

W. A. HEINRICH.
CUT-OUT SWITCH.
APPLICATION FILED MAY 17, 1918.

1,394,087.

Patented Oct. 18, 1921.

Fig. 1

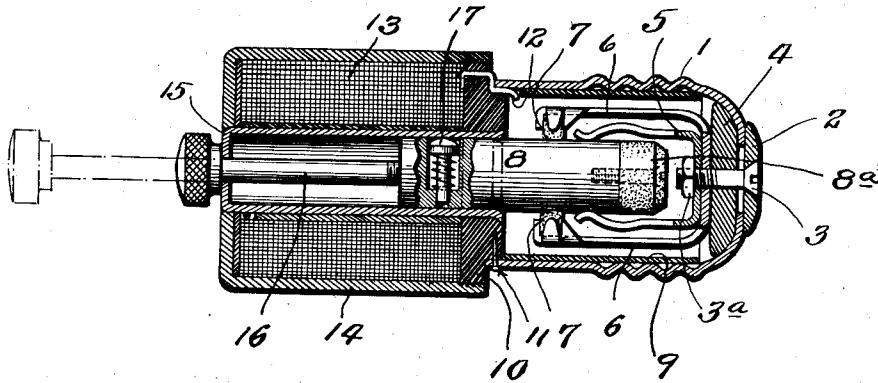


Fig. 2

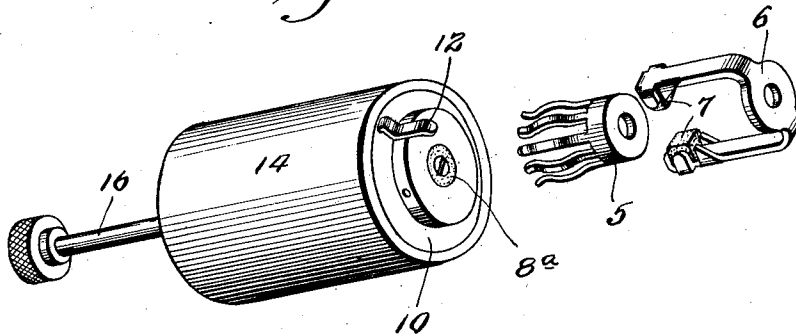
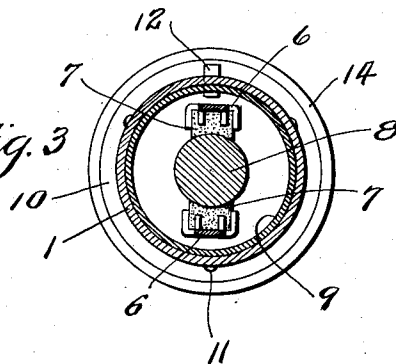


Fig. 3



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UNITED STATES PATENT OFFICE.

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CUT-OUT SWITCH

1,394,087.

Specification of Letters Patent.

Patented Oct. 18, 1921.

Application filed May 17, 1918. Serial No. 235,172.

To all whom it may concern:

Be it known that I, WALTER A. HEINRICH, a citizen of the United States, residing at city of St. Louis, State of Missouri, have invented a certain new and useful Improvement in Cut-Out Switches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal sectional view through my improved cut out switch.

Fig. 2 is a detail view of the parts separated.

Fig. 3 is a cross sectional view.

This invention relates to a new and useful improvement in cut out switches, the object being to provide a simple and cheap device which will take the place of an ordinary fuse and enable the user of current to establish the circuit without the necessity of putting in a new fuse. The cut out switch has a magnet which is in the main circuit, and in the event of a short-circuit or overload, will energize the solenoid magnet which will operate the switch to cut out the circuit temporarily, whereupon the user of the current may close the switch and reestablish the circuit.

In the drawings, 1 indicates the casing or housing of a plug, such as is usually employed in a lamp socket, which casing is made up of metal and serves as one terminal of the circuit. This casing or housing is provided with an insulation button 2 at its outer end having a contact screw 3 which contact screw forms the other terminal of the circuit and by means of a nut 3^a holds in position the insulation washer 4 against which is held a spring contact 5 in the form of a thimble having yielding prongs which normally bear against the core or armature 8 of the solenoid magnet and serve as a guide for the inner end thereof.

6 indicates a contact bearing member carrying carbon brushes 7, which cooperate with the carbon member 8^a on the end of the solenoid magnet. These form the secondary contacts and are provided to prevent injury to the main contacts.

