E. P. BRAUNWARTH.

CUT-OUT SWITCH FOR ALTERNATING CURRENT MOTOR CIRCUITS.

APPLICATION FILED DEC. 4, 1917.

1,288,820.

Patented Dec. 24, 1918.

2 SHEETS—SHEET 1.

Fig. 1,

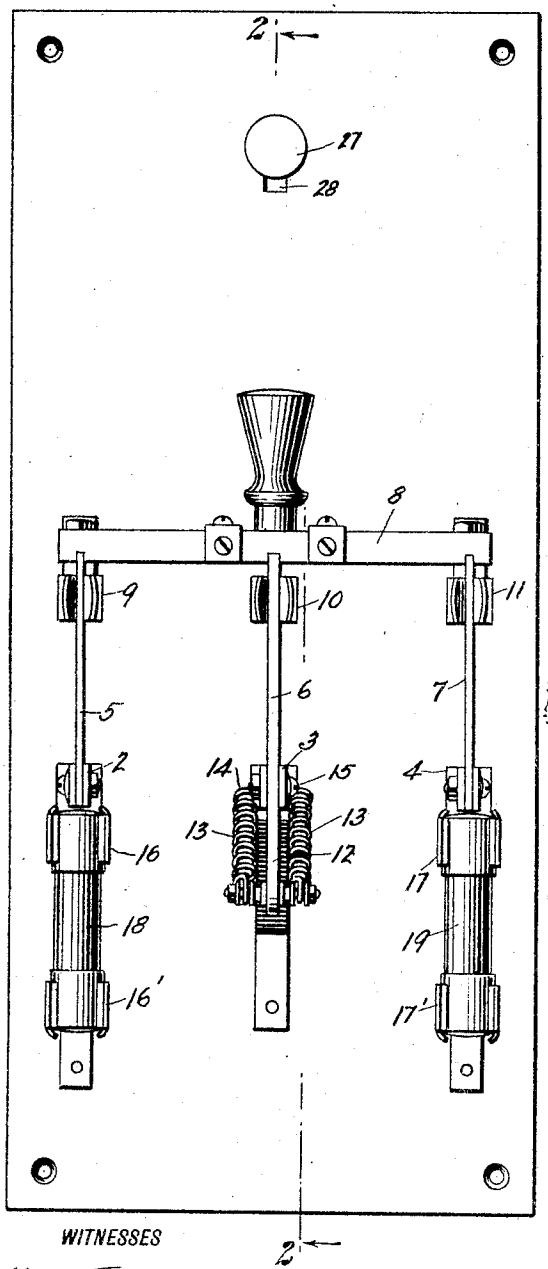
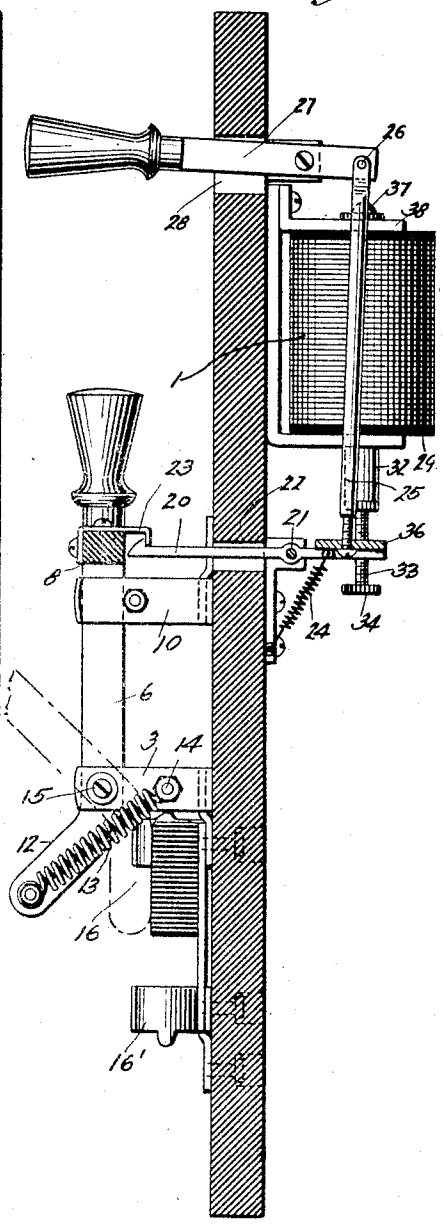


Fig. 2,



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Fig. 3.

