

April 15, 1930.

J. SACHS

1,754,442

ELECTRIC CIRCUIT CONTROLLING APPLIANCE

Original Filed Nov. 24, 1926

2 Sheets-Sheet 1

Fig. 1

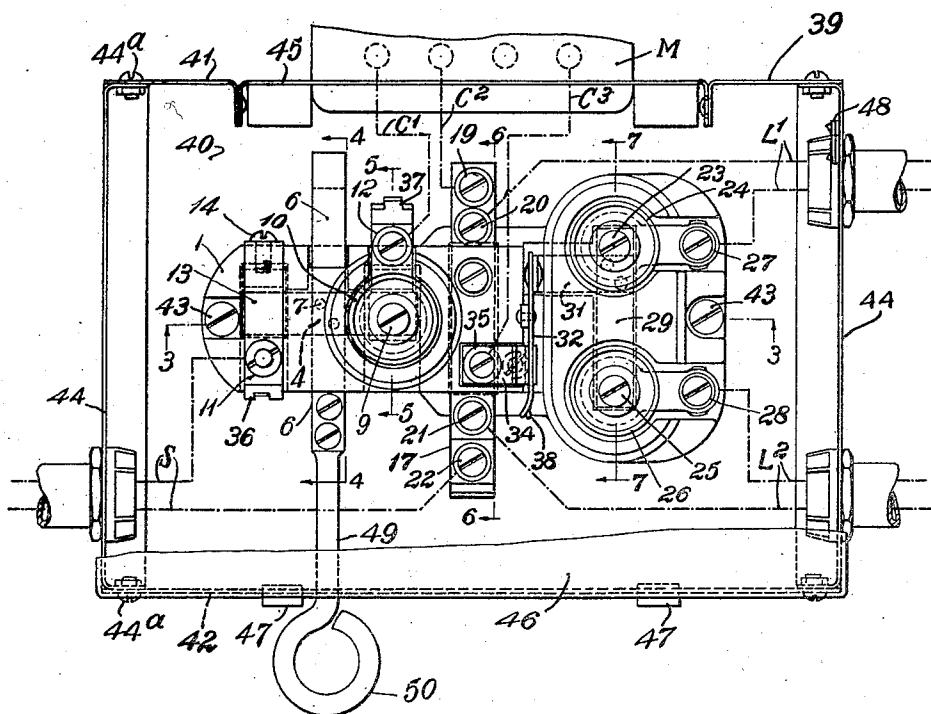
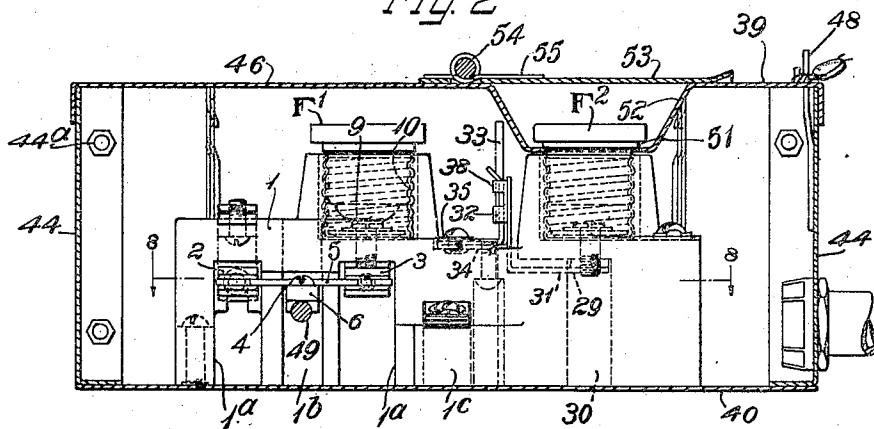


