Nov. 3, 1925. 1,559,580

T. E. MURRAY, JR

SWITCH AND FUSE MOUNTING

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Fig. 1.

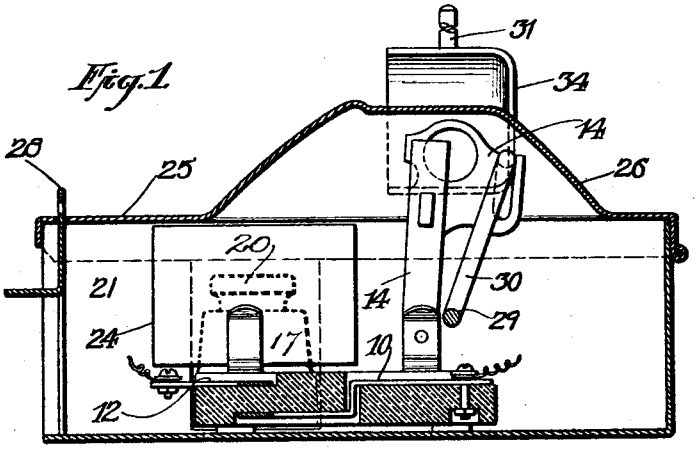


Fig. 2.

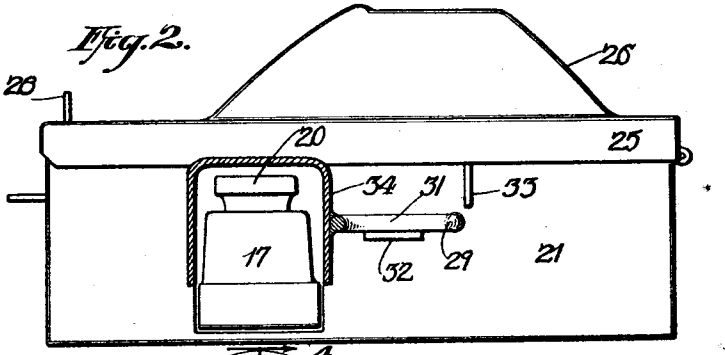
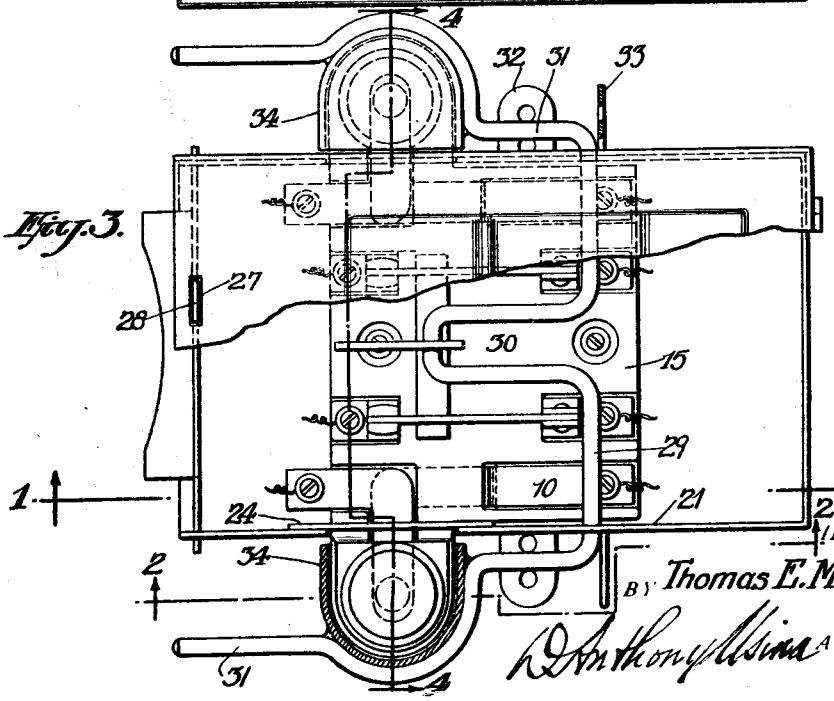


Fig. 3.



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Fig. 4.

