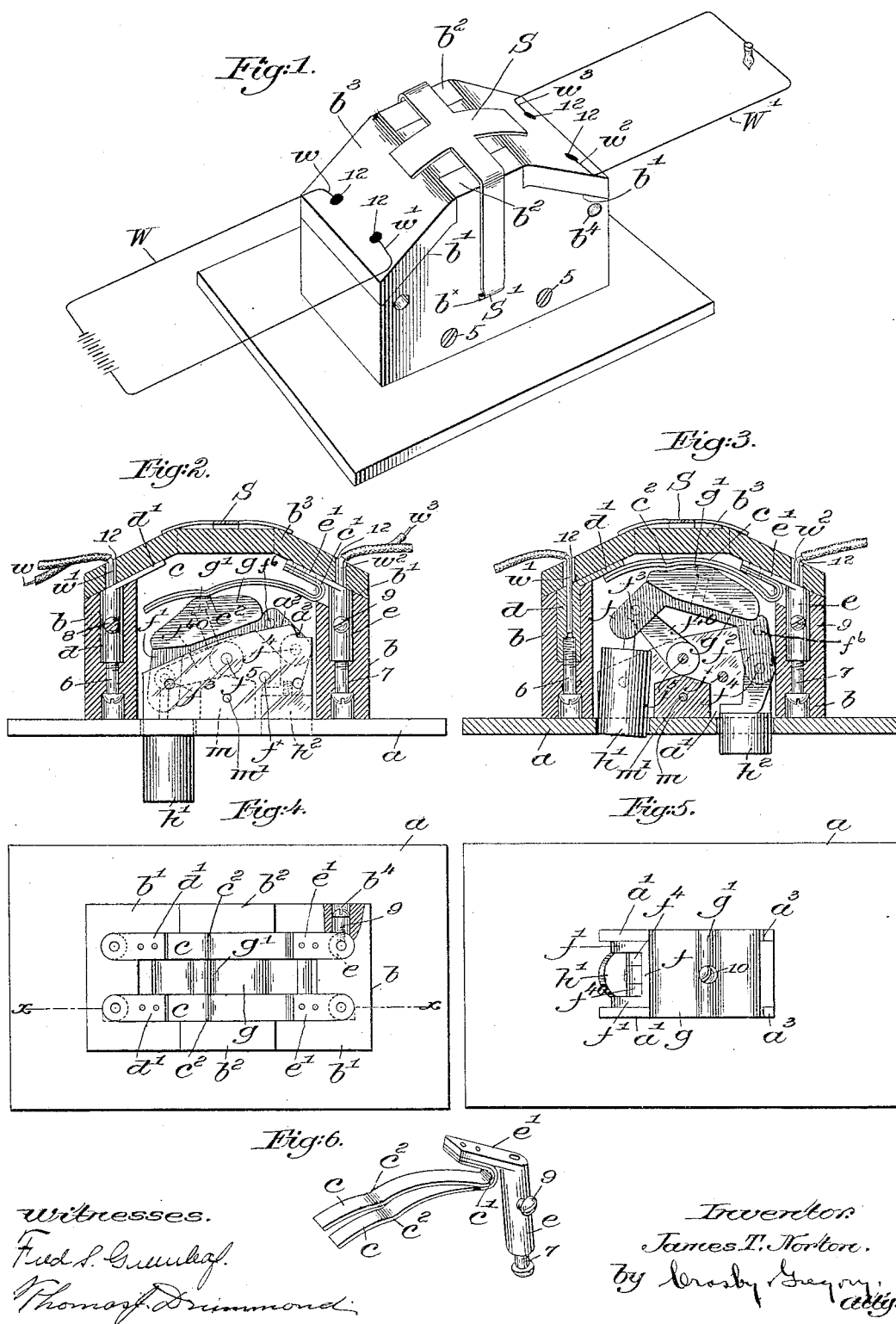


(No Model.)

J. T. NORTON.
ELECTRIC SWITCH.

No. 571,927.

Patented Nov. 24, 1896.



Witnesses.

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ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 571,927, dated November 24, 1896.

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To all whom it may concern:

Be it known that I, JAMES T. NORTON, of Boston, county of Suffolk and State of Massachusetts, have invented an Improvement in Electric Switches, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

10 This invention has for its object the production of a compact, well-protected, and efficient "push-switch" or cut-out for electric circuits as distinguished from those wherein the movable contact is operated by a swing-
15 ing handle or lever. In many instances the switches or cut-outs are secured in or attached to the walls or ceilings of rooms or other apartments, and it is frequently desirable that the greater part of the apparatus be concealed.

20 The switch forming the subject of this invention is adapted to be let into a wall or other support, the base of the apparatus being flush with the supporting-surface, the operation of the switch being effected by a pair of plungers or push-buttons, one or other of which
25 projects from the base-plate of the apparatus.

