April 26, 1949. R. N. ROWE 2,468,235

ELECTRIC SWITCH UNIT

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Fig. 1

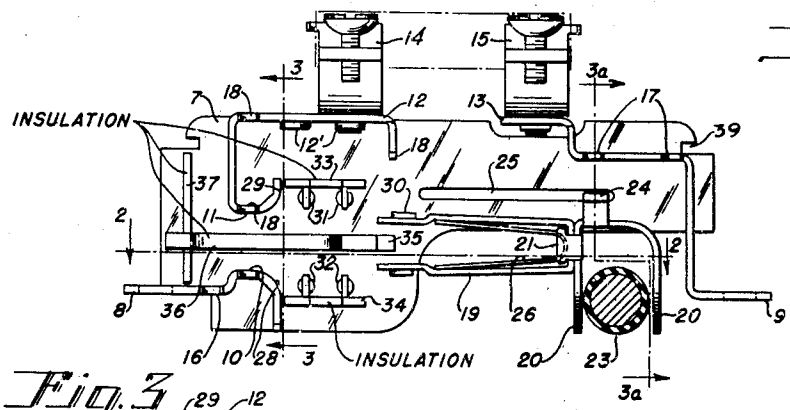


Fig. 3a

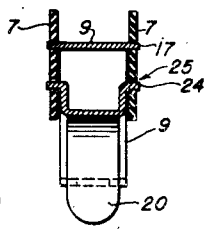


Fig. 3

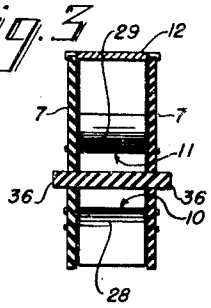
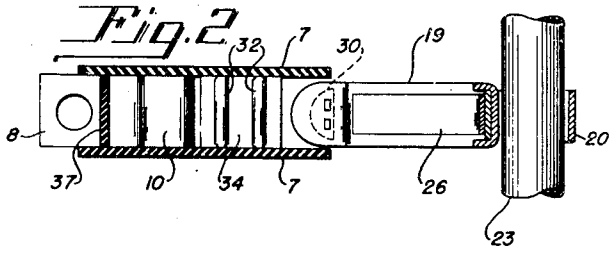


