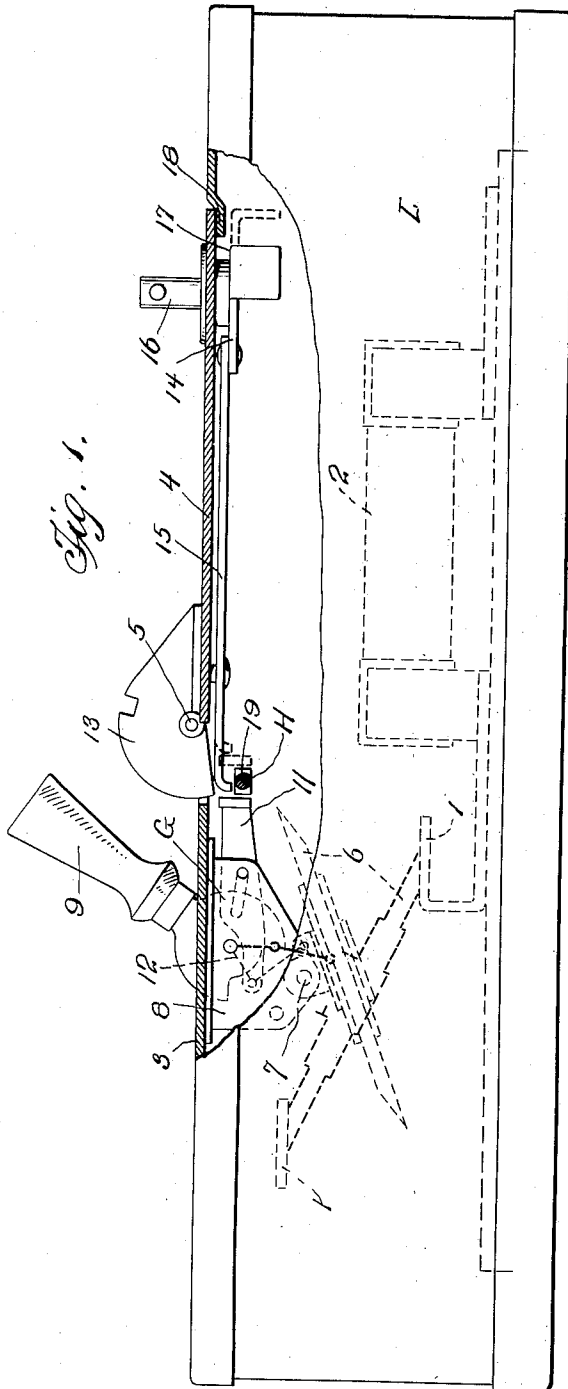
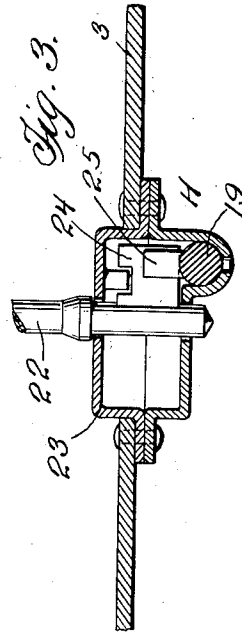


1,420,111.

Patented June 20, 1922.

