

April 17, 1928.

1,666,724

D. T. WADSWORTH  
INCLOSED ELECTRIC SWITCH

Filed Aug. 15, 1924

2 Sheets-Sheet 1

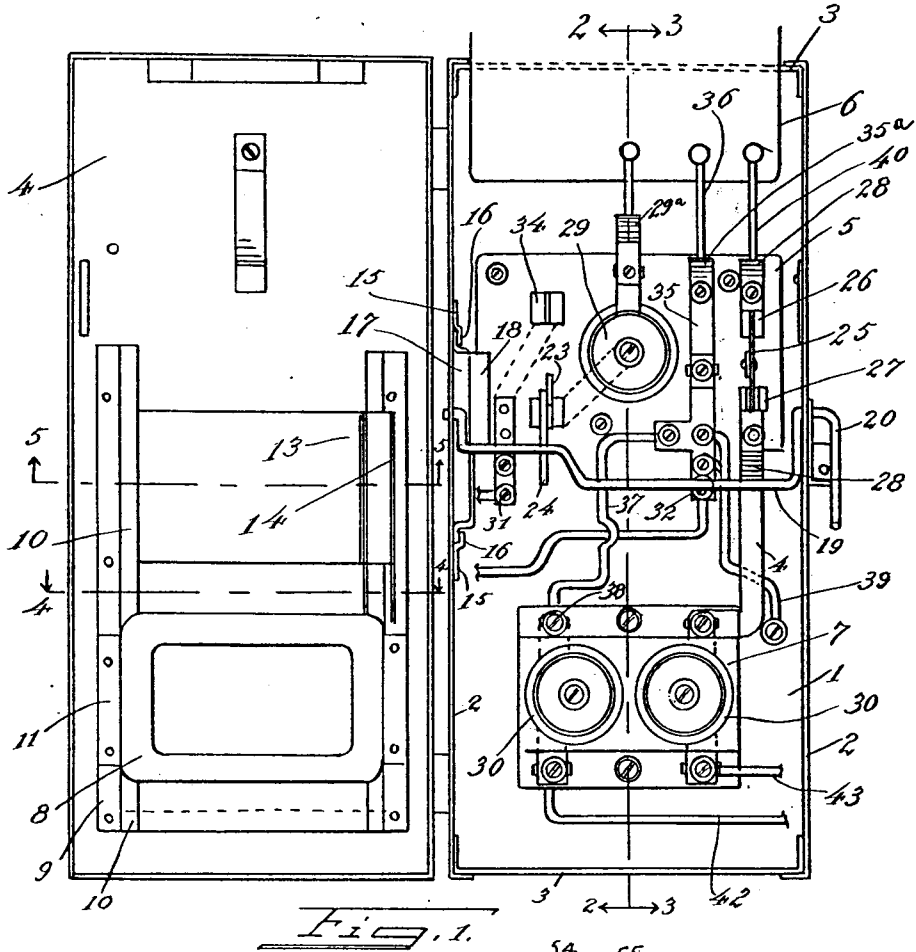


Fig. 1.

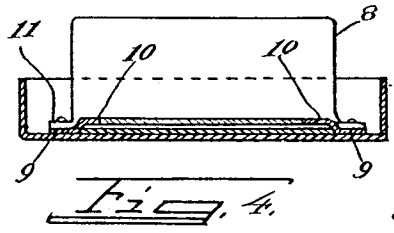


Fig. 4.

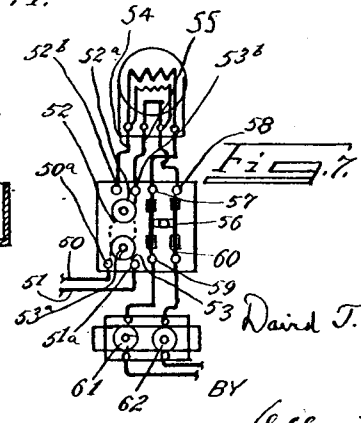


Fig. 7.

