

J. M. S. ANDERSON.
ELECTRIC SWITCH.
APPLICATION FILED AUG. 29, 1913.

1,100,515.

Patented June 16, 1914

Fig. 1.

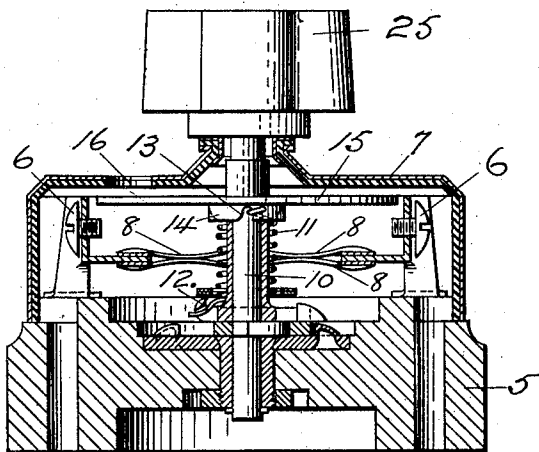


Fig. 2.

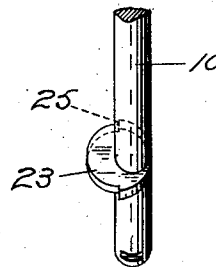
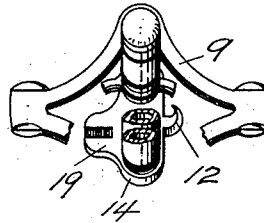
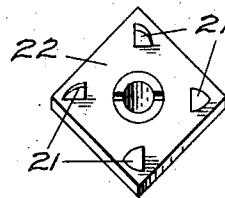
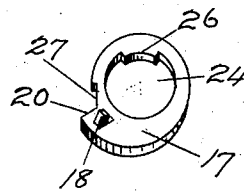
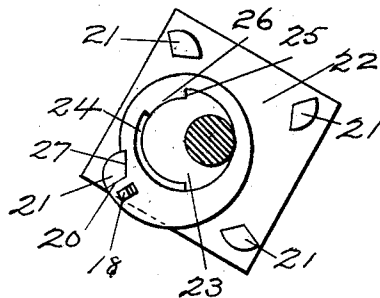


Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

1,100,515.

Specification of Letters Patent.

Patented June 16, 1914.

Application filed August 29, 1913. Serial No. 787,319.

To all whom it may concern:

Be it known that I, JOHN M. S. ANDERSON, a citizen of the United States of America, and residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented a certain new and useful Improvement in Electric Switches, of which the following is a specification.

My invention relates to electric switches and particularly to electric snap switches, the object of my invention being to improve the same in the features hereafter particularly described and illustrated in the accompanying drawing in which—

Figure 1 is a vertical section through a snap switch; Fig. 2 is a dropped perspective, partially broken away, of the escapement elements; and Fig. 3 is a horizontal section showing portion of the escapement mechanism drawn to a larger scale.

The switch mechanism here shown to illustrate a suitable embodiment of my invention, is of the type disclosed in the Wallbillich Patent 1,038,895. The switch mechanism is mounted on an insulating base 5 carrying combined wire and switch terminals 6 and provided with an inclosing cover 7. The switch blades 8 are fastened to a yoke 9 which is freely sleeved on the spindle 10. A coil spring 11 on the spindle, engages at its one end with the spur 12 on the yoke and at its other end with a notch 13 in the collar 14 fast on the spindle. An indicator dial 15 of usual type is here shown fast on the spindle above the collar 14 and lying beneath the aperture 16 in the top of the switch cover. The escapement mechanism of the switch is in the main the same as shown in said Wallbillich patent, and comprises an eccentric 17 having a struck up lug 18 in sliding engagement with the slotted wing 19 of the yoke. The shoulder 20 of the eccentric engages successively the stops 21 struck up from the stop plate 22 secured to the base, while the cam 23 fast on the spindle 10 rotates in the bearing aperture 24 of the eccentric and, on the rotation of the spindle, draws the shoulder 20 of the eccentric out of engagement with the successive stops 21 to secure the snap action of the switch in well understood manner. To effect this disengagement of the shoulder 20 from a stop 21, it is necessary to rotate the cam 23 more than a quarter turn. Consequently

