June 12, 1928.

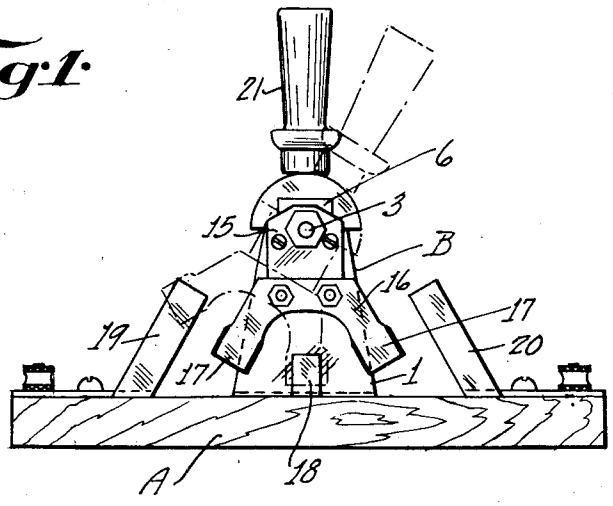
1,673,385

W. WURDACK

ELECTRIC SWITCH

Filed Nov. 2, 1925

Fig. 1.



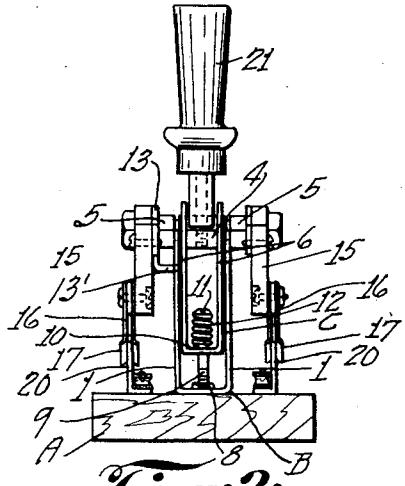
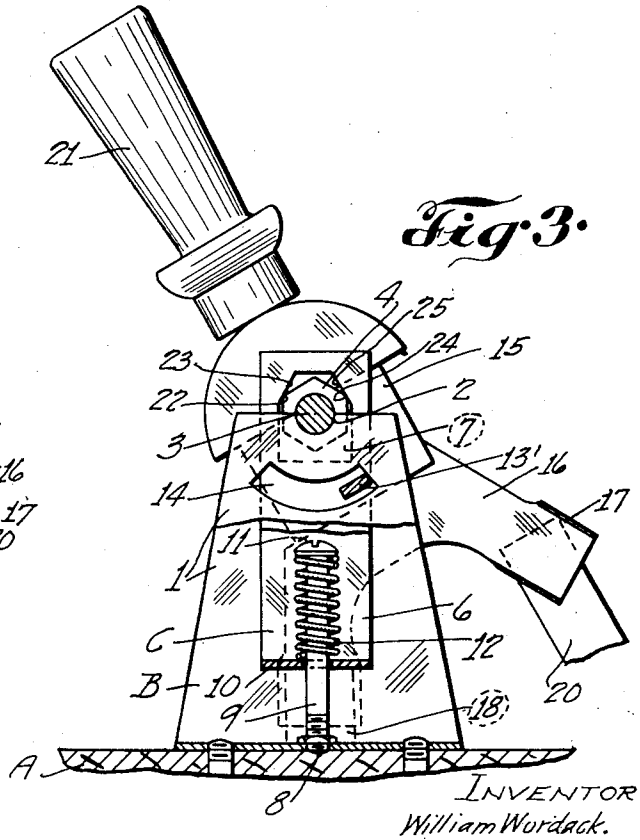


Fig. 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

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ELECTRIC SWITCH.

Application filed November 2, 1925. Serial No. 66,203.

This invention relates generally to electric switches. More particularly, my invention relates to a certain new and useful improvement in electric switches of the so-called knife type and has for its chief object the provision of a switch of the type stated which is of inexpensive, compact, and durable form and structure, and which is so constructed to effect in an efficient manner yielding retention of the blade or blades in both neutral and swung or circuit-closing positions.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts hereinafter described and pointed out in the claims.

In the accompanying drawing,

Figure 1 is a side elevational view of an electric knife-switch embodying my invention, the blades of the switch being shown in full lines in neutral position and in dot-and-dash lines in swung or thrown, circuit-closing position;

Figure 2 is an end view of the switch; and

Figure 3 is an enlarged vertical or longitudinal sectional view of the switch, showing the contact-engaging blades in thrown circuit-closing position opposite to that of Figure 1.

Referring now more in detail and by reference characters to the drawing, which illustrates a practical embodiment of my invention, A indicates a suitable preferably insulation base, rigidly fixed to which is a standard or support preferably, as shown, in the form of a U-shaped member B, whose legs 1—1 are presented upwardly and suitably spaced.

Formed in the upper ends of the standard-legs 1, are arcuate bearing-recesses. as at 2, for a shaft 3. Fixed upon shaft 3 intermediate the standard-legs 1, is a member or block 4 of hexagonal or other suitable polygonal formation; and disposed on shaft 3 outwardly of the standard-legs 1, are retaining-nuts 5—5.

C designates a U-shaped member or yoke which depends from the shaft 3 for shiftable movement bodily intermediate the standard-legs 1, the yoke C adjacent the upper ends of its legs 6, 6, being formed with shaft-accommodating apertures 7, whose upper wall is correspondingly polygonal in formation, as shown, for interengaging co-operation with the polygonal block 4, for purposes shortly appearing. Suitably rigidly attached, as at 8, to the base or bight of standard B, is a screw-bolt or the like 9, which projects upwardly through the bight 10 of yoke C, as shown, and disposed on bolt 9 intermediate its head 11 and the yoke-bight 10, is a coiled spring 12.