Fig. 2



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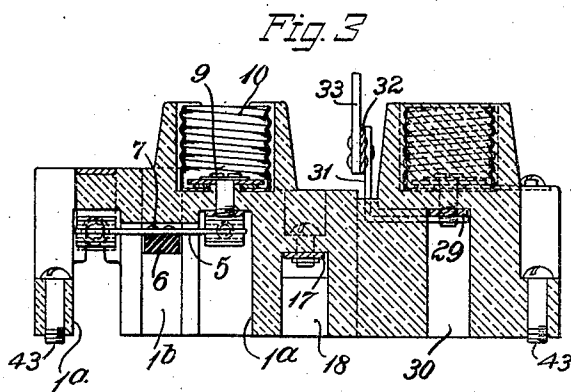
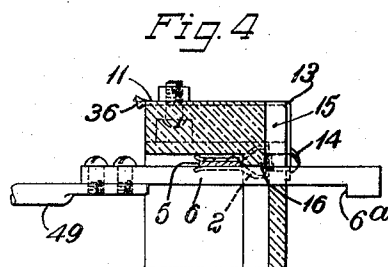
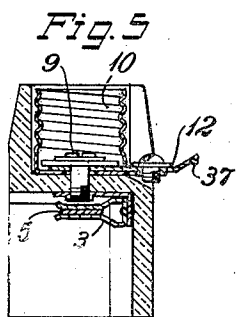
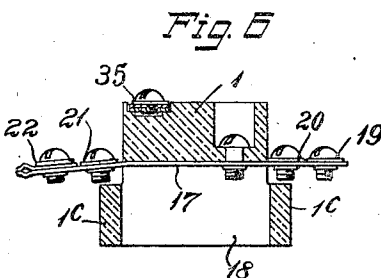
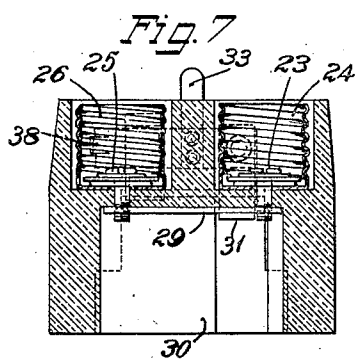
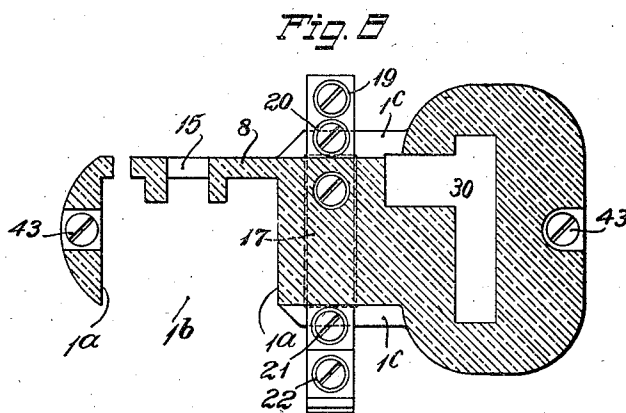
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ELECTRIC-CIRCUIT-CONTROLLING APPLIANCE

Application filed November 24, 1926, Serial No. 150,586. Renewed January 20, 1930.

This invention is particularly applicable to an electric appliance having circuit controlling means, preferably including switching and fusing elements, enclosed within a protecting cabinet capable of being sealed so as to render the live parts inaccessible; but the invention is not so limited. A construction embodying the present invention is in many respects similar to that disclosed in my copending application for electric circuit controlling appliances, Serial Number 746,911, filed October 30, 1924, and Serial No. 131,043, filed August 23, 1926.

One of the objects of the present invention is to provide, in an appliance of the type referred to, a sliding switch having an improved construction and having an improved cooperative relationship with the other parts of the appliance, whereby the circuit is broken at two places and whereby other advantages are obtained.

Another object of the invention is to provide an improved operating mechanism for an appliance of the general character referred to, this operating mechanism including a member rectilinearly movable through an opening in a wall of the cabinet.

