

July 19, 1938.

R. N. ROWE

2,124,275

SAFETY SWITCH

Filed Dec. 28, 1935

2 Sheets-Sheet 1

Fig. 1.

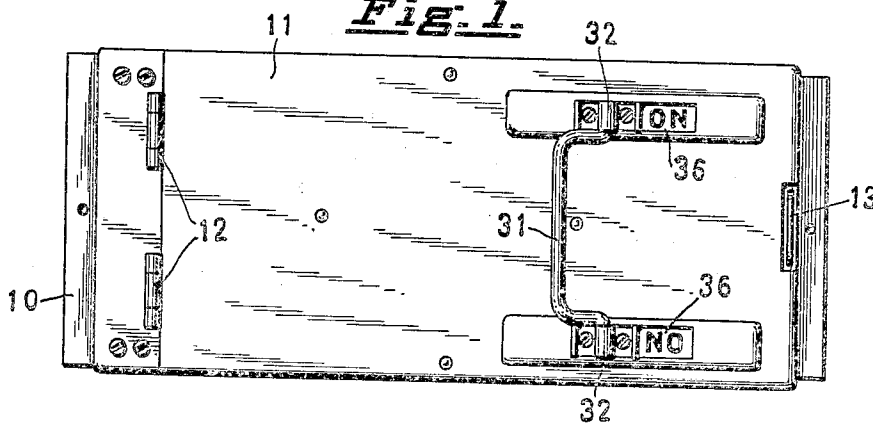


Fig. 2.

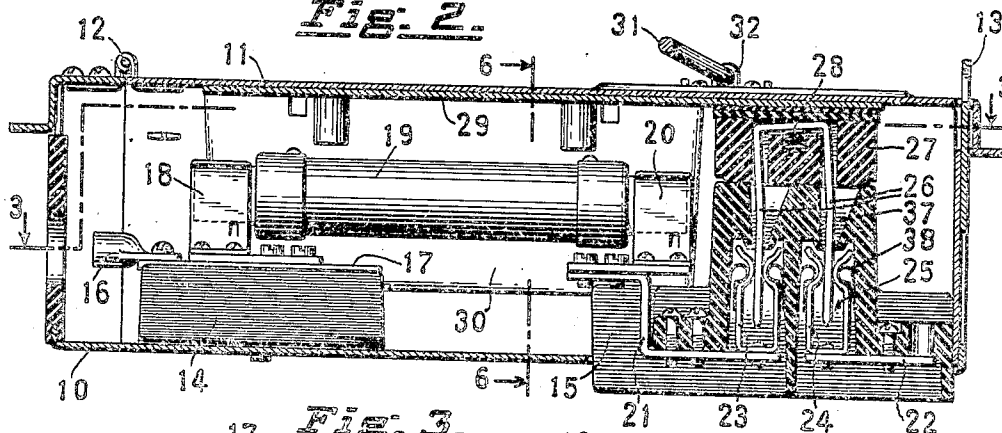
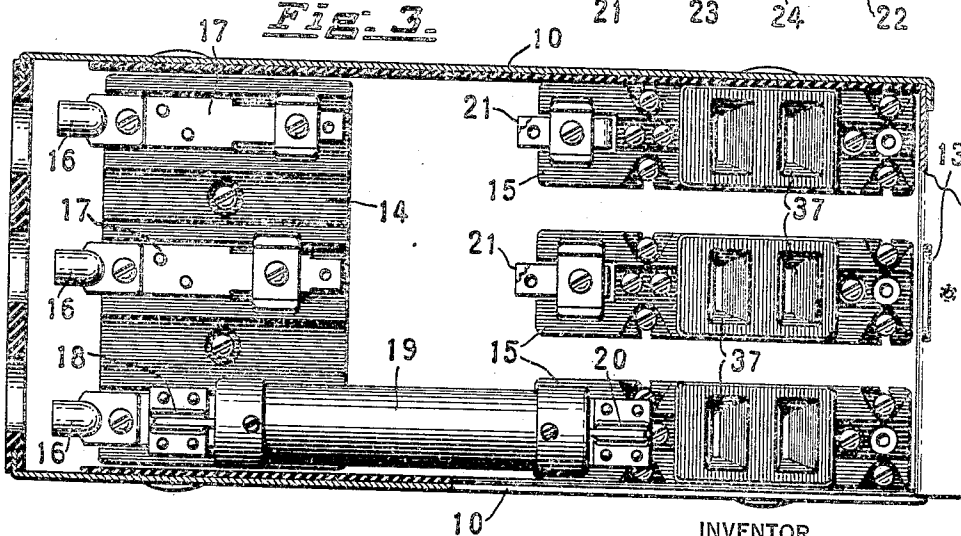


Fig. 3.



