Oct. 5, 1926. 1,602,318

C. E. ANDERSON

ELECTRIC SWITCH

Filed July 15, 1924

Fig. 2.

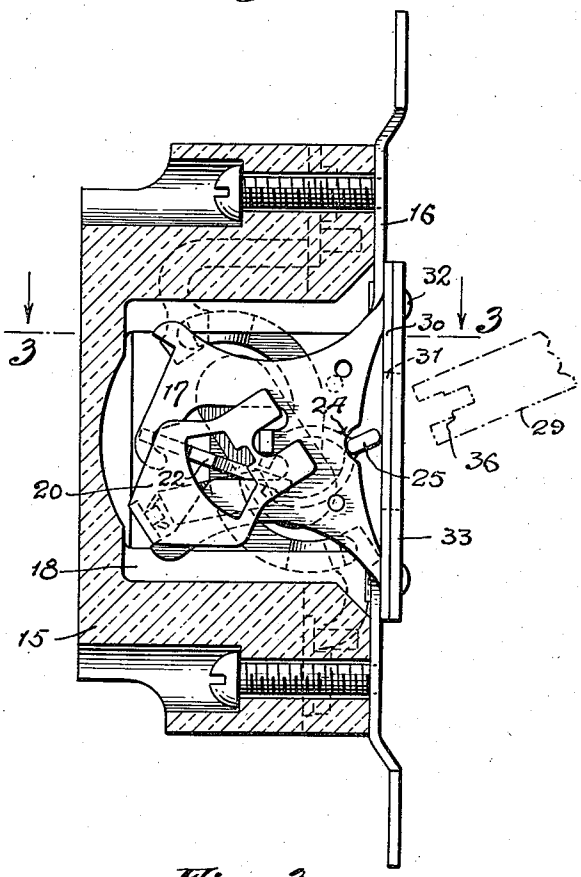


Fig. 1.

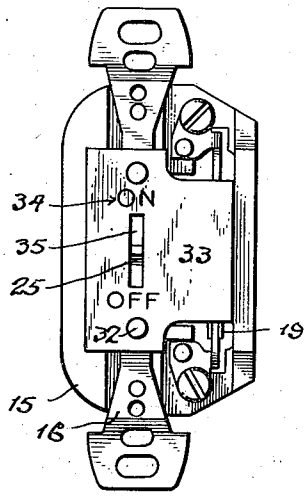


Fig. 3.

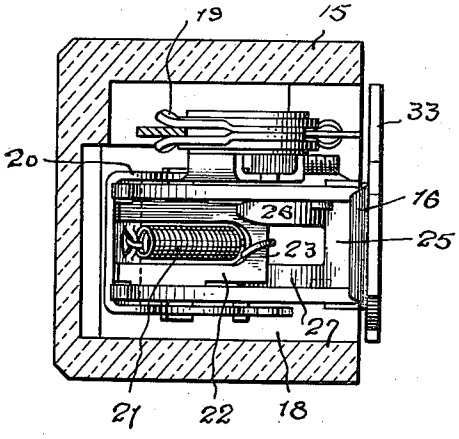
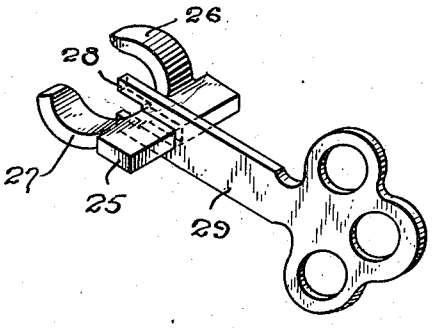


Fig. 4.



INVENTOR

CARL ERIC ANDERSON

BY

ATTORNEYS

Patented Oct. 5, 1926. 1,602,318

UNITED STATES PATENT OFFICE.

CARL ERIC ANDERSON, OF STRATFORD, CONNECTICUT, ASSIGNOR TO THE BRYANT ELECTRIC COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC SWITCH.

Application filed July 15, 1924. Serial No. 726,132.

My invention relates to electric switches, and particularly to a switch of the key-operated type. The object of my invention is to provide a toggle switch mechanism comprising an operating member adapted to be engaged and actuated by a cooperating detachable key.

In the accompanying drawings—

Fig. 1 is a plan view of a flush switch to which my invention is applied in one form;

Fig. 2 is a longitudinal section therethrough, drawn to a larger scale;

Fig. 3 is a section on the line 3—3, Fig. 2; and

Fig. 4 is a perspective of the toggle actuating member and associated detachable key.

In its main features the structure shown in these drawings is of the type illustrated in my copending application Ser. No. 509,242, filed October 21, 1921, to which reference is made for a more detailed exposition of its structural features. For the purposes of the present application it suffices to refer generally to the cup-shaped insulating body 15 adapted to be supported in an outlet box by the longitudinal strap 16, with offset side wings 17 which project into the switch chamber 18 and constitute the frame upon which the moving portions of the switch mechanism are mounted. As in my previous construction, the switch blade (or blades) 19 is carried by a pivoted yoke 20 to which one end of the switch operating spring 21 is attached. The opposite end of the spring engages the rocker 22, also pivoted on the frame as in my prior application, but in the present modification materally reduced in length and terminating at its free end slightly above the crotch 23 which joins the legs of the lever, and over which the end of the spring is now hooked.

In my prior construction the rocker 22 is carried above the supporting strap 16 and provided with a finger grip. I have now substituted for the extended end of the manually operated rock lever, a key-operated mechanism.

