

July 1, 1924.

1,499,996

F. R. OBERLANDER

SAFETY SWITCH BOX

Filed March 7, 1921

2 Sheets-Sheet 1

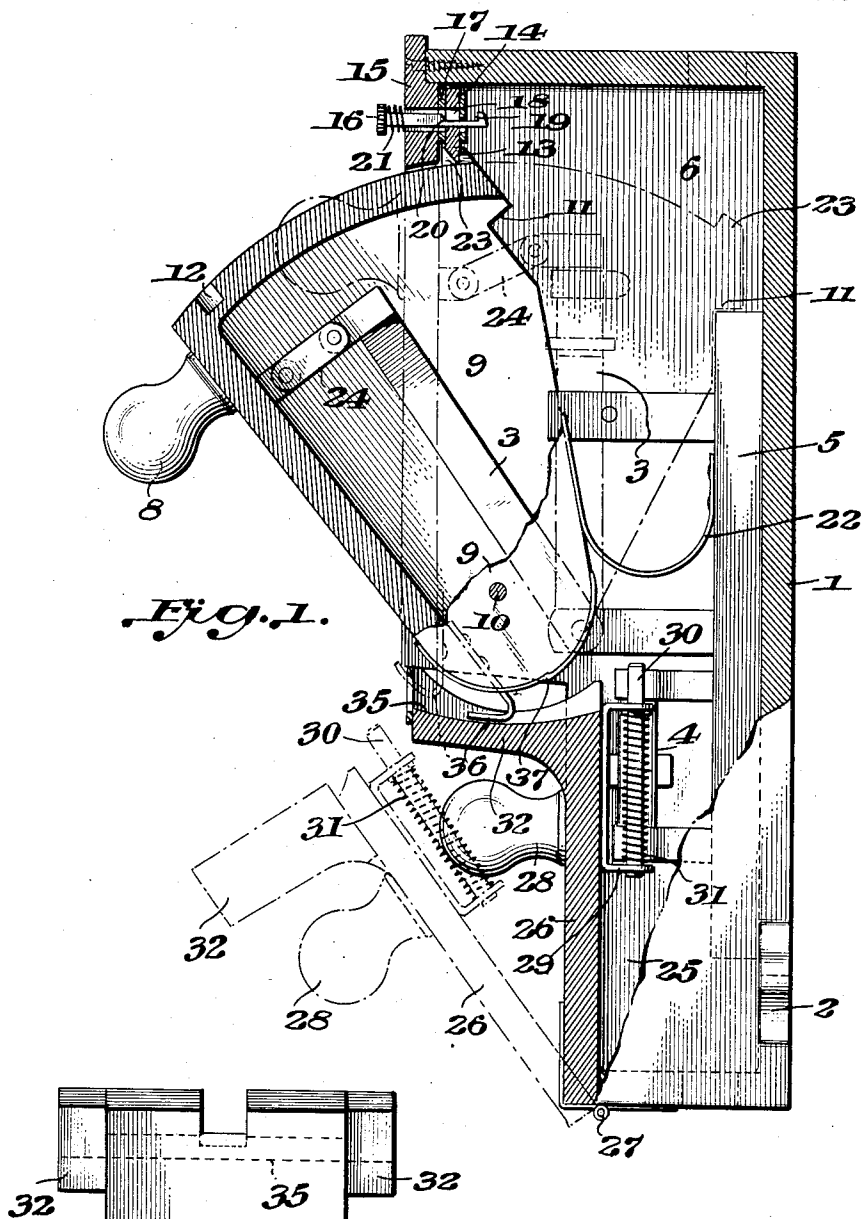
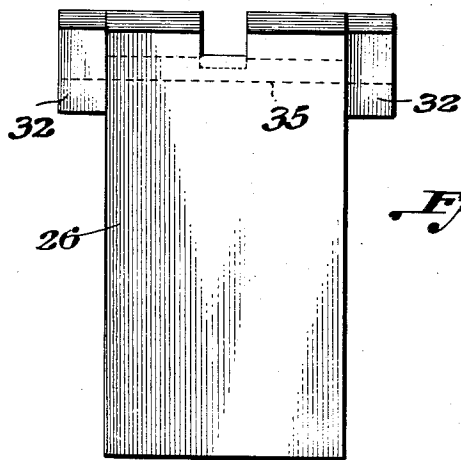


Fig. 3.

