(No Model.)

D. B. TURNER.

ELECTRIC SWITCH.

No. 448,698. Patented Mar. 24, 1891.

Fig. 1.

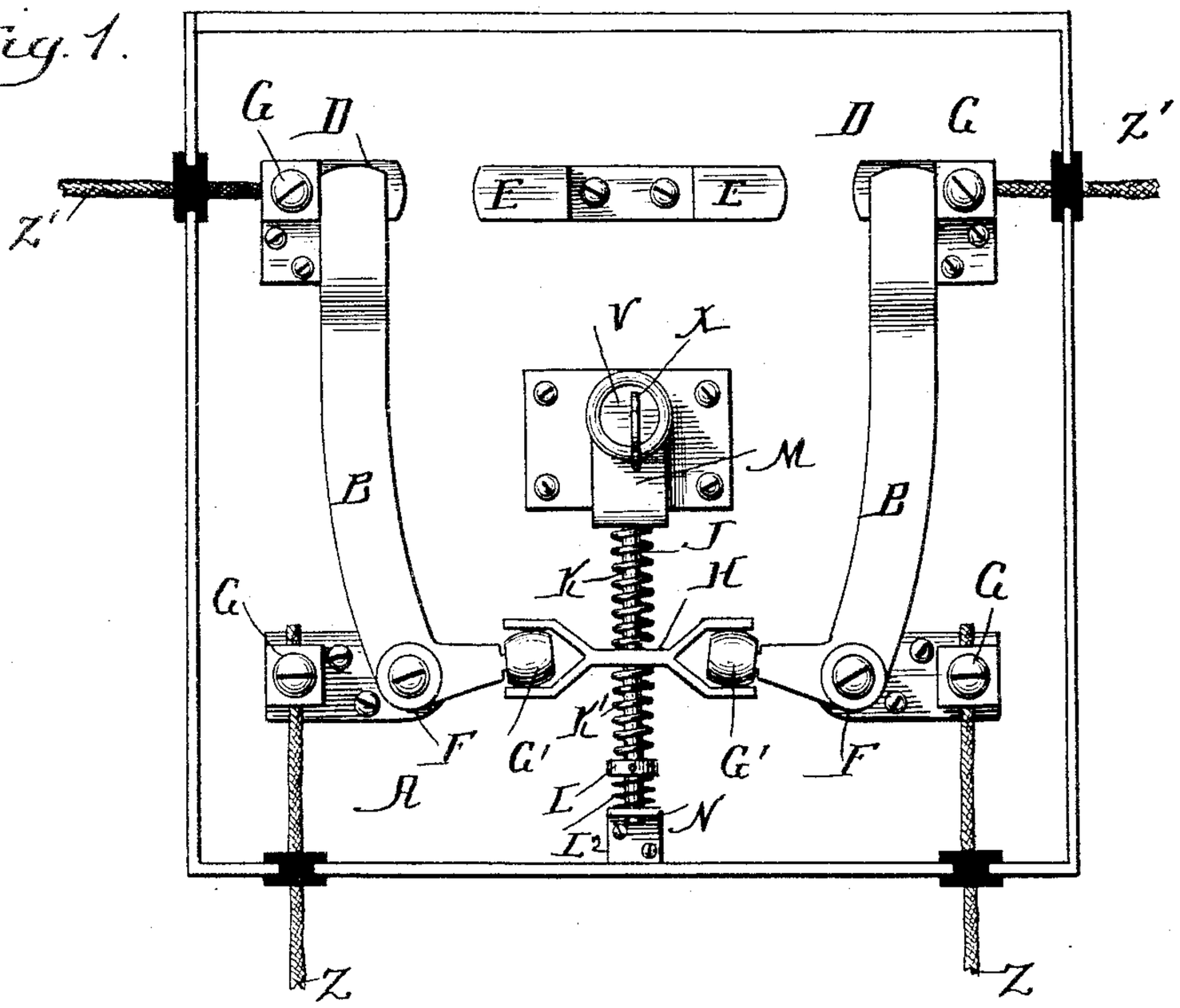


Fig. 2.