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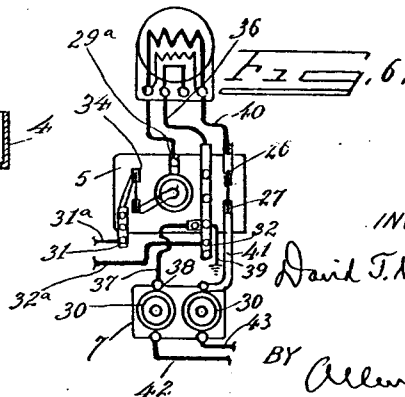
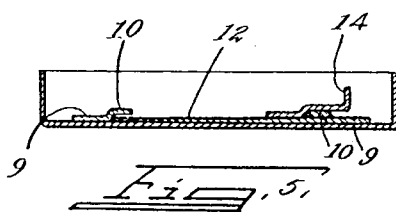
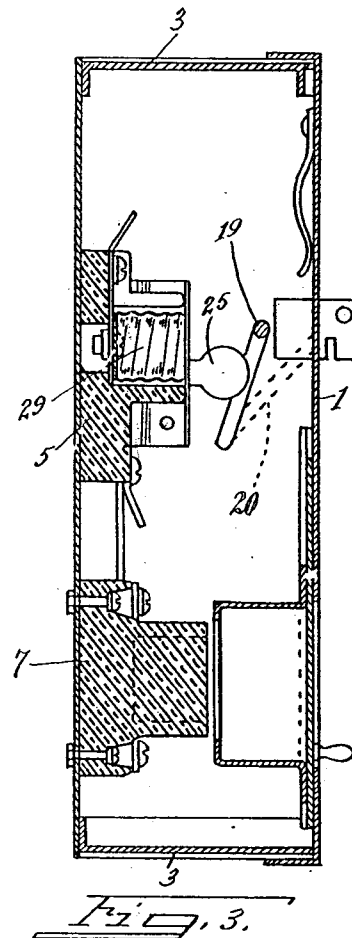
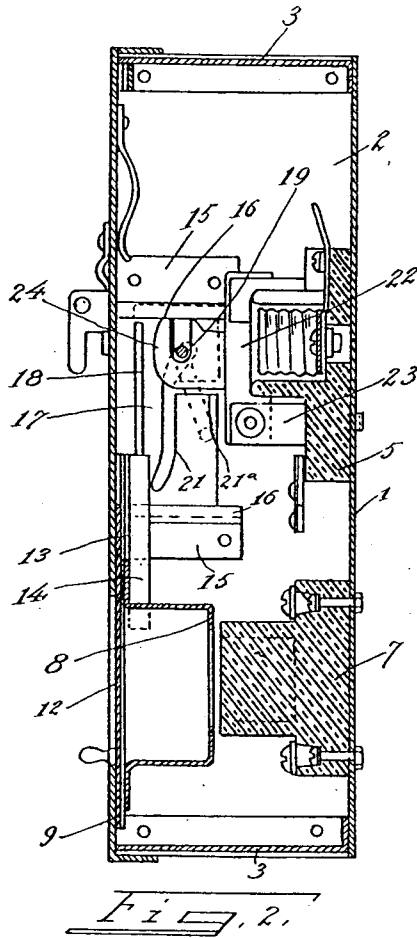
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2 Sheets-Sheet 2



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# UNITED STATES PATENT OFFICE.

DAVID T. WADSWORTH, OF COLD SPRINGS, KENTUCKY, ASSIGNOR TO THE WADSWORTH ELECTRIC MANUFACTURING COMPANY, OF COVINGTON, KENTUCKY, A CORPORATION OF KENTUCKY.

## INCLOSED ELECTRIC SWITCH.

Application filed August 15, 1924. Serial No. 732,272.

My invention relates to externally operated switch and fuse boxes, particularly where same are used with an individual electric meter, and relates particularly to modes of assuring safety against contact with live parts in changing fuses, protection to the central station by its own inaccessible fuses, and protection against theft of current from the customers' fuses.

There are two general types of switch boxes on the market at present which are designed to prevent contact with live terminals and also to protect against theft of current. The one type has a box inclosing the switch, and the fuses, with a door giving access to the fuses, but not to the switch, said door being interlocked with the device for opening the switch so as to assure that the fuses are dead, whenever the door that gives access to them is open.

The other type has two sets of fuses, one of which sets is inclosed in an inaccessible compartment in a box, and is located ahead of an electric meter, i. e., between the meter and the line. Also in another compartment in the same box, or in another box, are the lines coming from the meter to the load, said lines having fuses in them. There is no chance of theft from this second type of box, but there is chance of injury through contact with live parts.

It is one of my objects to provide a device which accomplishes the good points of each of the above types of box without the disadvantages of either.