Fig. 2



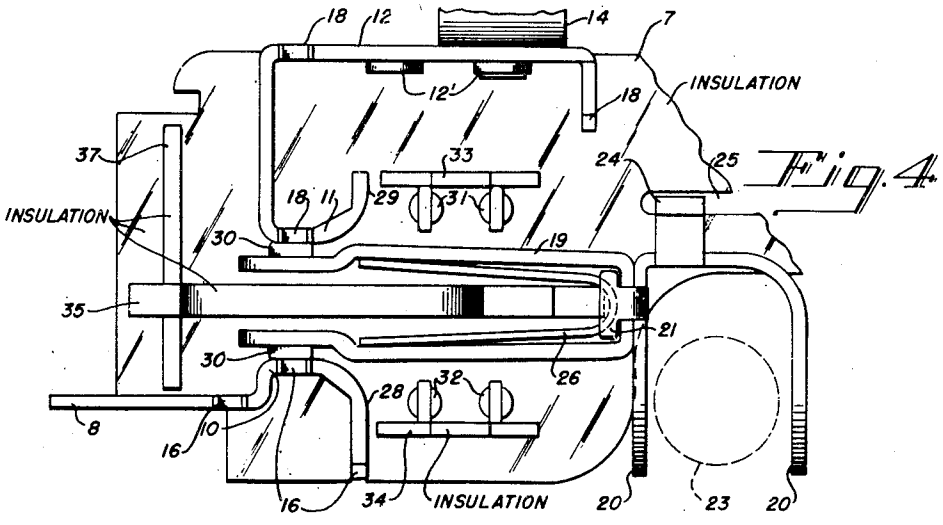


Fig. 4

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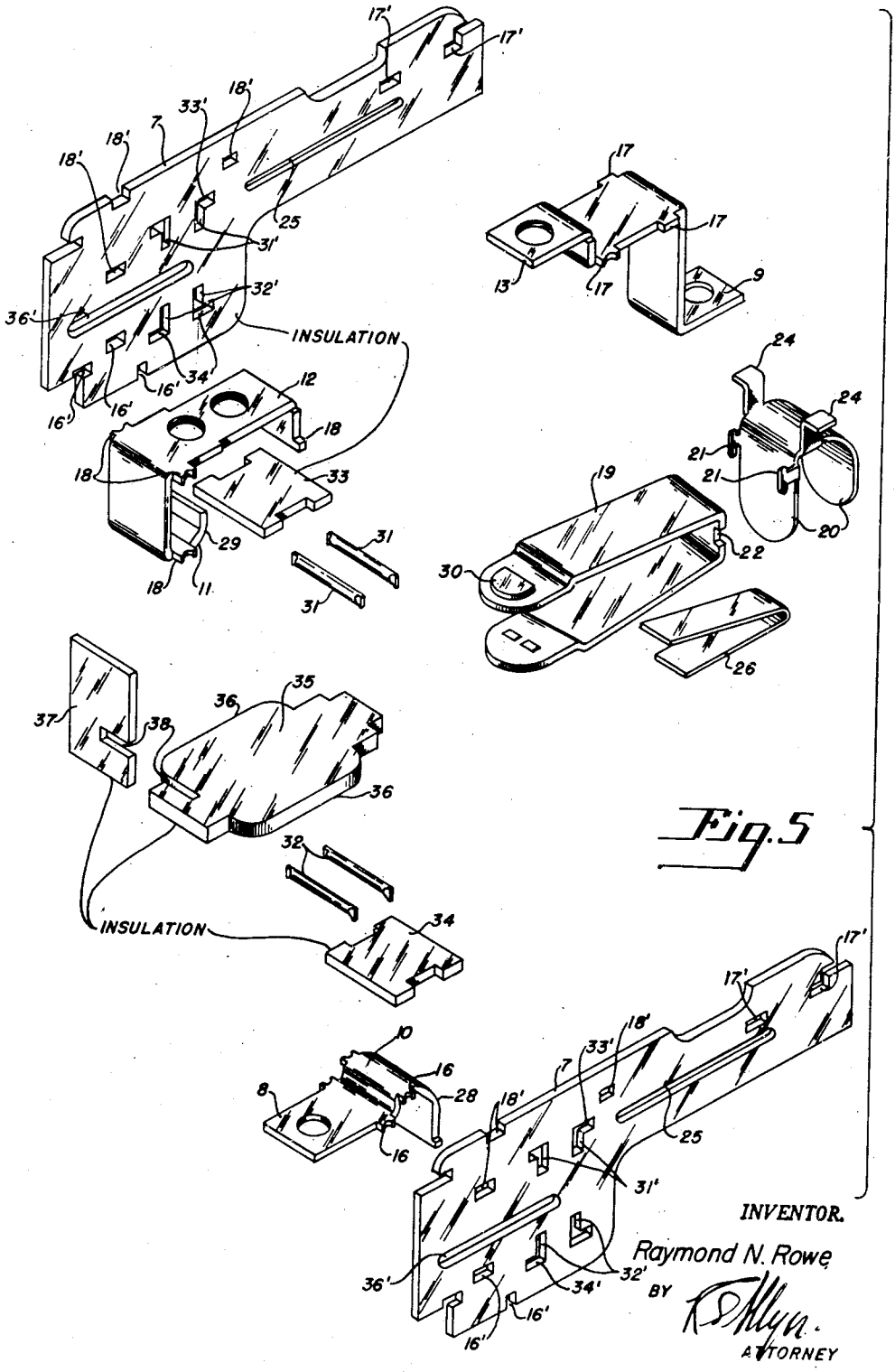


Fig. 5

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ELECTRIC SWITCH UNIT

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Application November 7, 1946, Serial No. 708,375

6 Claims. (Cl. 200—144)

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My invention relates to the contact mechanism and its support.

