No. 725,259. PATENTED APR. 14, 1903.

# I. KITSEE.

## AUTOMATIC CUT-OUT.

APPLICATION FILED MAY 20, 1897. RENEWED MAY 15, 1902.

NO MODEL.

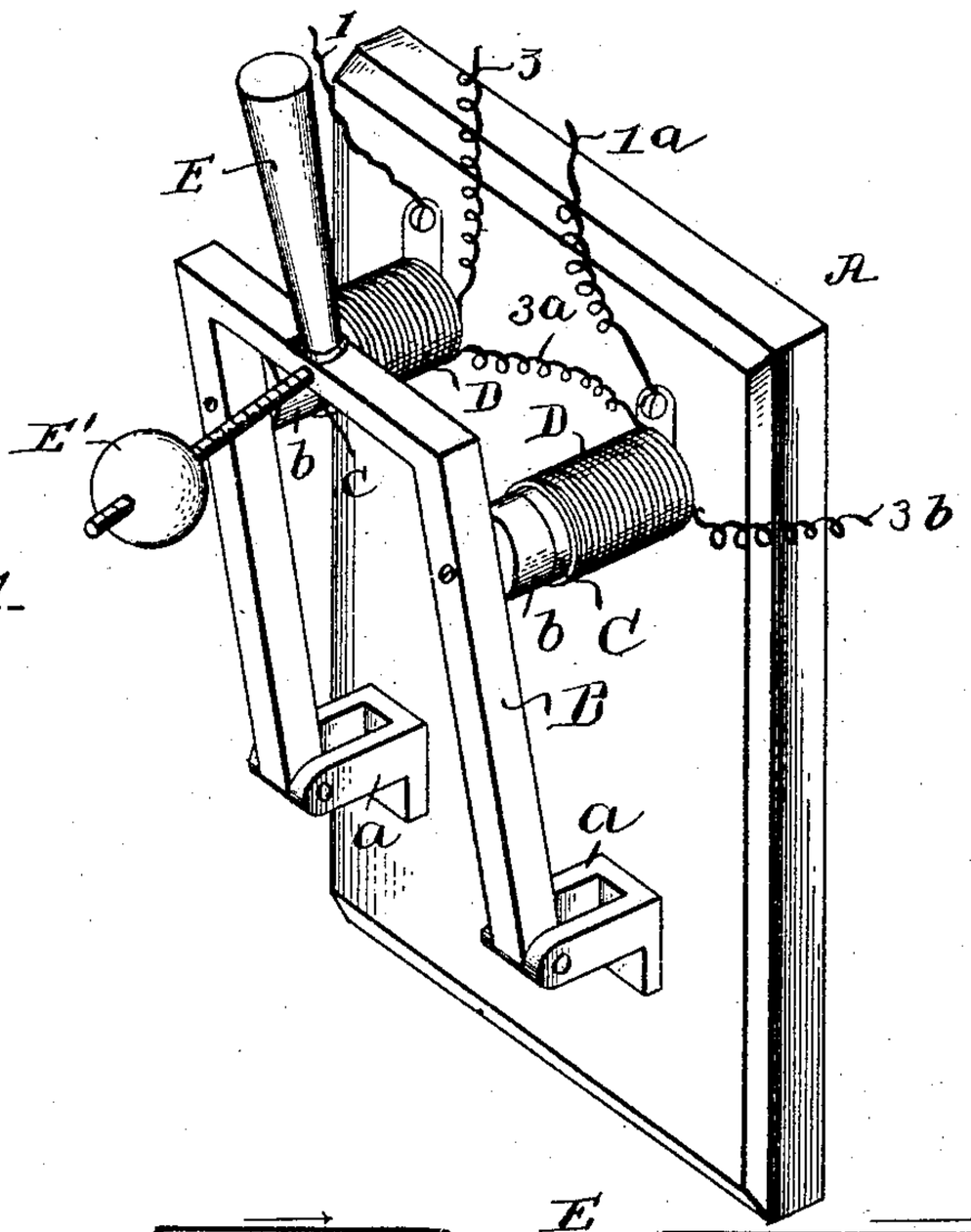


FIG. 1.

