No. 775,052. PATENTED NOV. 15, 1904.

I. G. WATERMAN.

ELECTRIC SWITCH.

APPLICATION FILED JAN. 31, 1903.

NO MODEL.

Fig. 1.

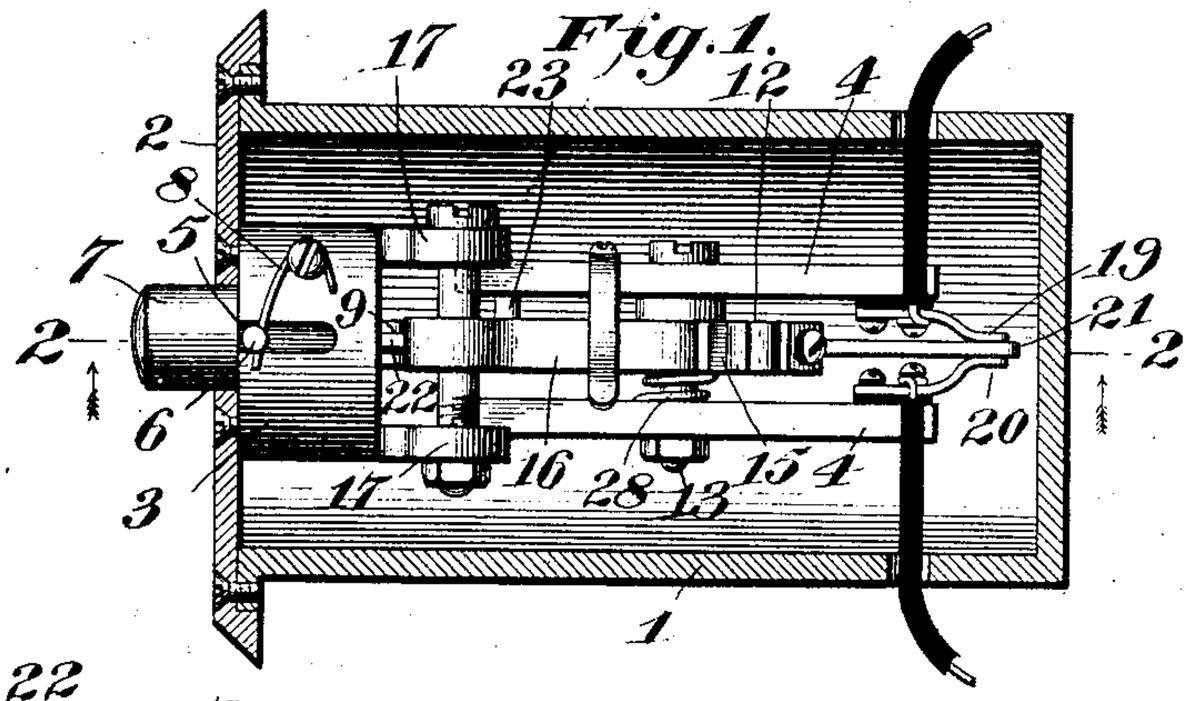


Fig. 2.

