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H. J. HAMMERLY

2,177,249

ELECTRIC SWITCH

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Fig. 1.

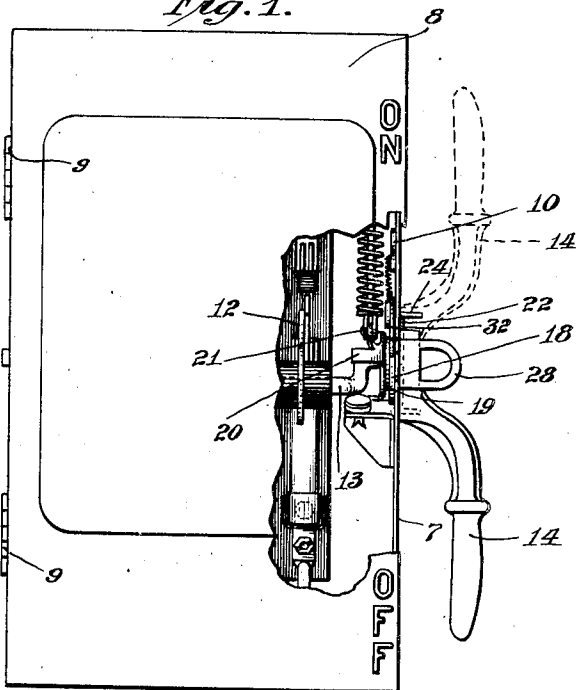


Fig. 2.

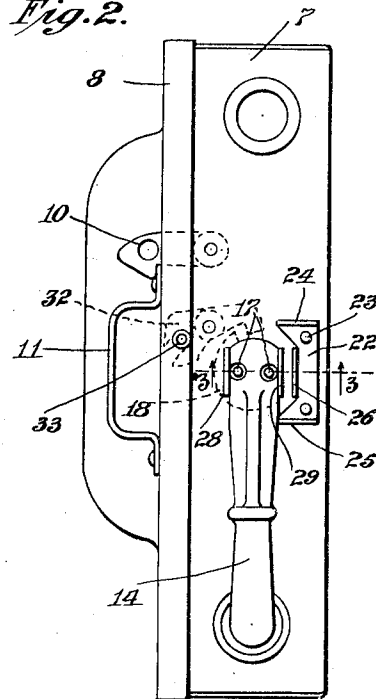


Fig. 3.

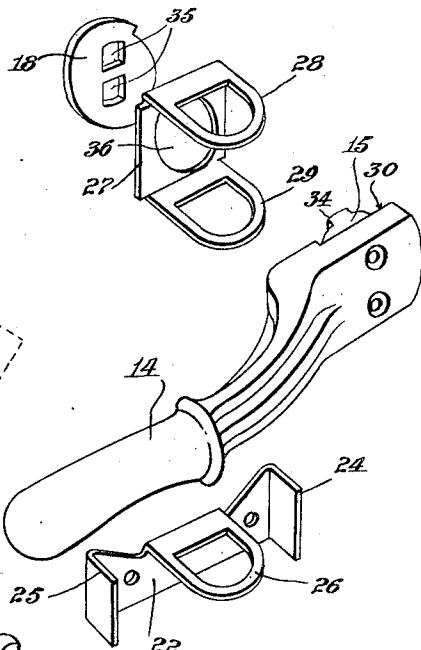
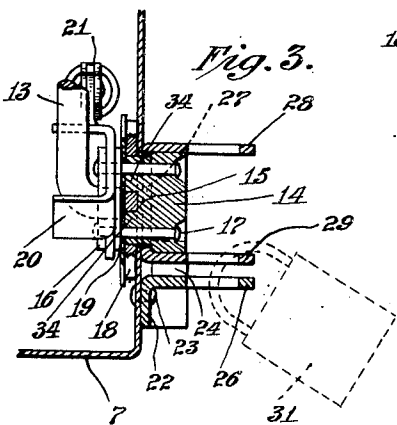
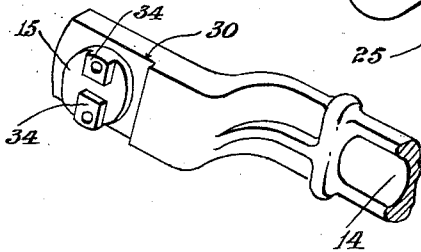


Fig. 4.

Fig. 5.



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UNITED STATES PATENT OFFICE

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ELECTRIC SWITCH

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7 Claims. (Cl. 200—50)

My invention relates particularly to enclosed or safety type switches and has for its main object to provide convenient and satisfactory means for padlocking or sealing the actuating handle either in the "off" or "on" position. Another object is to rigidly and positively lock the handle to the correlated locking and interlocking members.

In its preferred form the invention contemplates the use of a U-shaped anchorage member fitted to the pivoted end of the handle and a combined stop and anchorage member secured to the wall of the box or switch receptacle adjacent the pivot of the handle and the crank shaft.

Fig. 1 is a front view of a switch structure embodying one form of my invention, part of the cover being broken away to disclose part of the interior switch mechanism.

Fig. 2 is a side view of the same.

Fig. 3 is a fragmentary section showing the handle and the anchorage lugs on a large scale.

Fig. 4 is an exploded perspective view of the handle and the stops and anchorage lugs.

Fig. 5 is a perspective view of the rear of the hub end of the handle.

The box body 7 has a cover 8 which is hinged at 9 and may be provided with the usual latch 10 and any suitable form of interlock and a grip member 11 to facilitate opening and closing the cover.

The switch mechanism per se may be of any suitable type, for instance with a hinged knife blade 12 and an operating crank 13 inside the box.

