRAY and ARTHUR V. A. MCHARG, citizens of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Protective Devices for Electric Circuits, of which the following is a specification.

10 The invention is a protective device for electric circuits, embodying the principle set forth in the pending application of Arthur V. A. McHarg for Letters Patent, Serial No. 803,521, filed November 28, 1913.

15 A pivoted switch member is held in circuit closing position against the resiliency of a retracting spring, by means of a stop of material destructible by heat which in the present embodiment of our invention is

20 supported upon a pivoted lever. Upon the occurrence of an overload current, said member becomes heated sufficiently to fuse or destroy the said stop, whereupon the switch member is released and being retracted by

25 the spring opens the circuit.

There are certain conditions in the commercial sale of current where the consumer enters into a contract which limits him to current of certain strength at a particular 30 period of time. In such event it is desirable to control his use of the protective device aforesaid, so that after an overload has released the switch by destroying the stop aforesaid, he can not manually reclose that 35 switch and then by fastening it in position avail himself of stronger current which at a different period may be present on the circuit.

In the accompanying drawings Figure 1 40 is a vertical longitudinal section of our device on the line  $x, x$  of Fig. 2. Fig. 2 is a transverse section on the line  $y, y$  of Fig. 1.

Similar numbers of reference indicate like parts.

45 1 is a base, preferably of porcelain or other insulating material.

2 is a movable switch member having an arm 3, to which is attached a helical retracting spring 4. As here shown, said switch 50 member is a lever made of two metal parts 5, 6, with an intervening block 7 of insulating material secured to both. One of these parts (6) is pivoted in fixed clips 8. The other part 5 co-operates with fixed contact 55 clips 9. The parts 5, 6 are connected on the

upper side of the lever 2 by a wire 10, which is separated by an air space from the insulating block 7. Circuit terminals 11, 12 are respectively connected to clips 9 and 8, so that when the lever 2 is in circuit closing 60 position, the wire 10 is traversed by the current, and is heated thereby. Said wire is to be of such resistance or otherwise to be so constructed as to become heated when the circuit is overloaded.

65 13 is a lever pivoted on top of the metal case 14. Said case completely covers the base 1 and parts thereon, and may be locked in place by any suitable means, as for example a bar 24 headed at one end inserted through the base and both walls of the case, and having an opening in its opposite projecting end to receive a seal fastening 23. Said lever supports a destructible filament, as hereinafter explained and near its free 70 end is bifurcated, said bifurcations being downwardly extending curved arms 15, 16 which enter the case 14 through an opening in the upper wall thereof. Carried by said arms is a reel 17, upon which is wound a 75 filament 18 of material fusible or destructible by said switch member when heated as aforesaid. Said filament extends downwardly on the inner side of arm 16, passes through an opening in said arm and extends along the outside thereof, then passes through openings in both arms, thus bridging the recess or space between them and is finally secured on arm 15, Fig. 2. The 80 bridge portion 19 lies upon and in contact with the wire 10 on lever 2. In order to prevent lever 13 from being lifted by spring 4, we provide a spring latch 20 pivoted on case 14 which engages a stud 21 on the side 85 of lever 13.

90 The operation is as follows: The parts remain in the position shown in the drawings until an overload current comes on the circuit. This causes heating of wire 10 and consequent fusion or destruction of filament 18. Lever 2 is caused by spring 4 to then rise between the arms 15, 16 of lever 13 and until it strikes the stop 22 of insulating material on the lower side of the top wall of case 14, as shown in dotted lines, Fig. 1, 95 thus breaking the circuit. As the filament 18 has been destroyed, it is obviously impossible to return lever 2 to its normal circuit closing position by operating lever 13 until filament 18 has been restored. This 100 105 110

may be done by raising the arms 15, 16 out of the case, latch 20 being first released, unwinding new filament from reel 17, passing the end of said filament, as before, through the openings in both arms and resecuring it. The new filament 18 then engages wire 10, and by pushing down lever 13, lever 2 may now be returned to normal position and secured, as before, by means of latch 20.

10 We claim:

1. A movable switch member adapted to be heated by an overload current in the circuit including said member, means destructible by said heated member for retaining said member in circuit closing position, and said member in circuit closing position, and means for supporting said retaining means and moving the same into and out of coöperation with said switch member.

2. A movable switch member adapted to be heated by an overload current in the circuit including said member, means destructible by said heated member for retaining said member in circuit closing position, an in-  
25 closing case for said parts, and means entering said case through an opening in a wall thereof for supporting said retaining means and moving the same into and out of coöperation with said switch member.

3. A movable switch member adapted to be heated by an overload current in the circuit including said member, a movable support having a recess, and a filament destructible by said heated member bearing  
35 thereon and bridging said recess.

4. A movable switch member adapted to be heated by an overload current in the circuit including said member, a movable support having a recess, a rotatable reel on said  
40 support, and a filament destructible by said heated member bearing thereon, wound on said reel and bridging said recess.

5. A pivoted switch member adapted to be heated by an overload current in the circuit including said member, resilient means for retracting said member, a pivoted lever disposed above said switch member, parallel arms depending from said lever and receiving said switch member between them, a  
45 body of material destructible by said heated member extending between said arms and across said member, and means for preventing the retraction of said switch member by said resilient means when said destructible  
50 body is in contact with said member and when said member is in circuit closing position.

6. A movable switch member adapted to be heated by an overload current in the cir-

cuit including said member, resilient means 60 for retracting said member, a case inclosing said parts, a support having a recess at one end and slideable in an opening in a wall of said case, and a filament destructible by said heated member on said support, bridging 65 said recess and bearing upon said member.

7. A movable switch member adapted to be heated by an overload current in the circuit including said member, resilient means 70 for retracting said member, a case inclosing said parts, a lever pivoted on said case having a bifurcated end entering said case through an opening in a wall thereof, and a filament destructible by said heated member extending between the bifurcations of 75 said lever and bearing upon said member.

8. A movable switch member adapted to be heated by an overload current in the circuit conductor including said member, resilient means for retracting said member, a 80 support, and a body of material destructible by heat on said support and engaging said conductor: the said support being movable to carry said body into contact with said conductor when said switch member is in 85 circuit closing position.

9. A movable switch member adapted to be heated by an overload current in the circuit conductor including said member, resilient means for retracting said member, a 90 support, and a body of material destructible by heat on said support and engaging said conductor: the said support being movable to carry said body into contact with said conductor and thereby to move said switch member into and to retain the same in 95 circuit closing position.

10. A movable switch member adapted to be heated by an overload current in the circuit conductor including said member, resilient means for retracting said member, a case inclosing the aforesaid parts, a support on said case and entering the same through an opening in a wall thereof, and a body of material destructible by heat on said support and engaging said conductor: the said support being movable in said opening to carry said body into contact with said conductor and thereby to move said switch member into and retain the same in circuit 110 closing position.

In testimony whereof we have affixed our signatures in presence of two witnesses.

THOMAS E. MURRAY.

ARTHUR V. A. McHARG.

Witnesses:

MAY T. McGARRY,  
GERTRUDE T. PORTER.