

(No Model.)

J. S. GIBBS.
RECIPROCATING SNAP SWITCH.

No. 471,993.

Patented Mar. 29, 1892.

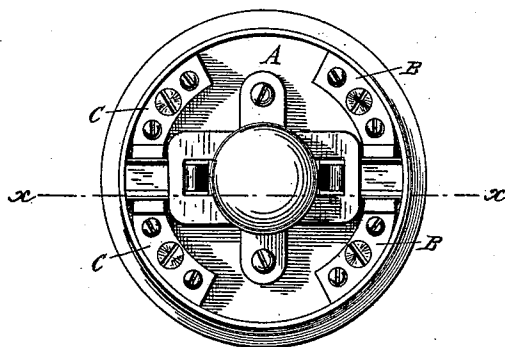


Fig. 1.

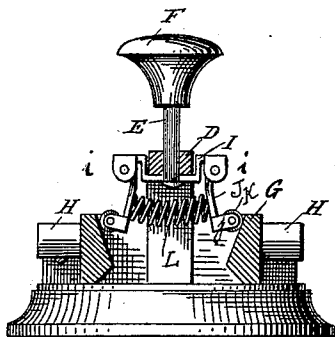


Fig. 2.

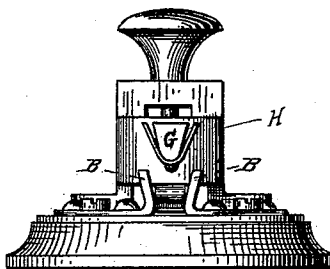


Fig. 3.

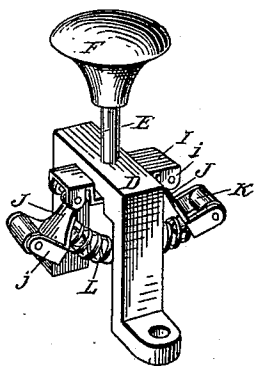


Fig. 4.

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UNITED STATES PATENT OFFICE.

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RECIPROCATING SNAP-SWITCH.

SPECIFICATION forming part of Letters Patent No. 471,993, dated March 29, 1892.

Application filed July 3, 1891. Serial No. 398,988. (No model.)

To all whom it may concern:

Be it known that I, JACOB S. GIBBS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Reciprocating Snap-Switches, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to the class of switches represented by the switch patented September 9, 1890, No. 436,080, to Jacob S. Gibbs and Charles G. Perkins, and the special object of the present invention is to improve the switch referred to by certain changes of detail, which will be fully set forth in the specification which follows. I may say here that in the patented switch of Gibbs and Perkins there was a reciprocating shaft mounted in a bracket and extending through the switch-base and carrying an angular piece which cooperated with spring-slides contained within a reciprocating plug. In my present invention I simplify the construction by making the angles inside the plug and causing them to be acted upon by spring-levers attached or pivoted to an arm secured to the reciprocating rod. Moreover, the rod in my present invention does not extend into the base, but is made to end just below the top bar of the bracket. This simplifies the construction, as will be more clear farther on.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a top view of my switch. Fig. 2 is a section along the line *x x* in Fig. 1. Fig. 3 is an end elevation of my switch as it appears when open, and Fig. 4 is a separate perspective view of certain detached parts of my switch.

The same letters refer to the same parts in all the figures.

A is the base of my switch, which is made of porcelain or other good insulating material.

B B and C C are angle-pieces secured to the base and forming in pairs the circuit-terminals or binding-posts of my switch. It will be observed that those portions of the circuit-terminals which project upward are inclined

with respect to each other instead of being vertical to the base. This is in order to make a good electrical contact with the movable contact-piece and to admit of the latter being withdrawn easily when the occasion arises. This will be made clearer by what follows.

A bracket D is secured to the base, and within the said bracket is mounted a reciprocating rod E, having a thumb piece or button F at the top. Within the bracket is a reciprocating plug G of insulating material. The plug is reduced at opposite ends to receive metallic pieces H H, preferably of copper, for making contact with the line-terminals B B and C C.