The actuating handle 14 on the outside of the box has a bearing portion 15 supported in an opening in the side wall concentric with the end of the crank shaft. This bearing together with discs 16, 18 and 19 constitutes the hub of the actuating mechanism, the parts of which are held together and secured to the handle by screws or rivets 17. The disc 18 is larger in diameter than the bearing 15 so as to overlap the rim of the bearing opening. The end of the crank shaft extends into and has a bearing in the hub structure as shown in Fig. 3.

The invention is preferably applied to switches having some suitable form of quick make and quick break mechanism such as the oscillator 20 and the spring pressed throwing member 21. The oscillator 20 is mounted between the discs 16 and 19 and has a lost motion connection directly or indirectly with the connector rivets 17 and a lost motion connection with the arm of the crank shaft 13 as is common in switches of this character.

The switch is actuated in a well known manner by throwing the handle 14 from the position shown

in full lines (Fig. 1) to the position shown in dotted lines or vice versa.

A plate 22 is secured to the side wall of the box adjacent the hub of the handle and provided with projecting stops 24, 25 to serve as abutments for the handle. Between these stops is an anchorage lug 26 integral with the plate 22 and projecting at right angles to the side wall of the box.

Attached to the handle is a U-shaped anchorage member preferably formed of sheet metal with a base 27 and lugs 28 and 29. The base 27 of this member is located in a recess 30 formed in the inner side of the handle and the lugs 28, 29 overlap the edges of the handle. The rivets 17 hold the parts of the hub and the anchorage member together. The lugs 26, 28 and 29 are preferably made large enough to accommodate a number of padlocks 31 or other sealing devices so that the switch mechanism may be secured either in the "off" or "on" position, and that it may require the concurrent action of a number of people to actuate the switch.

The switch is also preferably provided with a suitable form of interlock between the cover and the actuating mechanism as is customary with switches of this type. This preferably takes the form of the locking cam-like member 18 coacting with the latch 32 which in turn interlocks with the pin 33 carried by the cover as shown in Patent No. 1,310,163 dated July 15, 1919.

As considerable strain may be brought to bear on the locking disc 18, I provide extension lugs 34 on the bearing hub part 15 which project into the openings 35 in the disc and thus take the strain independently of the rivets 17.

In assembling the parts the bearing hub part 15 and the lugs 34 are thrust through the opening 36 in the plate 27 so that the plate is properly positioned on the end of the handle. The bearing portion 15 is then inserted through the wall of the box and the lugs 34 are inserted in the openings 35, 35 in the interlocker disc or plate 18. The parts are then connected by means of rivets such as 17 and all of the operating strain on the plate 18 and the anchorage plate 27 is taken up independently of the rivets.

I claim:

1. In an electric switch, a box, switch mechanism within the box, an operating handle pivoted in a wall of the box, a plate secured to said wall adjacent the pivot of the handle and having stop shoulders for the handle at opposite ends and an intermediate anchorage lug, and two anchorage lugs secured to the handle adjacent its pivot and adapted to be alternately moved to register with

the lug of said plate as the handle is moved to "off" or "on" position.

2. In an electric switch, a box, switch mechanism within the box, an operating handle pivoted in a wall of the box, a combined stop and anchorage lug secured to said wall adjacent the pivot of the handle, a U-shaped member secured to the inner surface of the handle adjacent its pivot and having two integral outwardly projecting anchorage lugs adapted to be alternately moved so as to register with the lug of said plate.

3. In an electric switch, a box, switch mechanism within the box, an operating handle pivoted in a wall of the box, a combined stop and anchorage lug secured to said wall adjacent the pivot of the handle, a U-shaped sheet metal member secured to the handle adjacent its pivot and having two integral anchorage lugs adapted to be alternately moved so as to register with the lug of said plate as the handle is moved to "off" or "on" position.

4. In an electric switch, a box, switch mechanism within the box, an operating handle pivoted to a wall of the box, a plate secured to said wall adjacent the pivot of the handle and having stop shoulders for the handle at opposite ends and an intermediate anchorage lug, a U-shaped member secured to the handle adjacent its pivot and having two anchorage lugs adapted to be alternately moved so as to register with the lug of said plate when the handle is moved to the "off" or "on" position.

5. An enclosed switch having a box with a bearing opening in one of its stationary walls, switch actuating means including an external handle having an integral hub support in said bearing opening and integral extensions projecting from said hub inside of the box, a cover for the box, and interlocking means for the cover including a

perforated locking disc mounted on said hub extensions inside the box, a perforated disc-like member adjacent the locking disc and rivet-like means passing through the perforations in the discs and through the extensions on the handle to secure the discs in position.

6. The combination of a switch box having a bearing opening in one wall with an external handle having a hub rotatably supported in said opening and an extension eccentric of the axis of the bearing opening projecting from said hub beyond the inner wall of the box, a perforated actuating disc mounted on said eccentric extension in the box so that it rotates with said handle and its hub, an inner perforated disc adjacent said actuating disc and a rivet extending transversely through said hub, said extension, said actuating disc and said inner disc and holding said parts together laterally free of shearing stress, said eccentric extension withstanding substantially the entire rotative stress between the handle hub and the actuating disc.

7. In an enclosed switch, a box having a bearing opening in one of its stationary walls, switch actuating means including an external handle having an integral hub supported in said bearing opening and integral extensions projecting from said hub inside of said wall, a cover for the box, interlocking means including a perforated locking disc mounted on said extensions inside the box, an inner perforated disc-like member at the inner face of said locking disc and fastening devices extending through the extensions on said handle and through the perforations in said discs to secure the discs in position, said extensions taking up substantially the entire rotative operating stress between said handle and said locking disc.

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