9 is an insulation sleeve arranged within the casing 1 serving to space the said casing in its assembled relation to an insulation

head 10 to which the casing 1 is secured by a suitable fastening means 11, there being a spring contact 12 connected to one end of the coil of the solenoid magnet 13. This solenoid magnet is incased by an insulation housing 14 and is wound upon a hollow spool or thimble 15, which is flanged or turned outwardly at its inner end over the insulation head 10 and is bent inwardly at its outer end so as to provide a bearing for a push rod 16 connected to the armature 8 of the solenoid magnet. This armature is provided with a transverse cavity having a laterally movable, spring-pressed plunger 17 which serves to frictionally hold the armature in its different positions and maintains a good electrical contact between the thimble 15 and the armature 8. The winding of the solenoid magnet is such that in service, for a given load, it will not be sufficiently strong to move inwardly the armature or core thereof, but in the event of a short-circuit or overload, the armature will operate the core, causing the same to move to the dotted line position shown in Fig. 1, in which position the circuit will be broken. It is only necessary for the operator to push the plunger in to reestablish the circuit, and when this is done, the necessity for replacing a fuse, which might have been blown out, is obviated.

Among the advantages of my construction is the simplicity of application of the device which is intended and designed to fit in ordinary lamp sockets, and also the cheapness of cost and the certainty with which the solenoid will be operated at a predetermined maximum. It is particularly advantageous as a control in buildings where a common load is contracted for, an excess of which will be immediately determined by the pull of the solenoid which will cut off the circuit until such time as the load is reduced and the strength of the solenoid weakened to such an extent that it will not operate the switch.

I claim:

1. A cut-out switch comprising a metallic plug adapted to be connected to the main lines, a solenoid carried by said plug, a plunger adapted to be actuated by said solenoid when the current exceeds a predetermined strength, switch contacts carried by said plug and adapted to cooperate with said plunger to complete the circuit of said

solenoid, said switch contacts being provided with auxiliary contacts of low electrical conductivity adapted to break contact with the plunger subsequent to the main switch contacts.

2. A cut-out switch for electrical circuits comprising a metallic plug, a solenoid supported by said plug and having one terminal connected thereto, a solenoid core in electrical contact with the other terminal of said solenoid and adapted to be actuated by said solenoid, main contacts carried by said plug and insulated therefrom, said contacts cooperating with said core to make and break the circuit, secondary contacts having contact members of resistance material cooperating with the first-mentioned contacts and adapted to break contact with said core, subsequent to the main contacts.

3. A cut-out switch comprising a casing adapted to be inserted in the main line circuit, a solenoid supported on said casing and having electrical connection therewith, a plunger in electrical contact with said solenoid and arranged to be actuated by it, main switch contacts carried by said casing and adapted to normally maintain electrical contact with said plunger, secondary switch contacts of low electrical conductivity carried by said casing and cooperating with said plunger to break the circuit subsequent to the main contacts.

4. A cut-out switch comprising a metallic plug, switch contacts carried by said plug and insulated therefrom and provided with auxiliary contacts of resistance material, said plug and switch contacts being adapted to be detachably interposed in the main line circuit, a solenoid supported by said plug

and in electrical connection therewith, a solenoid core having electrical connection with said solenoid and provided with a contact member of resistance material, said core normally maintaining contact with the main contacts, whereby said solenoid is in series with the main circuit, and adapted to be actuated by said solenoid upon an excess load in the circuit to break said circuit, said auxiliary switch contacts cooperating with the core contact member to break the circuit, subsequent to the main contacts.

5. A cut out switch comprising a magnet having an insulated head, a metallic plug secured to said head, electrical contacts secured to said housing and insulated therefrom, an electromagnet adjacent to said head, a plunger arranged within the magnet, a friction element carried by said plunger, and means connected to said plunger whereby the same may be manually restored after being electrically operated.

6. The combination of an electromagnet, of a plunger frictionally arranged therein and carrying a resistance block at its end, means for manually operating said plunger, a metallic plug secured to said magnet, and contacts mounted on said plug and cooperating with the plunger, said contacts serving to support and guide the plunger in its movement.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this 14th day of May, 1918.

WALTER A. HEINRICH.

Witnesses:

M. P. SMITH.
N. A. HANDEL.