

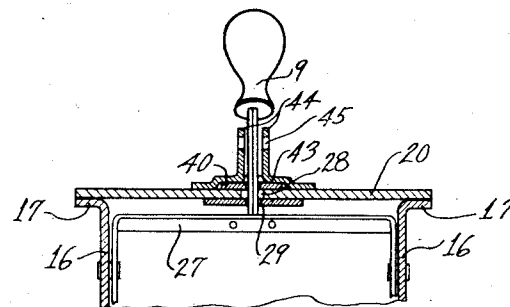
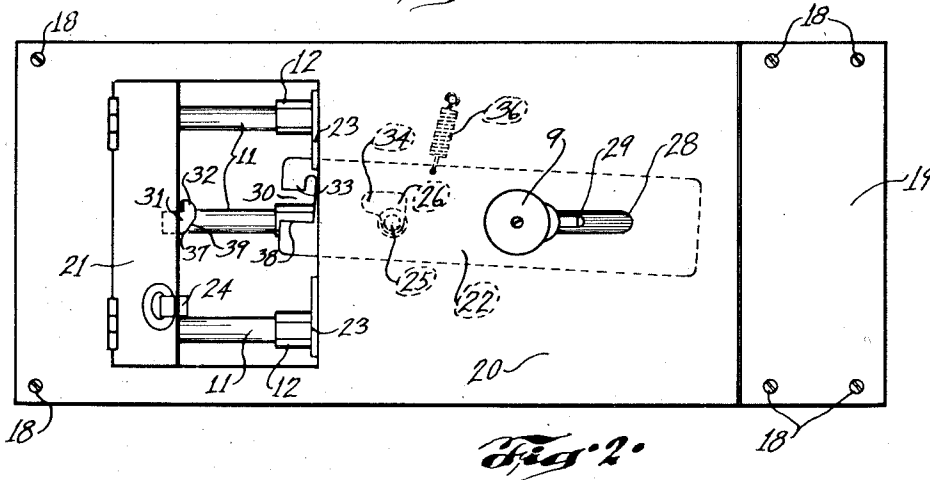
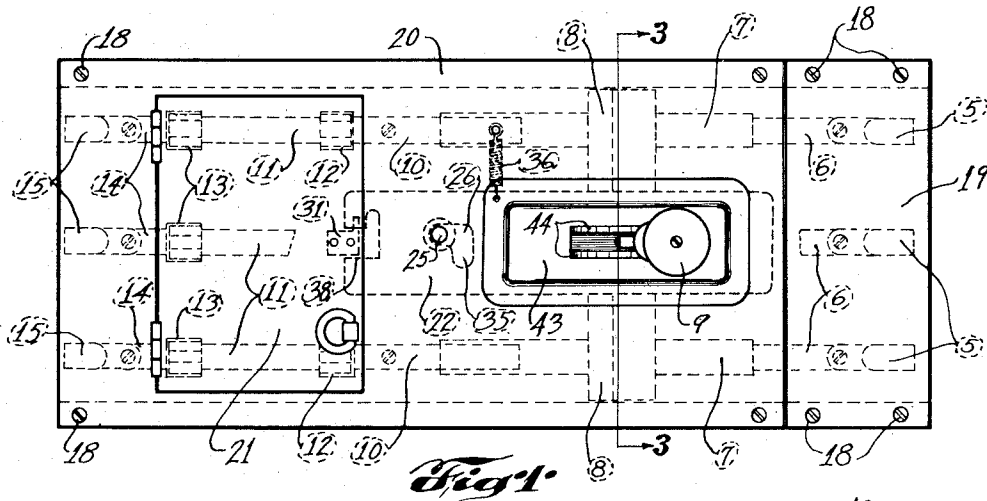
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H. M. STIEGLITZ

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SWITCH INCLOSURE

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Inventor
Henry M. Stieglitz

By

Eilert Schaubert
Attorneys

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SWITCH INCLOSURE

Henry M. Stieglitz, St. Louis, Mo., assignor to
Frank Adam Electric Co., St. Louis, Mo., a cor-
poration of Missouri

Original application February 14, 1930, Serial
No. 428,368. Divided and this application Au-
gust 14, 1931, Serial No. 557,091

8 Claims. (Cl. 200-50)

My invention relates to improvements in switch inclosures, and more particularly to improvements in latching means for a door of a fuse compartment, adapted to prevent personal contact with live switch parts. This invention forms a division of the original subject matter of my patent application for Brush-type safety switches, Serial No. 428,368, filed February 14, 1930.

An object of my invention is to provide, in connection with inclosed fuse switches, an improved latching mechanism, or interlock for the fuse door which precludes access to the fuse compartment when the switch is in closed position.