For this purpose I mount in open bearings 24 at the outer edges of the frame wings 17, an oscillating fork 25, the legs 26 and 27 of which are offset in opposite directions, preferably bowed, to straddle the free end of the rocker 22. As clearly shown in Fig. 3, the legs 26 and 27 are longitudinally spaced apart along the web which forms the head of the fork 25, thus affording between them a clearance for the accommodation of the projecting fingers 28 of the key 29.

Extending between the opposite ends of the supporting strap 16, and overlying the bearing ends of the fork to prevent its escape from the bearings 24, is a metallic guard plate 30. The latter is longitudinally slotted to form a key guideway 31 so located with respect to the web of the fork 25 that the portion thereof between the legs 26 and 27 lies beneath the slot 31, but extends transversely thereto. Above the guard plate 30, and also secured to the strap 16 by the rivets 32, is a cover sheet 33 of insulating material, such as fiber or the like, on which are legends 34 for indicating the "on" or "off" position of the switch. The usual face plate (not shown) is provided with an aperture of sufficient size to disclose these legends, and also to permit the insertion and oscillation of the key through the slot 35 in the cover sheet 33 which registers with the slot 31 in the guard plate 30.

When the key 29 is inserted through the face plate (not shown) and guide slots 35—31 in the cover sheet and guard plate, respectively, its fingers 28 straddle the web of the fork 25. Upon the swing of the key in the guide slots, the fork 25 is rocked in its bearing 24, and one or the other of its legs, 26 or 27, is brought into sliding engagement with the rocker 22, thus shifting the free end of the latter across the axis of oscillation of the switch blade yoke 20, and causing the toggle operating spring 21, now under increased stress, to swing the switch yoke 20 to the opposite end of its throw. It will be noted that the axes of oscillation of these pivoted members lie in substantially the same plane—but spaced apart. And further that the axes of the rocker and fork are at opposite margins of the frame while the axis of the switch bar yoke is intermediate. No binding of the free end of the rocker 22 between the legs 26—27 of the fork can occur, in spite of the relative angular movement between these parts, since the outward bowing of the fork legs permits the engaged end of the rocker to swing freely therebetween.

It will be observed that the web of the fork 25 assumes an angular position with

respect to the plane of the guard plate 30 when the parts of the switch mechanism are at rest in "on" or "off" position. It facilitates the engagement of the fingers of the key 29 with the head of the fork if the fingers are stepped on their inner faces, as indicated at 36 (Fig. 2), thus affording at the entering end of the key a slot of considerably greater width than the thickness of the web of the fork head 25, while the inner end of the key slot closely coincides in dimensions with the thickness and height of the web, thus insuring a snug fit and engagement between these parts during the operating swing of the key.

The fork is readily struck from sheet metal and formed to shape. The rocker 22 and the key 29 are also of sheet metal, and may be readily blanked out of flat stock. It will be obvious furthermore that the present switch yoke and frame may be utilized for either a lever- or key-operated switch, and that to convert a lever-operated switch into a key-operated switch it is only necessary to substitute the rocker 22 for the operating lever and to add the fork 25 and the guard plate 30 to the standard construction. The value of this, from a manufacturing standpoint, will be recognized.

Various modifications in details of arrangement and construction of parts will readily occur to those dealing with the problem, which do not depart from what I claim as my invention.

I claim—

1. In an electric switch, an oscillating switch bar yoke, a pivoted rock lever, a spring operatively engaged between said yoke and rocker to form a spring toggle, in combination with pivoted fork, the legs of which straddle the free end of the rocker, and a guard plate overlying the fork and having a key guide slot extending transversely to the axis of oscillation of the fork.

2. As an element of a switch mechanism, an operating fork comprising a head web adapted to be straddled by the fingers of a key, together with fork legs extending from one margin of the head web and adapted for sliding engagement with a cooperating pivoted rocker.

3. As an element of a switch mechanism, an operating fork comprising a head web adapted to be straddled by the fingers of a key, together with forked legs oppositely offset from one margin of the head web and adapted to have sliding engagement with a cooperating pivoted rocker.

4. As an element of a switch mechanism, an operating fork comprising a head web adapted to be straddled by the fingers of a key, together with fork legs extending from said head web at points beyond and on opposite sides of the key-engaged area of said web, and adapted to have sliding engagement with a cooperating pivoted rocker.

5. As an element of a switch mechanism, an operating fork comprising a head web adapted to be straddled by the fingers of a key, together with fork legs bowed from said head web at points beyond and on opposite sides of the key-engaged area of said web, and adapted to have sliding engagement with a cooperating pivoted rocker.

6. In an electric switch, a cup-shaped insulating body, a supporting strap extending across the open face of said cup-shaped body, and having integral frame wings extending therefrom into the chamber of said body, in combination with a switch mechanism mounted on said frame wings and comprising a pivoted switch bar yoke, a cooperating pivoted rocker, and a pivoted key-operated fork, the pivotal axes of said members being spaced apart in substantially the same plane, and the legs of the fork straddling the free end of the rocker and serving to shift the latter across the pivotal axis of the switch bar yoke.

7. In an electric switch, a frame, a rocker pivoted adjacent one margin of the frame, a fork pivoted adjacent the opposite margin of the frame, and a switch bar element pivoted on said frame intermediate said margins and substantially in the plane of the pivotal axes of the rocker and fork, said fork straddling the free end of the rocker and serving to shift the latter across the axis of oscillation of the switch bar element.

In testimony whereof I have signed my name to this specification.

CARL ERIC ANDERSON.