

(No Model.)

F. BRYAN.
CUT-OUT.

No. 459,560.

Patented Sept. 15, 1891.

Fig. 1.

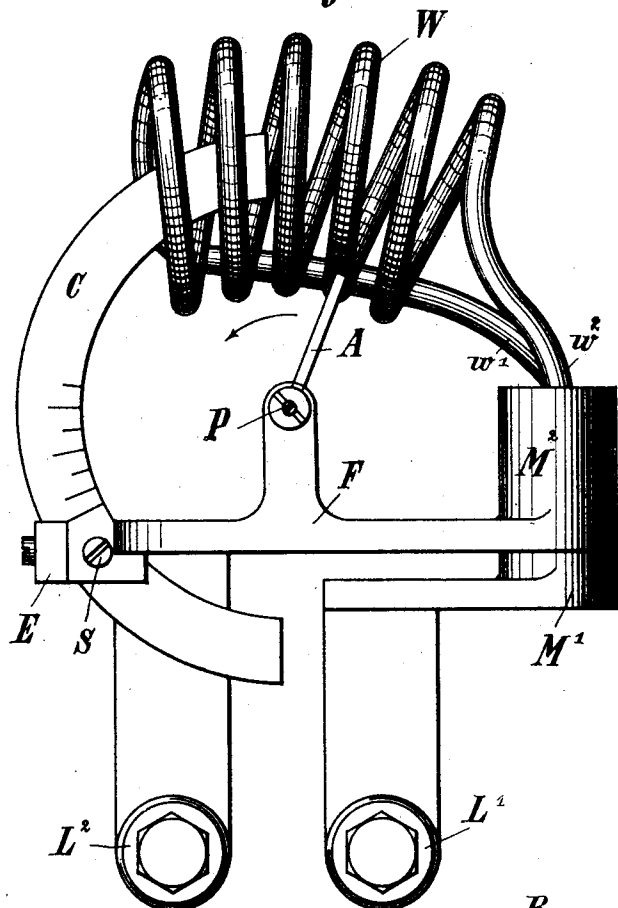


Fig. 3.

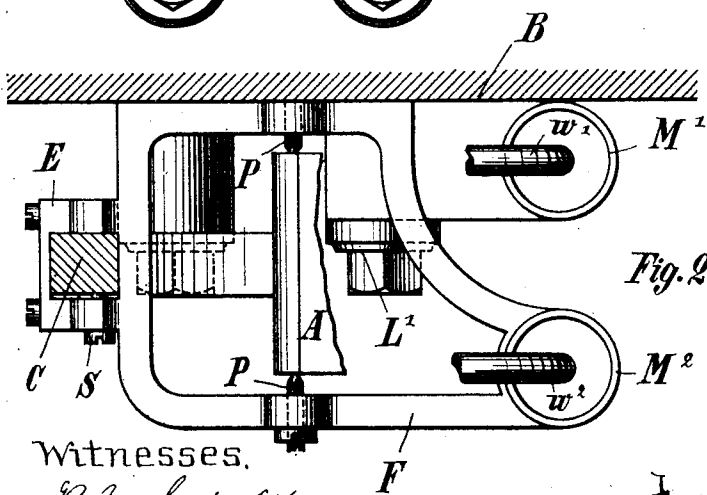
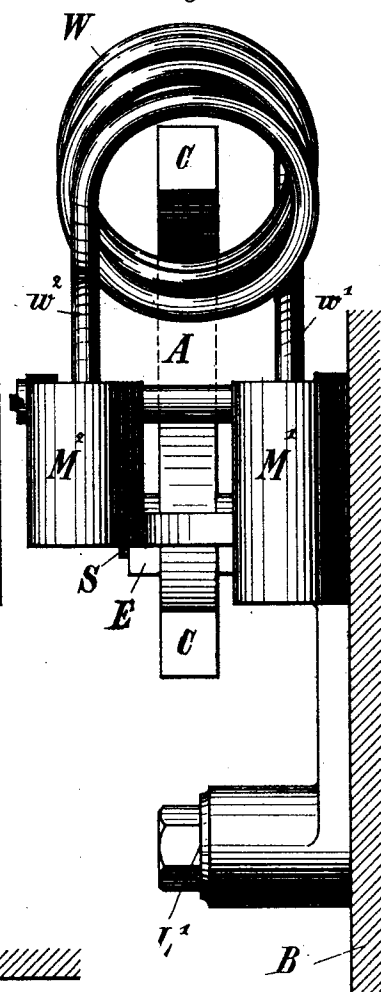


Fig. 2.