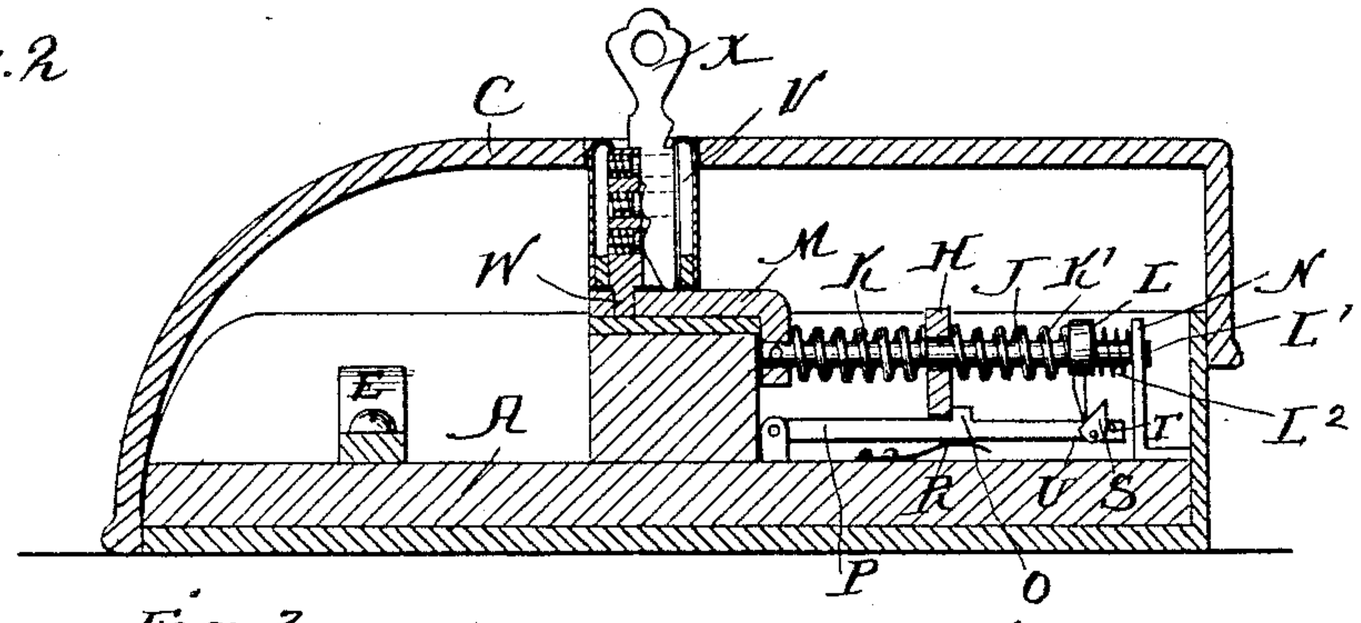


Fig. 3.

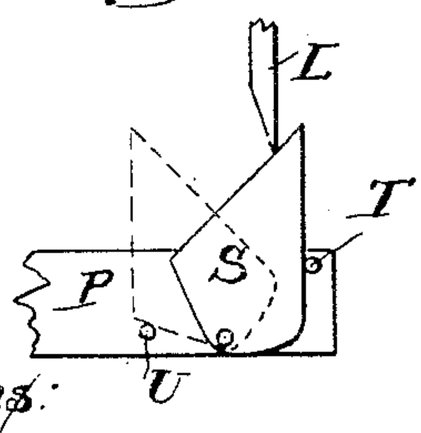
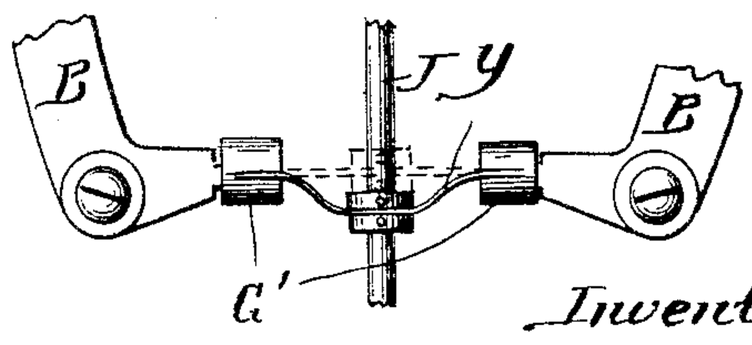


Fig. 4.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 448,698, dated March 24, 1891.

Application filed June 18, 1890. Serial No. 355,884. (No model.)

To all whom it may concern:

Be it known that I, DONLEE B. TURNER, a citizen of the United States, and a resident 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, and exact specification.

My invention relates to switches for electric work, and has for its object to provide a convenient and simple switch. It is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of the switch with the top of the case removed. Fig. 2 is a cross-section through the case and switch. Fig. 3 is a detail of the tripping-block, and Fig. 4 is a detail of a modification.

Like parts are indicated by the same letter in all the figures.

A is the base on which the mechanism rests; B B, pivoted arms, and C the cover.

D D and E E are contacts for the outer extremities of the arms B B, and F F are the blocks to which these arms are pivoted.

G G are the binding-posts to which the conductors are attached, and two of them are connected with the contacts D D and the other two with the blocks F F.

On the short ends of the arms B B are the blocks of insulation G′ G′, which are secured between the bifurcated ends of the piece H, which is free to move on the rod J.

K K′ are the spiral springs on this rod on opposite sides of the piece H, and bearing, respectively, against the rigid collar L and the end of the pitman M. The rod J is securely fastened to this pitman and passes through the standard N. The piece H engages the lug O on the pivoted bar P, which is upwardly forced by the spring R, and carries the pivoted cam-block S and the two pins T and U. The lower end of the rigid collar L is adapted to engage and slide upon the cam-block, as shown in Fig. 3.