when the switch button 25 is released after the switch has been actuated, the spring 11 is still under some tension. Frequent operation of the switch produces unavoidable wear between the cam 23 and its bearing aperture 24 with the result that the joint becomes sufficiently loose to permit the spindle to rotate partially backward under the influence of the recoil action of the spring 11. While this motion is not apt to be enough to appreciably affect the efficiency of the switch *per se*, it is not uncommonly sufficient to result in the non-register of the dial marks beneath the sight aperture 16 in casing, and the result is that the dial no longer accurately indicates the position of the switch. To obviate this defect I now provide the cam 23 with a shoulder 25 and form a cooperating boss 26 in the cam bearing 24. In the position of rest, the shoulder 25 engages one side of the boss 26. As the spindle is rotated to actuate the switch, the shoulder is moved out of engagement with the boss. When the eccentric has taken up its next position however, the switch button is released and the spindle under the recoil action of the spring tends to turn backward, it is promptly halted by the engagement of the shoulder 25 of the cam against the boss 26 in the cam bearing. This tendency of the spindle to rotate backward on the release of the switch button also causes the shoulder 20 of the eccentric 17 to tend to leave the stop 21 and while this tendency is normally overcome by the friction between the parts, I have provided means to positively prevent this action, by slightly recessing the periphery of the eccentric at 27 adjacent the face of its shoulder 20, so that a shallow seat is formed. The cam 23 is so shaped that on its slight return rotation on release of the switch button, the eccentric is forced slightly outward, thus seating the stop 21 in the recess 27 and holding the eccentric against accidental return rotation.

Another feature of value attending the present construction is the facilitation which it provides for the assembling of the mechanism on the base. In the construction shown in Wallbillich patent, the cam and eccentric bearing being perfectly plain, there is nothing to hold the parts together on the spindle before the latter is positioned on the base. Consequently great care has to be

exercised lest they drop apart during this portion of the assembly operation. With the present construction however, the relation of the cooperating shoulders in the bearing between the cam and eccentric is such that in their normal position the switch spring is slightly tensioned. The frictional engagement between the faces of the shoulders which this tension causes is sufficient to hold the parts together during assembly without danger of dropping apart and thus greatly facilitates the mounting of the switch spindle with the escapement mechanism assembled thereon, upon the base.

The construction here shown is but an exemplary embodiment of my invention, of which various modifications will readily suggest themselves. Obviously the invention may be applied without departure to switches of other general construction.

I claim as my invention:—

1. In a switch mechanism for rotary snap switches, a rotary switch spindle, a cam thereon, an escapement eccentric journaled on said cam, and cooperating shoulders on the bearing surfaces of said cam and eccentric which shoulders engage on the reverse rotation of said cam, with relation to the eccentric and thus hold the cam in predetermined position with relation to said eccentric, substantially as described.

2. In a switch mechanism for rotary snap switches, a rotary switch spindle, a dial thereon, a cam fast on said spindle, an escapement eccentric journaled on said cam and cooperating means on said cam and eccentric to hold said dial in predetermined rotary positions, irrespective of wear between said parts.

3. In a switch mechanism for rotary snap switches, a rotary switch spindle, a dial rotating therewith, an escapement mechanism for the spindle and means in connection with said escapement mechanism for insuring the predetermined rotary position of said dial irrespective of wear between cooperating members of the escapement mechanism.

4. In a switch mechanism for rotary snap switches, a rotary switch spindle, a dial fast thereon, a pair of switch blades, a yoke freely journaled on the spindle and carrying the switch blades, a shouldered eccentric in sliding engagement but rotarily movable with said yoke, a series of stop lugs cooperating with the shoulder of the eccentric, a cam on the switch spindle for operating the eccentric, and means on the bearing faces of said cam and eccentric for preventing

the reverse rotation of the switch spindle and dial.

5. In a switch mechanism for rotary snap switches, a rotary switch spindle, a dial thereon, an apertured casing through which portion of said dial is visible, an escapement mechanism for the switch and means in connection with said escapement mechanism for insuring the proper positioning of said dial beneath the aperture in the casing irrespective of wear between bearing surfaces in the escapement mechanism, substantially as described.

6. In a switch mechanism for rotary snap switches, an escapement mechanism comprising a rotary switch spindle, a cam thereon, an escapement eccentric journaled on said cam, cooperating shoulders on the bearing faces of said cam and eccentric which shoulders engage on the reverse rotation of said cam with relation to the eccentric and thus hold the cam in predetermined position with relation to said eccentric, together with a peripheral shoulder and adjacent seat on said eccentric and a series of stops successively engaged by said peripheral shoulder on rotation of said eccentric in one direction, the shape of said cam being such that on initial reverse rotation of the spindle following each stop of the eccentric the latter is moved outward and the stop engaged in the peripheral seat on the eccentric, for the purpose described.

7. In a switch mechanism for rotary snap switches, an escapement mechanism comprising a peripherally shouldered eccentric, a series of stops successively engaged thereby on rotation of said eccentric in one direction, and a peripheral seat in said eccentric in which said stop is engaged to prevent reverse rotation of said eccentric, substantially as described.

8. In a switch mechanism for rotary snap switches, a rotary switch spindle, a shouldered cam thereon, an escapement eccentric with bearing aperture for said cam, a shoulder in said bearing aperture forming portion of the cam bearing said shoulder on the eccentric engaging the shoulder on the cam on the reverse rotation of the cam with relation to said eccentric, substantially as described.

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

JOHN M. S. ANDERSON.

Witnesses:

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GEORGE B. THOMAS.