One object is to provide a simple, compact but efficient switch unit which can be readily installed in various ways and in which the movable switch contact may be moved by any suitable means.

Another object is to provide a construction which can be made economically, for instance, from stampings and strip stock.

Another object is to provide a simple switch of maximum current carrying capacity for a given size.

Another object is to provide a unit which can be readily adapted to various conditions, e. g. for use with or without fuses or protective relays or with fuses of different sizes.

In carrying out the invention, I mount the various current carrying elements between insulating side plates which are suitably secured together to hold them in place.

The accompanying drawings illustrate one form of unit embodying my invention.

Fig. 1 is a side view of a switch unit embodying one form of the invention, one of the side plates being omitted so as to disclose all of the other parts, the movable switch member being shown in the open circuit or "off" position.

Fig. 2 is a longitudinal sectional view taken on the plane of the line 2—2 of Fig. 1.

Fig. 3 is a transverse sectional view taken on the plane of the line 3—3 of Fig. 1.

Fig. 3*a* is a transverse sectional view taken on the plane of the line 3*a*—3*a* of Fig. 1.

Fig. 4 is a side view of part of the switch unit of Fig. 1 on a larger scale and showing the switch in the closed circuit or "on" position.

Fig. 5 is an exploded perspective view showing all of the parts of the switch unit.

In the form shown, the side plates 7, 7, of insulating fibre or other switch material, supports all the contacts and are dissipating members. Terminal strips 8 and 9 constitute convenient supports for the unit. Stationary contact 10 is formed on a raised portion of a strip 8 and stationary contact 11 is formed as a part of the supporting strip 12 for the fuse.

The other fuse support 13 is a part of the strip 9. Any suitable fuse clips 14, 15 may be mounted on supports 12 and 13. A screw seat 12' may be provided so as to accommodate the relocation of the clip 14 if desired. The various conductive parts are supported between the side plates 7, 7 for instance by being provided with lugs such as lugs 16, 16, 16 in part 8 which fit in recesses or holes 16', 16', 16', in the side plates. Part 9 has

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lugs 17, 17, 17 which fit recesses or holes 17', 17' and 17' in the side plates. Part 12 has lugs 18, 18, 18 which fit holes 18', 18' and 18' in the side plates.

The movable switch member 19 is forked in the form of a U-shaped part carried by the saddle 20. These parts are connected by lugs 21 which are interlocked in notches 22 in the switch contact member 19. This saddle receives a crank shaft 23 by which it is moved back and forth.

The switch member is guided by lugs or ears 24 which slide in slots 25 in the side plates. A compensating spring 26 may be conveniently mounted within the arms of member 19 to assist in expanding it to ensure good contact engagement between the contacts 10 and 11.

The tips of the contacts are flared at 28 and 29 to assist in guiding the movable contact into position. The contact faces 30, 30 of the movable member 19 may be formed of any suitable material and are preferably tapered toward the stationary contacts so that when the switch member is drawn away from the stationary contacts the arc will be drawn toward the center.

To assist in dissipating the arc, I provide grids of discrete conductive bars or pins 31, 31 and 32, 32 adjacent the opposite sides of the path of movement of the movable switch member. These pins have flattened ends supported in holes 31' and 32' respectively in the side plates.

Insulating abutment plates or guards 33 and 34 are supported close to the tips of the contacts in holes 33' and 34' above and below the grids 31 and 32 respectively to prevent flash of the arc to conductive parts of the switch or the box in which the unit may be mounted.

Between the stationary contacts 10, and 11, I mount an insulating barrier 35 which extends between the arms of the movable switch member and between the grids 31 and 32 to keep the arcs separated as far as possible. This barrier has flanges 36 which are supported in slots 36' in the side plates. Behind the contacts 10 and 11, I provide an insulating abutment 37 which has a slotted engagement 38 with the end of the barrier 36. This abutment prevents striking an arc to the terminal mounting bolt (not shown).