Another of my objects is to provide for a novel interlock mechanism between a fuse door and switch operating member, in externally operated switches, which is simple to make and install, easy to remove, if its use is not desired, and which cannot be bent out of line, or fall away, so as to create a short circuit.

Another object of my invention is to provide for meter testing equipment in connection with the switch panel, as distinguished from the fuse panel portion of the box, avoiding any confusion in connection with barriers in the box, which together with the lid thereof, serve to render the live parts inaccessible when the fuse access door is open. Furthermore, with the addition of a meter test switch in the inaccessible portion

of the installation, the power company can render the switch permanently open by throwing open the test switch and sealing the lid of the box in place.

I accomplish the objects above stated and other points of advantage to be noted, by that certain construction and arrangement of parts to be hereinafter more specifically pointed out and claimed.

In the drawings:

Figure 1 is a front elevation of the device with the lid open.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a section on the line 3—3 of Figure 1.

Figure 4 is a section on the line 4—4 of Figure 1.

Figure 5 is a section on the line 5—5 of Figure 1.

Figure 6 is a diagram of one wiring diagram for my device.

Figure 7 is a wiring diagram for another style of box.

The body of the box is formed of a simple sheet metal structure having a base 1, sides 2, 2, and ends 3, 3. The lid 4 is hinged to the box, as is usual in devices of this nature, and may be provided with some way of sealing it shut (not shown).

I have shown two blocks of insulation, such as porcelain, although a single block would serve. The switch block 5, in this instance, is at the upper end of the box, which has a space above the block for the insertion of the terminal block 6 of an electric meter.

The fuse block 7 is inserted in the lower end of the box, and preferably has the cups for the fuses elevated above the points of attachment of the wires from the meter, which will be referred to specifically below. The lid has a hopper 8, located so that when the lid is closed, it will surround the top of the fuse block, housing the fuses in the opening therein, but giving access to no other part of the box. The hopper opens through the face of the lid, to give access to the fuses in changing them, and metal strips 9, 9, are secured to the underside of the lid, in such a way that the elevated projecting portion 10 of the strips lies under the side edges of the hopper. Lips 11, 11, on the two sides

of the hopper lie over the portions of the strips 9 which are secured against the lid thereby elevating the hopper enough, so that a sliding shutter 12, which is set under the flanges 10 of the strips, can slide across the opening left by the hopper in the face of the lid.

The strips 9, 10, extend along the lid beyond the hopper and the shutter has a lip 13, which extends outwardly away from the shutter, and thence turns so as to project inwardly from the lid in the upstanding flange 14.

Located at the side of the box, are a pair of strips 15, having raised flanges 16, which provide a slideway for the interlock piece 17. This piece is formed so as to drop down between the flanges 16, but it cannot be tipped into the box, without breaking away the flanges, which are securely riveted or welded into place.

By raising and lowering the piece 17, which has a laterally extending lip 18 at the top thereof, the sliding shutter is required to take predetermined positions, due to the interference of its lip flange 14, with the lip 18 on the piece 17.

The switch is operated by a bail 19, which extends out through one side of the box in a bend 20 that forms a handle. The other end is journaled in the side of the box, and the transverse portion of the bail engages in a cam slot 21 in the interlock piece 17.

The cam slot 21 has a branch slot 21<sup>a</sup>, which opens through the lower edge of the piece 17. As a result, the piece 17 can be dropped into place, or removed at will.

The switch itself in the form shown has a single blade, but the number of blades can be as desired. The blade 22 is pivoted in the clip 23, and has a piece of insulation material 24 thereon, same being formed with a forked end to engage over the bail.

Also mounted on the switch base is a test switch which has a blade 25, and terminals 26 and 27. On each of these terminals a tongue 28 is projected, to serve as point of attachment of the clips of a meter testing set.

On the switch base is a fuse 29. There may be as many fuses as desired in this portion of the box, said fuses being termed station fuses, as they are not available for changing to the customer, through the fuse door.

The mode of wiring the device may be varied to suit different purposes, and the number of circuits served. A two-wire, single circuit is shown in the drawings, in which the meter is inserted between the switch and the customers' fuses 30, in the fuse block 7. However, in view of the interlock for the fuse door, the wiring can be arranged to suit, without any chances of theft or of getting contact with live parts.

I prefer, however, to set the customers' fuses between the meter and the load, since this results in impossibility of stealing current, unless the box is broken open. There might be, and is a chance, to lead wires out through any fuse door, within practical range of costs in switch boxes of the type in question, but the hitching of wires onto the switch portion of my device is entirely impossible, unless the box is broken open, by opening the main lid thereof, or cutting a hole in its sides.