In the accompanying drawing, I have shown one embodiment of the invention, but it will be understood that the drawing is intended for illustrative purposes only and is not to be construed as defining or limiting the scope of the invention, the claims forming a part of this specification being relied upon for that purpose.

Of the drawing:

Figure 1 is a front view of an appliance embodying the invention, the front cover of the enclosing cabinet being broken away to show the parts inside of the cabinet.

Fig. 2 is a bottom view of the appliance, the cabinet being shown in section.

Fig. 3 is a sectional view taken along the line 3—3 of Fig. 1.

Fig. 4 is a vertical sectional view taken along the line 4—4 of Fig. 1.

Fig. 5 is a vertical sectional view taken along the line 5—5 of Fig. 1.

Fig. 6 is a vertical sectional view taken along the line 6—6 of Fig. 1.

Fig. 7 is a vertical sectional view taken along the line 7—7 of Fig. 1.

Fig. 8 is a sectional view taken along the line 8—8 of Fig. 2.

In accordance with the invention, I provide an insulating base 1 which is so constructed and arranged that the front body portion thereof is spaced from the wall or surface upon which the base is mounted, so as to provide space for a switch. Preferably and ordinarily the supporting wall is the back wall of an enclosing cabinet as will presently appear. The base is shown as formed with integral portions 1^a, 1^a extending rearward, so as to be adapted to directly engage the said supporting wall. These integral portions 1^a, 1^a serve as means for supporting the said body portion in normally fixed spaced relationship with the said supporting surface. A switch recess 1^b is formed between the said portions 1^a, 1^a.

As shown and as preferred, there are two stationary switch contacts or clips 2 and 3 carried by or connected with the base adjacent the back thereof. These contacts 2 and 3 are in opposed relationship and are laterally spaced from each other at opposite sides of a vertical plane perpendicular to the said supporting surface. For normally establishing an electrical connection through the switch, there is provided a movable switching member 4 which includes a conducting element 5 normally engaging both of the clips 2 and 3. The switching member 4 also includes an insulating element 6 upon which the conducting element 5 is carried. The said conducting element 5 preferably projects laterally at both sides of the insulating element 6 and it is shown as being in the form of a flat blade parallel with the plane of the supporting surface for the base. The details of connection between the elements 5 and 6 may be varied, but as illustrated, the two elements are rigidly connected together by means of rivets 7.

The recess 1^b in the block may be shaped as shown in Fig. 8, being open at the rear and at the bottom and being partly closed at the top by an integral wall 8. The before-mentioned switch contacts 2 and 3 are located

in this recess and when the contacts are in the form of clips they are preferably arranged with the openings therein facing toward the bottom. This arrangement permits the conducting element 5 of the switch member 4 to be positioned as aforesaid in a plane parallel with the supporting wall for the block.

The switching member 4 is rectilinearly movable parallelly with the supporting wall. Upon movement in one direction the conducting element 5 of the said member is disengaged from both of the switch contacts or clips 2 and 3, thus breaking the electrical connection simultaneously at two places. Upon movement in the other direction, the clips are re-engaged to re-establish the electrical connections.

Mounted upon a face of the base other than the back face and preferably upon the front face thereof is a pair of fuse receiving contacts, one contact of the said pair being connected with one of the before mentioned switch contacts. As illustrated, the said fuse contacts are adapted for receiving a fuse of the screw plug type, the said contacts being shown in the drawings at 9 and 10. Preferably, the screw which constitutes the central contact 9 extends through the base and directly engages and holds one of the switch contacts, such as the contact 3 to hold it in place. It will be observed that both fuse contacts are located at one side of the aforesaid vertical plane between the two switch contacts 2 and 3, as clearly shown in Fig. 3.

Two wire connecting terminals 11 and 12 are provided, arranged to be accessible from the front of the base and connected respectively with the remaining switch contact 2 and with the remaining threaded fuse contact 10. The connection between the wire connecting terminal 11 and the switch contact 2 is preferably in the form of a strap 13 extending along the front and top faces of the base and connected with the contact 2 by means of a screw 14.

