Sept. 13, 1932. H. A. DOUGLAS 1,876,878

ELECTRIC SWITCH

Filed Aug. 8, 1930

Fig. 1.

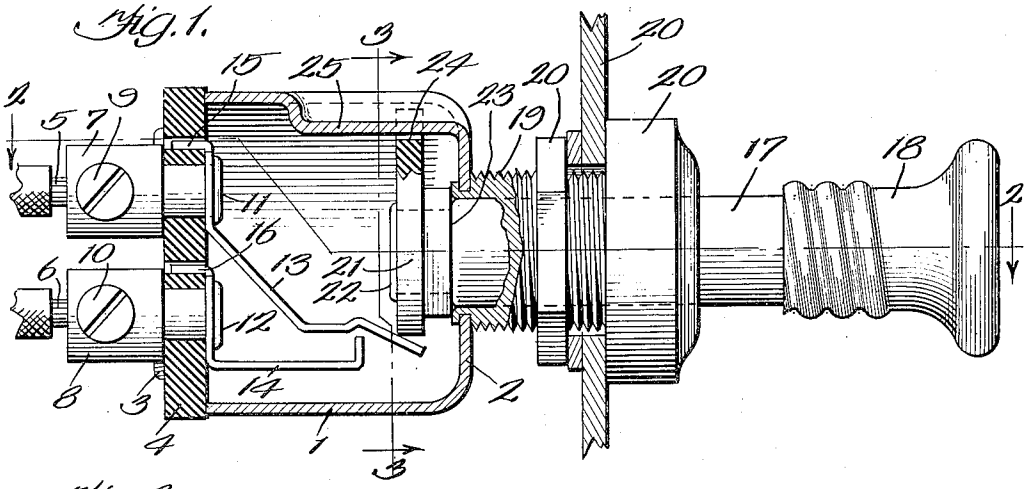


Fig. 2.

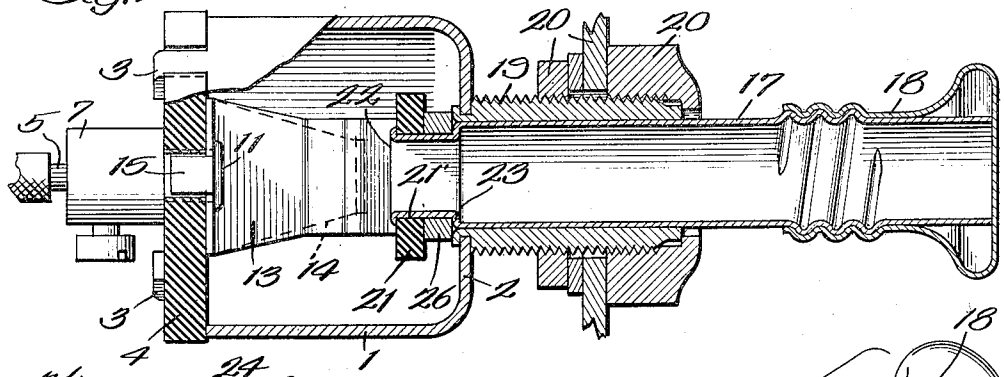


Fig. 3.

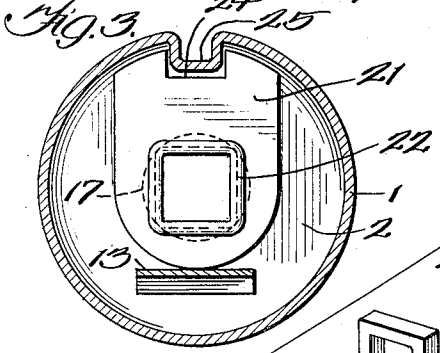


Fig. 4.

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UNITED STATES PATENT OFFICE

HARRY A. DOUGLAS, OF BRONSON, MICHIGAN

ELECTRIC SWITCH

Application filed August 8, 1930. Serial No. 473,800.

My invention relates to electric switches and has for its general object the provision of an improved contact actuator. In accordance with the invention this actuator is provided with a handle that includes, in its formation, a tubular portion which is reciprocable within said sleeve and carriage the contact actuator upon one end, and a cap portion applied to the other end of the tubular portion. This cap portion serves as a handle knob and also as a closure to guard against the access of foreign matter to the handle interior. The handle cap desirably also serves as a stop to limit the extent to which the handle may be inwardly thrust.

In accordance with another characteristic of the invention, the tubular portion of the handle is re-shaped at its inner end into polygonal contour where it is received within an opening of corresponding contour which is formed in a contact engaging element.