Fixed on shaft 3, is a small plate 13 provided with a laterally presented finger 13′ working in and adapted for engagement with the end-walls of an arcuate slot 14 formed in the adjacent wall or leg 1 of standard B, also for purposes shortly appearing.

Also suitably fixed on the opposite ends of shaft 3, are insulation-blocks 15, 15, carrying downwardly presented substantially yoke-shaped blade-providing members 16, whose blades 17, 17, are preferably of the spring-jaw type for electrical engagement with circuit-contacts or terminals of the knife-type suitably fixed to and upstanding from base A. The switch here specifically illustrated is of the so-called double-pole, double throw type, and there are consequently three sets of the circuit terminals, as at 18, 19, and 20, suitably located upon the base A for engagement by the blades 17 as the shaft 3 is rotarily actuated in one or the other direction by means of a suitable handle 21 fixed thereto.

Now, in use and operation, the switch-handle 21 and blades 17 are, I might say, normally in neutral position or in the position thereof illustrated in full lines in Figure 1, the yoke C being in full downwardly pulled position under the tension of spring 12 and the polygonal block 4 being in full matching registration or engagement with the polygonally shaped walls of the yoke apertures 7. It being understood that the spring or other resilient member 12 is constantly resiliently pulling downwardly upon the yoke C, it will be seen that the engagement between the block 4 and yoke C will retard axial or rotary actuation or movement of the shaft 3 and that the blades 17 will hence be yieldingly retained in such neutral position. Yet, as the handle 21 is positively swung to the left, reference being had to Figure 3, to engage the blades 17 with, and close the circuit between, the terminals 18 and 20, the block 4 camwise engages at

its corner 22 with the adjacent oblique faces 23 of the apertures 7 and thereby shiftingly forces the yoke C upwardly against the tension of the pulling spring 12, the finger 13′, on engagement with corresponding end-wall of slot 14, limiting the swung or thrown movement of the switch-blades 17. The spring-pulled yoke C then functions in like manner to retard returning axial or rotary movement of the shaft 3, the blades 17 being thereby yieldingly retained in such circuit-closing or electrical engagement with said terminals. To break the circuit and return the blades 17 to neutral position, the handle 21 is reversely manually or otherwise forcibly moved to the right, whereupon the block surface or corner 22 rides down the oblique faces 23 of the yoke apertures 7 and the block 4 and yoke C assume in due course their full matching registration, the spring-pulled yoke C functioning then, as described, to retain the parts in normal position. Or, should it be desired to engage the blades 17 with, and close the circuit between, the terminals 18 and 19, the handle 21 is further moved to the right, when in a similar manner, the block 4 at its corner 24 rides up, so to speak, the adjacent oblique faces 25 of the yoke-apertures 7 and thereby shifts the yoke C upwardly against the pull of its spring 12, the yoke C, following electrical engagement between the blades 17 and said terminals 18, 19, functioning to similarly retain the blades 17 in electrical engagement therewith, the finger 13′, also in a similar manner, engaging the opposite end wall of the slot 14 and limiting the swung movement of the handle 21 and blades 17 in such direction.

My new switch comprises few, readily assembled parts, and by its construction the blades are in a simple, but most efficient manner, yieldingly retained either in neutral position or in either of their swung circuit-closing positions.

Although not here specifically shown, it will be evident that, by suitably reducing the length of the slot 14, the switch here illustrated may be readily converted into one of double-pole, single throw type, that by omitting upon one side of the shaft 3 one of the knife-blade providing members 16, the switch here illustrated may be likewise easily converted into one of the single pole, double throw type, and that other changes in the form, construction, arrangement, and combination of the several parts of the switch may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

Having thus described my invention, what I claim and desire to secure by Letters Patent is:

1. In an electric switch, an axially movable shaft, a block cam fixed on the shaft, a shiftable cam member adapted for camwise interengaging co-operation with said block, and means resiliently pulling upon said member for yieldingly retarding through the engagement between said member and said block axial movement of the shaft.

2. In an electric switch, an axially movable shaft, a polygonally-shaped block fixed on the shaft, a member depending from the shaft and having polygonally shaped apertures for camwise interengaging shiftable co-operation with said block, and means resiliently pulling upon said member for yieldingly retarding through the camwise engagement between said member and said block axial movement of the shaft.

3. In an electric switch, an axially movable shaft, a polygonally-shaped block fixed on the shaft, a member depending from the shaft and having polygonally shaped apertures for camwise interengaging shiftable co-operation with said block, means resiliently pulling upon said member for yieldingly retarding through the camwise engagement between said member and said block axial movement of the shaft, and means for limiting the axial movement of the shaft.

4. In an electric switch, a standard having an arcuate slot, a shaft mounted for axial movement on the standard, a contact-engaging blade carried by the shaft, a polygonally-shaped block fixed on the shaft, a yoke-shaped member depending from the shaft and having polygonally-shaped apertures for camwise interengaging shifting co-operation with said block, a member carried by the shaft and working in said slot for limiting the axial movement of the shaft, and means resiliently pulling upon the yoke-shaped member for retarding through the camwise engagement between said member and said block axial movement of the shaft for yieldingly retaining the blade in neutral and swung positions.

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

WILLIAM WURDACK.