Figure 1 is a perspective view of one form of switch or cut-out embodying my invention with the inclosing case or cover in position, the circuits being indicated diagrammatically. Fig. 2 is a vertical sectional view
30 thereof on the line $x x$, Fig. 4, the switch being shown as open. Fig. 3 is a similar view with one side of the supporting-frame omitted, the switch being shown as closed. Fig. 4 is a top or plan view of the apparatus shown
35 in Fig. 1, partly broken out, and with the cover omitted. Fig. 5 is a similar view of the actuating mechanism for the movable contact member, the casing of insulating material
40 being omitted; and Fig. 6 is a perspective view of a movable switch member detached.

Referring to the drawings, the apparatus is shown as mounted on a base-plate a , of
45 metal or other suitable material, provided with upturned supports $a' a'$, Fig. 5, to sustain the moving parts of the switch, and having inclined tops a^2 , notched at their higher ends at a^3 for a purpose to be described, said base-plate being adapted to be
50 set into and preferably flush with the surface of a wall or other support.

A cover or casing b , of insulating material, preferably porcelain, is slipped over the moving parts when in use, and retained in place
55 by suitable screws $5 5$, Fig. 1, extended into threaded holes in the supports a' .

I have herein shown my invention as embodied in a double-pole switch; but its operation would be precisely the same were it a
60 single-pole switch, as will be obvious hereinafter.

The end walls of the casing b are socketed to receive hollow metal plugs $d e$, held in place
65 by screws 6 and 7, Figs. 2, 3, and 5, entering their threaded lower ends through the bottom of the casing.

I prefer to oppositely incline the top of the casing at b' , leaving side lugs b^2 , and a removable cover b^3 , shaped to fit snugly thereon, is
70 held in place by a suitable spring-clip S , Fig. 1, straddling the top and casing and intumed at S' to enter recesses b^x in the casing side.

The upper ends of the plugs $d e$ are flattened and offset at $d' e'$ and inclined to correspond with the top b' of the casing, suitably
75 recessed to receive them, the offsets d' forming the fixed switch member.

The line terminals pass through holes 12 in cover b^3 and are inserted in the plugs d and
80 e and held by binding-screws 8 9, extended through holes b^4 in the casing.

In Fig. 1 the terminals $w w'$ of the main circuit W are shown as secured to the two
85 plugs d and the terminals $w^2 w^3$ of a lamp or other circuit W' to the plugs e , so that the circuit is interrupted at two points.

The movable switch member for each pole of the apparatus is herein shown as a plurality
90 of strips c , of copper or other suitable metal, bent over at c' to impart spring action thereto and attached in any suitable manner to the offsets e' , the free ends of the switch members
95 c extending below the exposed under sides of the fixed switch member d' , as clearly shown in Fig. 2.

Referring to Figs. 2 and 3, a switch-actuator is shown as a frame f , downturned at its ends to form pairs of legs $f' f^2$, to which are
100 respectively pivoted at f^3 and f^4 plungers or push-buttons $h' h^2$, preferably of insulating material, extended loosely through the base-plate a . The actuator is connected to the supports a' by a link f^{10} , bifurcated at its up-

per end and pivoted on the pin f^3 and at its other end loosely mounted on a pin f^5 , extended through the supports a' and forming the fixed fulcrum for the switch-actuator. A wiper-block g , of insulating material, is secured by a screw 10 to the actuator, it having an abutment g' to cooperate with a downward bend c^1 in the movable spring members c of the switch. As shown in Fig. 2, the plunger h^1 is extended and the actuator depressed, permitting the movable spring members c to leave the fixed members d' , opening the circuit, the bends c^2 in movable members c acting on the abutment g' at one side of the dead-center of the switch-actuator to retain it inoperative and the circuit open, the plunger h^2 being retracted.

Viewing Fig. 3, the circuit is closed, the plunger h^1 having been pushed in to rock the actuator f about its fixed fulcrum, thereby raising and moving the wiper g to the right, the abutment g' thereof wiping across the members c and moving them into contact with the fixed members d' . As the abutment passes beneath the bends c^2 the actuator passes its dead-center, and the resiliency of the switch members c acts to complete the movement of the actuator f with a quick snap or jerk, the raised end of the wiper g maintaining the switch members in contact. Outwardly-extended pins f^6 on the actuator ride up on the inclined tops a^2 of the supports a' as the actuator is moved as described, simultaneously lifting the right-hand end thereof, and just as the spring switch members c are about to snap the actuator over the pins f^6 enter the notches a^3 . This projects the plunger h^2 through the base-plate and also locks the switch from accidental reversal, as by a heavy jar or shock. To reverse the switch the plunger h^2 must be pushed in, thereby lifting the pins f^6 from the notches a^3 , a stop-pin f^8 preventing undue inward movement of plunger h^2 . At the same time the link f^4 will be swung to the left, Fig. 3, by the spring-pressure of c , and the actuator f will be rocked in the same direction on the pivot-points f^1 and f^5 , carrying the abutment g' to the other side of the bend c^2 of the movable switch member. As the frame passes its dead-center the spring members c throw or snap it over to the end of its movement, and said movable members c break contact with the fixed members d' . Thus there is a sharp quick snap of the movable switch member c either when making or breaking the contact between c and d' . The metallic parts of the actuator are thoroughly insulated from the switch members, and the whole apparatus is completely inclosed and insulated by the casing b and its cover b^3 , so that moisture cannot readily have access thereto.

