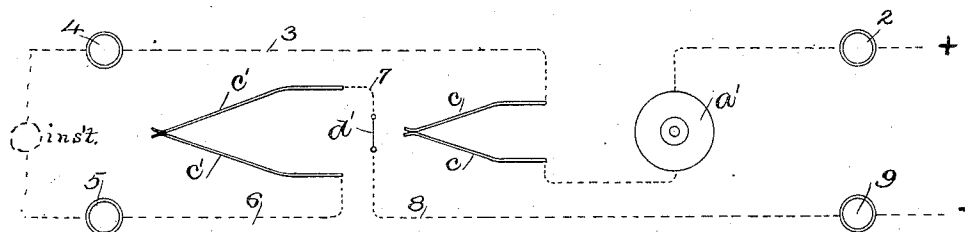
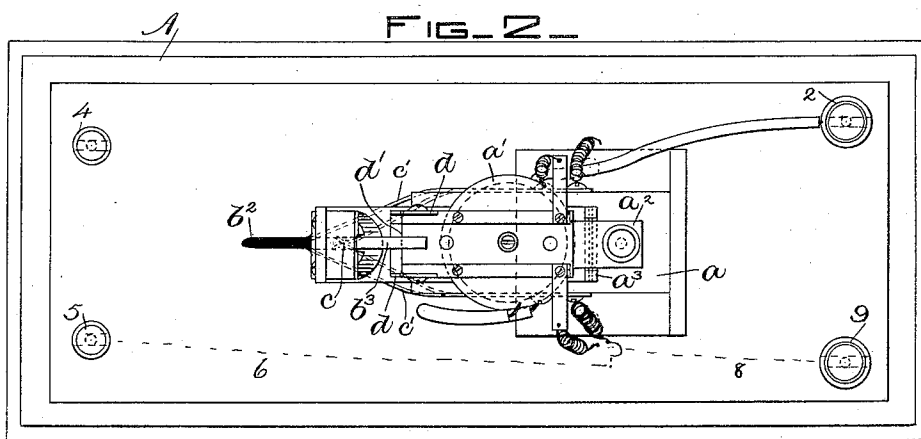
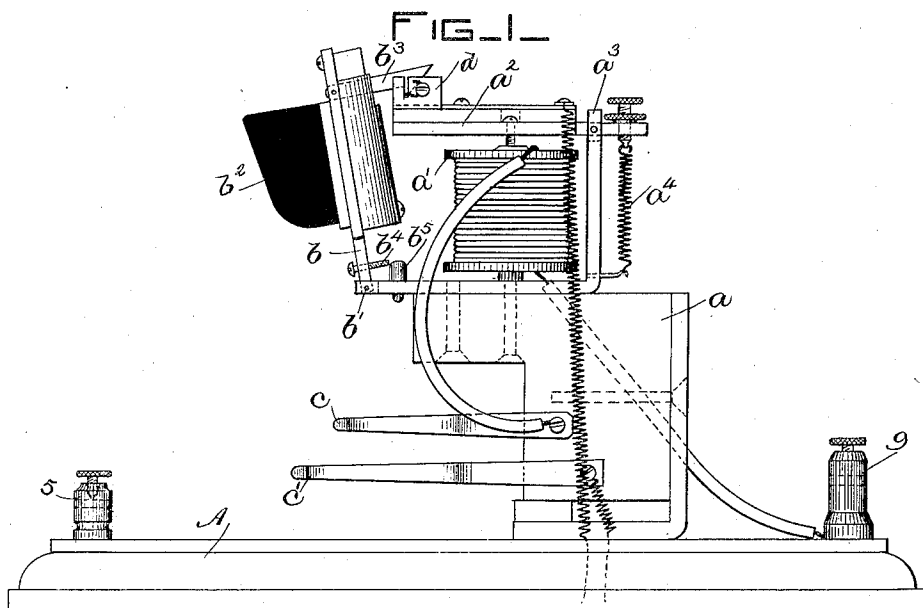


(No Model.)

B. J. NOYES.
ELECTRO MAGNETIC CUT-OUT.

No. 433,022.

Patented July 29, 1890.



WITNESSES
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BERNICE J. NOYES, OF BOSTON, MASSACHUSETTS.

ELECTRO-MAGNETIC CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 433,022, dated July 29, 1890.

Application filed February 5, 1890. Serial No. 339,244. (No model.)