By reference to Fig. 2 it will be seen that the contact-plug G is shaped on its interior to form V's or angles at its opposite ends. I usually prefer to make the incline toward the top of the plug somewhat longer than that toward the bottom, or, in other words, I make the angle which slopes from the top somewhat less acute than that which slopes from the bottom, and to compensate for the smaller motion produced in this way (through instrumentalities which will be described hereinafter) I make the incline longer. The contact-plug has two reversed positions, in one of which the parts H H are in contact with the circuit-terminals on the base and in the other of which they are out of contact therewith. The two positions are illustrated in Figs. 2 and 3. The reversal of the positions of the contact-plug is accomplished by means of devices which will now be described, acting in co-operation with the inclines on the interior of the contact-plug. To the rod E is secured a bar I, the angular shape of which is shown clearly in Fig. 2. At each end of the bar I is a pair of lugs *i i*, and within each pair is mounted a swinging lever J. Each lever also carries lugs *j j*, within which is mounted a roller K. The two levers are normally pressed apart by a spring L.

The operation of the parts is as follows: By referring to Fig. 2 it will be seen that when the rod E is in its raised position the circuit is closed. In order to open the circuit it is necessary to push down or in upon the rod E or the button F, it being understood

that the rollers K K rest within the plug, as shown in Fig. 2, at the time when the circuit is closed. The pushing in on the rod has the effect of forcing the rollers down the incline
 5 on the interior of the plug and at the same time compressing the spring L. This continues until the rollers have been forced to the highest point of the incline, after which the spring expands along the opposite incline and
 10 forces the plug upward with a quick movement. To make the circuit the rod is pulled outward and the rollers are forced up the lower incline by the movement of the rod, and are afterward pushed by the release of
 15 the spring along the longer incline to throw the plug back. I make the lower or inner incline quicker or sharper so as to secure a very quick break of the circuit. It is not so
 20 necessary to have the circuit made with great rapidity, as the spark is much smaller when the circuit is made than when it is broken.

In order to throw the switch back the same distance which it is thrown by the action of the springs in breaking the circuit, I am
 25 obliged to make the incline formed by the more obtuse angle longer than the other.

It will be seen that the rollers bear upon the inner surface of the plug at all times. Now as the rollers are joined through inter-
 30 mediate devices to the rod E it is evident that the said rod practically has two bearings—one in the upper bar of the bracket D and the other within the plug. This gives me the advantages which would arise from having
 35 the rod pass through both the bracket and the base; but with the short rod I am able to employ a single spring L instead of two springs, which would be necessary if the rod went all the way through the base. Moreover, the

space below where the rod terminates is all
 40 needed for the operation of the spring-levers.

Having now described my invention, I claim—

1. In an electric switch, the combination, with the base, the line-terminals, and the
 45 bracket secured to the base, of a reciprocating rod having a cross-bar at its lower end provided with downwardly-projecting levers having an unobstructed space between them,
 50 a tension-spring located in said space and bearing at its ends against the levers to press them apart, and a movable plug having angular inner walls to operate in conjunction with the levers and contact-pieces at its outer ends
 55 to make and break circuit, substantially as described.

2. In an electric switch, the combination, with the base, the line-terminals, and the bracket secured to the base, of a reciprocating rod having a cross-bar at its lower end
 60 provided with downwardly-projecting levers having an unobstructed space between them, a tension-spring located in said space and bearing at its ends against the levers, and the angular plug carrying contact-points at
 65 its outer ends and provided at its interior with angular opposing faces, the angle which slopes from the top of the same being less acute than that which slopes from the bottom, the said angular faces forming a bearing
 70 and guide for the lower ends of the levers, substantially as described.

In testimony whereof I have hereunto set my hand this 1st day of July, 1891.

JACOB S. GIBBS.

Witnesses:

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 FREDERICK W. DAVIS.