

H. E. LEPPERT.
SWITCH.

APPLICATION FILED MAR. 17, 1910.

1,058,071.

Patented Apr. 8, 1913.

Fig. 1.

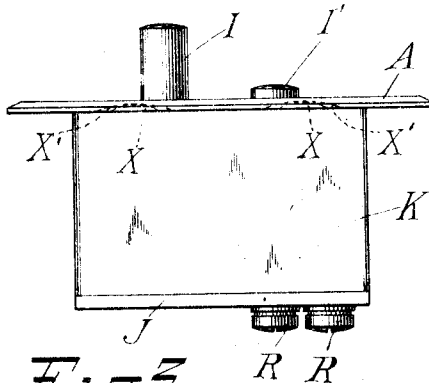


Fig. 2.

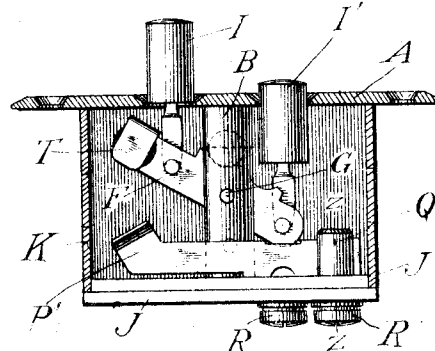


Fig. 3.

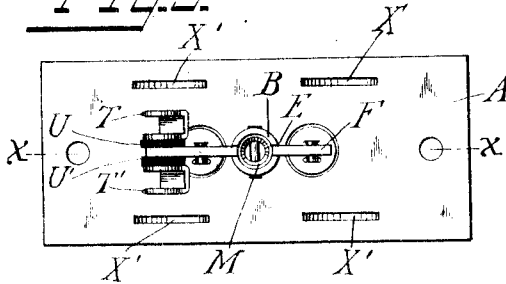


Fig. 4.

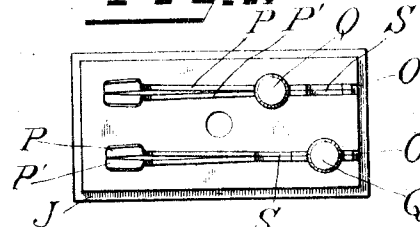


Fig. 5.

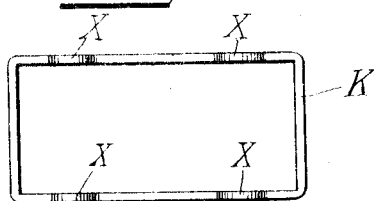


Fig. 6.

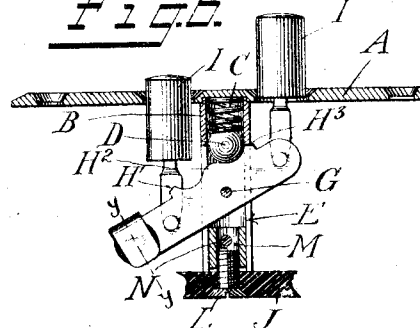


Fig. 8.

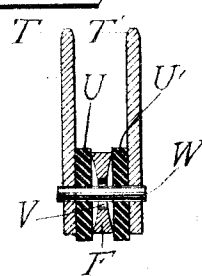


Fig. 7.

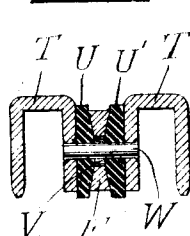


Fig. 9.

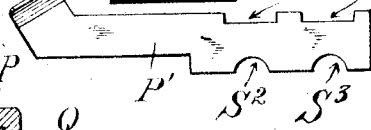
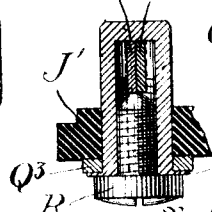


Fig. 10.



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UNITED STATES PATENT OFFICE.

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SWITCH.

1,058,071.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed March 17, 1910. Serial No. 549,819.

To all whom it may concern:

Be it known that I, HENRY E. LEPPERT, a citizen of the United States, residing at New Britain, county of Hartford, State of Connecticut, have invented certain new and useful Improvements in Switches, of which the following is a full, clear, and exact description.

My invention relates to improvements in switches, and has for its object to produce a new and improved switch having an oscillating switch arm which shall be simple in construction and efficient in action.

The following is a description of an embodiment of my invention, reference being had to the accompanying drawings, in which—

Figure 1 shows a side elevation of a switch embodying my invention. Fig. 2 shows the same with the switch plate in section and one side of the case removed. Fig. 3 shows a bottom view of the face plate with the parts attached thereto. Fig. 4 shows a plan view of the base plate. Fig. 5 shows a plan view of the casing. Fig. 6 shows the face plate with the parts attached thereto, the face plate and support being in section on the line $x-x$ Fig. 3. Fig. 7 shows a section of a detail on the line $y-y$ Fig. 6. Fig. 8 shows in section the parts of Fig. 7 at one stage of their manufacture. Fig. 9 shows a side elevation of one of the spring contacts. Fig. 10 shows a section of a detail on the line $z-z$ Fig. 2.