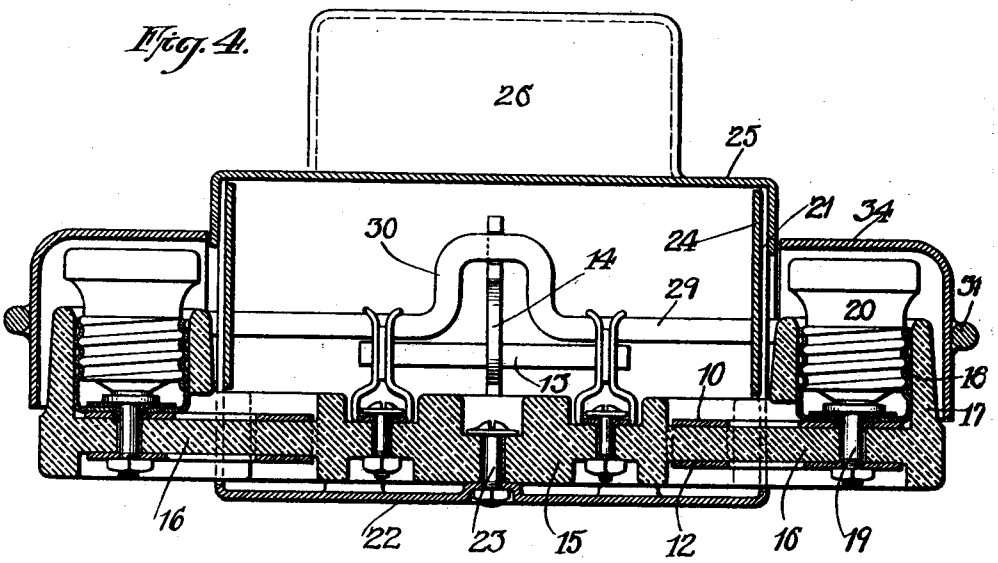
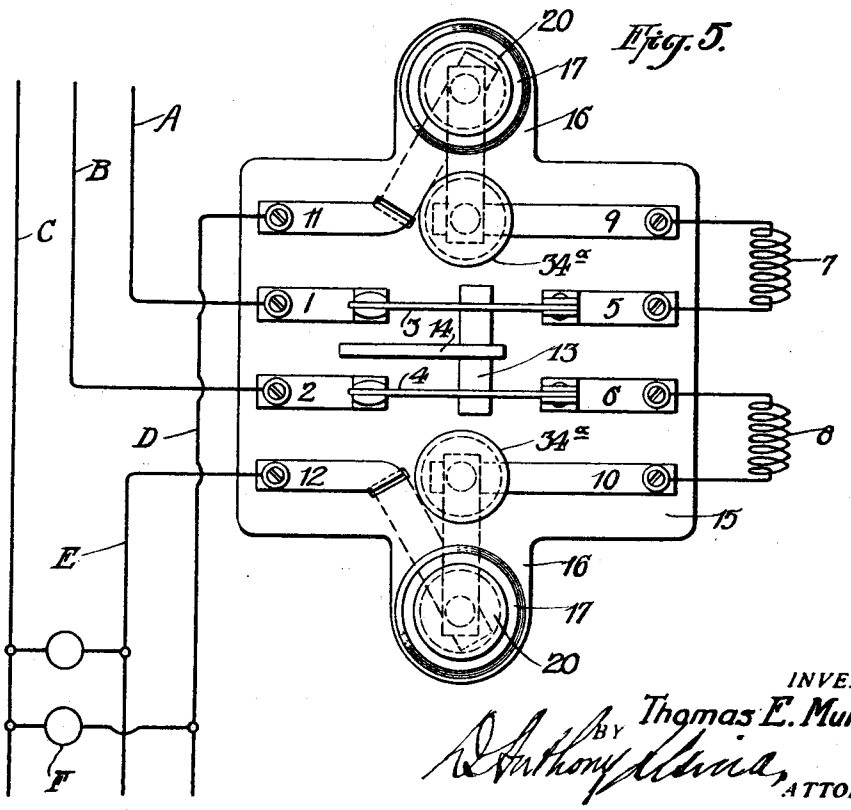


Fig. 5.



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UNITED STATES PATENT OFFICE.

THOMAS E. MURRAY, JR., OF BROOKLYN, NEW YORK.

SWITCH AND FUSE MOUNTING.

Application filed January 6, 1923. Serial No. 611,022.

To all whom it may concern:

Be it known that I, THOMAS E. MURRAY, Jr., a citizen of the United States, residing in Brooklyn, New York, have invented certain new and useful Improvements in Switch and Fuse Mountings, of which the following is a specification.

