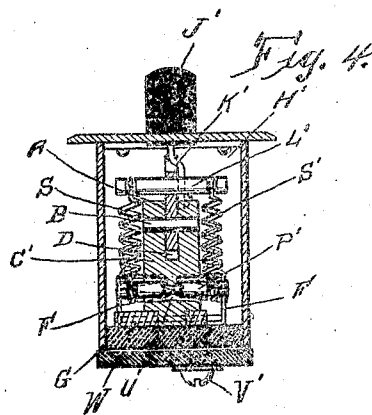
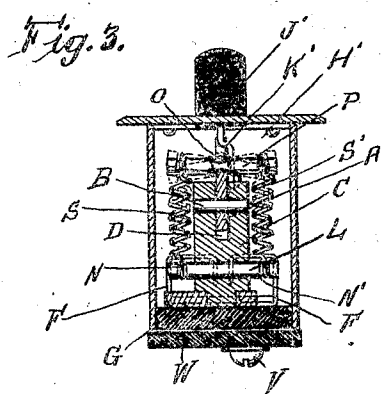
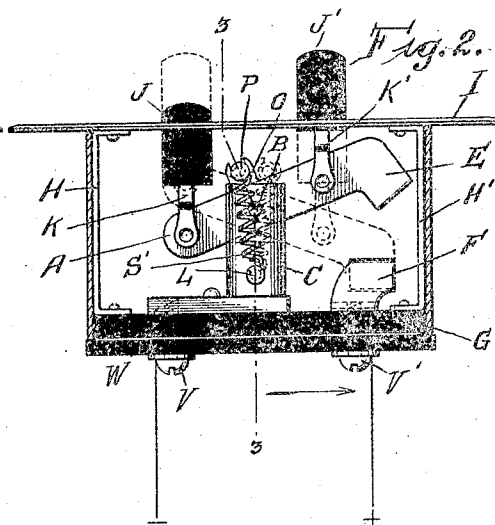
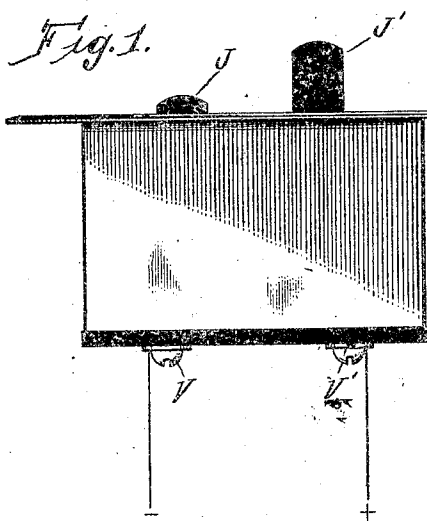


G. C. KNAUFF.
ELECTRIC SWITCH.
APPLICATION FILED MAY 19, 1911.

1,047,245.

Patented Dec. 17, 1912.



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UNITED STATES PATENT OFFICE.

GEORGE C. KNAUFF, OF CHICAGO, ILLINOIS.

ELECTRIC SWITCH.

1,047,245.

Specification of Letters Patent.

Patented Dec. 17, 1912.

Application filed May 19, 1911. Serial No. 628,144.

To all whom it may concern:

Be it known that I, GEORGE C. KNAUFF, a citizen of the United States, residing at the city of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Electric Switches, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to the class of electric switches in which the circuit is opened and closed by a rocking lever to which the final part of its motion in either direction is imparted by a pair of springs located on opposite sides of the rocking lever, these springs being stretched whenever the lever passes a point about half way between its circuit-opening and circuit-closing positions. In switches of this class it has heretofore been customary to attach one end of each spring to a cross-bar or rod rigidly connected to the rocking lever. Unless these springs were exactly matched as to their tension it would tend to tilt the rocking lever toward one side, thereby causing the lever to bind in its support and to make imperfect contact in closing the circuit. My invention consists in a simple and novel arrangement of parts whereby any difference in the tension of the two springs is equalized so that the rocking lever will always be free to move in the same plane and to make a good electrical contact when in the circuit-closing position.