Another object of my invention is to provide a fuse-door latching device operatively associated with the switch mechanism, whereby the opening of the switch is prerequisite to the opening of the fuse door which, when opened, results in the switch being effectually locked in open position.

A further object of my invention is to provide an automatic latching device having the above recited characteristics, which is simple and economical of manufacture.

Other objects and advantages will appear from the following description and accompanying drawing illustrating a preferred embodiment of my invention, Fig. 1 of which is a plan view of an inclosed switch equipped with the device of my invention, the fuse-door being shown disposed in latched position; Fig. 2, similar to Fig. 1, shows the fuse door and switch actuating handle in open position, the latter being locked to prevent closure of the switch, and Fig. 3 is a fragmentary section taken along line 3-3 of Fig. 1. For purposes of clearness, certain elements appearing in Figs. 1 and 3 have been omitted in Fig. 2.

In Fig. 1, represented by dotted lines, are shown the essential elements of a three-pole, brush-type switch. Thus, arranged near one end of the switch structure for connection with a power circuit are terminal lugs 5, secured to flat conductor strips 6, the inner portions of which provide contact surfaces for brush-type switch blades 7. These blade members are carried by a swivel frame 8, from which they are electrically insulated, which frame, extending crosswise of the blades, is adapted to be rocked upon actuation of the switch handle 9, to effect opening and closing of the switch. When the switch is in closed position, a circuit is adapted to be completed through the strips 6, and opposing conductor strips 10, the ends of which lie in a plane above the plane of the strips 6. The brush blades 7 are thereby adapted to make contact, at one end, with the

upper surfaces of the strips 6, and at the other, with the under surfaces of the strips 10.

Spaced apart from the switch proper are fuses 11, disposed in fuse clips 12 on the conductors 10, and fuse clips 13 on conducting strips 14, which latter strips are provided with terminal lugs 15 for connection with wires forming distribution circuits. Obviously, when the switch is installed in the manner intended, power being delivered to the assembly at the switching end and discharged from the fuse end, opening of the switch renders the fuses dead, so that they may then be handled without danger. The means hereinafter described absolutely prevent personal contact with the fuses and associated elements when such are energized through the switch.

The entire switch and fuse assembly is disposed within a metal casing, the side walls 16 of which (Fig. 3) are provided with outwardly turned flanges 17 to which a removable cover plate is adapted to be secured as by means of screws 18, or the equivalent. The cover plate by preference is formed in two sections, the smaller portion 19 of which overlies the terminal lugs 5 and is adapted to be removed independently of the portion 20 which forms a closure for the switch mechanism and fuses. A door 21 is provided in the cover plate through which access to the fuses is obtained to permit of their removal and replacement in case of rupture. Since the fuses and fuse clips become energized when the switch is closed, the fuse door at such times must be closed and locked in closed position to guard against any attempt to handle the fuses. Automatic locking of the fuse door, dependent upon the open or closed position of the switch actuating handle, is accomplished by means of a locking plate 22, which also operates to prevent the switch being closed at such times when the fuse door is open. Thus the locking of the fuse door and the switch are interdependent, either being dependent upon the open or closed position of the other. The fuse door is hinged by preference, on an axis transverse to the normal movement of the switch actuating handle 9, with the free end of the door disposed toward the handle. Strips 23, secured to the underside of the cover plate, extend beyond the margin of the opening and provide a seat for the fuse door when closed. A catch 24, mounted on the door, is adapted to engage one of the strips 23 and serves to prevent the door from accidentally falling open, an event likely to occur when the switch is mounted in a vertical or inverted position.

Turning now to the fuse-door and switch inter-

locking means, hereinbefore mentioned, the locking plate 22 is supported by an enlarged head portion of a stud 25 which depends from the under side of the cover plate and passes through an L-shaped opening or slot 26, in the locking plate. Endwise movement of the locking plate is effected by the switch handle, the handle being secured for pivotal movement with a yoke member 27, the yoke member forming a part of the switch actuating mechanism. The switch handle extends through the cover plate 20, and the locking plate 22, openings 28 and 29, respectively, being provided in the members for that purpose. The locking plate extends beyond the margin of the opening formed by the fuse door and is provided with an irregularly shaped recess 30 through which a latch member, or keeper 31, on the door is adapted to extend when the fuse door is in closed position. The keeper 31 has a laterally projecting off-set portion 32 which is adapted to be engaged by a lip 33, on the locking plate.