In certain prior applications I have described boxes and mounts particularly designed for the switches and fuses generally used at the entrance of electric service lines into a house and designed to make the fuse terminals accessible to the householder or at least to make it possible for him to change the fuses, but to do this only when the switch is open so that no current can be stolen from the fuse terminals and so that the person inserting a new fuse is not apt to be injured.

My present invention relates to apparatus of the same general character, in which the desired objects are obtained by a simple construction in which the fuse socket is not carried in the same box with the switch terminals, but is carried wholly or substantially outside of such parts; and in which the construction is distinguished in other ways referred to more fully hereinafter.

The accompanying drawings illustrate two embodiments of the invention.

Fig. 1 is a longitudinal section through a box of one type showing the switch open, the plane of section being indicated by the line 1—1, Fig. 3;

Fig. 2 is a side elevation with parts in section on the line 2—2, Fig. 3;

Fig. 3 is a plan of the complete apparatus partly in section and with part of the cover removed;

Fig. 4 is a transverse section, on the line 4—4, Fig. 3;

Fig. 5 is a diagram in plan illustrating the connections and certain alternatives.

The invention may be applied to various arrangements of terminals, switches, etc. According to Fig. 5, two main wires enter by way of terminals 1 and 2, whence the current passes through switch blades 3 and 4 pivoted on terminals 5 and 6 to coils 7 and 8 of a meter; thence by fixed terminals 9 and 10 through fuses hereinafter referred to and out by way of terminals 11 and 12 to the house wires. The two switch blades 3 and 4 are connected together by means of a cross bar 13 which carries an arm 14 by which the switch is opened or closed.

The fixed terminals and switch supports are mounted on a base 15 of porcelain or non-conducting material of rectangular outline. At each side of this base a lateral projection 16 (Figs. 4 and 5) is formed to carry the fuse sockets. As shown in Fig. 4 these projections carry at their outer ends upwardly projecting porcelain casings 17 in which are the fuse terminals. These terminals are shown of a common design comprising a threaded shell 18 fastened to the base by a central screw or rivet 19, each of these parts being of conducting material but being insulated from each other. A fuse 20 when screwed into the socket makes contact with the parts 18 and 19 separately and carries a fusible element which forms a connection between these parts.

The base 15 and the extensions 16 thereof are grooved on the top and bottom to accommodate the bars 10 and 12 respectively, the latter extending out to points beneath the fuse socket where one of them is fastened in contact with the shell 18 and the other with the central contact 19. In this way the current passes through the fuse or is interrupted if the fuse burns out. The same arrangement is shown at the opposite side between the terminals 9 and 11.

The switches and switch terminals are carried in a box 21 of sheet metal on the bottom 22 of which the porcelain base 15 is fixed as by means of screws 23. The width of the box 21 is such that its sides extend along the sides of the base 15, as shown best in Fig. 3, except where openings are left for the extensions 16 to pass through the side walls so as to carry the cases or sockets 17 for the fuses outside of the box. After the insertion of the base, with the terminals, attached thereto, the openings in the sides of the box may be closed by plates 24 welded in place.

The box will generally be formed with an opening, Fig. 1, at one end, for making connections with a meter or other apparatus which fits closely against the end of the switch box so as to prevent access thereto. The box is provided also with a cover 25 hinged at its rear edge, having a flange to surround the box and having an elevated portion 26 in the center to permit the turning of the switch blades up as shown in Fig. 1. The flanges of the cover may be used to close the openings in the sides of the box though I prefer the separate plates

24 for this purpose. When the cover is brought down an opening 27 therein passes over an upwardly projecting ear 28 on the front wall of the box which is designed to carry a padlock, the key of which is held by the electric company.

For manipulating the switch a bent shaft 29 is used having a central arm 30 engaging a slot in the switch arm 14 (Fig. 1) and pivoted in the sides of the box, projecting through the latter and bent on the outside to form arms or cranks 31 by which the shaft can be rocked between the limits set by the stops 32 and 33 (Fig. 2). The stops 32 and 33 are perforated, as shown in Fig. 3, so that by means of a staple or other connection the switch can be locked if desired in either open or closed position.

Each of the arms 31 carries a cap 34 welded or otherwise fastened to it at an intermediate point and adapted to cover and prevent access to the fuse on the corresponding side when the switch arms are down in the closed position. The swinging of either switch arm upward uncovers the fuses and moves the caps out of the way so that either or both of the fuses can be replaced. But this cannot be done until the switch arms are moved upward sufficiently to open the switch and thus prevent the stealing of current from the fuse terminals or accidental short circuiting of these terminals while the current is on.