To all whom it may concern:

Be it known that I, BERNICE J. NOYES, of Boston, county of Suffolk, State of Massachusetts, have invented an Improvement in Electric Cut-Outs, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object to construct an electric cut-out which may be used to protect instruments against the effects of abnormal currents.

In accordance with this invention an electro-magnet is included in the line, the armature of which carries a fuse-wire, and a gravity circuit-changer is employed, it being held in elevated position by the armature, but more directly by the fuse-wire thereon, so that in the event of any movement of the armature toward the pole of the electro-magnet, or in the event of the fuse-wire melting or rupturing, the gravity circuit-changer will fall. Two pairs of contact-pens or separable contacts are employed—one pair at each side of the instrument to be protected—so that whenever the gravity circuit-changer falls the instrument will be cut out, disconnected, or the current passing through it diverted.

Figure 1 shows in side elevation an electric cut-out embodying this invention; Fig. 2, a plan view of the cut-out shown in Fig. 1; and Fig. 3, a diagram showing the circuits.

The base-plate A has arranged on it a block, stand, or support a , upon which is secured an electro-magnet a' , the armature a^2 of which is pivoted to a stand or support a^3 , and is normally held retracted by a spring a^4 . The wire of the helix of the electro-magnet is quite large to allow a normal current to flow through it and not attract the armature; but when an abnormal current passes through it the armature is attracted.

A gravity circuit-breaker, consisting of a plate b , pivoted at b' , and having a block b^2 of insulating material on it, is employed, it having a suitable latch b^3 , which, when the circuit-breaker is in elevated position, engages a wire or other part arranged on the armature a^2 of the electro-magnet. The circuit-breaker is provided with an adjusting-screw b^4 , which, striking a projection b^5 , limits

its movement in one direction, and the circuit-breaker is suitably weighted to fall quickly and with considerable force.

On the support or standard a two pairs of contact-pens c c' are placed, their free but normally-contacting ends lying in the path of movement of the insulated portion of the gravity circuit-breaker, so that when the said circuit-breaker falls the said pens c c' are separated. Suitable ears d are arranged on the armature a^2 at or near its end, which support a fuse-wire d' , arranged transversely. The fuse-wire d' is the support for the latch b^3 . When the protector thus described is connected in circuit, the current normally passes from the post 2 through the helix of the magnet a' , through the pair of pens c , thence by wire 3 to the post 4, thence through the instrument to be protected, and returns to the post 5, thence by wire 6 to the pair of pens c' , thence by wire 7 to the fuse-wire d' , thence by wire 8 to the post 9. Thus it will be seen that one pair of pens is included in the line at each side of the instrument to be protected, and whenever the gravity circuit-breaker falls the line is open at each side of the instrument.

When an abnormal current passes over the line, the magnet a' energized, its armature will be attracted, and the gravity circuit-breaker will fall; but if the current be one that will not energize the magnet a' sufficiently to attract its armature, but is sufficient to melt the fuse-wire d' , the gravity circuit-breaker will also fall, so that in either instance the instrument to be protected will be cut out.

Whenever the gravity circuit-breaker falls and the pens c c' are separated, the arc drawn by said separation is destroyed by the block b^2 of insulating material.

The fuse-wire d' , arranged on the armature of the electro-magnet, may be employed as a support or hanger for various forms of circuit-changers, so that I do not desire to limit my invention to this use for supporting a circuit-breaker.

I do not herein claim a cut-out adapted to open the line at both sides of an instrument and simultaneously close the main circuit to maintain its continuity, as I desire to not only

protect the particular instrument cut out, but to leave the line dead open to thereby protect other instruments in the line.

I claim—

- 5 1. In an electric cut-out, an electro-magnet, its armature, and a gravity circuit-breaker, combined with two normally-contacting pens included in the circuit at one side of the instrument to be protected and two normally-
10 contacting pens included in the circuit at the other side of the instrument to be protected, said circuit-breaker when falling separating said pens to thereby break the continuity of the circuit at two points, substantially as de-
15 scribed.

2. In an electric cut-out, an electro-magnet, its armature, and fuse-wire carried by it, com-

bined with a gravity circuit-changer suspended on the fuse-wire, and contact-pens with which it co-operates, substantially as described. 20

3. In an electric cut-out, an electro-magnet, its armature, and fuse-wire carried by it, combined with a gravity cut-out and pivoted latch carried by it, and two pairs of pens included in circuit, one at each side of the instrument 25 to be protected, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BERNICE J. NOYES.

Witnesses:

JAS. H. CHURCHILL,
EMMA J. BENNETT.