

A. S. CUBITT.
SNAP SWITCH.
APPLICATION FILED MAR. 18, 1911.

1,011,754.

Patented Dec. 12, 1911.

Fig. 1.

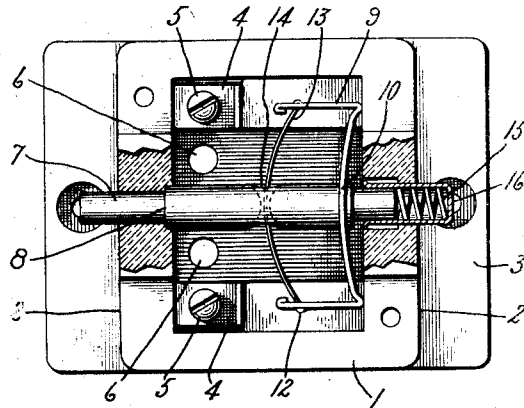
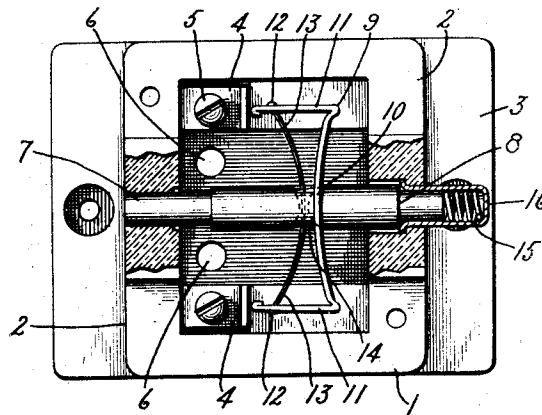


Fig. 2.



WITNESSES:

J. Earl Ryan.
J. Ellis Glen.

INVENTOR:

ARCHIBALD S. CUBITT,

BY *Alfred B. Davis*

HIS ATTORNEY

UNITED STATES PATENT OFFICE.

ARCHIBALD S. CUBITT, OF PITTSFIELD, MASSACHUSETTS, ASSIGNOR TO GENERAL ELECTRIC COMPANY, A CORPORATION OF NEW YORK.

SNAP-SWITCH.

1,011,754.

Specification of Letters Patent.

Patented Dec. 12, 1911.

Application filed March 18, 1911. Serial No. 615,201.

To all whom it may concern:

Be it known that I, ARCHIBALD S. CUBITT, a subject of the King of Great Britain, residing at Pittsfield, county of Berkshire, State of Massachusetts, have invented certain new and useful Improvements in Snap-Switches, of which the following is a specification.

The present invention relates to electric switches and more especially to reciprocating switches having a snap action, and has for its object to provide an improved double snap switch consisting of few operative parts, capable of withstanding long and hard service and of low cost of manufacture.

The advantages of a switch operating with a snap action, both in making and in breaking the circuit, have been long recognized by those skilled in the art, but the mechanical means for practically accomplishing such double snap action have been relatively complex and lacking in durability. Switches have heretofore been made in which a bow or buckling spring has been employed to produce the snap action, but, so far as I am aware, none of the prior bow spring switches has gone into general or practical use, although the mechanical simplicity, incident to the use of the bow spring, was well recognized.

In carrying my invention into practice, I provide a suitable insulating base on which are mounted the stationary contacts and line terminals, and upon a suitable reciprocating actuator I mount a U-shaped contactor adapted to bridge and electrically connect the stationary contacts when moved into engagement therewith and having a bow or buckled spring sprung in between its legs. The bow spring is connected to the reciprocating actuator so as to be buckled from side to side of its straight line or dead center position, and on recoil the contactor will be moved with a snap action from its operative to its extreme inoperative position or vice versa each time the actuator is operated. According to my invention the force applied to the actuator to break the circuit operates to press the contactor into firmer engagement with the stationary contacts until the bow spring has been moved to the opposite side of its straight line or dead center position so that there is no time interval in which the contactor makes different engagement with the stationary

contacts, and consequently all heating and fusing of the switch members is avoided.