The insulating element 6 of the switch member is arranged to engage the base to be guided at least in part thereby and as shown it is guided by the base entirely independently of the supporting wall on which the base is mounted. Preferably the said element 6 extends through an opening in the upper part of the base. For convenience in molding the base, this opening is formed by means of a notch 15 which extends rearward from the front of the base and into the wall 8 at the top of the recess 1^b. The side and rear walls of the notch 15 constitute three guiding surfaces for the element 6 and a rearward projection 16 in the recess 1^b constitutes a fourth guiding surface for the switch member. The element 6 is preferably provided with an integral shoulder 6^a which constitutes a stop to limit downward movement of the switch member.

An appliance embodying the invention is applicable for use in connection with electric meters and when so used the electric connections are such that the switch and fuse which have been described are ahead of the meter, which is shown at M in Fig. 1. The service wires are represented diagrammatically at S, one of these wires being connected directly with the terminal 11 on the switch and fuse block. A meter connection C¹ extends from the wire terminal 12 to the meter. The base carries a conductor member 17 which extends vertically through a recess 18 extending forward from the back of the base. The said member 17 is provided at its upper end with wire connecting terminals 19 and 20 and at its lower end with wire connecting terminals 21 and 22. The other service wire S is connected with one of the lower terminals, as for instance 22, and a meter connection C² is connected with one of the upper terminals, as for instance 19.

It is frequently preferable or desirable to provide one or more load side fuses on the same base with the switch and fuse on the service side. I have shown two pairs of contacts for receiving such load side fuses, these contacts being adapted for receiving fuses of the screw plug type. The said pairs of contacts are shown respectively at 23 and 24 and at 25 and 26. The base 1 is widened at one end to provide for the said load side fuse contacts and for the sake of added strength shoulders 1^c, 1^c are provided which extend over the ends of the recess 18. The outer threaded contacts 24 and 26 are connected respectively with wire connecting terminals 27 and 28. The inner contacts 23 and 25 are connected with a conductor 29 located in a recess 30 extending forward from the back of the base. The conductor 29 is riveted or otherwise connected to a conductor 31 which extends laterally and forward through a hole in the front of the base and forms a hinge contact for a switch blade 32. The switch blade 32 is adapted to normally engage a switch clip 34 provided with a wire connecting terminal 35. The switch blade 32 carries a forward extending operating handle 33 of insulating material. A meter connection C³ extends between the meter and the wire terminal 35.

The two pairs of load wires are shown respectively at L¹ and L², the wires L¹ being connected respectively with the remaining upper terminal 20 on the conductor 17 and with the terminal 27, and the wires L² being connected respectively with the remaining lower terminal 21 on the conductor 17 and with the terminal 28. From the foregoing description, it will be apparent that when the two switches are closed, the circuit will extend from one of the service wires through the switch 4, the service fuse, the meter and the respective load fuses, to the respective load

circuits. From the other service wire, the connection extends directly to the load circuits through the conductor 17 and the terminals thereon.

The switch 32 serves as a testing switch to disconnect the meter from the load circuits when the meter is being tested. To facilitate the testing, the terminals 11, 12 and also the switch blade 32 are provided respectively with auxiliary contacts 36, 37 and 38 adapted for the attachment of meter testing connectors.