Inventor
Felix R. Oberlander

By *J. M. Hauler*
his Attorney

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F. R. OBERLANDER

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2 Sheets-Sheet 2

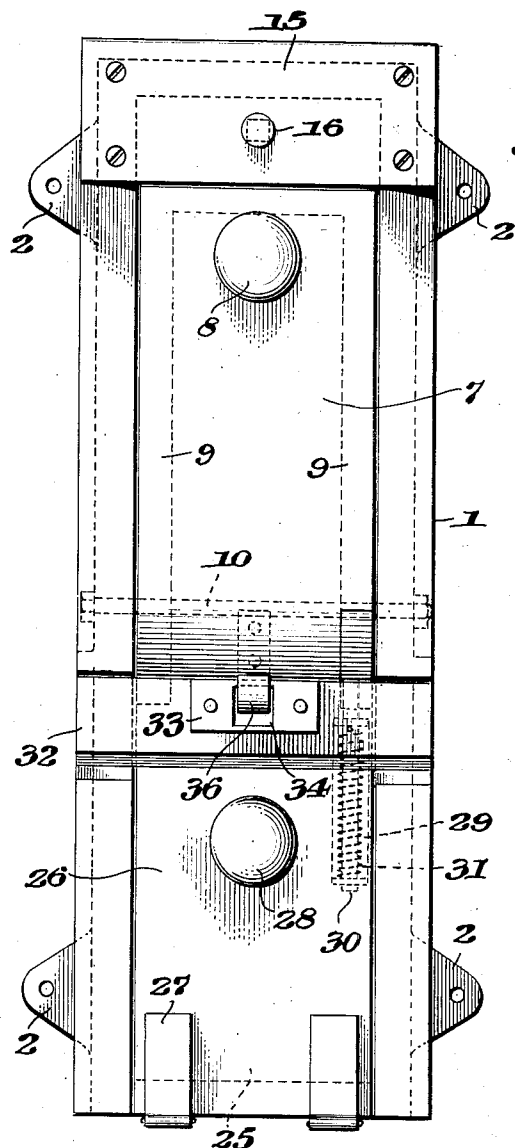


Fig. 2.

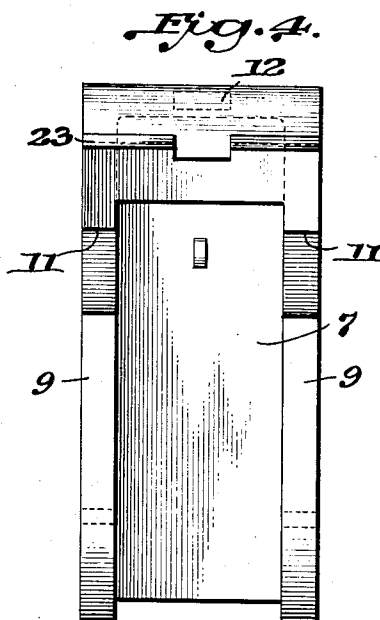


Fig. 4.



Fig. 5.



Fig. 6.

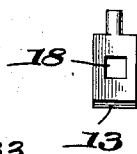


Fig. 7.

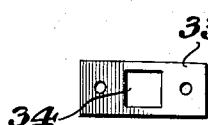


Fig. 8.

Inventor

Felix R. Oberlander

By

E. M. Haudrich
his Attorney

UNITED STATES PATENT OFFICE.

FELIX REID OBERLANDER, OF SALT LAKE CITY, UTAH.

SAFETY SWITCH BOX.

Application filed March 7, 1921. Serial No. 450,457.

To all whom it may concern:

Be it known that I, FELIX REID OBERLANDER, a citizen of the United States, residing at Salt Lake City, in the county of Salt Lake and State of Utah, have invented certain new and useful Improvements in Safety Switch Boxes, of which the following is a specification.

This invention relates to safety switch boxes whose purpose is to protect persons opening or closing an electric switch or inserting or removing the fuse thereof against accidental contact with live parts or terminals and from being burned by the flash or arc when operating the switch as well as to prevent tampering with the circuits.

It has been proposed heretofore to provide switch boxes of different kinds which will embody the safety features above enumerated but these earlier constructions have, so far as I am aware, been of a complicated and expensive nature, liable to derangement, and unsatisfactory for one reason or another. Furthermore, earlier constructions have had no provision for the protection of a knife switch previously installed but, on the contrary, have been wholly self-contained and manufactured in unitary form so that it was necessary to do away with a switch already in use.