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Fig. 4.

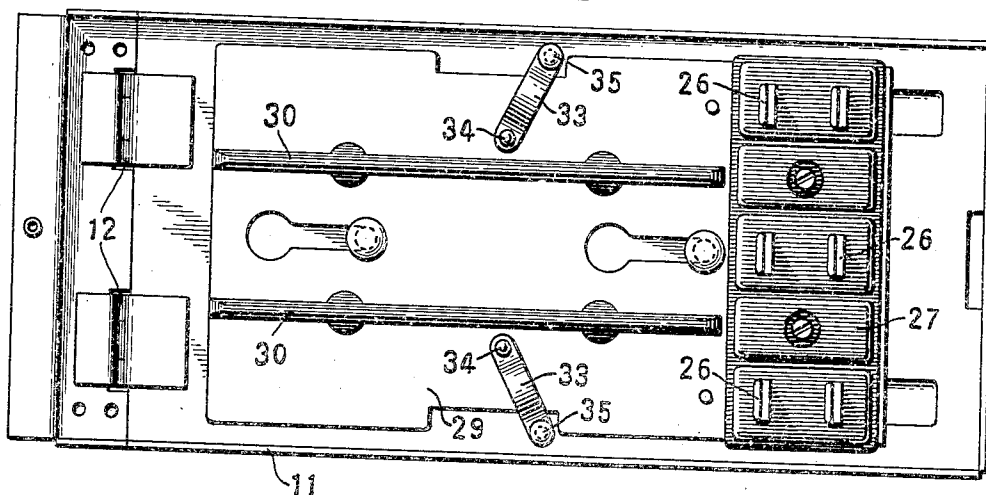


Fig. 5.

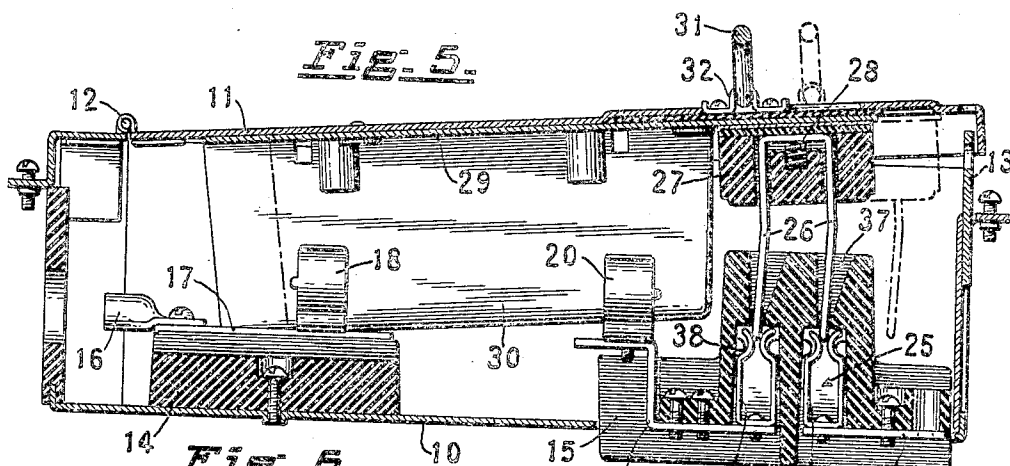


Fig. 6.

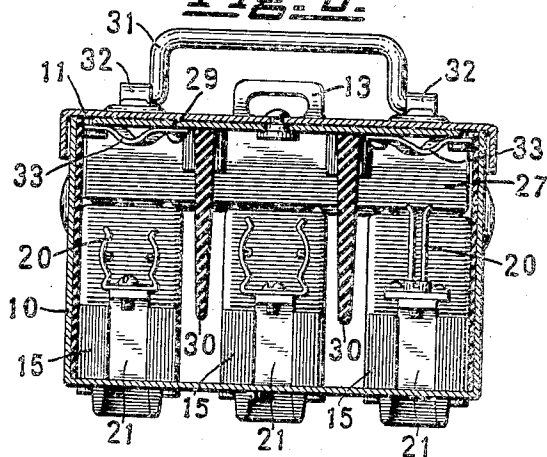


Fig. 7.