Preferably and ordinarily, the switch and fuse block described is enclosed within a suitable casing or cabinet which is constructed not only to enclose the major portion of the switch and fuse block, but also, in the case of a meter service appliance, to be protectively associated with the meter so as to enclose the terminal portion thereof and to also enclose the connections between the meter and the switch and fuse block. In Figs. 1 and 2 of the drawings, I have shown a cabinet 39 having a back wall 40, which constitutes a supporting wall for the base 1, an integral top wall 41 and an integral bottom wall 42. The base is secured to the back wall 40 by means of screws 43, 43. The cabinet is also provided with side walls 44, 44 which are preferably removable, being shown as held in place by means of screw bolts 44^a, 44^a. The top wall 41 is provided with an opening adapted for receiving a removable end wall 45 which is, or may be, of standard construction having an opening therein adapted to receive the terminal portion of the meter M. With the meter in place as shown in Fig. 1, the terminal portion thereof is within the cabinet as are also the connections C¹, C² and C³ between the meter and the appliance within the cabinet. The cabinet is also provided with an openable cover 46 which is shown as being hinged at 47, 47 to the bottom wall 42. The cover is adapted to be sealed in closed position as for instance by means of a wire inserted through a hole in a latch 48 projecting through a hole in the cover.

For moving the switch member 4, I provide a suitable rod 49, which is preferably rigidly connected with the insulating element 6 of the said switch member and which extends through an aperture in the bottom wall of the cabinet terminating in a handle 50. It will be obvious by moving the handle the switch member may be rectilinearly moved to break and re-establish the electrical connection as already described.

The main portion of the cover 46 is spaced away from the base 1 sufficiently to provide ample clearance for the service side fuse which is indicated at F¹ in Fig. 2. In order that the load side fuses may be accessible even when the main cover 46 is sealed in closed position, I preferably form the said cover with an opening 51 therein registering with the

load side fuses, one of which is indicated at F² in Fig. 2. The cover is depressed as indicated at 52, the depressed portion extending downward in close proximity with the outer portion of the base so that no access can be had through the opening with any parts within the cabinet except the said load side fuses and the contacts therefor.

Preferably an auxiliary cover 53 is provided for closing the opening 51, this cover being hinged at 54 and being normally held in closed position by a spring 55. This cover is adapted to be opened by the customer at any time for the purpose of inspecting or replacing the load side fuses.

I do not herein claim as part of the present invention the particular form of enclosing cabinet which is shown, as this constitutes the subject matter of my copending application for enclosing system for electric circuit controlling appliance, Serial No. 190,287, filed May 10, 1927.

What I claim is:

1. In an electric switch, the combination of an insulating base, means for holding the said base in fixed relation to a supporting surface with the back of the base facing the said surface, two opposed stationary switch contacts laterally spaced from each other and connected with the base adjacent the back thereof, the said contacts being located at opposite sides of a vertical plane perpendicular to the said supporting surface, a pair of fuse receiving contacts on the base at the front thereof and at one side of the said plane, means for electrically connecting one of the fuse contacts with the corresponding switch contact, a wire terminal at the other side of the said plane and electrically connected with the remaining switch contact, and a conducting switching element rectilinearly movable parallelly with the said plane into and out of engagement with both of the switch contacts simultaneously to make and break electrical connection between them.

2. In an electric switch, the combination of an insulating base, means for holding the said base in fixed relation to a supporting surface with the back of the base facing the said surface, two opposed stationary switch contacts laterally spaced from each other and connected with the base adjacent the back thereof, the said contacts being located at opposite sides of a vertical plane perpendicular to the said supporting surface, a pair of fuse receiving contacts on the base at the front thereof and at one side of the said plane, means for electrically connecting one of the fuse contacts with the corresponding switch contact, a wire terminal at the other side of the said plane and electrically connected with the remaining switch contact, a switching member movable parallelly with the said plane and comprising an insulating element and a conducting element carried thereby and

movable into and out of engagement with both of the switch contacts simultaneously to make and break electrical connection between them, and means engaging the insulating element for moving the switching member as aforesaid.