In the accompanying drawing forming a part of this specification, Figure 1 is a plan view of one form of my switch with the contactor in retracted or open position; and Fig. 2 is a similar view with the contactor in closed position.

The base 1 is of porcelain or other insulating material made in the form of a box with the bottom extended beyond the end walls 2 to form attaching feet 3. Stationary contacts 4 made L-shaped are secured to the bottom of the box at opposite sides thereof and each is provided with a binding screw 5 to receive the end of a line wire adapted to be introduced through a hole 6 in the bottom.

The actuator 7 consists of a cylindrical insulating rod reduced at both ends to form shoulders 8 and supported for reciprocation in bearings formed in the opposite end walls 2. The contactor 9 consists of a strip of spring metal preferably phosphor-bronze bent U-shaped with an aperture at the center of the bridge portion 10 of a size to permit the actuator 7 to pass freely there-through and the ends of the leg portions 11 are bent back to provide contact feet and adjacent their ends are provided apertures or recesses 12 for the pivotal reception of the ends of the bow spring 13. The spring 13 is a strip of flat steel threaded through an aperture 14 in the actuator 7 and of a length to bow out when sprung between the legs 11 of the contactor.

In order that the contactor 9 may be held against the stationary contacts 4 under substantial pressure when in closed position, the actuator 7 is made longitudinally expansible by a spring 15 engaging one end thereof and inclosed in a metal thimble 16 longitudinally movable in the bearing of the end wall 2 and spun out at its inner end after assembly of the parts.

When the parts of the switch are in the position shown in Fig. 1, both springs 13 and 15 are practically without tension. Movement of the actuator 7 to the right causes the spring 13 to straighten, forcing the legs 11 of the contactor 9 apart until 13 passes the dead center whereupon the contactor snaps from full open to closed position, as shown in Fig. 2, with practically the full tension of spring 15 coacting to hold it

in engagement with the stationary contacts

4. Pressure exerted upon the thimble 16 will move the actuator 7 to the left causing the spring 13 to straighten and the legs 11 of the contactor to spread apart with their contact ends wiping against the stationary contacts 4 until the spring 13 passes the dead center, whereupon the contactor snaps back to full open position. It will thus be seen that the contactor moves in both directions with a snap, so that destructive arcing cannot take place nor can the parts be "set," that is with the bow spring 13 in straight line position and without tending to throw the contactor to extreme position.

I do not desire to restrict myself to the particular form or arrangement of parts herein shown and described, since it is apparent they may be changed and modified without departing from my invention.

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

1. In an electric switch, the combination with a base having stationary contacts, of a bridging contactor having flexible legs, a bow spring engaging said legs, and an actuator.

2. In an electric switch, the combination with a base having stationary contacts, of a bridging contactor having flexible legs, a bow spring engaging said legs near their free ends, and an actuator for said spring.

3. In an electric switch, the combination

with a base having stationary contacts, a bridging contactor having flexible legs, a bow spring thrusting outwardly against the free ends of said legs, and an actuator for said spring.

4. In an electric switch, the combination of a base having stationary contacts, a U-shaped contactor, a bow spring disposed between the free ends of said legs, and an actuator threaded through said contactor.

5. In an electric switch, the combination with a base and stationary contacts, of a bridging contactor, and a longitudinally expansible actuator for moving said contactor.

6. In an electric switch, the combination with a base and stationary contacts, of a contactor, a bow spring for producing snap movement of said contactor, and a longitudinally expansible actuator for said spring.

7. In an electric switch, the combination with a base and stationary contacts, of a U-shaped contactor made in one piece, a bow spring tending to spread the legs of the U-shaped contactor, a longitudinally expansible actuator threaded through the contactor and having an aperture through which the bow spring is threaded.

In witness whereof, I have hereunto set my hand this 15th day of March, 1911.

ARCHIBALD S. CUBITT.

Witnesses:

J. C. MUSGROVE,

M. E. CANNING.