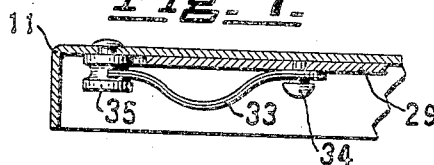


Fig. 8.



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2,124,275

SAFETY SWITCH

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necticut

Application December 23, 1935, Serial No. 56,406

3 Claims. (Cl. 200—163)

My invention relates to enclosed switches of the so-called safety type.

One object is to provide a construction in which it is impossible to open the box or receptacle containing the live parts without breaking the circuit.

Another object is to provide a construction of this character in which there is no danger of arcing when the circuit is broken.

Another object is to provide a construction of this character in which the stationary contacts are fully guarded when the box is open.

Another object is to provide a construction which permits the box to be closed either with the circuit open or the circuit closed.

Another object is to provide a construction of this character in which the switch contacts are protected against injury in case a fuse explodes.

Another object is to provide a construction of this character in which the circuit must be broken and the box opened before the movable switch member can be moved to the open circuit position.

In carrying out the invention I have shown one type of construction which is especially adapted to use with conduit and bus bar systems of power distribution.

The box which contains the conducting elements has a hinged cover which carries the movable switch member, and the fuse protecting devices are mounted in the body of the box. The movable switch member is supported by a slide guided in the cover and which has an external handle for facilitating opening the cover and also for enabling the operator to move the switch member to the on or off position.

Details of the improvement will be found in the following specification and in the accompanying drawings in which

Fig. 1 is a front view of a switch embodying my invention, the cover being closed and the parts of the switch being in the closed circuit or on position.

Fig. 2 is a longitudinal sectional view on a somewhat larger scale.

Fig. 3 is a horizontal sectional view on the plane of the line 3—3 of Fig. 2 showing the parts supported within the body of the box.

Fig. 4 is a view of the inside of the cover with the movable switch member.

Fig. 5 is a sectional view showing the cover partially opened in full lines and showing in dotted lines the position which the movable switch member would occupy in the open circuit or off position.

Fig. 6 is a transverse sectional view on the plane of the line 6—6 of Fig. 2.

Figs. 7 and 8 are detail views of the device for holding the switch slide.

The box body 10 and cover 11 are preferably of metal, the cover being hinged at 12. A latch 13 is provided for a padlock or other sealing device.

The conducting parts are carried by insulating blocks such as 14 and 15. The invention is shown as applied to a switch for a three-wire system but it is obviously applicable to switches for controlling the circuit through either one, two or more lines.

A circuit terminal 16 is connected to a conducting plate 17 mounted on the block 14 and carrying a clip 18 for a fuse 19. A fuse clip 20 is carried by the conducting member 21. The conducting members 21 and 22 are both carried by the insulating block 15 and each carries a spring jaw such as 23 and 24 which are mounted in recesses such as 25.

The movable switch member 26 is in the form of a U-shaped member having two blades adapted to be inserted into the jaws 23 and 24. This switch member is supported in a block 27 carried by the cover. This switch member 26 is loosely carried and held resiliently in a central position by means of a spring 28. A slide 29 supported by the cover serves as the direct support for the block 27. An insulating barrier 30 is also carried by slide 29 and extends down between adjacent fuses when the cover of the box is closed.

A handle 31 has its ends hinged to lugs 32 which are secured to the slide 29 and project through slots in the cover.

A bowed spring 33 has one end connected to a pin 34 carried by the slide 29 and the other end detachably engaged with a button 35 carried by the cover. This spring 33 exerts a pressure upon the pin 34 to hold the slide resiliently in the on position. As the slide is moved from the full line position of Figs. 4 and 5 to the dotted line position of Fig. 5, spring 33 is compressed and acts as a toggle to resiliently move the slide to the off position and hold it there.

An indicator 36 is provided on the slide and visible through the cover. It will be noted that the spring switch jaws 23 and 24 are housed in recesses in the insulating block 15. The entrance 37 to each recess is funnel shaped or tapered so as to more readily receive the tips of the blades of the switch member 26, as the cover is moved into the position shown in Fig. 5. By loosely mounting the movable switch member and providing these tapered entrance passages, I insure

proper electrical engagement of the contacts without requiring accurate location of the stationary and movable parts.

