March 4, 1930. A. B. ESSELTINE 1,749,070

ELECTRIC CIRCUIT SAFETY LOCK

Filed Dec. 31, 1927

Fig. 1

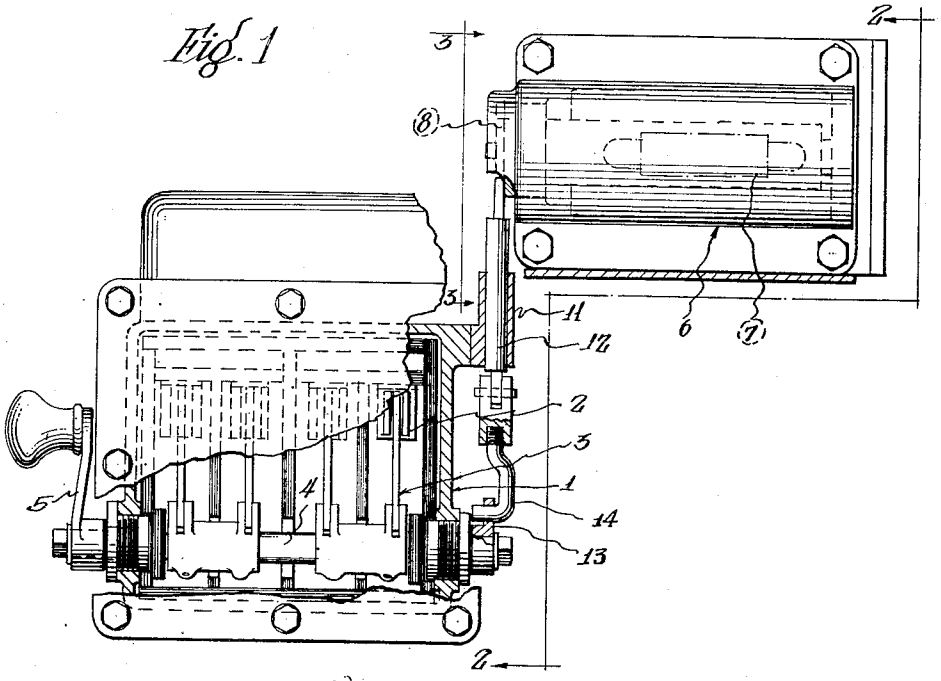


Fig. 2

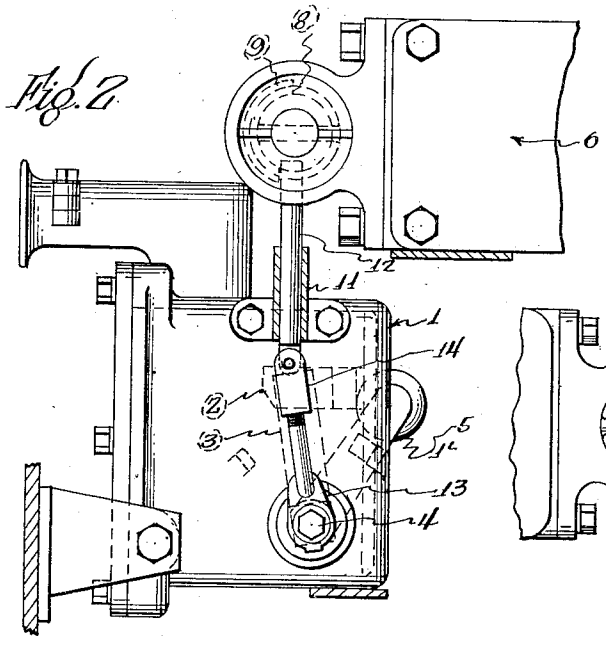
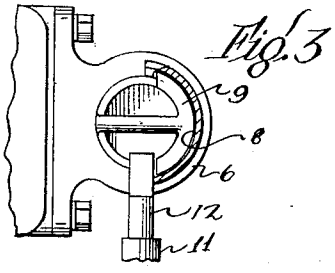


Fig. 3



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UNITED STATES PATENT OFFICE

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ELECTRIC-CIRCUIT SAFETY LOCK

Application filed December 31, 1927. Serial No. 243,358.