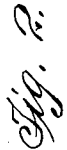
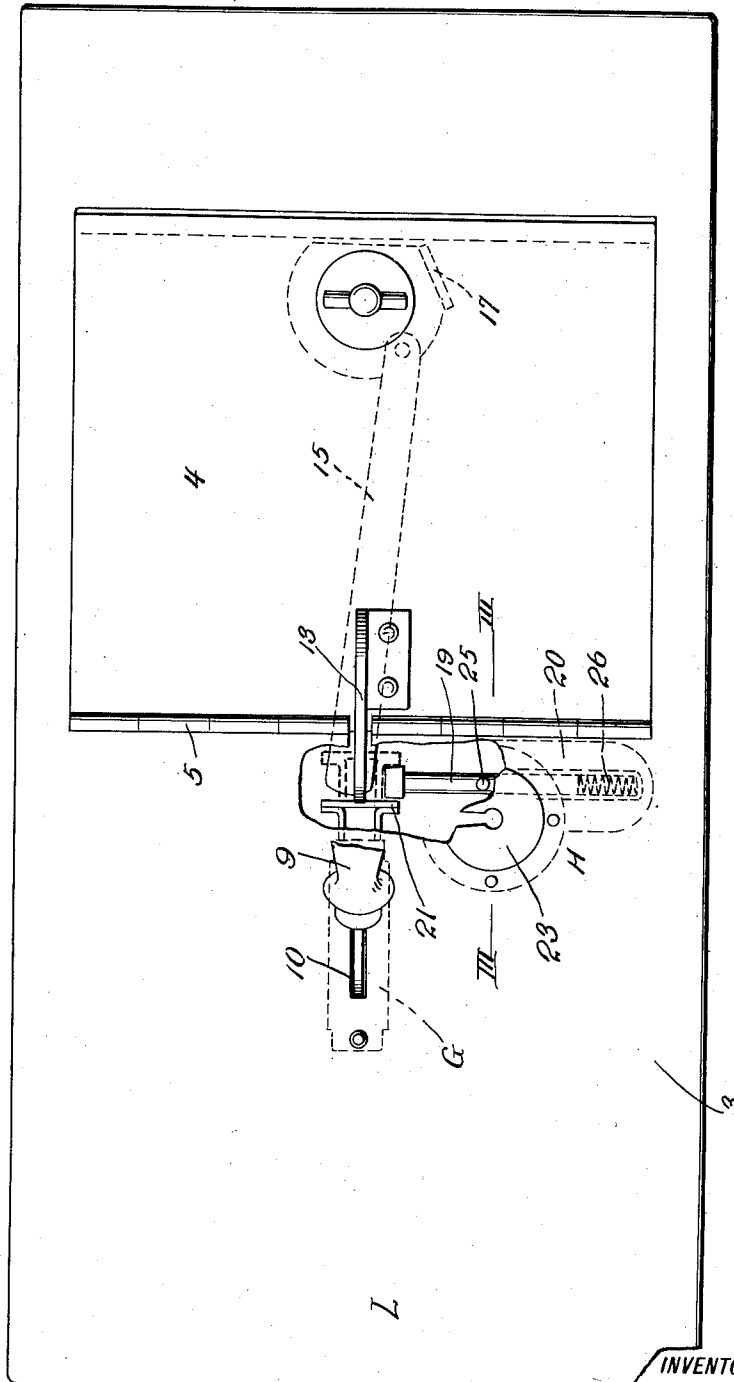
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.



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SAFETY PANEL BOX.

1,420,111.

Specification of Letters Patent. Patented June 20, 1922.

Application filed August 17, 1917. Serial No. 186,661.

To all whom it may concern:

Be it known that I, HUBERT F. KRANTZ, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in a Safety Panel Box, of which the following is a specification.

This invention relates to a safety panel box, such for instance as is shown in Patent No. 1,292,808 issued to me January 28, 1919.

The object of the present improvement is to provide means whereby the switch mechanism within the panel box may be locked against operation whenever desired.

A more detailed object is to provide a panel box having a switch mechanism arranged therein with an operating handle extending through the wall of the box, and to provide key-controlled lock means to positively hold the switch mechanism against operation when desired.

A further object is to provide a panel box having an entrance door or guard member for giving access to certain parts within the box, the box also having a switch mechanism therein, to provide means for positively locking the switch mechanism in one of its positions, and to provide means cooperative for positively locking the door closed when the switch mechanism is locked in the mentioned position.

A further object is to so associate the lock with the switch mechanism as to be capable of locking the switch mechanism in either its "on" or "off" positions, and further to so associate the lock with the door that when the switch mechanism is locked in the "on" position, the door will be positively locked closed, and so that when the switch mechanism is in the "off" position the door may be opened or closed at will.

Other objects and aims of the invention, more or less specific than those referred to above, will be in part obvious and in part pointed out in the course of the following description of the elements, combinations, arrangements of parts and applications of principles, constituting the invention; and the scope of protection contemplated will be indicated in the appended claims.

In the accompanying drawings which are to be taken as a part of this specification, and in which I have shown merely a preferred form of the embodiment of the invention:

Figure 1 is a vertical sectional view through a panel box constructed in accordance with this invention, parts being illustrated in elevation.

