(No Model.)

E. M. HEWLETT.

DOUBLE THROW SNAP SWITCH.

No. 524,384. Patented Aug. 14, 1894.

Fig. 1.

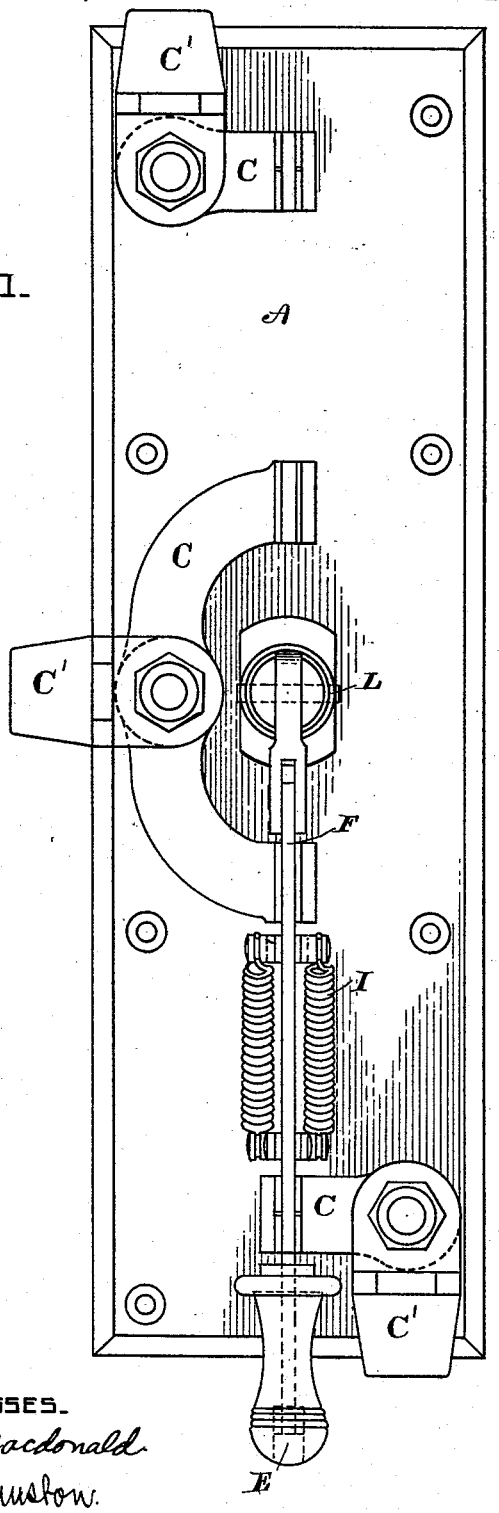
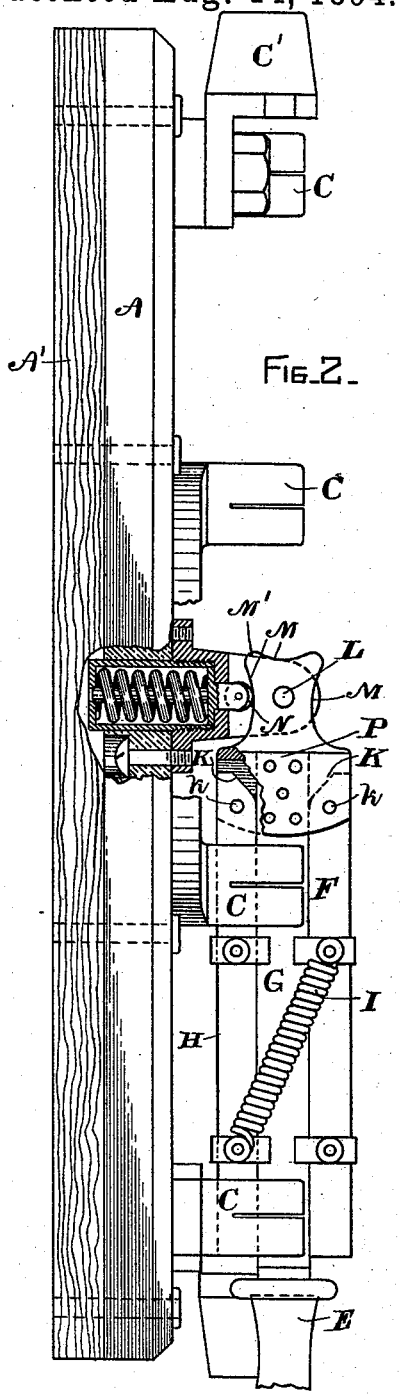


Fig. 2.



Witnesses.
A. F. Macdonald.
D. Johnston.

Inventor.
Edward M. Hewlett
by
Geo. R. Blodgett.
Atty.

UNITED STATES PATENT OFFICE.

EDWARD M. HEWLETT, OF SCHENECTADY, NEW YORK, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF NEW YORK.

