

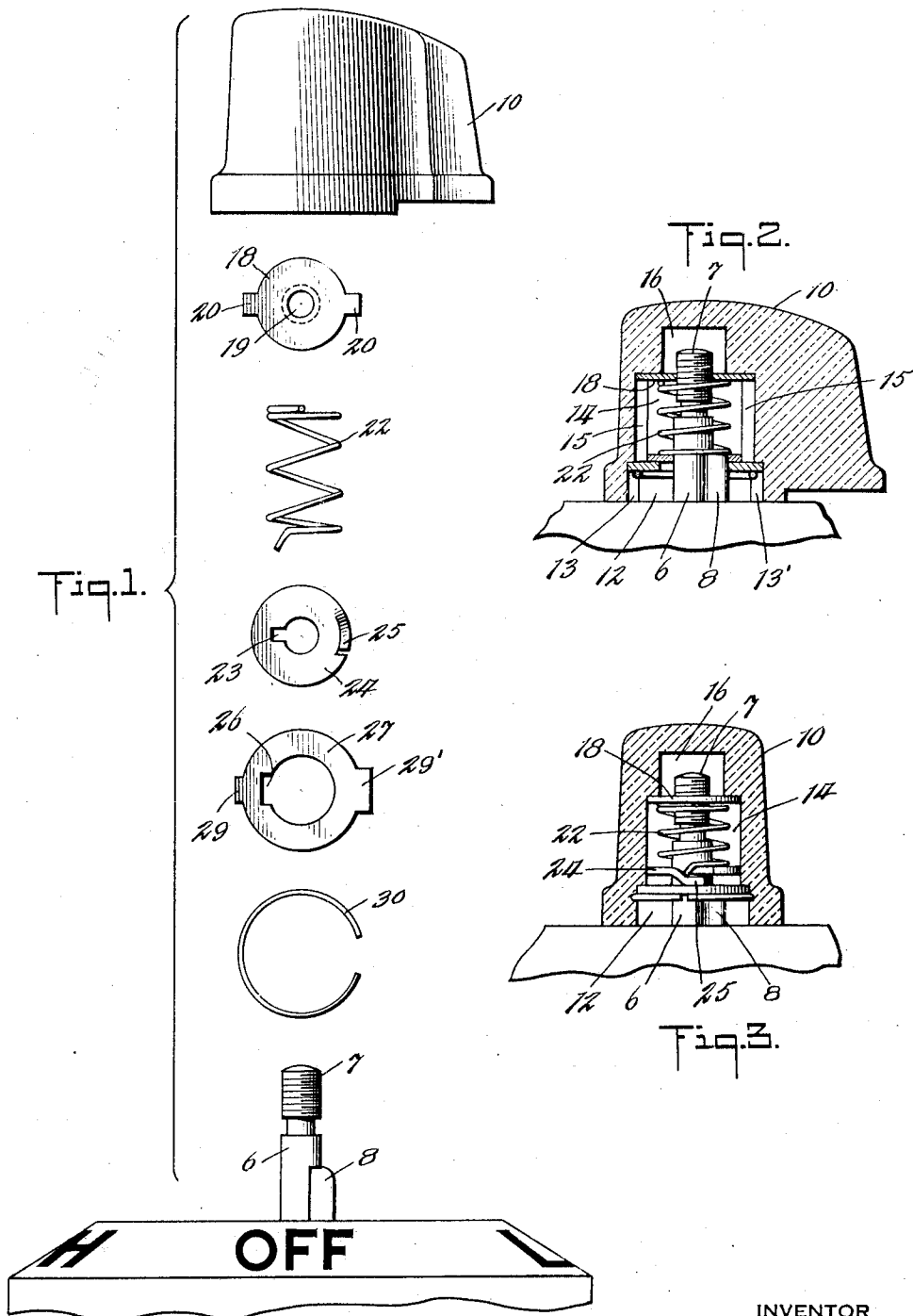
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SWITCH HANDLE

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SWITCH HANDLE

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This invention relates to handles for snap switches. More particularly it relates to handles for rotary snap switches in which one or more movable contacts are secured to a switch spindle which may be rotated in one direction by movement of the handle.

In some rotary snap switches the switch mechanism used is such that the switch spindle and contacts can be rotated in one direction only. When such a switch mechanism is used it is undesirable to use the kind of handle used with switches capable of rotating in two directions, for the reason that an excess of force applied to the handle in an attempt to operate the switch by rotation in the wrong direction may cause the handle or switch to become damaged or broken. On the other hand, it is desirable that the handle used have means to orient it in relation to the switch spindle so that the position of the handle will indicate the circuit condition established by the switch.

Therefore, it is an object of my invention to make a switch handle which, in normal rest positions will indicate the position of the movable switch contacts and thereby the circuit condition established by the switch.

It is a further object of my invention to make a switch handle which will engage with and rotate the switch spindle as the handle is rotated in one direction, but which will not engage with the spindle in such a way as to cause it to rotate when the handle is rotated in the other direction.

Another object is to make a switch handle which may be put on a conventional switch spindle by rotation in one direction and removed by rotation in the other direction.

Other objects and advantages will appear as the invention is described in connection with the accompanying drawing.

In the drawing:—

Fig. 1 is an exploded view of my new switch handle and the switch spindle with which the handle cooperates.

Fig. 2 is a sectional elevation view of my switch handle in assembled position upon the switch spindle.

Fig. 3 is a sectional elevation view of the

handle shown in Fig. 2 but with the section taken on a plane at right angles to the section in Fig. 2.