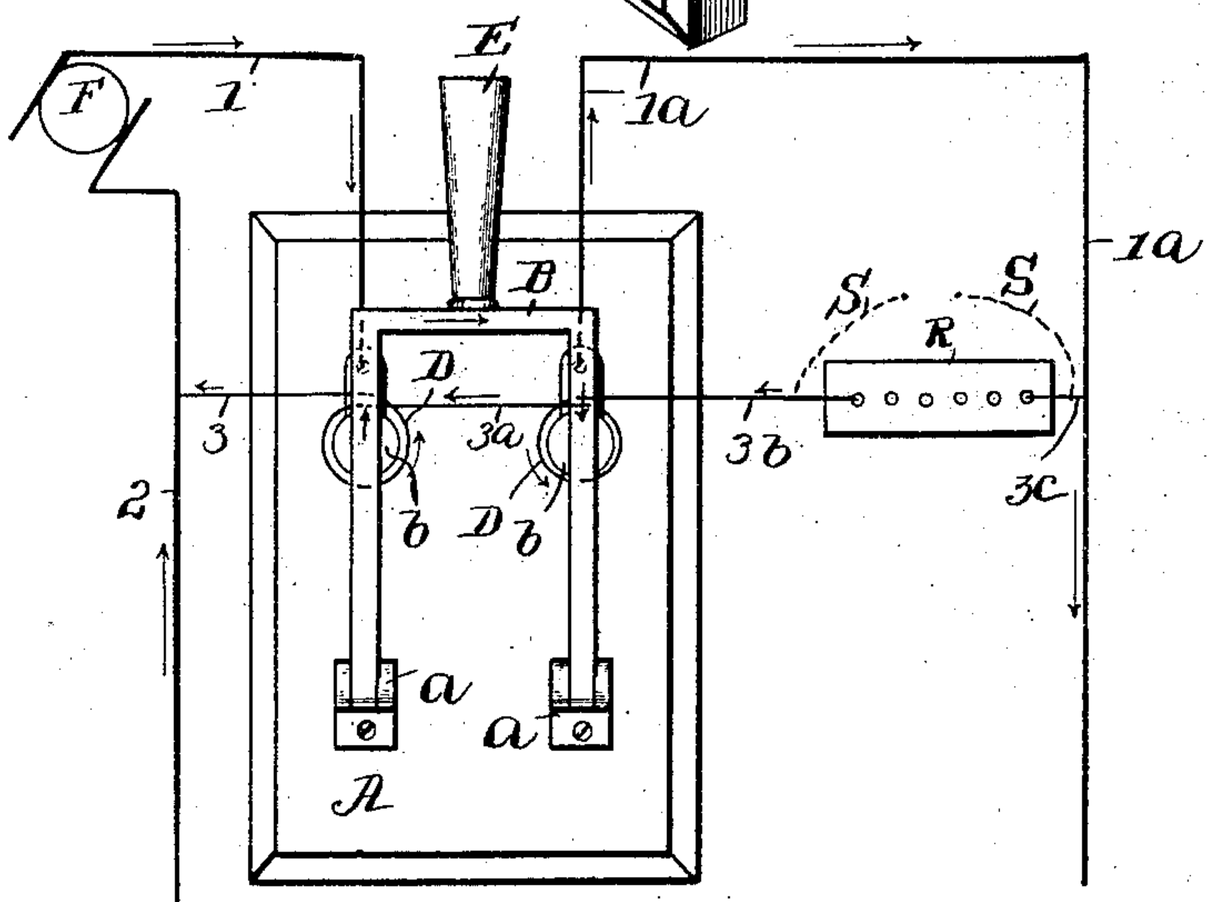


FIG. 2.

Witnesses:

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# UNITED STATES PATENT OFFICE.

ISIDOR KITSEE, OF PHILADELPHIA, PENNSYLVANIA.

## AUTOMATIC CUT-OUT.

SPECIFICATION forming part of Letters Patent No. 725,259, dated April 14, 1903.

Application filed May 20, 1897. Renewed May 15, 1902. Serial No. 107,460. (No model.)

*To all whom it may concern:*

Be it known that I, ISIDOR KITSEE, of the city and county of Philadelphia, State of Pennsylvania, have invented certain new and useful Improvements in Automatic Cut-Outs or Switches, of which the following is a specification.

My invention relates to automatic cut-outs or switches. Its object is to break a current-carrying circuit if an undue amount of current is flowing.

Referring to the drawings, Figure 1 is a perspective view of the apparatus embodying my invention. Fig. 2 is a diagram of same, illustrating clearly the connections in the main circuit.

A represents the insulating-base, to which are fastened the two supports *a a* for the switch-bar proper, B. Supports *a a* are made of a suitable metal. The bar, which is hinged on the two supports *a a*, should be either of soft iron throughout or should be provided with soft-iron pieces at the points meeting the cores *b b* when closed.

E is an insulating-handle, attached to the switch-bar B.

*b b* are a pair of soft-iron cores, around which are wound the coils D D.