As the plungers h^1 and h^2 are small and project, one or the other, only a short distance beyond the outer face of the base-plate the apparatus is neat and attractive when in place.

My invention is not restricted to the exact construction and arrangement shown, as the same may be modified or rearranged without departing from the spirit and scope of my invention.

In the dotted lines, Fig. 2, and full lines, Fig. 3, a block m , of rubber or other suitable material, is shown resting on the base-plate between the supports a' and held by a pin m' , the inclined top of said block acting as a catch or stop for the link f^{10} when the switch is open, supporting the actuator thereby in its inoperative position.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In an apparatus of the class described, a fixed switch member, an actuator having a rocking and a lateral movement, a wiper thereon provided with an abutment, independent plungers to rock said actuator in opposite directions, and a movable resilient switch member adapted to engage the abutment at one or the other side, to thereby move the actuator laterally after passing its dead-center, inward movement of the switch-closing plunger rocking the actuator to cause the wiper to retain the switch members in contact while the lateral movement of the actuator is completed by the spring member, substantially as described.

2. In an apparatus of the class described, a fixed switch member, a cooperating movable spring member having a bend or projection therein, a rocking actuator to engage and move said spring member in one direction, said actuator having an abutment to be engaged by the projection on the movable member, and manually-operated means to impart initial movement to the actuator in opposite directions, engagement of the abutment at one side by the projection on the movable switch member completing the throw of the actuator, substantially as described.

3. In an apparatus of the class described, a fixed switch member, a cooperating movable member comprising a plurality of superposed springs secured at one end, an actuator adapted to move the spring switch member positively in one direction, and independent plungers to move the actuator in opposite directions, to open or close the switch, substantially as described.

4. In an apparatus of the class described, a fixed switch member, a cooperating movable member comprising a plurality of superposed springs secured at one end, an actuator having a fixed and a movable fulcrum, and adapted to engage and positively move the spring member in one direction, and independent manually-operated plungers to swing the actuator in opposite directions, to open or close the switch, substantially as described.

5. In an apparatus of the class described, a rocking actuator having an abutment thereon, a fixed switch member, a cooperating movable spring member adapted to engage

the abutment at one or the other side, to complete the throw of the actuator, independent devices to manually move the actuator initially in opposite directions, and a fixed detent to limit movement of said actuator in one direction, substantially as described.

6. In a double-pole switch or cut-out, two fixed switch members, two cooperating movable resilient members, a common actuator to positively move the resilient members simultaneously in one direction, and independent means to impart initial movement to the actuator in opposite directions, the movable switch members acting upon and by their resiliency completing the movement of the actuator automatically, substantially as described.

7. In a machine of the class described, a fixed switch member, a cooperating movable spring member having a bend or projection therein, an actuator adapted to rock and provided with an abutment, the bend or projection of the spring member engaging the abutment at one or the other side, to throw the actuator after it passes the dead-center, means to move the actuator in one direction to close the switch, and a locking device to thereafter permit movement of the actuator into position to be acted upon by the spring member and lock the switch, substantially as described.

8. In an apparatus of the class described, an actuator provided with an abutment and having a fixed and a movable fulcrum, a fixed switch member, a cooperating movable spring member adapted to engage the abutment at one or the other side, to complete the throw of the actuator, independent plungers, to impart initial movement of the actuator in opposite directions, a pin on the actuator, and a notched support therefor, initial move-

ment of the actuator to close the switch causing the pin to ride over the support to the notch, entrance of the pin into the notch on lowering the adjacent end of the actuator to thereby permit the spring member to complete the throw of the actuator, such engagement of the pin and notch locking the switch in closed position, substantially as described.

9. In an apparatus of the class described, a base-plate having upturned supports thereon, a rocking frame having projections at one end to move on said supports, a link pivotally connecting the other end of the frame and the supports, and plungers to rock said frame in opposite directions, combined with a casing of insulating material, a fixed switch member and a movable switch member supported thereby, and an insulating wiper-block on the frame, adapted to engage and positively move the spring member in one direction, the plungers moving the frame in opposite directions to open or close the switch, substantially as described.

10. In an apparatus of the class described, an actuator mounted to rock, and having an abutment thereon, a fixed switch member, a cooperating movable spring member adapted to engage the abutment at one or the other side, and to throw the actuator after passing dead-center, and independent plungers to impart initial movement to the actuator and change the point of engagement of the spring member and abutment, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES T. NORTON.

Witnesses:

JOHN COUPER EDWARD,
FREDERICK L. EMERY.