The preferred embodiment of my invention is shown in the accompanying drawings, which I will now describe:

Figure 1 is a side elevation of the switch with the casing inclosing the mechanism; Fig. 2 is an elevation of the same with the forward side of the casing cut away to expose the mechanism; Fig. 3 is a section of the mechanism along the lines 3—3 in Fig. 2; Fig. 4 is a similar section showing an alternative arrangement of the spring equalizing mechanism which characterizes my invention.

In the drawings: A is a lever pivoted near its center on an axle B passing through a post C, all of which are preferably made of brass. This post C has a slot D in which the lever can move freely. One end E of the lever A is elongated and so shaped as to match the parallel ends of a contact clip F, preferably made of German silver. The

post C is fastened to a base plate W which base plate, together with the contact clip F are both mounted on an insulating base G, preferably made of hard rubber. This insulating base G is supported by brackets H—H' from a face plate I. Circuit terminals, minus and plus, are connected to the switch by means of the screws V—V'. The face plate I has two openings through which insulated buttons J—J' project, these buttons being secured to opposite ends of the rocking lever A by pivoted stems K—K'. The post C also supports a bar L slid through a smooth hole of uniform diameter bored through the post transversely of the plane of the lever A and close to the base plate W, this bar L having grooves N—N' near its opposite ends. Adjacent to the pivot B and directly over it when the lever A is in its mid-position, this lever has a notch O in which a cross-bar P rests, the latter being kept from sliding in the notch O by a groove in the bar P. This cross-bar P also has grooves near each end, into which are hooked two springs S—S' leading from this cross-bar to the bar L.

In operation, the springs S—S' are extended whenever the lever A is moved to its mid-position by depressing the uppermost button J or J' and as soon as it has passed this mid-position, the springs will throw the lever to the extreme of its travel. In doing this, if the cross-bar P were rigidly fastened to the lever A and the springs were not equally in tension, the difference in tension would cause the cross-bar P to tilt transversely, thereby binding or sticking in the slot B and also making contact only at the edges of the clips F instead of offering the full carrying capacity of the contact by sliding between the parallel ends of the clips. With the cross-bar P loosely pivoted on the lever A by resting in the notch O as in my invention, such a difference in tension of the springs merely tilts this cross-bar P without twisting the lever A out of its normal plane, thereby allowing it to work freely and to make good electrical contact in closing the circuit.

If the bar L were rigidly secured to the post C, the action of the springs through the cross-bar P upon the lever A might still tend to twist this lever so that its sides would not contact smoothly with the contact clips. I therefore leave the bar L free to slide back and forth in the

hole bored transversely in the post C, so that it can adjust itself to the strains by sliding lengthwise, thereby allowing the switch lever A to work freely and to make good contact with the clips in spite of variations in the tension of the springs S S'.

Instead of having the sliding bar L go through the post and having the tilting bar P pivoted on the rocking lever, I can reverse the order as shown in Fig. 4 in which the center grooved bar P' is pivoted in a perforation U bored through the post C, while the bar L' is slid through a hole in the rocking lever A.

While I have shown the preferred embodiment of my invention as applied to a double push flush switch, I do not wish to be limited to this particular type of switch nor to the particular shape of notched lever or the specific arrangement of contacts which I have shown and described, as numerous modifications can be made without departing from the spirit of my invention.

What I claim as new and desire to cover by Letters Patent is:

1. In an electric switch, a lever adapted to open and close the circuit; and spring mechanism tending to hold the lever in

either the circuit-closing or circuit-opening position; the said spring-mechanism including a bar slidably mounted in the stationary part of the switch, a second bar tiltably mounted upon the rocking lever, and a pair of springs fastened at their opposite ends respectively to the ends of the said bars.

2. In an electric switch, a stationary member carrying a contact terminal connected to one side of the circuit; a rocking member connected to the other side of the circuit and adapted when rocked to move into or out of contact with the said contact terminal; a bar slidably mounted in one of the said members and a second bar tiltably mounted upon the other of the said members; and a pair of springs fastened at their opposite ends respectively to the ends of the said bars.

In witness whereof, I have hereunto set my hand, this 17th day of May A. D. 1911, in the presence of two subscribing witnesses.

GEORGE C. KNAUFF.

Witnesses:

ALBERT SCHEIBLE,
A. S. PHILLIPS.