Dec. 30. 1924. 1,521,530

O. HAMMERSTROM

ELECTRIC SWITCH

Filed April 28, 1924

Fig. 1.

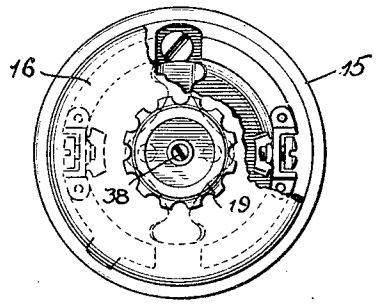


Fig. 2.

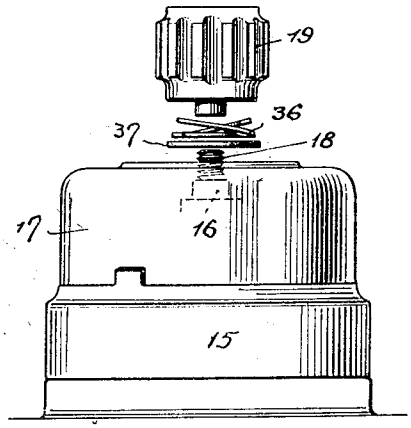


Fig. 3.

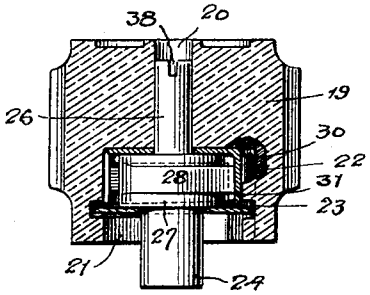


Fig. 4.

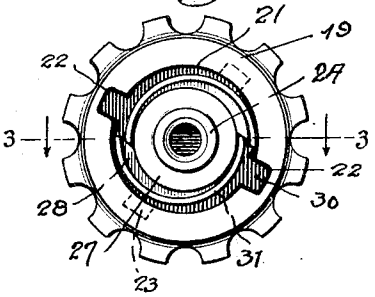


Fig. 6.

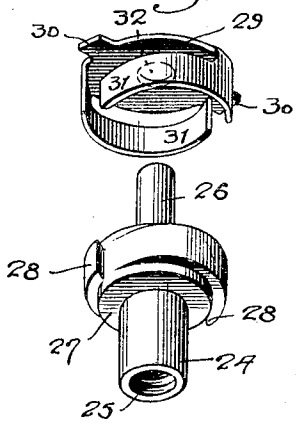
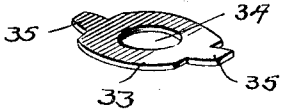


Fig. 5.



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1,521,530

UNITED STATES PATENT OFFICE.

OSCAR HAMMERSTROM, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE BRYANT ELECTRIC COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC SWITCH.

Application filed April 28, 1924. Serial No. 709,614.

To all whom it may concern:

Be it known that I, OSCAR HAMMERSTROM, a subject of the King of Sweden, residing at Bridgeport, in the county of Fairfield and State of Connecticut, have invented certain new and useful Improvements in Electric Switches, of which the following is a specification.

My invention relates to electric switches, and particularly to the handle for a one-way rotary snap switch. The object of my invention is to provide an improved one-way connection between the body of the handle and the handle element which engages and operates the rotary snap switch spindle.

In the accompanying drawings—

Fig. 1 is a broken plan view of a rotary snap switch of the surface type to which a handle embodying my invention is applied;

Fig. 2 is a side elevation thereof;

Fig. 3 is an enlarged vertical section through the handle taken on the line 3—3, Fig. 4;

Fig. 4 is an inverted plan of the handle;

Fig. 5 is a perspective of a detail; and

Fig. 6 is a detached perspective of the operating members for the handle.

It is desirable in one-way rotary snap switches to provide means for establishing a one-way connection between the switch handle and the rotary switch spindle, in order that no undue strains may be placed upon the switch mechanism by an attempt to rotate the spindle in the wrong direction. Various one-way connections between the handle and spindle elements have been suggested for this purpose, but they have proved for the most part either difficult to assemble or expensive to construct. The present invention provides a one-way handle, the parts of which are easy to assemble, inexpensive to manufacture, and efficient in operation.

While the handle may be applied to one-way rotary snap switches of any type, I have, for the sake of illustration, indicated a surface switch of conventional type, comprising an insulating base 15 upon which the rotary switch spindle 16 is mounted, the switch mechanism and contacts being housed within the usual cover 17. As a convenient means for attaching the handle to the spindle 16, to drive the latter, the upper end 18 of the spindle is screw threaded.

The particular shape of the body 19 of the handle is also immaterial, and I have shown a more or less conventional thumb-piece or button of insulating material. The button is axially pierced by a hole 20, which is enlarged, at the spindle end of the button, to form a well 21 of considerably greater diameter. At appropriate points, preferably at opposite diametral points, channels 22 are formed in the sides of the well and extend the depth of the latter. Spaced from the spindle end of the button a pair of opposite recesses 23 is formed in the wall of the well.