F represents a dynamo or other generator of electric energy from which emanate the circuit-wires 1 and 2. The wire 1 is divided into two parts, 1 and $1^a$, respectively. The terminal of the part 1 is electrically connected to one of the two cores *b b*, and one of the terminals of the part $1^a$ is connected electrically to the other of the cores *b b*. It is therefore obvious that the cores are placed in series, with one of the wires emanating from F and designed to carry the current. It is also obvious that if the metallic bar B is not in contact with the cores *b b* a gap between the part 1 and part $1^a$ is the result. In other words, the circuit emanating from F is broken if no metallic connection is established between the cores *b b*. To establish, therefore, a path for the current, it is necessary to establish a continuous conducting-path between *b b*. In the device as illustrated such continuous path is established through the switch-bar B pressing on both of the cores *b b*. The current, as far as wire 1 $1^a$ is concerned, is allowed to flow; but as soon as the bar is down—that is, if it breaks its contact with *b b*—the path, and thereby flow of the current, is interrupted.

The coils D D, wound around the cores *b b*, are connected together through wire $3^a$, and one terminal of the double coil is connected through wire 3 to wire 2, emanating from generator F. The other terminal of the double coil is connected through wire $3^b$, (indirectly in the drawings,) through the interposition of resistance R, and wire $3^c$ to wire $1^a$. To persons versed in the art it is therefore obvious that the coils D D are connected in multiple arc to the two wires emanating from the generator and designed as the circuit-wires carrying the current.

S S are the wires of a shunt. (Shown in the drawings in dotted lines.)

If such a switch, as is the most practical way, is fastened to the wall of the building wherein the circuit-wires pass, the handle E should be loaded with lead or other heavy substance, so that the tendency of the bar to be drawn away from the cores is increased. In cases where the device is placed horizontally on a table or other support, a spring may be substituted to act in the same way as gravity in the former case, keep normally, if no current is flowing, the bar from the cores.

The coils D D should be of comparatively high resistance.

The resistance R is placed in the coil-circuit, so as to enable the person in charge to vary the resistance of the circuit 3 D $3^a$ D $3^b$, and therefore the flow of the current through the same.

If no current flows through 1, $1^a$, and 2, gravity will force B downward, and therefore the switch will be open. If a current is generated in F and the bar B pressed against the cores *b b*, the current will flow through said circuit, in a degree depending on its own resistance, the potential developed in F, and, if an outside path for the current is established, the resistance or counter electromotive force developed by the device establishing the circuit besides the coil-circuit. Suppose now the electromotive force developed in F is one hundred volts, the resistance of the switch-coil circuit about five hundred ohms. About one-fifth of an ampere will therefore flow through said circuit. As long, there-

fore, as the current amount developed through F is sufficient it does not matter how many consuming devices with a high resistance are placed in multiple arc in the main circuit the current will always flow through the coil-circuit, which can be so arranged and adjusted that a certain prearranged magnetic pull is necessary to overcome the gravity of handle E and bar B. It is easily understood that the operator has it in his power to keep the switch closed till a certain prearranged point of resistance connection in the outer circuit is reached. If, for instance, one of the consuming devices having, say, five to six hundred ohms' resistance is accidentally short-circuited, the flow of the current toward the point of short-circuiting will at once deprive the coil-circuit of the necessary amount of current and the bar will drop. The force of gravity has overcome the pull of the cores. The switch or cut-out therefore can be arranged so as to suit every requirement by simply raising or lowering the resistance of the coil-circuit or by simply raising or lowering the weight of handle and bar.

If required, the bar can be knife-shaped and the cores *b b* terminate in flexible metal strips, as is the case in common switches; but the force of gravity should then be able to also overcome the friction between the knife and the flexible metal strips. It is also obvious that the contact-strip can be either part of the cores or separate from them.

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

1. In an automatic cut-out, the combination with a current-carrying circuit, of an electromagnetic device having its coils connected in multiple arc and its core connected in series with said circuit, and a movable member adapted to coact with the core for closing the circuit therethrough.

2. In an automatic cut-out, the combination with a current-carrying circuit, of an electromagnet having its coils connected in multiple arc with said circuit and its cores connected in series with the terminals thereof, a resistance placed in the coil-circuit, and a movable member adapted to coact with the cores for closing the circuit therethrough.

3. In an automatic cut-out, the combination with a current-carrying circuit, of an electromagnetic device having its coil connected in multiple arc with said circuit, and a movable member adapted to coact with the armature of said electromagnetic device for maintaining the circuit normally closed.

In testimony whereof I sign my name, this 25th day of October, A. D. 1895, in the presence of two subscribing witnesses.

ISIDOR KITSEE.

Witnesses:
WALLACE B. ELDRIDGE,
JESSE B. HELLER.