Figure 2 is a top plan view of the structure shown in Fig. 1, portions of the wall of the box being broken away so as to disclose the arrangement of the parts within the box, and

Figure 3 is an enlarged transverse sectional view taken substantially upon the plane of line III of Fig. 2.

Referring to the drawings for describing in detail the structure which is illustrated therein, the reference character L indicates the panel box, which may be of any desired size, shape and construction so as to provide an enclosure for the switch mechanism G, the switch contacts 1, and usually the fuse, or fuses 2. The top wall, as 3, of the box is provided with a door 4 which is preferably hinged, as at 5, adapted to be opened when desired to give access into the box, for renewing the fuses or for other purposes.

The switch mechanism G is substantially the same as that illustrated and described in Patent No. 14,498 reissued to me July 30, 1918, and comprises a switch blade 6 which is pivotally mounted at 7 upon a frame or carrier 8. The carrier 8 is preferably fixed to the inner surface of the top wall 3 of the box.

A switch handle 9 is arranged exteriorly of the box and is connected with the switch mechanism through an opening 10 formed in the top wall 3.

A plunger 11 is formed as a part of the switch mechanism. The particular manner of connecting this plunger in the switch mechanism forms no part of the present invention. It is sufficient to say that when the handle 9 is thrown from an "on" position to an "off" position the plunger is projected toward the handle from the position shown by dotted lines to the position shown by full lines in Figures 1 and 2. Also that it is impossible to throw the handle from the "off" position to the "on" position except by an accompanying movement of the plunger away from the handle, and that likewise it is impossible to throw the handle from the "on" position to the "off" position except by an accompanying movement of the plunger toward the handle. One manner of connecting this plunger in the switch mech-

anism is clearly illustrated and described in Patent No. 1,292,805 issued to me Jan. 28, 1919, in which it will be seen that the plunger is connected at the heel of a toggle, as 12, which toggle is positively connected with the switch blade to be made and broken by the movements of the handle.

When the switch blade is in the "on" position current flows through the fuse 2, but when the switch blade is in the "off" position the fuse is dead. Thus, for the sake of safety, the door 4 of the box should be positively held closed when the switch is "on," but when the switch is "off" then the door might be safely opened at will.

To accomplish this result, the door is furnished with a suitable safety means, which, in the present instance, comprises first, a semi-circular retaining disc 13 which is connected to the door concentric with the pivot or hinge 5, and second, a latch 14 which is rotatably carried by the door adjacent the free edge thereof and which is cooperatively associated with the switch mechanism through a link 15.

The disc 13 is arranged so that when the door is swung open a peripheral portion of the disc moves into the path of the plunger 11 so that while the door stands open, it is impossible to throw the switch handle from the "off" to the "on" position.

The latch 14 includes a handle 16 which projects through the door by means of which the latch may be turned from latching to unlatching position. When in latching position a portion 17 of the latch engages beneath a ledge 18 of the box. The link 15 is connected to the latch by one of its ends and has its other end disposed in the path of the plunger 11 so that any outward movement of the plunger produces a corresponding movement of the link and results in moving the latch to latching position.

These two safety features are more fully shown and described in the above mentioned Patent No. 1,292,808, and it is apparent that in their presence the door must necessarily be closed in order to permit the outward movement of the plunger which is required for an "on" position of the switch blade, and that the latch is also necessarily in latching position when the plunger is moved out.

The essential structural addition to the above described parts consists of a locking element, such as that shown at H, to lock the plunger in either its inner or its outer position in order to accomplish the objects set forth in the early paragraphs of this description.

The locking device H may be of any type or it may operate upon the plunger directly as shown, or it may operate upon the plunger indirectly through the other connected elements of the switch mechanism, as preferred. As illustrated, however, it includes a sliding

bolt 19 which is supported in a casing 20 fixed to the under surface of the top wall 3 of the box with its direction of movement substantially at right angles to the direction of movement of the plunger. The plunger 70 is formed with a lateral projection 21 and the end of the bolt 19 is adapted to engage either in front of or behind the projection 21 according as the plunger is in its inner or outer position when the bolt is shot. The 75 two positions are clearly indicated in Figures 1 and 2 of the drawings.