I will explain my invention more fully by reference to the accompanying drawing in which Fig. 1 is a view in elevation with parts shown in section; Fig. 2 is a sectional view on line 2—2 of Fig. 1; Fig. 3 is a sectional view on line 3—3 of Fig. 1; and Fig. 4 is a perspective view showing component parts of the contact actuator in separated relation.

The casing illustrated preferably includes a generally cylindrical wall 1 and a second wall 2 which is angular to the first and constitutes therewith a switch receptacle of cup formation. The wall 1 is formed with prongs 3 which are passed through notches in the closure wall 4 and which are clinched into engagement with the outer flat face of said closure wall, whereby this wall and the cup part of the casing are held in assembly. The casing wall 4 desirably constitutes the contact carrier of the switch structure. The circuit wires 5 and 6 are illustrated, these wires being clamped within the larger portions of the metallic sleeves 7 and 8 respectively by means of binding screws 9 and 10. The reduced portions of these sleeves pass snugly through holes that are formed in the wall 4 and are riveted at their inner ends to form flanges 11 and 12 which clamp said wall against the larger portions of the sleeves. Metallic leaf springs 13 and 14 are penetrated by the reduced ends of the sleeves and are clamped against the wall 4 by the flanges 11 and 12 respectively. Said springs are formed with angular tails 15 and 16 that are received within recesses in the wall 4 to prevent these springs from being turned upon their mountings. The unmounted ends of the springs are brought together to close the circuit by the means to be described, the resilience of the spring 13 being sufficient to separate it from the spring 14 when the circuit closing influence is removed. The cylindrical wall of the casing cup and the bottom wall 2 of such cup constitute two angularly related branches of a guiding element. The shank 17 on the handle 18 passes through an opening that is preferably formed at the center of the wall 2.

A guiding sleeve 19 has its inner end suitably received within the central opening of the wall 2 to direct the handle in its movements. This guiding sleeve is exteriorly threaded to receive clamping nuts 20 which may be employed to clamp the structure in assembly with the mounting 20′. The handle carries a contact actuator 21 upon its inner end. As the handle is preferably made of metal and as the contact actuator desirably has direct engagement with the contact 13, such actuator is made of insulation, being clamped in place between the flange 22 upon the inner end of the handle and the shoulder 23 on the handle. Said contact actuator has a formation which is preferably a notch 24 in its periphery which takes part in guiding the movement of the handle and the actuator. The cylindrical wall of the casing is formed with a rib 25 that extends in the direction of movement of the handle and which enters the notch 24 and cooperates with the contact actuator and the opening in the wall 2 to guide the handle and the actuator. The unmounted end portion of the spring 13 desirably slopes to constitute a cam formation that cooperates with the actuator in effecting a depression of the unmounted end of this spring against the unmounted end of the spring 14 when the handle is moved inwardly whereby the circuit is closed. When the handle is moved outwardly the spring 13, of its

own resilience, will rise to become separated from its engagement with the spring 14.

In accordance with my invention the handle portion 17 is tubular and the gripping portion 18 of the handle is formed to constitute a cap which closes the outer end of the portion 18 against the access of foreign matter. The cap and the tubular portion of the handle are desirably threaded so that they may be screwed into engagement. The rim of the threaded cap skirt desirably serves as a stop that is engageable with some part that is fixed with relation to the switch casing such as the outer nut 20.

The inner end of the tubular portion 17 of the handle is desirably squared to be receivable within the square opening 21′ of the actuator 21. A washer 26 having a square hole corresponding to the square shape of the inner end of the handle portion 17 is desirably interposed between the actuator 21 and the larger part of the portion 17 to serve as a spacer.

Changes may be made without departing from the invention.

Having thus described my invention, I claim:

1. In a structure of the class described, a mounting having an opening therethrough; an exteriorly threaded sleeve passing through said opening; a clamping nut on said sleeve and clamping the sleeve to the mounting; a hollow shank carrying a contact actuator at one end and reciprocable in said sleeve and the other end of the shank being threaded by a distortion of the metal of the shank; and a hollow knob having a skirt portion provided with threads interengaging with the threads of the shank, said skirt portion surrounding the shank and interengageable with the nut to limit the movement of the shank in the direction of the actuator.

2. The structure of claim 1 wherein the shank is generally tubular and has its actuator carrying end of polygonal contour to be received into a correspondingly shaped opening formed in the actuator.

3. The structure of claim 1 wherein the shank is generally tubular and has its actuator carrying end of polygonal contour to be received into a correspondingly shaped opening formed in the actuator, and wherein a spacing washer is located upon the shank intermediate the actuator and the threaded end, said washer having a polygonal opening fitting the shank.

In witness whereof, I hereunto subscribe my name.

HARRY A. DOUGLAS.