3. In an electric switch, the combination of an insulating base, means for holding the said base in fixed relation to a supporting surface with the back of the base facing the said surface, two opposed stationary switch contacts laterally spaced from each other and connected with the base adjacent the back thereof, the said contacts being located at opposite sides of a vertical plane perpendicular to the said supporting surface, a pair of fuse receiving contacts on the base at the front thereof and at one side of the said plane, means for electrically connecting one of the fuse contacts with the corresponding switch contact, a wire terminal at the other side of the said plane and electrically connected with the remaining switch contact, and a switching member rectilinearly movable parallelly with the said plane and comprising an insulating element and a conducting element carried thereby and projecting at both sides thereof, the said insulating element being located between the switch contacts and directly engaging the base to be guided in part thereby and the said conducting element being movable into and out of engagement with both of the switch contacts simultaneously to make and break electrical connection between them.

4. In an electric switch, the combination of an insulating base having a recess formed therein and extending from the back face thereof, means for holding the said base in fixed relation to a supporting surface with the back face of the base engaging the said surface, two stationary switch contacts carried by the base in the said recess, a movable flat switch blade located in the recess and parallel with the plane of the said supporting surface, the said blade normally engaging the said contacts to establish an electrical connection between them, and means for rectilinearly moving the said switch blade in either direction parallelly with the plane of the aforesaid supporting surface to disengage it from or to reengage it with at least one of the said contacts.

5. In an electric switch, the combination of an insulating base, means for holding the said base in fixed relation to a supporting surface with the back thereof facing the said surface, two stationary switch contacts carried by the base at the back thereof, a movable conducting switching element located at the back of the base and normally engaging the said contacts to establish an electrical connection between them, an insulating element upon which the conducting element is mounted, the said insulating element being located at the back

of the base and directly engaging the said base so as to be guided thereby independently of the supporting surface and independently of the contacts for rectilinear movement parallel with the plane of the said surface, and means for moving the insulating element and the conducting element as aforesaid in either direction to disengage the last said element from or reengage it with at least one of the said contacts.

6. In an electric switch, the combination of an insulating base having a recess formed therein and extending from the back face thereof, means for holding the said base in fixed relation to a supporting surface with the back face thereof engaging the said surface, two stationary switch contacts carried by the base in the said recess, a movable conducting switching element located in the recess and normally engaging the said contacts to establish an electrical connection between them, an insulating element upon which the conducting element is mounted, the said insulating element being located in part in the said recess and extending through a hole in the wall thereof so as to be guided thereby independently of the supporting surface for rectilinear movement parallel with the plane of the said surface, and means for moving the insulating body and the conducting element as aforesaid in either direction to disengage the last said element from or reengage it with at least one of the said contacts.

7. In an electric switch, the combination of an insulating base having formed therein two communicating overlapping recesses extending respectively from the front and the back faces thereof, the inner and outer edges of the said recesses constituting guiding means, means for holding the said base in fixed relation to a supporting surface with the back thereof facing the said surface, two stationary switch contacts carried by the base at the back thereof, a movable conducting switching element located in the recess and normally engaging the said contacts to establish an electrical connection between them, an insulating element upon which the conducting element is mounted, the said insulating element engaging the said guiding means so as to be guided thereby independently of the supporting surface for rectilinear movement parallel with the plane of the said surface, and means for moving the insulating body and the conducting element as aforesaid in either direction to disengage the last said element from or reengage it with at least one of the said contacts.

8. In an electric switch, the combination of an enclosing cabinet including an openable cover, an insulating base in the cabinet, means for holding the said base in fixed position in the cabinet with the back thereof facing the back wall of the cabinet, two stationary switch contacts carried by the base adjacent the back

5 wall of the cabinet a switching member located between the main body of the base and the back wall of the cabinet and rectilinearly movable parallelly with the said wall, the said member including a conducting element normally engaging the said contacts to establish an electrical connection between them and also including an insulating element upon which the conducting element is mounted, 10 and a handle rigidly connected with the insulating element and extending through a wall of the cabinet so as to be accessible from the exterior thereof, the said insulating element and handle being rectilinearly movable 15 as a unit and being respectively guided for such movement by the said base and by the last said cabinet wall.

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