In the main views and diagram of Figure 6, the terminals for service lines, are shown at 31 and 32, with the service lines shown at 31<sup>a</sup> and 32<sup>a</sup>. There is a strap from the switch clip 34 to the terminal 31 and from the switch clip 23 to the service station fuse 29. A wire is connected from fuse 29, which also has a test tongue 29<sup>a</sup> thereon, to the meter.

The terminal 32, to which service lead 32<sup>a</sup> is secured, has a strap 35, on which is a test tongue 35<sup>a</sup>, and which strap is connected to the meter terminal block by a wire 36. The strap 35 is also connected by a lead 37 with one of the terminals 38 of the customer's fuse and is also grounded by a lead 39.

The meter is connected by wire 40 with one of the test switch terminals, and the other test switch terminal is connected by a lead 41, with the other terminal 38 of the second customer's fuse. The load lines lead out of the box at 42, 43, from the two customers' fuses.

In the wiring diagram of Figure 7, the service lines 50, 51 are connected to terminals 50<sup>a</sup> and 51<sup>a</sup>. Straps extend from the terminals 50<sup>a</sup> and 51<sup>a</sup>, as indicated by lines 52, and 53, to two service station fuses respectively indicated at 52<sup>a</sup> and 53<sup>a</sup>. From the fuse 53<sup>a</sup> a strap extends up to terminal 53<sup>b</sup> alongside of terminal 52<sup>b</sup> of the other fuse, where test tongues are attached as before, and from which wires 54 and 55 lead to the meter terminal block.

The switch 56 is a two blade switch, with leads from the meter to its terminals 57 and 58, and leads from its other terminals 59 and 60 to the two customers' fuses 61 and 62, from which the load lines pass out through the box. In this device the main switch serves as a test switch.

As in the first instance all testing is localized at the switch block, and the fuse block can thus be formed in the most convenient way to permit of complete exclusion of the customer from the switch portions of the box, while giving him access to his fuses.

It is not believed to be necessary to deal particularly with the necessity for station fuses, and customers' fuses, as this has been practiced in the switch art for many years.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent, is:—

1. An electric switch and fuse box comprising a switch, a member for operating the switch, comprising a rocking part controlled from the outside of the box, said box having an opening and a shutter therefor, a slide in the box, means for slidably mounting the slide, said slide being formed and located so as to prevent open positions of the shutter, when the slide is in a selected position, and means on the slide detachably engaging the rocking part, whereby it is moved to the said selected position when the switch is closed.

2. An electric switch and fuse box, comprising a switch, a member for operating the switch comprising a rocking part controlled from the outside of the box, said box having an opening, and a shutter therefor, a slide moving in said box and removable therefrom, means for mutual sliding engagement between the slide and the box, a cam slot in said slide engaging said rocking part, said slide being so formed and located as to prevent an open position of the shutter when the rocking part is in switch closing position.

3. An electric switch and fuse box, comprising a switch, a member for operating the switch comprising a rocking part controlled from the outside of the box, said box having an opening, and a shutter therefor, a slideway along the side of the box, open at the top, a slide moving in said slideway and removable therefrom, a cam slot in said slide engaging said rocking part, said slide

being so formed and located as to prevent an open position of the shutter when the rocking part is in switch closing position, and said slot being formed with a downwardly opening branch, adapted to slide over the rocking part, whereby the slide can be lifted away when or if desired.

4. An electric switch and fuse box, comprising a switch, a member for operating the switch comprising a rocking part controlled from the outside of the box, said box having an opening, and a shutter therefor, a slide in the box, means for slidably mounting the slide, a cam slot in said slide engaging said rocking part, said slide being so formed and located as to prevent an open position of the shutter when the rocking part is in switch closing position, said mounting means formed of a pair of elevated flanges, forming a dovetail in which the slide moves, whereby the slide cannot bend outwardly and touch any live parts of the mechanism.

5. An electric switch and fuse box, comprising a switch, a member for operating the switch comprising a rocking part controlled from the outside of the box, said box having an opening, and a shutter therefor, a slide moving in said box, means for mutual sliding engagement between the slide and the box, a cam slot in said slide engaging said rocking part, said slide being so formed and located as to prevent an open position of the shutter when the rocking part is in switch closing position.

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