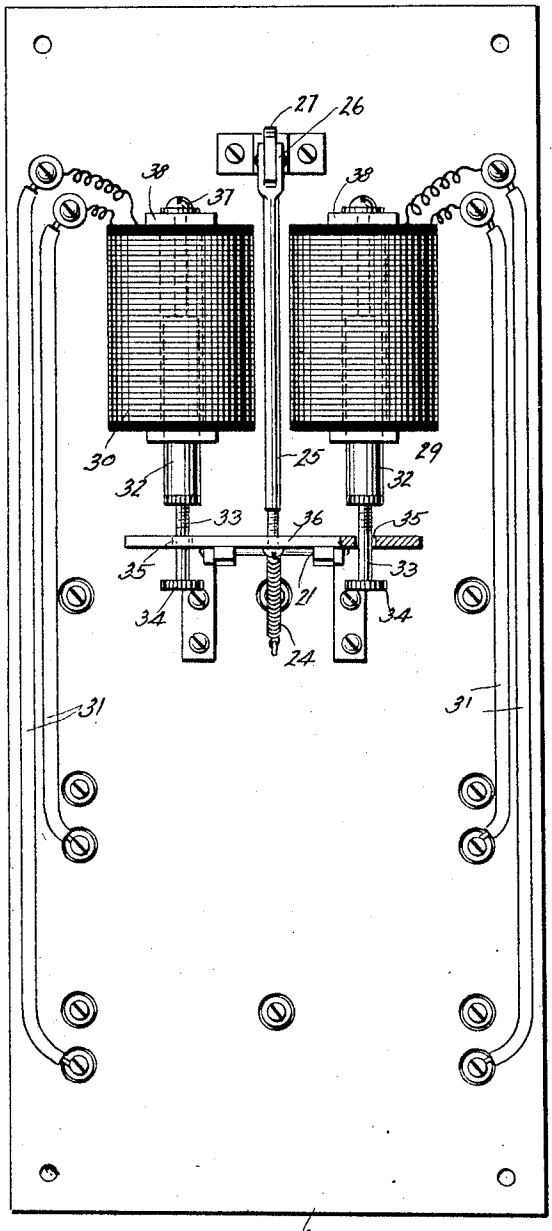
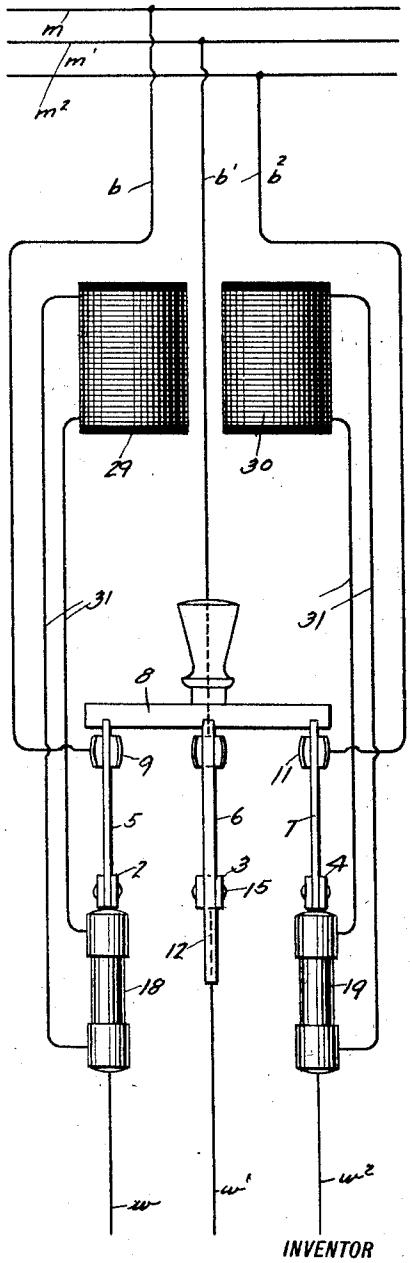


Fig. 4.



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CUT-OUT SWITCH FOR ALTERNATING-CURRENT MOTOR-CIRCUITS.

1,288,820. Specification of Letters Patent. Patented Dec. 24, 1918.

Application filed December 4, 1917. Serial No. 205,317.

To all whom it may concern:

Be it known that I, EDWARD P. BRAUNWARTH, a citizen of the United States, and a resident of the city of New York, borough of Brooklyn, in the county of Kings and State of New York, have invented a new and Improved Cut-Out Switch for Alternating-Current Motor-Circuits, of which the following is a full, clear, and exact description.

This invention relates to automatic cut-out switches for alternating current motor circuits, and it has for its general object to provide a novel protective means whereby the switch will be automatically opened in a simple, novel and effective manner when any fuse in the motor circuit is blown when the voltage is excessively high.

