No. 837,023. PATENTED NOV. 27, 1906.

G. WRIGHT.

CIRCUIT BREAKER.

APPLICATION FILED JAN. 11, 1904.

Fig. 1.

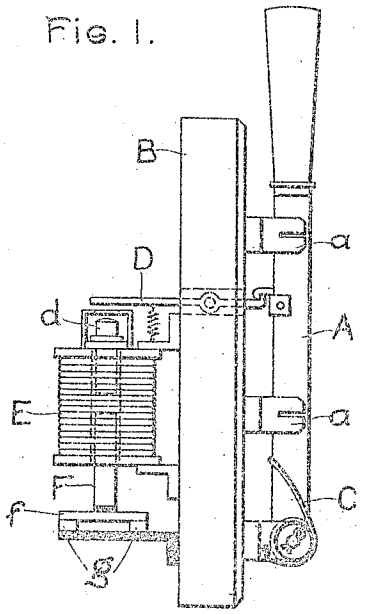
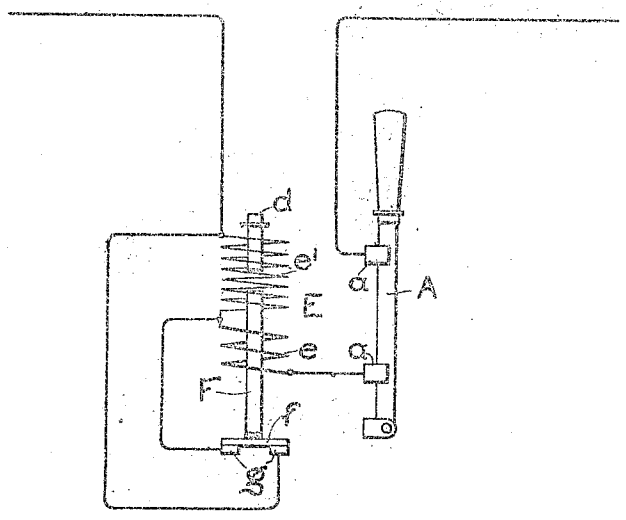


Fig. 2.



Witnesses:

Inventor,
Gilbert Wright.
by
Atty

UNITED STATES PATENT OFFICE.

GILBERT WRIGHT, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO STANLEY ELECTRIC MANUFACTURING COMPANY, OF PITTSFIELD, MASSACHUSETTS, A CORPORATION OF NEW JERSEY.

CIRCUIT-BREAKER.

No. 837,023. Specification of Letters Patent. Patented Nov. 27, 1906.

Application filed January 11, 1904. Serial No. 188,519.

To all whom it may concern:

Be it known that I, GILBERT WRIGHT, a citizen of the United States, residing at Pittsfield, in the county of Berkshire and State of Massachusetts, have invented certain new and useful Improvements in Circuit-Breakers, of which the following is a specification.

My invention relates to automatic switches or breakers for electric circuits; and the object of my invention is to provide a tripping device for such breakers which shall be more compact and more economical both in respect to materials and in respect to consumption of energy than tripping devices as heretofore constructed and which shall be positive and efficient in action, operating with a quick hammer-blow to release the breaker.

My invention will be best understood by reference to the accompanying drawings, in which—

Figure 1 shows a switch and tripping device arranged in accordance with my invention, and Fig. 2 shows diagrammatically the circuits of the same.

In the drawings, A represents a switch mounted on the base B and engaging when closed the stationary contacts *a a*.

Although for the sake of simplicity I have shown switch A as a simple knife-blade switch, it will be understood that my invention is in no way limited to this type, but is applicable to any well-known type of switch.

C is a spring tending to open switch A, and D is a catch or latch normally restraining switch A in its closed position against the tension of spring C.

E is a solenoid having a compound winding, as shown in Fig. 2, consisting of the winding *e*, which is of comparatively large wire and few turns, and winding *e'*, which consists of comparatively fine wire and many turns.

F is the movable core of solenoid E. Core F carries bridging member *f*, which when core F is in its normal position bridges the stationary contacts *g*. Bridging member F thus normally short-circuits the fine-wire coil *e'*, which is thus cut out of circuit, as is shown in Fig. 2. The consumption of energy in the solenoid is consequently very small, since only the large-wire coil *e* of few turns is normally in circuit. When a predetermined overload occurs, however, coil *e* raises core F, lifting bridging member *f* from contact *g*. The short circuit is consequently removed from the winding *e'*, which is thereby thrown into series with the winding *e*. The ampere-turns of the breaker are thus instantly increased, the pull upon core F increases, and core F moves up quickly, driving the movable member *d* with a hammer-blow against the latch D. It will be seen that winding *e'* is in circuit only instantaneously, and consequently may be made of much smaller wire than would be necessary in a coil which is all the time in circuit. Consequently the solenoid may be much smaller than a solenoid designed to give a hammer-blow of the same strength, but whose winding is all the time in circuit.

I do not desire to limit myself to the particular construction and arrangement of parts here shown, since changes therein which do not depart from the spirit of my invention and which are within the scope of the appended claims will be obvious to those skilled in the art.

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In combination with a circuit to be protected, two magnet-windings in series with said circuit, a movable core controlled by said windings, a member actuated by said core and arranged to short-circuit one of said windings when said core is in its normal position, and a circuit-breaker tripped by the movement of said core to open said circuit.

2. In combination with a circuit to be protected, two magnet-windings in series with said circuit, one of said windings being of a greater number of turns than the other, a movable core controlled by said windings, a member actuated by said core and arranged to short-circuit the magnet-winding of the greater number of turns when said core is in its normal position, and a circuit-breaker tripped by the movement of said core to open said circuit.

3. In combination with a circuit to be protected, two magnet-windings in series with said circuit, one of said windings being of smaller wire than the other, a movable core controlled by said windings, a member actuated by said core and arranged to short-circuit the winding of smaller wire when said

core is in its normal position, and a circuit-breaker tripped by the movement of said core to open said circuit.

4. In combination with a circuit to be protected, two magnet-windings in series with said circuit, a movable core controlled by said windings, means normally short-circuiting one of said windings, means for removing the short circuit upon the flow of a predetermined current in said circuit, whereby the pull upon said core is increased, and a circuit-breaker tripped by the movement of said core to open said circuit.

5. In combination with a circuit to be protected, two magnet-windings in series with said circuit, one of said windings having a greater number of turns than the other, a movable core controlled by said windings, means for normally short-circuiting the winding having the greater number of turns, operative connections between said core and said short-circuiting means for removing said short circuit when said core begins to move, whereby the effective ampere-turns acting on said core are increased, and a switch arranged to be operated by the continued movement of said core and adapted to open said circuit.

In witness whereof I have hereunto set my hand this 5th day of January, 1904.

GILBERT WRIGHT.

Witnesses:

ARTHUR EUGENE JENNEY,
LEONARD WILSON.