Referring more particularly to the drawings, A is a face plate, to which is rigidly secured a tubular projection or standard B. Within this tube and abutting the face plate is a spring C supporting the anti-friction ball D. The tubular member B is slotted at E.

F is an oscillating switch arm which passes through the slot E in the tube B and is pivoted to the tube B by a pin at G. This switch arm has three projections $H^1-H^2-H^3$, the middle one, H^3 , of which, as the switch arm is oscillated in one direction or the other, depresses the ball D and passes from one side to the other of said ball, the spring C yielding to permit such action. After the middle projection H has passed the ball, the spring C forces the ball upward, which compels the switch arm to complete its movement with a snap action. The

switch arm F is actuated by push-buttons $I-I'$ passing through the face plate A.

J is a base plate which is held against the bottom of the metal casing K by a screw L, which engages a screw-threaded insert M within the remote end of the tubular member B, being secured within said member by a pin N. The base plate J is provided with two grooves O—O. In each of these grooves is a pair of parallel spring contacts P—P' which are held to the plate by a slitted stud Q, whose lower ends are upset at Q' over a washer Q'. Each stud Q is tapped for a binding screw R, which enters the bottom thereof for securing the wire conductors. The spring contacts are each provided with two upper recesses S—S' and two lower recesses S²—S³, into which latter the rounded ends of the screws R enter. The stud which secures one pair of spring contacts to the base plate is located at the recess S' and the stud which secures the other set of contacts to the base plate is located at S. The binding posts are thus separated from one another for a considerable distance, although the springs are counterparts of one another and are similarly placed.

T—T' are contacts carried by the switch arm F but insulated therefrom by mica washers U—U'. These contacts T—T' engage and disengage the pairs of spring contacts P—P', so as to break the circuit. In order that the contacts T—T' should be properly secured to the switch arm F and yet insulated therefrom, I make a hole V in the end of the switch arm F and slightly countersink the metal at each end thereof. I then apply the mica washers U—U' and contact members T—T' to the opposite sides of the switch arm, passing therethrough a rivet W which fills the holes in the mica washers, the members T—T' being flat or un-bent at the time. I then upset the rivet W so as to draw the contacts together and hold them and the mica washers firmly in position. The rivet W is considerably smaller than the hole V. The countersinks in the switch arm partially receive the washers U—U' and thus hold them and the switch contact T—T' from movement relating to the switch arm F, and at the same time the operation centers the pin W so that it is out of contact with the switch arm F and is maintained out of contact under all condi-

tions. After the parts have thus been secured, the strips of which the contacts T—T' are formed are bent into the form shown in Fig. 7.

5 The casing K is held to the face plate A by the screw L. In order to secure it in position, the base plate J is provided with a slight circumferential recess or offset J' so as to provide a portion which enters the casing K and a flange which rests upon the bottom of the casing K. The casing K is also provided with positioning lugs or projections X which enter the recesses or grooves X' formed in the bottom of the face plate. The same screw L therefore holds the base plate in position and holds the casing in position, the projections X and recess X' acting respectively as dowels and dowel recesses.

20 The invention may be embodied in various forms without departing from the subject-matter, as hereinafter referred to in the claims.

What I claim is:

25 1. In a switch, the combination of an oscillating arm having a projection thereon, a slotted tubular support for said arm, a face plate to which said support is secured, a spiral spring within said support, and a ball also within said support, said ball being un-
30 attached to said arm but actuated by said spiral spring so as to engage said projection, electrically connected contacts secured to said arm but insulated therefrom, and station-
35 ary contacts adapted to be engaged and disengaged by said electrically connected contacts.

2. In a switch, the combination of two push buttons, an oscillating arm with which
40 said push buttons are connected, a support for said arm pivoted thereto between said push buttons, and a stationary spring contact consisting of two members extending parallel to said arm from one side to the

other of said support, said contact having its
45 end on one side fixed relatively to said support and its other end adapted to be engaged and disengaged by said arm.

3. A casing for push switch or the like, comprising a metallic wall portion with position-
50 ing lugs, independent top and base, one of the latter having recesses corresponding to said lugs and the other being peripherally offset to receive the edges of said wall portion, in combination with a standard ex-
55 tending between said top and base and carried by one of the latter, and means in connection with the other for rigidly uniting said top and base to the wall as described.

4. A casing for push switch having a wall
60 portion comprising a plate of metal angled to desired shape and provided with positioning lugs, independent base and top, one of the latter having recesses corresponding to
65 said lugs, in combination with a standard extending between said top and base and carried by one of the latter, and means in connection with the other for rigidly uniting said top and base to the wall as de-
70 scribed.

5. In a switch, the combination of a base plate, counterpart spring contacts carried
75 by said base plate having two similar recesses in their upper edges and two similar recesses in their lower edges, and two clamps passing over said contacts respectively and
80 through said base plate, said clamps engaging the recesses in the upper edges of said contacts, and screws passing upward into said clamps and through said base plate into the recesses in the lower edges of said contacts, the corresponding recesses in the two contacts being in a line and the clamps and screws being displaced relatively to said line.

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Witnesses:

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