A more specific object of the invention is the provision of a switch in which the blades are normally held in closed circuit position against spring tension by means of a latch, which latter is automatically released by magnetic means which is in shunt with the fuse and which becomes energized when the fuse is blown, so that the releasing of the latch will permit the switch to automatically open.

With such objects in view, and others which will appear as the description proceeds, the invention comprises various novel features of construction and arrangement of parts which will be set forth with particularity in the following description and claims appended hereto.

In the accompanying drawings, which illustrate one embodiment of the invention and wherein similar characters of reference indicate corresponding parts in all the views,

Figure 1 is a front view of the switch;

Fig. 2 is a vertical section on the line 2—2, Fig. 1;

Fig. 3 is a rear view; and

Fig. 4 is a diagrammatic view of the circuit connections.

Referring to the drawing, 1 designates the switch panel, which has on its front a plurality of hinge clips 2, 3 and 4, to which are hingedly connected respectively the switch blades 5, 6 and 7 that are fastened to a cross bar 8. The switch blades coöperate with the spring clips 9, 10 and 11 to open and close the motor circuit. The central blade 6 has an extension 12 to which are connected helical springs 13 that are anchored at 14 on the central pivot post 3, these springs being under tension and so arranged with respect to the hinge 15 that the springs tend to throw the switch open or to move the switch blades from the full-line position, Fig. 2, to the broken-line position.

Associated with the hinge posts 2 and 4 are fuse clips 16 and 17 with which coöperate clips 16′ and 17′, respectively, for holding fuses 18 and 19 of any approved form so as to protect either side of the circuit from overloads. The switch is held closed against the tension of the springs 13 by means of a latch 20 which is fulcrumed at 21 on the rear side of the panel and projects forwardly through an opening 22, so that the front end of the latch can engage a catch 23 carried by the cross bar 8. The latch has a spring 24 connected with it so as to urge the catch-engaging end upwardly or hold it in locking position. This catch can be released by hand by means of an adjustable connecting bar 25 which has its upper end connected at 26 with a releasing lever 27 which passes forwardly through an opening 28 in the panel.

The switch is adapted to be automatically opened when either of the fuses blows, and for this purpose magnet or solenoid coils 29 and 30 are arranged in shunt relation to the fuses 18 and 19, respectively, the terminals of the fuses being connected with the windings of the coils by the wires 31 on the rear of the panel, Fig. 3. In each coil is a core 32 which carries an adjustable screw 33 that has a head 34 at its bottom, the screw passing through an opening 35 in a cross bar 36 carried by the rear end of the latch 20. Normally the cores 32 are in lowered position, as shown in Fig. 3, and the heads or hammers 34 are somewhat below the cross bar 36, and when either coil is energized the core thereof is drawn upwardly and the head 24 of the core strikes the latch bar 36 with considerable force so as to release the latch 20 from the latch 23, whereupon the switch automatically opens. The cores 32 are suspended by means of headed screws 37 which pass through the upper brackets 38 for the coils, and are screwed into the upper ends of the cores. The solenoids 29 and 30 operate only after the blowing of the fuse.

In Fig. 4 the supply mains m, m', m^2 have branches b, b', b^2 which lead to the spring clips 9, 10 and 11 of the switch and the

wires w, w', w^2 which supply the leads that feed the alternating current motors or other translating devices. When excessive current flows through either or both fuses 18 or 19, one or both solenoids 29 and 30 are energized and cause the switch to automatically open so as to protect the translating devices that are fed through the switch.

From the foregoing description taken in connection with the accompanying drawings, the advantages of the construction and method of operation will be readily understood by those skilled in the art to which the invention appertains, and while I have described the principle of operation, together with the apparatus which I now consider to be the best embodiment thereof, I desire to have it understood that the apparatus shown is merely illustrative and that such changes may be made when desired as fall within the scope of the appended claims.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. An automatic circuit breaker comprising a panel, switch blades mounted thereon, a contact with which the blades engage, circuit wires connected with the contacts, fuses connected with the switch blades, a latch mounted on the panel and extending through the same and adapted to hold the switch blades in closed circuit position, magnet coils in shunt relation to the fuses, a member connected with the latch, means for mounting the coils on the back of the panel, cores for the coils adjustably connected with the said member, and a device mounted on the panel and connected with the member for manually operating the latch from a point in front of the switchboard and independently of the coils.

2. The combination of switch blades, a latch for holding the blades in closed circuit position, a member connected with the latch, a spring for maintaining the latch in holding position, magnet coils, cores for the coils, adjustable connecting means between the cores and the said member, a lever for operating the latch, and an adjustable connection between the lever and said member.

EDWARD P. BRAUNWARTH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents. Washington, D. C."