Witnesses.

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UNITED STATES PATENT OFFICE.

FRANK BRYAN, OF LONDON, ENGLAND, ASSIGNOR TO WOODHOUSE &
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CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 459,560, dated September 15, 1891.

Application filed March 11, 1891. Serial No. 384,560. (No model.)

To all whom it may concern:

Be it known that I, FRANK BRYAN, a subject of the Queen of Great Britain, residing at London, England, have invented certain new and useful Improvements in Appliances for Cutting Out an Electric Circuit, of which the following is a specification.

My invention relates to a cheap, reliable, and practically incombustible instrument which can be adjusted to break an electrical circuit whenever the current attains a predetermined strength, as I shall describe, referring to the accompanying drawings, in which—

Figure 1 is a front view and Fig. 2 a plan, of a cut-out instrument according to my invention. Fig. 3 is an end view.

Similar letters refer to similar parts throughout the several views.

M' M² are two cups containing mercury. M' is fixed against a base-plate B of insulating material, and is connected to one of the conductors L' for the circuit. The cup M² is quite separate from M' and forms part of a metal frame F, which is fixed to the base B and is connected to the other conductor L² of the circuit. The frame F has an eye E, through which passes an iron bar C, bent to a circular curvature. This bar C can be fixed in the eye E by a set-screw S, so that a greater or less length of it projects above and beyond the eye. A coil of wire W, preferably bare copper wire, is carried by an arm A, which is pivoted to the frame F at P P, and the two ends of this wire coil dip into the mercury in the cups M' M², respectively. While they are in this position the circuit is complete from conductor L', through cup M', the coil W, cup M², and frame F to conductor L². The wire coil W operates as a solenoid-coil, to which the bar C acts as a core, and, as said bar or core is fixed, the coil is attracted toward the eye E; but while the current is moderate the attraction is not sufficient to move the coil from its position. If, however, the current should exceed a predetermined strength for which the instrument is adjusted, then the coil W is moved over to the left, withdrawing the ends of the wire from the mercury-cups, and so opening the circuit. As

the center of gravity of the coil W passes the vertical line of the pivots P it falls over like a tumbling weight, and the circuit remains open until the coil W is restored to its position. By adjusting the core C so as to penetrate more or less into the coil W the movement of the coil can be made to take place under various strengths of current.

Instead of an iron bar, the core C might be a tube, or it might consist of a magnetic bar surrounded by a coil, or of a magnetic tube inclosing a coil; also, instead of making contact through mercury, the ends of the wire W might make contact with solid metal without departing from the nature of my invention.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. An appliance for cutting out an electric circuit when the current exceeds a certain strength, comprising a pivoted wire coil, an adjustable magnetic core inclosed by said wire coil, which latter forms part of the circuit while it is in a certain position said coil being pivoted so that when the strength of current causes a certain amount of mutual attraction between it and the core the coil is made to move out of position and so to open the circuit, substantially as described.

2. The herein-described improved automatic cut-off for electrical circuits, comprising two electrically-connected mercurial cups, a coil-spring having its ends designed to enter said cups, a pivot-bearing or support for said coil-spring, and an adjustable core projected into said coil-spring, substantially as set forth.

3. The herein-described improved automatic cut-off for electrical circuits, comprising two electrically-connected mercurial cups, a coil-spring having its ends designed to enter said cups, a frame, a pivotal bearing for said coil-spring supported by said frame, and a bar or core adjustably secured to said frame and projecting into said coil-spring, substantially as set forth.

4. The herein-described improved automatic cut-off for electrical circuits, comprising a base-plate, a frame secured thereto, two

electrically-connected mercurial cups, a coil-spring having its ends designed to enter said cups, an arm pivotally mounted by said frame and supporting said coil-spring, and a curved
5 bar or core adjustably connected to said frame, substantially as set forth.

In testimony that I claim the foregoing as

my invention I have signed my name, in presence of two witnesses, this 13th day of February, 1891.

FRANK BRYAN.

Witnesses:

ARTHUR G. SAVILL,
ALEX. RIDGWAY.