One of the objects of my invention is to provide a safety switch box which can be made to inclose a knife switch and fuse already installed, thereby changing an unsafe switch into a protected installation from which it is impossible for a workman or operator to accidentally come in contact with live parts or terminals either in opening or closing the switch or inserting or removing a fuse. In that respect, the invention embodies a novel construction and combination of inclosing box of suitable material, switch operating door and door for affording access to the fuse, the aforesaid doors being provided with improved interlocks and safety appliances, the whole constituting a self-contained safety switch box which can be applied to high voltage and high amperage switches.

A further object is to provide a novel safety switch box and switch operating door held by a latch and automatically opened by spring means, the door being adapted for connection to a knife switch so that the latter will be opened or closed according to the

operation of the door. It is possible to employ this feature of my invention without resorting to that other novel feature which resides in the provision of the door for affording access to the fuse, inasmuch as my improvements may be used in connection with a knife switch having no fuse, or, with one provided with a fuse.

Another object is the provision of a novel safety switch box having compartments for a knife switch and its fuse, the respective compartments being provided with doors which have improved interlocking and blocking arrangements to effectuate the purposes of the invention, the switch compartment door being connected to the switch and preferably opened by a spring, when said door is unlatched; the door for the fuse compartment of the box being arranged so that its operation is dependent on the position of the door controlling the switch, thus rendering it impossible for the operator to insert or remove a fuse when the door controlling the switch is in closed position.

I am aware that modifications may be resorted to in carrying out the improvements hereinbefore expressed, without departing from the essential principles of the invention and it is to be understood, therefore, that the disclosure of the invention, although given in its preferred form, is illustrative and not restrictive of construction which may be resorted to.

In the accompanying drawings:

Figure 1 is a vertical section, the switch door being shown in full lines in open position and in dotted lines in closed position, and the fuse door in full lines in closed position and in dotted lines in open position;

Fig. 2, is a front elevation, both doors being shown in closed position;

Fig. 3, is a rear view of the fuse door;

Fig. 4, is a rear view of the switch door; and

Figs. 5, 6, 7, 8, detail views of certain parts.

The box or casing 1 may be of iron, steel, transite, asbestos or bakelite, micarta, or any other suitable material, and it is provided with ears 2 by which it can be fastened to the wall so as to inclose the knife switch 3 which, as shown, has a removable fuse 4, the base of the switch appearing at 5.

The door for the switch compartment 6 appears at 7, said door having a front pro-

vided with a suitable handle or knob 8 and sides which appear at 9 through which passes a bolt 10 that pivots or hinges the door to the side walls of the box 1. The rear edges of the sides 9 have shoulders 11 which rest against the base 5 when the door is closed. The upper edge of one of the sides 9 is provided with a socket or keeper 12 to receive a vertically slidable latch 13 which moves in a loop 14 fastened to the inside of the ledge 15 at the upper front part of the box 1. The latch 13, when received in the socket or keeper 12, holds the door 7 in closed position. To raise the latch and release the door 7, there is provided a spring-actuated push button 16 which slides through a plate 17 and through an opening in the loop 14, and also through an opening 18 in the latch 13. The push button 16 has a cut out portion 19 provided with a cam face 20 which, when the push button is pressed in, raises the latch 13. When the push button is released, the actuating spring 21 thereof snaps it outwardly and the latch 13 then falls. Consequently, if the door 7 is latched and the push button 16 pressed, the door will be instantly opened by a suitable spring 22 which cooperates with the door and with the base 5. To arrest the door 7 when thus opened by spring 22, there is provided a lug or stop 23 on the side 9 and as the latch 13 drops immediately the push button 16 is released by the operator, said latch is struck by the stop 23 and the door is retained in open position.

The knife switch 3 is connected to the door 7 in any suitable manner as, for instance, by one or more links 24 and, consequently, the switch is opened or closed according to the position of the door 7. When the door 7 is closed the switch is necessarily closed but when the door is open it is impossible for the switch to remain closed and, consequently, the operator cannot accidentally receive a shock or come in contact with live parts or terminals.

The foregoing part of my invention affords complete protection for the operator in so far as the switch is concerned and I wish it understood that the construction described is capable of use aside from the door for the fuse compartment hereinafter set forth as some switches have no fuses and the invention may thus be embodied in the construction recited.

My invention finds usefulness in connection with switches carrying currents of high voltage and amperage which have fuses of the tubular type and I have therefore devised the additional improvements which cooperate with the switch door to the end that neither the switch nor the fuse can be touched when the switch is closed.