V is a combination-lock, the details of which are not shown, but the rotating portion of which is eccentrically connected at W to the pitman M.

X is the key by which this central portion may be made to rotate, so as to operate the pitman M in either direction.

In the modification a spring-bar Y is substituted for the springs K K′. The contacts F F are eccentrically connected to the conductors Z Z and form parts of the main circuit, and the conductors Z′ Z′ lead, for example, to an arc light. The details of course might be greatly varied without departing from the spirit of my invention, and the arrangement of parts, size, and proportion, &c., might be greatly altered without departing from the law of the action of the device. I have also contemplated the use of mechanical equivalents of the various portions.

I have spoken of the piece L as being rigid with the rod J, and I mean so as to move therewith but to be capable of a slight motion thereon. It is limited in its motion by the recess S′ in the compressed spring K. (Indicated in dotted lines in Fig. 2.)

Between the standard N and rod J is the spring L^2, bearing against the piece or washer L.

The use and operation of my invention are as follows: The device being inclosed in the case, as shown in Fig. 2, and the parts being in the position indicated in Fig. 1, it is clear that the circuit will be completed through an electric-arc lamp, for example, placed in connection with the conductors Z′ Z′. If, now, it is desired to cut the lamp out and yet leave the circuit unbroken, it may be accomplished by introduction of the proper key into the combination-lock V, for when this is done, and not until then, can the central portion of such lock be rotated. By rotating this portion by means of the key the pitman M is moved and by its motion the rod J is moved. This motion is communicated to the piece H and thence to the arms B B to turn them on their pivots and complete the circuits through the contacts E E. It will be readily seen that by alternately turning the key in opposite directions such arc lamp may be successively turned in or out of circuit. It is desirable, however, that the arms in passing from one contact to the other should move with a sudden and strong motion, and this is accomplished by means of the devices more fully illustrated in Figs. 2 and 3, to which reference is now invited. Assuming that the parts are as indicated in full lines in Figs. 2 and 3, if the key be turned so as to force the pitman-piece M toward the right to its collar the

spring K will be compressed between the lug O on the pivoted lever P and the piece H, through which the rod J freely slides. For a considerable portion of the rotation of the key there will therefore be no movement of the block H, and hence none of the arms B B, but the spring K will be in process of compression. During this same motion the rod J, being movable with the pitman M, the rigid washer or piece L thereon will engage the cam-face of the block S, and riding upon it will steadily depress the pivoted lever P against the spring R until a moment will arrive when the washer or piece L will pass over the upper edge of the block S to the right thereof, and the piece H will be freed from the lug O and the expansion of the spring K will violently force such piece H to the right along the rod J until the equilibrium of the springs K and K′ has been restored. At this moment, however, the block H will be on the right of the lug O and the lever P will be restored to its position shown in full lines in Fig. 2. This violent and sudden motion of the block H of course swiftly swings the arms B B on their pivots until they make connection with the opposed contacts. In like manner these arms may be successively moved on their pivots to make or break the circuit. The edge of the washer L, which engages the cam-block S, is preferably sharp, so as to admit of an easy passage of such edge across the upper edge of the block. When the pitman is moving toward the right, the piece L will be held by its engagement with the cam-block in the position shown in Fig. 2; but when the compressed spring K is freed a slight pressure will be placed upon the piece or washer L and will force its end across the upper edge of the block S against the spring L^2. When the pitman M is moving in the opposite direction, the piece L will be forced over the edge of the block S by the expansion of the spring L^2 after or at the same moment that the compressed spring K′ is permitted to expand. If desirable, the key may be provided with an insulated head or end.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is as follows:

1. In a switch, the combination of two elbow crank-levers with suitable contacts for their long ends, a reciprocating piece connected with their short ends, and a lock having a movable part which controls the reciprocations of such piece.

2. In a switch, the combination of pivoted elbow crank-levers with suitable contacts for one set of their ends, a cross-piece connecting the other ends, itself elastically connected with a reciprocating bar, and a key-controlled lock or piece to reciprocate said bar.

3. In a switch, the combination of a movable piece which throws the circuit-making arms, with springs on the opposite sides thereof, a pivoted bar with a lug which alternately engages the opposite sides of such piece, and a pivoted cam on the piece and a lug on the bar adapted by their engagement to compress such springs and trip such arms.

4. In a switch, the combination of two elbow crank-levers with suitable contacts for two of their ends, a reciprocating piece connecting their other ends, and a lock having a movable part which controls the reciprocations of such piece, and thus rocks the levers to make or break circuit.

5. In a switch, the combination of two elbow crank-levers with suitable contacts for two of their ends, a lock, and a connection from such lock to the other ends of said levers, whereby the operation of the lock will move the levers on their pivots to make or break the circuit.

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