The parts may be held together by the lugs which extend from the conducting elements into the side plates or by other conventional means.

I claim:

1. As an article of manufacture, a self-supporting switch unit comprising two metallic strips having supporting feet, a fuse terminal on one end of one of said strips, a lower switch contact

on the other strip, an upper switch contact arranged opposite the lower contact, a fuse terminal integrally connected with the upper contact and arranged opposite the first-mentioned fuse terminal, an insulating barrier extending between said contacts, side plates connecting all of said parts in fixed relation and a switch member having two spaced arms slidably supported by said plates for moving between said contacts at opposite faces of said barrier and means for detachably connecting said switch member to the operating crank of actuating mechanism.

2. As an article of manufacture, a self-supporting switch unit comprising two metallic strips, each having a supporting foot at one end, a fuse terminal on one end of one of said strips, a lower switch contact on the other strip, an upper switch contact arranged opposite the lower contact, a fuse terminal integrally connected with the upper contact and arranged opposite the first-mentioned fuse terminal, insulating side plates connecting all of said parts in fixed relation, a switch member slidably supported between said plates for moving between said contacts and a saddle connected to said switch member and guided to slide between said plates and having an opening for detachable connection with an operating crank of actuating mechanism.

3. As an article of manufacture, a self-supporting switch unit comprising two metallic strips having supporting terminal feet, a fuse supporting terminal integral with one end of one of said strips, a lower switch contact integral with the other strip, an upper switch contact arranged opposite the lower contact, a fuse supporting terminal integrally connected with the upper contact and arranged opposite the first-mentioned fuse supporting terminal, insulating side plates connecting all of said parts in fixed relation, a switch member having two spaced arms, a saddle connected to said switch member and guided to slide in said plates and having an opening for detachable connection with the operating crank of actuating mechanism and a guide member mounted between said plates and extending between the arms of said switch member.

4. As an article of manufacture, a switch unit comprising two spaced insulating side plates, metallic strips secured between said plates at opposite ends thereof, each strip having a foot serving as a support for the unit, one strip having a contact portion extending between said plates, the other strip having an extension constituting a supporting member for one end of a circuit protective device, a third strip supported between said plates, one end of said latter strip having a contact portion spaced away from the first-mentioned contact portion and the other end of said latter strip having means for supporting the other end of a circuit protective device, a saddle guided to slide in said plates and having two parts for engaging on opposite sides of an operating shaft, a switch member having spaced arms connected to said saddle and means carried by

said side plates for guiding said switch member to position between said contacts.

5. As an article of manufacture, a switch unit comprising two spaced insulating plates, terminal strips secured between said plates at opposite ends thereof, each strip having a foot serving as a support for the unit, one strip having a terminal contact extending between said plates, the other strip having an extension constituting a supporting member for one end of a fuse, a third strip supported between said plates, one end of said latter strip having a contact spaced away from the first-mentioned contact and the other end of said latter strip having means for supporting the other end of a fuse, a saddle guided to slide in said plates and having two parts for engaging on opposite sides of an operating crank shaft, a switch member having two spaced arms connected to said saddle, an insulating barrier between said plates for guiding said switch member to position between said contacts and an insulating abutment at the end of said barrier remote from said switch member for confining any arc between said barrier, said abutment, said side plates and said terminal contact.

6. A switch unit comprising two metallic strips, each of which has a terminal foot for supporting the unit, one strip having a contact portion extending generally toward the other strip, said other strip having a fuse supporting member in a plane parallel with its foot, a second fuse supporting member in the same plane with the first-mentioned fuse supporting member, a contact portion connected to the second fuse supporting member and spaced apart from the first-mentioned contact portion, insulating side plates supporting all of said strips including said contact portions and said fuse supporting members, a saddle having lugs slidable in said side plates and having an opening facing in a direction away from the plane of said fuse supporting members for fitting over an actuating member, a switch member connected to said saddle and means for guiding said switch member to slide between said contact portions.

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