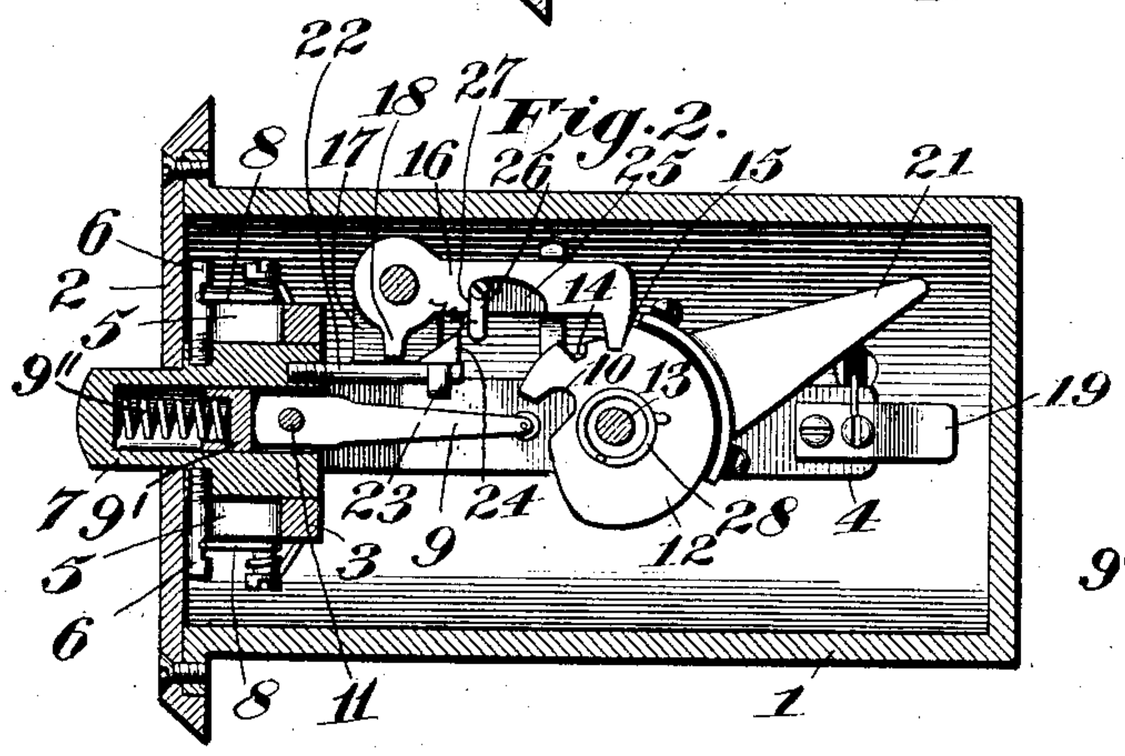


Fig. 4.

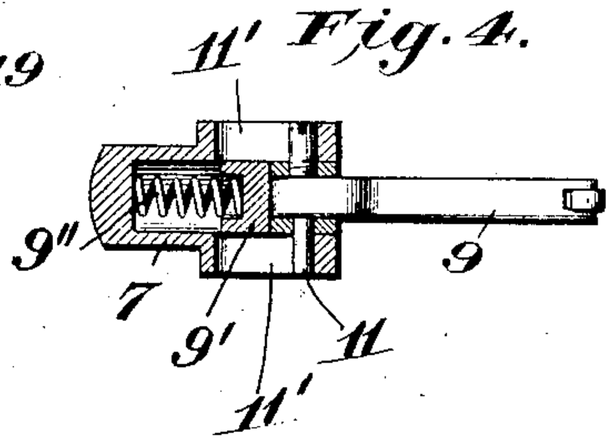


Fig. 3.