My invention relates to electric circuits involving removable circuit connections such as overload fuses and has for its general object the provision of means whereby a removable circuit connection such as a fuse cannot be removed or replaced while the circuit is otherwise closed, so that the danger involved in removal or replacement of the circuit connection while the circuit is otherwise closed is obviated, the invention having particular reference to safety in underground mining where explosive gases are often encountered.

The invention will be more readily understood by reference to the accompanying drawings, in which:

Figure 1 is a front elevation of electric circuit means embodying my invention with parts broken away and in section;

Figure 2 is an end elevation of the same from the line 2—2 of Figure 1 and with parts broken away and in section;

Figure 3 is a partial view from the line 3—3 of Figure 1.

Like characters of reference indicate like parts in the several views.

Referring to the drawing, 1 designates a casing enclosing therein an electric switch including stationary contacts 2 and movable contacts 3 secured upon a pivoted shaft 4 for angular movement into and out of engagement with the contacts 2. The shaft 4 extends outwardly of the casing with both ends thereof, and an operating handle 5 is secured on one of the shaft ends for the manual operation thereof to open and close the switch.

Mounted in fixed relation with the casing 1 and disposed upwardly thereof adjacent one end of the same is an enclosed electric fuse mounting 6 provided with an end opening for the insertion and removal of a suitable electric fuse 7 therein. The fuse mounting 6 and the fuse 7 are of a well known construction and require no further description except to note that the fuse is locked in the fuse mounting against accidental removal by means of a semicircular internally grooved formation 8 on the fuse mounting which is engaged and disengaged with a semicircular flange 9 on the adjacent end of the fuse 7 by angular movement of the fuse when in the mounting. See Figure 3.

Mounted for longitudinal movement in a board bracket 11 on the switch casing 1 is a vertically disposed rod 12 the upper end of which is flattened and adapted to move over the end opening of the mounting 6 and the end of the fuse 7 therein to lock the fuse against removal in the mounting. A crank member 13 is secured on the end of the shaft 4 opposite that on which the handle 5 is secured and underlying the rod 12, and a connecting link 14 has its ends pivotally connected respectively with the outer end of the crank member 13 and the lower end of the rod 12 whereby the rod 12 is actuated vertically with pivotal movement of the shaft 4, the arrangement being such that when the switch is closed the upper end of the rod overlies the adjacent end of the fuse mounting and fuse therein and locks the fuse in the mounting, and when the switch is open the rod 12 is in a lower position with the upper end thereof disposed below the end opening of the fuse mounting and fuse therein, thus unlocking the same for removal or replacement of the fuse.

The switch being in circuit with the fuse mounting, the fuse 7 can only be removed or replaced when the circuit is in otherwise open condition with the result that arcing is prevented in the removal or replacement of the fuse in the fuse mounting. While I have shown herein and described one form of my invention, I do not wish to be limited to the precise details of construction or arrangement of parts herein shown and described except as specifically limited in the appended claims.

I claim as my invention:

1. In a device of the character described, the combination with an enclosed electric switch including a movable switch member, of an enclosed electric fuse mounting provided with an end opening for the insertion and removal of an electric fuse therein, and means operated by said switch member including a locking member movable over said end opening to prevent removal of a fuse in

said mounting when said switch member is moved to closed circuit position.

2. In a device of the character described, the combination with an enclosed electric switch including an angularly movable switch member, of an electric circuit connection mounting, a locking member movable into and out of position to prevent removal of an electric circuit connection on said mounting, and connecting link and crank means for operating said locking member into and out of said position with opposite movements of said switch member.

3. In a device of the character described, the combination with an enclosed electric switch including an angularly movable switch member, and enclosed electric fuse mounting provided with an end opening for the insertion and removal of a fuse therein, a slidably mounted locking member movable over said end opening to prevent the removal or insertion of a fuse in said mounting, and connecting link and crank means for operating said locking member into position over said end opening with circuit closing movement of said switch member and for moving said locking member out of said position with circuit opening movement of said switch member.

Signed at Chicago, in the county of Cook and State of Illinois, this 28th day of December, A. D. 1927.

ALFRED B. ESSELTINE.