Preferably a separately formed key, as 22, is employed for sliding the bolt back and forth, and a housing 23 is arranged to receive the key as best seen in Figure 3. The lobe 24 of the key cooperates with a portion, as 25, of the bolt to move the bolt back and forth in a well understood manner.

Preferably a compression spring, as 26, 85 is provided behind the bolt for holding the bolt normally in shot position as by this means it will be a prerequisite of the structure that the key 22 be used prior to every operation of the switch handle, as the bolt 90 19 will at all times obstruct movement of the plunger except while the bolt is being held back by the key. A careless or unintentional operation of the switch handle will thus be avoided.

When the bolt is in position locking the switch mechanism "off" then the latch 14 may be manipulated and the door opened and closed at will.

When the bolt is in position locking the switch mechanism "on" then it is also in position positively retaining the latch in latching position so that the door can not possibly be opened except the bolt be withdrawn by the key 22.

Here it should be noted that, when the switch is in the "on" position, except for the presence of the bolt locking the plunger out then the latch might readily be operated to move the plunger in and throw the switch 110 "off". This might be done by an unauthorized hand at an inopportune time and might occasion serious results. The necessity for first unlocking the bolt with the key, however, places the responsibility in authorized hands and assures the desired results.

As many changes could be made in this construction without departing from the scope of the invention as defined in the following claims, it is intended that all matter 120 contained in the above description or shown in the accompanying drawings, shall be interpreted as illustrative only and not in a limiting sense.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. In a device of the class described comprising a box having a switch mechanism therein and the box having a door movable 130

to give access thereto, the door having retaining means, and the switch mechanism having a part movable into two positions for rendering said retaining means effective or not effective in accordance with the movements of the switch mechanism, the combination therewith of a lock device carried by the box including a locking member movable into and out of a position obstructing the movements of said mentioned portion of the switch mechanism, and a key adapted to be inserted through an opening in the box for operating said locking member.

2. In a switch box, the combination with a switch, a door for a portion of the casing, and means for interlocking the door with the switch to preclude opening the door while the switch is closed and closing the switch while the door is open, of means for normally locking the interlocking means, and means for unlocking the locking means to permit the interlocked operation of the switch and door.

3. In a switch box, the combination with a switch, a door for a portion of the box, and means for interlocking the door with the switch to preclude opening the door while the switch is closed and closing the switch while the door is open, of means whereby the interlocking means is so normally held that a key must be inserted before opening or closing movement of the switch and door may be effected.

4. In a switch box, the combination with a switch mechanism, a door movable to give access thereto, a retaining means for the door and a member movable into two positions for rendering the retaining means effective in accordance with the movements of the switch mechanism, of a lock device mounted in the box and having a locking member movable into and out of a position normally obstructing the movements of the movable member, and a key for actuating the locking member before each movement of the switch mechanism.

5. In a switch box, the combination with a switch, a door for the box, and means for interlocking the door with the switch to preclude opening the door while the switch is closed and closing the switch while the door is open, of a key-actuated member normally preventing operative movement of the interlocking means.

6. In a switch box, the combination with a switch, a door for the box and means for interlocking the door with the switch to preclude opening movement of the door while the switch is closed, of a key-actuated member preventing movement of the interlocking means.

7. In a switch box, the combination with a switch, a door for the box and a latch for the door interlocked with the switch whereby opening movement of the latch is precluded so long as the switch is in closed position, of a key-actuated member normally preventing movement of the switch.

8. In a switch box, the combination with a switch, a door for the box and means for interlocking the door with the switch to preclude opening movement of the door while the switch is closed and closing movement of the switch while the door is open, of a key-actuated member normally preventing movement of the interlocking means.

9. In a switch box, the combination with a switch, a door for the box and a latch so interlocked with the switch that opening movement of the latch causes opening movement of the switch and closing movement of the switch causes closing movement of the latch, of a key-actuated member normally preventing movement of the switch from one operative position to another.

In testimony whereof I affix my signature in the presence of two witnesses.

HUBERT F. KRANTZ.

Witnesses:

CHARLES W. HESSER,
ROBERT A. MERTENS.