Carried by the button is a mandrel 24 tapped at 25 to screw on the threaded end 18 of the switch spindle. Intermediate the tapped end 25 and the shank 26 of the mandrel, which has a snug bearing in the hole 20 in the button, is the barrel-like body 27 of the mandrel. On the periphery of the body 27 are formed ratchet teeth 28, faced in one direction.

To establish a one-way drive between the handle body 19 and the ratchet mandrel 24, a cooperating ratchet member 29 is seated in the bottom of the well 21. The member 29 is formed from spring sheet metal, which may be readily blanked and formed to shape. It comprises a disc-like plate, from opposite sides of which extend lugs 30 which enter the channels 22 in the well 21, and thus prevent rotation of the disc with respect to the handle body 19. Offset from opposite margins of the disc are spring wings 31 which circumferentially embrace the barrel 27 of the mandrel 24 and form spring dogs which engage the teeth 28 of the mandrel. The disc is centrally apertured at 32 to pass over the stem 26 of the mandrel, thus accurately locating the disc with respect to the barrel and permitting the stem 26 to pass into the hole 20 in the body 19 of the button.

The mandrel and disc are retained in position within the well 21 by a washer 33. The latter is pierced at 34 to pass over the spindle end of the mandrel, and is provided with opposite marginal lugs 35. The dishing of the washer as shown in Fig. 5, so reduces its diameter that upon passing it

over the spindle end of the mandrel it clears the sides of the well 21. If the lugs 35 be located in register with the pockets 23 and the washer flattened, the lugs enter the pockets and thus secure the washer against escape, so that it serves to retain the mandrel and ratchet element 29 assembled with respect to the body of the handle.

Resilient pressure upon the cover 17 may be exerted by the handle through a spring washer 36 and bearing washer 37, which are interposed between the cover and the body of the button, and confined therebetween by the screw connection between the mandrel 24 and spindle 16.

Inasmuch as the engagement between the mandrel and spindle is established by a screw threaded connection, and further inasmuch as the ratchet dogs 31 engage the teeth 28 of the mandrel 24 only when the handle is rotated in a direction which will serve to screw the mandrel down on the spindle, means must be provided by which the mandrel may be engaged to rotate it in the opposite direction, so that the handle may be detached. For this purpose the mandrel stem 26, which projects into the hole 20 in the body 19, is transversely slotted at 38 to receive a screw driver, by which the mandrel may be rotated in the direction of the slip between the cooperating ratchet members.

The operation of the mechanism is obvious. Since the disc 29 is held by its lugs 30 against rotation with respect to the body 19 of the handle, it moves with the latter in both directions of rotation. The ratchet wings 31 of the disc, however, engage the teeth 28 of the mandrel 24 only when the handle is rotated in one direction, viz, the direction desired for the proper operation of the switch mechanism. Upon rotation of the handle in the opposite direction the spring ratchet wings 31 of the disc ride freely over the teeth 38 of the mandrel and no rotation in this direction is therefore imparted to the switch spindle.

The formation and assembly of the handle parts are both extremely simple and economical. A one-way handle construction is thus provided which may be marketed at an insignificant advance in price over the usual handle.

The exact shape and form of the parts may be modified in various ways, while still embodying the valuable features which I claim as my invention.

I claim—

1. In a handle for operating a one-way rotary snap switch, an insulating button recessed to afford a well, a mandrel adapted for operative connection to a rotary switch spindle, said mandrel having peripheral ratchet teeth located in said well, in combination with a spring metal plate located in said well and held against rotation therein with respect to the button, and spring wings offset from said plate and embracing the ratchet teeth of said mandrel to afford a one-way engagement between the body of the button and the mandrel.

2. In a handle for operating a one-way rotary snap switch, an insulating button pierced to afford an axial hole of different diameters, the portion of greater diameter forming a well at the spindle end of the handle, a sheet metal plate resting against the bottom of the well and having offset marginal spring arms projecting into the well, and a mandrel having a stem passing through said plate into the portion of the hole of less diameter, and having a barrel located in the well and provided with peripheral ratchet teeth embraced by the offset spring arms of said plate, said mandrel having means for establishing an operative connection with a rotary spindle of the snap switch.

3. A handle for rotary snap switches comprising an insulating body recessed to afford a well, a ratchet member resting in said well and held against rotation therein, a mandrel extending into said well and having peripheral teeth cooperating with the ratchet member held against rotation in said well, means for securing said mandrel and ratchet member in assembled position with respect to the handle body, means for establishing connection between the mandrel and the rotary spindle of the switch, and means for rotating said mandrel with respect to the spindle in the direction of the slip between the cooperating ratchet elements of the handle.

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

OSCAR HAMMERSTROM.