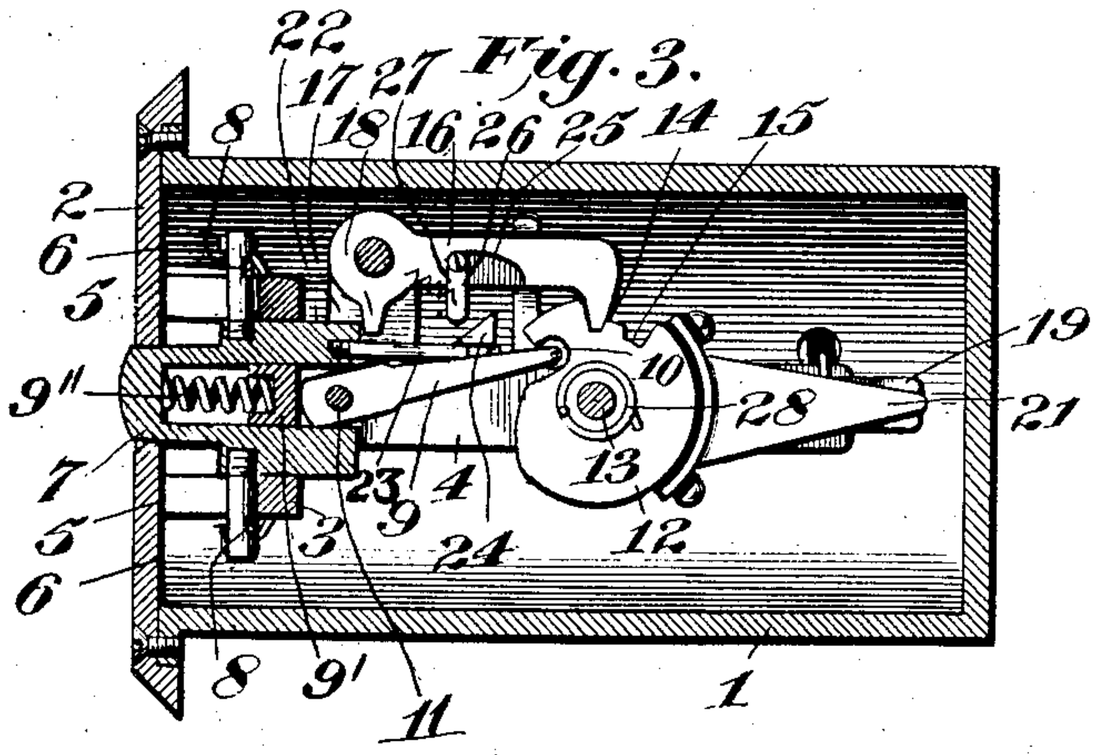
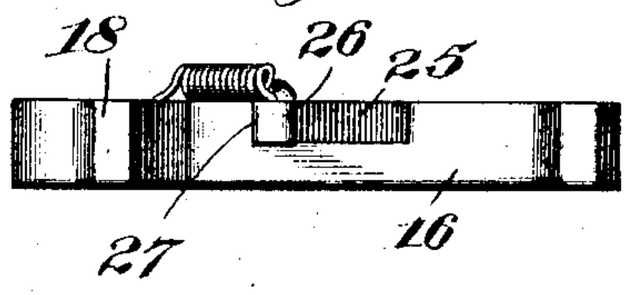


Fig. 5.



Witnesses

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No. 775,052. Patented November 15, 1904.

UNITED STATES PATENT OFFICE.

ISAAC G. WATERMAN, OF SANTA BARBARA, CALIFORNIA.

ELECTRIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 775,052, dated November 15, 1904.

Application filed January 31, 1903. Serial No. 141,386. (No model.)

To all whom it may concern:

Be it known that I, ISAAC G. WATERMAN, a citizen of the United States, residing at Santa Barbara, in the county of Santa Barbara and State of California, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

The present invention relates to electric switches.

This invention is designed as an improvement on the electric switch set forth in my Patent No. 732,477, dated June 30, 1903, and has for its object the provision of novel means for unlocking the switch-contact tumbler when the push-button is released and thereupon to throw the switch-contact tumbler to off position, the purpose being to first make and then break the circuit.

Having the foregoing object in view, the invention consists of the improved features and novel combinations and adaptations of parts set forth in detail hereinafter and embodied in the appended claims.

In the accompanying drawings, Figure 1 is a plan with the casing in section; Fig. 2, a longitudinal section showing the switch in "off" position; Fig. 3, a view like Fig. 2, showing the switch in "on" position; Fig. 4, a cross-section of the push-button mechanism; Fig. 5, an enlarged detail of the locking lever, cam, and pawl.

There is a shell or casing 1 provided with a detachable face-plate 2, the operative parts of the switch being connected to the face-plate and contained within the shell. Secured to the face-plate is a cup 3, with which is formed a bifurcated frame 4. The cup is provided with slots 5 to receive the pins 6 on the push-button mechanism 7, which works in the cup, and the push-button is held projected by springs 8 bearing on the pins 6. Slidable in the push-button is a cup 9′, which is seated against a coil-spring 9″ in the push-button. Pivoted to the cup is an actuating-finger 9, having trunnions 11, slidable in slots 11′ in the push-button, Fig. 4, which limit the play of the cup 9′. The finger 9 is adapted to coöperate with a notch 10 of the switch-contact tumbler 12, pivoted to the frame 4 by the pin 13 and having the locking-notches 14 and 15, adapted to be engaged in alternation by the locking-lever 16, which is pivoted to ears 17 on the bifurcated frame 4 and has the tail 18 positioned for engagement by the push-button mechanism.