DOUBLE-THROW SNAP-SWITCH.

SPECIFICATION forming part of Letters Patent No. 524,384, dated August 14, 1894.

Application filed July 2, 1894. Serial No. 516,259. (No model.)

To all whom it may concern:

Be it known that I, EDWARD M. HEWLETT, a citizen of the United States, residing at Schenectady, county of Schenectady, State of New York, have invented certain new and useful Improvements in Double-Throw Snap-Switches, of which the following is a specification.

My invention relates to switches for breaking circuits carrying heavy currents, and particularly to so-called "double-throw" switches; and has for its object to provide such a switch having a snap action which is rendered positive by means of an operating handle, and at the same time to so apply my invention to a jack-knife switch, so-called, that the blade will leave the two sets of contacts at substantially the same instant, and the circuit will thus be ruptured at two points at the same time; by which arrangement I avoid the destructive arcing which often accompanies the opening of such a switch. I also provide means for holding the switch open in a central position so that when the operator desires to open it from either direction, he has only to give it a positive throw, and it will at once assume this central position without establishing a circuit upon the other side. Many attempts have been made to attain all of these objects in one switch, but so far as I know there are objections to the devices employed.

To accomplish the ends pointed out, I construct my improved switch of three copper blades hinged together at one end and with a spring extending between the two outer blades, a handle being attached to the middle blade. The middle or inner blade is rigid with a central piece to which the outer blades are hinged, the inner ends of the hinged outer blades being cut away so that the inner blade may be rotated about its center to a certain angle before it will engage with the cut away ends of the outer blades to throw them from the contacts. This permits me to get the spring under such tension that when the friction between the contacts of the outer blades is overcome by means of the positive contact of the inner blade with the cut away portion of the outer blade, the spring will withdraw the outer blade instantly, thus, as already pointed out, breaking the circuit at both contacts at the same time.

In the accompanying drawings I show an embodiment of my invention, Figure 1 being a plan and Fig. 2 a side elevation of a switch constructed according thereto.

A is a base of ebonite or slate or other material having suitable insulating and refractory properties. It is, in the case illustrated, shown as attached to the base A′ of wood.

C, C, &c., are the contacts for the knife-blade portion of the switch, C′, C′ being the terminals for the circuits.

E is the handle attached, as already pointed out, to the inner member of the blade of the switch.

Referring now to Fig. 2, the side elevation shows the inner member G and the two outer plates F, H, of the switch hinged to a central piece P at *k*, *k*, the central blade being riveted to the piece P rigidly. A spring I is suitably attached to the two outer blades and, as illustrated in Fig. 1, is duplicated upon each side, although a single spring might be employed if desired. The outer blades are shown slightly cut away on their inner ends at K, K.

The center piece P is formed with three cam surfaces M, M, M, and a strong spring supporting a friction roller N, engages at all times with one or the other of these cam surfaces, the upper and lower ones being adapted to hold the switch firmly in engagement with the contacts, while the middle one holds it in an upright position between the two. At L is shown a central pivot upon which the whole switch swings.

The operation of the device is as follows: When it is desired to break the circuit, the handle E is thrown, describing an arc of about forty degrees, the piece P at the same time compressing the spring by depressing the friction roller N, the handle E forcing up the central blade G and the upper blade F, while the blade H remains in the contacts C, C, thus putting under tension the spring I. At the same time the blade H is slightly moved forward and its inner end raised by the action of the pivot *k* as it swings around the pivot L as its center. When the handle has reached the position thus described, the

inner end of the blade G comes in contact with the cut away portion K of the other blade H, and draws it up from the spring contacts C; when the resistance of these contacts is sufficiently overcome by the motion upward of the blade H, the spring I suddenly snaps away the blade. By this time the handle E will have passed to such a position that the point M′ upon the cam surface P will have passed the friction roller N, which then engages with the middle cam surface M and holds the switch in its upright position. The operation is the same when the switch is withdrawn from the other contacts.

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

1. A double-throw snap-action knife-blade switch comprising a central blade G and spring-actuated outer blades F, H, pivoted to the first blade and having cut-away portions permitting a lost motion of the first blade.

2. A double-throw jack-knife switch, comprising a central blade, two outer blades, and a spring connected from one of such outer blades to the other, the outer blades having cut-away portions pivoted to the central blade and adapted to make positive contact therewith after a definite arc of movement.

3. A double-throw spring-actuated knife-blade switch, comprising contacts C, C, a central blade as G, outer blades H and I pivoted to such central blade and having a cut-away portion K adapted to make positive contact with the inner blade after a definite arc of motion, and a cam and friction roller, as P, N, adapted to engage the switch in all of its three positions, substantially as described herein.

In witness whereof I have hereunto set my hand this 30th day of June, 1894.

EDWARD M. HEWLETT.

Witnesses:

B. B. HULL,

A. F. MACDONALD.