The switch arms 31 will generally be free so that the consumer may replace fuses at will and is protected against injury when doing so. The cover 25 of the box, however, may be, and will generally be, locked down so as to prevent access thereto except by the company's authorized agent. Such a person will generally know enough to open the switch for safety's sake before touching the connections inside. However, safety mechanism for requiring the opening of the switch before the box can be opened may be applied in any one of various ways if desired.

Fig. 5 shows, in addition to the matters referred to above, a pair of service fuses 34ª within the box so as to be accessible only to the company. These are extra fuses and when used are placed in series with the customers' fuses 20 and are generally of larger capacity, so that they will not function except in case of heavy short circuit on the system. This has the advantage that the company may make the main fuses 34ª which are locked against the customer of maximum permissible capacity; leaving the customer to take care of auxiliary fuses 20 of normal capacity. If then the customer should make the fuses 20 of abnormally large capacity so as to permit a dangerous current to pass, such a current would be guarded by the main fuses 34ª. And in such a case only the company would be able to replace the burned fuses and restore the line.

This figure also shows the outside wires, the main service wires A and B and the neutral wire or bus C; also the wires D and E leading from the fuses to the load indicated at F.

The construction of my improved mounting is greatly simplified as compared with those heretofore in use. A single-compartment box is used with the fuse sockets on the outside of it. The two terminals of each fuse socket, as 10 and 12, Fig. 4, pass into the box and through it to the meter and the outside line respectively; so that there is nothing outside of the box except the fuse sockets, and the connecting plates or bars are most compactly arranged within the box.

The arrangement of the customer's fuse sockets at opposite sides of the switch and on the projecting parts 16 of the base, leaves room also for the location of the service fuses on the base, physically between the switch and the respective customer's fuses. Thus, each of the service fuses 34ª is connected, as is most desirable, in the electrical line leading from the meter to the load. That is, the main fuses 34ª as well as the auxiliary fuse 20 are on the load side of the meter, but the auxiliary fuse alone is made accessible by the mere opening of the switch.

Though I have described with great particularity of detail certain embodiments of my invention, yet it is not to be understood therefrom that the invention is restricted to the particular embodiments illustrated. Various modifications thereof in detail and in the arrangement of the parts may be made by those skilled in the art without departing from the invention as defined in the following claims.

What I claim is—

1. The combination with a metal box having a cover and carrying within it a switch, of a support of insulating material on which parts of said switch are mounted, said support having extensions beyond the opposite side walls of the box constituting insulating casings and fuse sockets in said casing in circuit with the terminals of said switch.

2. The combination with a metal box having a cover and carrying within it a switch, of a support carrying a switch comprising two blades and terminals adapted for connection to two line wires and two branches of a meter circuit, said support having extensions to points outside of said box and constituting insulating casings, fuse sockets in said casings, additional fuse sockets within the box, one of said outside fuse sockets and one of said inside fuse sockets being connected in circuit with terminals adapted to connect an outgoing wire of the meter with a load wire.

3. The combination with a box carrying

within it a switch, of a support on which parts of the switch are mounted, said support having an extension beyond the outer wall of the box and said extension carrying a fuse socket in circuit with the switch terminals, the connection from both terminals of the fuse socket passing therefrom into the compartment which contains the switch, and a cover for said fuse socket.

4. The combination with a box carrying within it a switch, having a switch handle extending outside of the box, of a support on which parts of the switch are mounted, said support having an extension beyond the outer wall of the box and said extension carrying a fuse socket in circuit with the switch terminals, the connection from both terminals of the fuse socket passing therefrom into the compartment which contains the switch, and a cover for said fuse socket, which cover is attached to said switch handle.

5. The combination with a box carrying within it a switch, of a support on which parts of the switch are mounted, said support having an extension beyond the outer wall of the box and said extension carrying a fuse socket in circuit with the switch terminals, the connections from both terminals of the fuse socket passing therefrom into the compartment which contains the switch.

6. The combination with a box, of a base 15 carrying a switch and having lateral projections 16 carrying fuse sockets, the main part of the base being carried in the box and the projections 16 passing to the outside through openings in the sides of the box, and connecting members from both terminals of each fuse socket extending into the box and carried by the main part of the base adjacent to the switch terminals.

In witness whereof, I have hereunto signed my name.

THOMAS E. MURRAY, JR.