When the parts are in the closed circuit position of Fig. 2 it will be seen that the movable switch member and the stationary contacts are completely enclosed within insulating material of the blocks 15 and 27 and protected against any explosion that might occur when a fuse blows.

It will also be seen that it is impossible to move the slide to open the circuit except by opening the cover and that when the circuit is broken any arc which tends to form will be confined within the entrance passages 37 within the insulating block 15.

Supplementary springs 36 are provided but this detail of construction is more fully set forth and claimed in my companion application Serial Number 58,840, filed January 13, 1936.

When the cover of the box is opened the slide may be operated to move the switch member 26 to the open circuit position shown in dotted lines in Figure 5, whereupon the cover may be again closed. With the parts closed in this position it is obvious that the switch cannot be moved to the on or closed circuit position without first opening the cover. Inspection of the parts is thus assured whenever it is desired to open or close the circuit.

It will also be seen that on account of the construction and arrangement of the stationary and movable switch elements, the switch can be located in the on or off position by the simple expedient of first moving the parts to the position desired and then closing the cover and locking or sealing it.

I claim:

1. An enclosed switch having a stationary insulating base having recesses with spring jaws mounted in the recesses, and a slidable U-shaped switch member having an integral pair of blades, one or both of which may be inserted into jaws in the base.

2. A switch having a box with a hinged cover, a stationary contact mounted in the box, a slide carried by the cover, a switch member carried by the slide and a bowed flat spring interposed between the cover and the slide and biased to hold the slide in the on or off position.

3. In a switch, a box having a body with a cover hinged thereto, stationary contacts mounted in the box, a pair of integral switch blades carried by the cover and adapted to engage the contacts when the cover is closed, means for moving said blades away from the hinge of the cover when the cover is opened so that only one blade of said pair of blades will engage a contact when the cover is again closed.

4. A switch having a box body and a cover hinged to one end of the body, a pair of contact jaws mounted in the opposite end of the body, with contact faces parallel to the axis of the hinge of the box, an integral pair of switch blades carried by the cover and tiltable about an axis parallel to the hinge of the cover and adapted to engage the contact jaws when the cover is closed and means for moving said blades in a direction at right angles to the axis of the hinge when the

cover is opened to permit the cover to be closed in a non-circuit closing position.

5. A safety switch having a box with a cover hinged to one end thereof, a slide carried by the inside of the cover and movable toward and from the hinged end, a handle for the cover connected to the slide so that the cover may be opened by means of the handle and the slide may be moved relative to the cover when the cover is open, two contact jaws mounted in the box with their contact faces substantially parallel with the axis of the hinge of the cover, one of said jaws being located near the end of the box opposite the hinged end and the other jaw being located between said last mentioned jaw and the hinged end of the cover and a pair of switch blades connected together and loosely and resiliently carried by the slide and adapted to engage the said jaws when the cover is closed.

6. In a switch, a stationary contact, a support therefor, a member mounted to move toward and from the support, a slide carried by said member, a switch member carried by said slide and adapted when the slide is in a closed circuit position to engage said contact, said slide being movable on the member so as to move the switch member out of contact making position to an open circuit position, projecting members carried respectively by the slide and by the movable member, a bowed spring interposed between said projecting members and normally under compression and adapted to hold the slide with the switch member either in open circuit or closed circuit relation with respect to the stationary contact.

7. In an enclosed switch, a box having a cover hinged thereto at one end, an insulating base mounted in the box and having spaced recesses in the bottom of the base with funnel-like entrance passages, a stationary contact mounted in each recess, an insulating block having a sliding connection with the cover toward and from the hinged end thereof, a pair of connected switch blades loosely carried by said block with their ends in position to enter the funnel-like entrance passages leading to said contacts when the cover is closed while the block is in one position, said block being slidable longitudinally of the cover when the cover is open to displace the switch blades so that when the cover is again closed the circuit will remain open.

8. In a switch, a support, a pair of contacts on the support, a member movable toward and away from said support, an insulating block mounted on said movable member, said block having spaced holes therein opposite said contacts when said movable member is moved toward said support, a U-shaped switch member loosely supported by said block with the legs of the U passing freely through said holes, a compression spring acting against a portion of said block and the central part of the U, whereby said spring normally resiliently holds said switch member in a fairly uniform position in said block but permits the switch member to be self-aligning with the contacts because of the loose fit between the block and the switch member.

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