For the purpose of closing the compart-

ment 25 which contains the fuses 4, there is provided a door 26 hinged at 27 and provided with a suitable knob or handle 28 by which it may be manipulated. This door carries a vertically arranged bracket 29 in which is slidably mounted a lockout plunger 30 which is forced upwardly by a spring 31 so that its upper end projects above the bracket.

Projecting outwardly from the face of the door 26 is an extension 32 which carries a plate 33 at its outer end, said plate having an opening 34. The extension 32 has a grooved or channeled upper face 35.

Secured to the lower part of the door 7 is an interlocking hook 36 which is adapted to project through the opening 34 when the doors 7 and 26 are closed and, by virtue of the form of this hook, it is then impossible to open the door 26 and obtain access to the compartment 25 containing the fuses, for the reason that the hook 36 interlocks with the plate 33 and blocks opening of door 26. When, however, the door 7 is opened, thereby opening the switch 3, the rearward movement of the interlocking hook 36 disengages it from the plate 33, leaving the door 26 free to be open. Consequently if the two doors 7 and 26 are closed as when the switch is closed, it is impossible to have access to the fuses until the switch 3 has first been opened by opening the door 7. This guards against placing or removal of the fuses when the switch is closed.

The side piece 9 is provided with a notch or shoulder 37 which forms a step, abutment, or connection between the rounded parts of the lower edge of said side 9. The end of the lock-out plunger 30 projects to such an extent that if the door 7 is closed it will be impossible to close the door 26 because the plunger will then come squarely against the shoulder 37 and the closing movement will be arrested. Should the operator close the switch first, the fuse, which is carried by a clip on the inside of the door 26, cannot be inserted in the fuse clips because, with the door 7 closed, door 26 cannot be closed and, hence, the fuse carried by the door 26 cannot make contact with the fuse clips. It is necessary for the switch to be open before the fuse can be placed in position.

By employing the spring 22, when the button 16 is pressed, the said spring opens the door and switch with a quick break action which minimizes flashing.

What I claim is:

1. In a safety switch box having a switch chamber, the combination with a switch in said chamber, of a movable closure for said chamber operatively connected to the switch and adapted for actuating said switch and for affording access to the switch, of another closure affording access to the fuses

for the switch, and interlocking devices whereby the opening and closing of the second closure is controlled by the position of the first closure.

- 5 2. In a safety switch box, the combination with a movable closure adapted for actuating and for affording access to the switch, of another closure affording access to the fuses for the switch, and interlocking
10 devices whereby the opening and closing of the second closure is controlled by the position of the first closure, said box being adapted to be applied to a previously installed switch and its fuses and, together
15 with said closures, and interlocking means, constituting a self-contained unitary combined safety and operating appliance therefor.

3. In a safety switch box having a switch
20 chamber, the combination with a switch in said chamber, of a movable closure for said chamber operatively connected to the switch and adapted for actuating said switch and for affording access to the switch, of another
25 closure affording access to the fuses for the switch, and a hook and keeper respectively carried by the aforesaid closures which are arranged to engage so as to lock the last named closure when the first named
30 closure is closed and to permit operation of the last named closure when the first named closure is open.

4. In a safety switch box having a switch
35 chamber, the combination with a switch in said chamber, of a movable closure for said chamber operatively connected to the switch and adapted for actuating said switch and for affording access to the switch, of another closure affording access to the fuses for the

switch, interlocking devices carried by the
40 respective closures which prevent opening of the last named closure when the first named closure is closed, and a blocking device carried by the last named closure which
45 is adapted to cooperate with the first named closure to prevent closing of the last named closure when the first named closure is closed.

5. In a safety switch box, the combination with a movable closure adapted for actuat-
50 ing and for affording access to the switch, of another closure affording access to the fuses for the switch, a hook and keeper whose parts are carried by the respective closures
55 therebetween permitting the opening and closing of the first named closure but preventing the opening of the last named closure when the first named closure is closed, and a blocking device comprising a spring
60 actuated plunger carried by the last named closure which is adapted to engage means carried by the first named closure to thereby prevent the last named closure from being
65 closed when said first named closure is in closed position.

6. In a safety switch box the combination with a switch box, of a hinged closure there-
for having means for operating the switch, a latch for holding said closure in closed
70 position and for retaining it in open position, a push button for operating said latch, and spring means for opening said closure when the latch is released by pressing the
75 push button.

In testimony whereof I affix my signature.

FELIX REID OBERLANDER.