The construction of the parts heretofore described, with the exception of the bifurcated frame, is in all respects similar to the operating mechanism of the switch set forth in my Patent No. 732,477, dated June 30, 1903, and further description thereof is therefore deemed unnecessary.

In the present invention I provide contacts 19 and 20 on the ends of the frame members 4, and a contact-finger 21 is secured to the tumbler 12 and adapted to make contact with both contacts 19 and 20 simultaneously when the button is pushed in. The contacts are all suitably insulated.

Secured to and movable with the push-button mechanism is a rod 22, slidable in a guide 23 on the frame 4 and provided with a cam projection 24. In the face of the locking-lever I provide a recess 25, and pivoted therein is a dog or pawl 26, whose outer end is free to be engaged by the cam projection 24 in an idle manner when the push-button is pushed in and to thereafter drop back against the shoulder 27 and act as an abutment for the cam 24 to wipe against when the push-button is released and thereupon push the locking-lever aside and release the tumbler 12, which is then snapped to the off position by a spring 28, coiled around the tumbler-pivot and connected to the tumbler and to the frame 4.

The operation is as follows: When the button is pushed, the finger 9 engages the notch in the tumbler, putting spring 9″ under compression. Afterward the push-button 7 engages the tail 18 and unlocks the tumbler, whereupon the spring 9″ expands, projecting finger 9, which snaps the tumbler (in opposition to the retracting-spring 28 thereof) to cause the contact-finger 21 to engage the contacts 19 and 20, the cam projection riding past the pawl 26. On releasing the push-button the springs 8 return the push-button and finger, and the tumbler is first momentarily locked by the lever engaging the other notch thereof, after which the cam 24 engages the

pawl 26 and by pressing it against the shoulder 27 disengages the lever from the tumbler, whereupon the spring 28 snaps the tumbler back to off position, where it is held by the reëngagement of the lever therewith after the cam has passed the pawl.

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

1. In an electric switch, the combination with a movable switch-contact member, and a spring for actuating said switch-contact member, of a locking member for locking the movable switch-contact member in both on and off positions, an actuating member arranged to positively engage the movable switch-contact member and move it in opposition to the retracting-spring of said switch-contact member, a spring for snapping the movable switch-contact member in opposition to its own spring, and means controlled by the actuating member for releasing the locking member from the movable switch-contact member in both the advance and return movements of the actuating member.

2. In an electric switch, the combination with a movable switch-contact member, of a locking member for locking the switch-contact member in both on and off positions, an actuating member arranged to positively engage the switch-contact member, a retracting-spring for actuating the switch-contact member which is independent of the action of the actuating member, a spring for snapping the switch-contact member in opposition to the retracting-spring aforesaid, and means controlled by the actuating member adapted to release the locking member from the movable switch-contact member on both the advance and return movements of the actuating member.

3. In an electric switch, the combination with a movable switch-contact member and a spring for returning it to normal position, of a movable locking member for securing the switch-contact member, a pawl or dog carried by the locking member, an actuating member adapted to move the switch-contact member, and means movable with the actuating member adapted to idly move the pawl on the advance movement of the actuating member, and to positively engage the pawl and deflect the locking member on the return movement of the actuating member.

4. In an electric switch, the combination with a movable switch-contact member and a spring for returning it to normal position, of a pivoted lever for locking the switch-contact member, a pawl or dog carried by the locking member, an actuating member adapted to move the switch-contact member, and a cam carried by the actuating member adapted to idly engage the pawl on the advance movement of the actuating member and to positively engage the pawl and deflect the locking-lever on the return movement of the actuating member.

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

ISAAC G. WATERMAN.

Witnesses:
GARDINER MERRITT,
EDWARD S. PILLARD.