Turning now to the means provided for locking the switch in open position when the fuse-door is open, it may be seen that the L-shaped opening 26 in the locking plate is so oriented that an arm portion 34 thereof extends longitudinally with respect to the locking plate, and arm portion 35 of the slot 26 extends transversely of the locking plate. A spring 36 having one of its ends secured to the cover plate and the other end to the locking plate, tends to displace the locking plate sidewardly to cause the stud 25 to enter the transverse arm 35 of the slot. When the fuse-door is closed, lateral displacement of the locking plate is prevented by reason of the keeper 31, an edge surface 37 of which engages an edge 38 of the recess 30 in the locking plate. Before the fuse door can be opened the stud must necessarily lie adjacent the transverse arm 35 of the slot. Upon opening the fuse door the locking plate will be drawn sidewardly by the spring 36 into the position shown in Fig. 2, thereby preventing endwise movement of the locking plate, and effectually locking the switch handle. When the fuse door is again closed, an oblique surface 39 on the keeper 31, cams the locking plate into its normal position, whereafter the switch handle can be freely actuated.

In order to perfect the closure of the switch compartment, I prefer to provide an auxiliary cover or closure for the opening 28 through which the switch handle extends. This slot-closure preferably consists of a plate 40 (Fig. 3) having a handle opening therethrough, and disposed for endwise sliding movement, along the face of the switch front, between guides formed in a member 43; the sliding movement of the slot-closer being imparted to it by movement of the switch handle. As will appear from the dotted outline of the locking plate 22 in Figs. 1 and 2, this member is entirely sufficient to serve as a slot closer as well as a door interlock. A more finished appearance, however, results from the use of a separate closure element at this point, and disposed on the outer face of the switch front. The member 43 may be riveted, welded, or otherwise secured to the switch front, and is provided with a pair of parallel flanges 44 arranged on opposite sides of the switch handle, the handle being adapted for movement therebetween. Registering openings 45 may be provided in the flanges, through which a padlock or the equivalent may be extended, to prevent unauthorized actuation of the switch.

It will thus be seen that a simple and inex-

pensive interlocking arrangement is provided in accordance with the foregoing objects. The device herein shown and described is set forth in an exemplary and not a limiting sense. I fully realize that certain variations may be made, parts added and interchanged without departing from the spirit and full intended scope of my invention.

I claim as my invention:

1. In combination with a front closure member for a switch of inclosed type including a handle projecting through the closure, a door formed by a portion of the front, a switch and door interlocking member carried by the front and having an opening therein adapted to receive the switch handle, a spring associated with said member, said member being adapted for endwise movement by the switch handle, and lateral movement by said spring.

2. In a switch of inclosed type, a switch front, a door constituting a portion of the switch front, a latch member for the door having an L-shaped slot therein, a stud on said switch front projecting through said slot, and a switch handle extending through the front and said latch member, said latch member being adapted for swinging movement about the switch handle and arranged for endwise movement responsive to switch actuating movement of said handle.

3. In a switch of inclosed type including a switch front, a door formed by a portion of the switch front, a switch handle extending through the front, a latching member for the door carried by the switch front, and a stud on said switch front extending through the latching member, said member being adapted to be locked against endwise movement by said stud, said stud and latching member being related to permit a combined angular and endwise movement of said member upon actuation of the switch handle.

4. In a switch of inclosed type including a switch front, a door carried by the front, a switch handle extending through the front, a door locking element carried by the front, connected with said handle for pivotal movement thereabout, and a spring associated with said locking element, said element being arranged for rectilinear movement responsive to switch actuating movement of said handle, and for lateral movement responsive to the action of said spring.

5. A locking device for switches of a type including a switch front and a switch handle extending through the front, said device including a substantially flat member disposed for pivotal movement about said handle, a stud carried by the switch front for limiting the pivotal movement of said member, said member having an angulate slot therein through which said stud extends, and a spring tending angularly to move said member about said handle into switch-locking position.

6. In a switch of inclosed type including a switch front, a door formed by a portion of the front, a slotted latching member for the door, carried by the front, a switch handle extending through the slot, the slot in said latch member being shorter than the range of endwise movement of said handle in the plane of the switch front.

7. In a switch of inclosed type including a front closure therefor, means forming a fuse compartment within the switch inclosure, a door for access to the fuse compartment, a switch handle extending through the switch front and spaced from said door, a latching member carried by the switch front, and

having a closed slot therein to receive a portion of the switch handle for actuating the element to lock the door in closed position, said member being adapted for linear displacement into unlocking position responsive to switch actuating movement of said handle.

the door, connected to the switch handle and arranged to be reciprocated thereby, and means for locking the switch handle against actuating movement when the door is open, said means including a pivot carried by the switch front, an angulately slotted seat for said pivot formed in the latch bar, and a spring tending to urge said latch bar and pivot into relative position to prevent endwise movement of the latch bar.

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8. In a switch of inclosed type, including a switch front, a handle adapted to be rocked for throwing the switch, said handle extending through the switch front, a door constituted by a portion of the switch front, a latch bar for

HENRY M. STEGLITZ.

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