Referring to the drawing, switch spindle 6 is of conventional design having a screw thread 7 turned on its end and having a radial fin or key 8 beneath the thread. Any suitable switch mechanism may be actuated by the spindle. My switch handle comprises a hollow button 10 of insulating material such as porcelain or any moldable insulating composition. The button is hollowed out forming a three-stepped well, the step 12 of largest diameter being at the mouth of the well and the step 16 of smallest diameter being at the bottom of the well. The two steps 12, 14 have grooves 13, 13' and 15 formed in their walls parallel to the axis of the button.

The grooves 13, 13' in step 12 are unequal in size so as to receive the unequal sized tongues 29, 29' which extend in diametrically opposite directions from the periphery of a washer 27. By reason of the unequal size of the tongues and grooves the washer can be placed in the well in only one position. In order that the washer will not engage the switch spindle there is provided a larger central opening in the washer.

An expansible ring 30 expands into a circumferential groove in the wall of the first step 12, in such a way as to hold the washer 27 against the shoulder of the step. In this way the washer is fixed within the button 10. Pressed against the inner surface of washer 27 is a ratchet disc 24 which is centrally apertured to accommodate the switch spindle and has a radially directed key slot 23 cut into the inner periphery of the disc in which slot the spindle key 8 will slip when the handle is screwed far enough upon the spindle. Thus is the ratchet disc 24 caused to rotate with the spindle. A circumferential ratchet tooth 25 is pressed up adjacent the periphery of the ratchet disc for engagement in a radial slot 26 formed in the inner periphery of the washer 27.

Pressed against the shoulder of the second step of the well is a circular nut 18 having diametrically opposed radial tongues 20 extending from its periphery into the identical

grooves 15 whereby this nut is compelled to rotate with the button 10. The nut 18 has a central tapped aperture, the thread of which is adapted to engage the thread 7 on the switch spindle whereby the handle is secured on the spindle.

To press the ratchet disc 24 against washer 27 and at the same time press the nut 18 against the shoulder of the intermediate step 14 a compression spring 22 is coiled loosely around the spindle so that one end of the spring presses against the nut 18 and the other end presses against the ratchet disc 24.

When the handle parts are assembled as shown in Figures 2 and 3 and the handle is placed on the spindle and rotated clockwise the nut 18 will engage with and climb down the thread on the spindle eventually causing the key 8 to engage in slot 23 of disc 24. This will arrest further rotation of the disc 24 although the handle button 10 may keep on rotating until the ratchet tooth 25 falls into slot 26 of washer 27. This will cause the ratchet disc and washer to move as a unit in clockwise direction. But, since the disc 24 must move with the spindle, clockwise movement of the disc by rotation of the handle will cause the spindle to rotate and hence actuate the switch.

On the other hand counter-clockwise rotation of the handle can not cause movement of the switch spindle since the washer 27 may rotate counter-clockwise independently of the ratchet disc. Furthermore counter-clockwise rotation of the handle will cause the nut 18 to climb up the thread 7 and disengage the handle from the spindle.

Thus it will be seen that I have provided a switch handle which may be screwed upon a conventional switch spindle and which will only cause actuation of the switch when the handle is turned in one direction. And the handle will indicate the condition of the contacts and hence the circuit established, when the handle is turned so that the ratchet tooth is engaged in the slot of the washer. As this is the normal condition, the handle will for all practical purposes act as an indicator of the position of the switch contacts.

I claim:—

1. In combination a switch spindle, a hollow switch handle having within it a plurality of members engaged with the handle to be rotated thereby, one of said members also engaging with said spindle, a ratchet disc engageable with one of said members and movable with said spindle, a compression spring between said disc and one of said members, and means to hold all the handle parts in said handle.

2. In combination, a switch spindle, a hollow handle having within it a ratchet disc keyed to said spindle, two members engaging with said handle so as to be rotated thereby, one of said members having threaded en-

gagement with said spindle, a spring pressing said ratchet against the other of said members and means fixedly locating said other member within the handle.

3. In combination, a switch spindle, a hollow handle having within it a ratchet disc keyed to said spindle whereby said spindle may be rotated, two members engaging with said handle to be rotated thereby, one of said members having threaded engagement with said spindle and being axially movable relative to said handle, a spring pressing said ratchet upon the other of said members whereby upon rotation of said handle in one direction said ratchet will be caused to rotate with said members and handle, and means to hold all the handle parts within the handle.

4. In combination, a switch spindle, a key on said spindle, a hollow handle having within it a ratchet disc, said disc having an aperture for said spindle and a slot for said key whereby said disc and spindle will rotate together, two annular members having portions engaging said handle whereby said members and handle are caused to rotate together, one of said members having threaded engagement with said spindle, and a spring pressing against that member and against said ratchet disc causing said ratchet disc to engage the other of said members and rotate therewith when the handle is rotated in one direction, and means holding all the handle parts within said handle.

5. In combination, a switch spindle, a key formed on said spindle, a hollow switch handle having grooves in its inner walls, two members having tongues projecting into said grooves, one of said members having threaded engagement with said spindle, a ratchet disc having a slot for said key whereby said disc is rotatable with said spindle, said ratchet disc being engageable with the other of said members and rotatable with said other member when that member is rotated in a certain direction, a spring between said ratchet and one of said members pressing said ratchet against the other of said members, and means holding all of the handle parts within the handle.

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

ARVID H. NERO.