Nov. 12, 1946. E. B. FARMER ET AL 2,411,086

ELECTRIC SWITCH

Filed Jan. 13, 1945

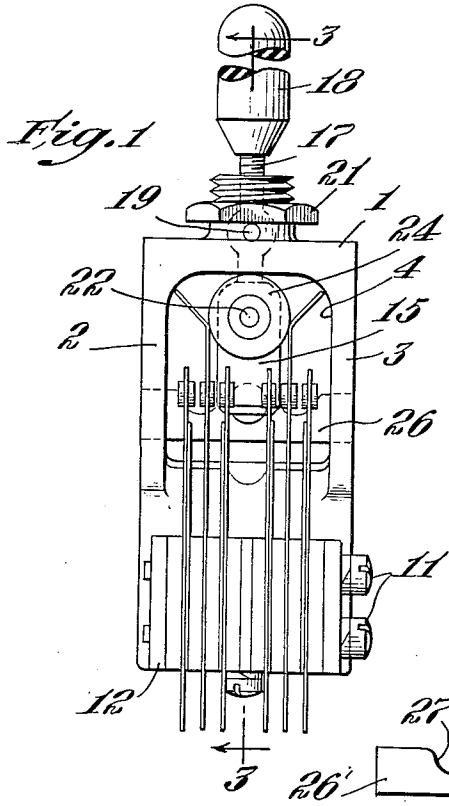


Fig. 1

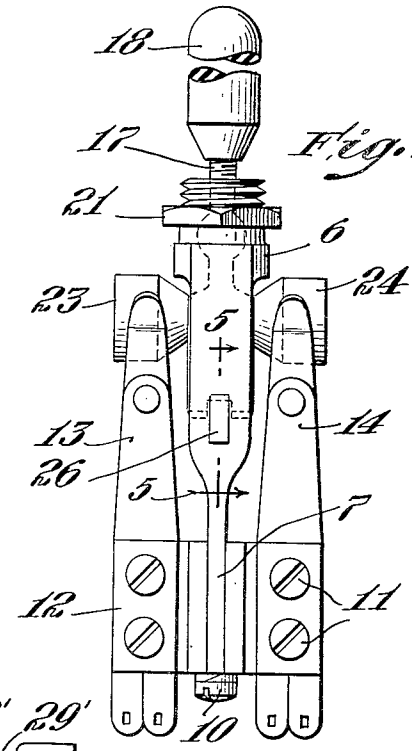


Fig. 2

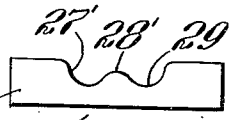


Fig. 6

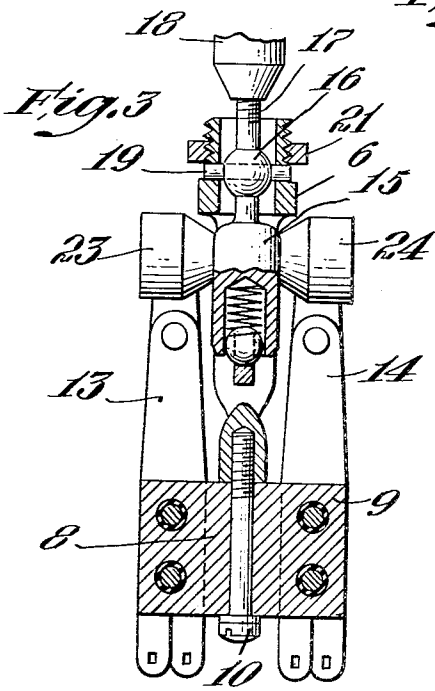


Fig. 3

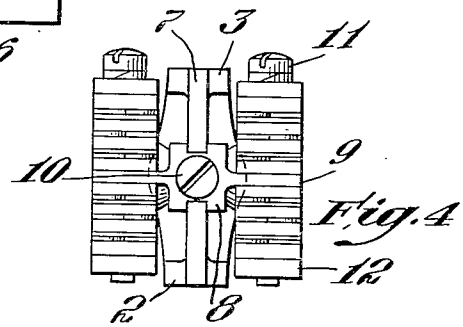


Fig. 4

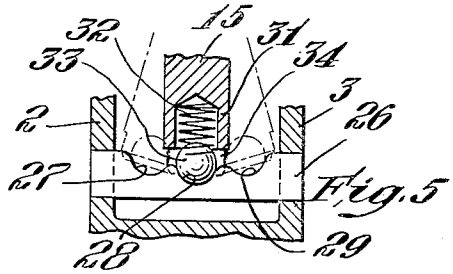


Fig. 5

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ELECTRIC SWITCH

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5 Claims. (Cl. 179—176)

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This invention relates to electric switches and more particularly to switches of the so-called telephone type comprising a frame, groups of switch contacts mounted on the frame, and an actuator pivotally mounted on the frame to swing from a midposition to either one of two opposite side positions to establish different circuit connections. For different conditions of use it is desirable to retain the switch in different positions. Sometimes it is desirable to have the switch remain in any one of the three positions until manually moved to another position, and sometimes it is desirable for the actuator to remain only in its side position and not in the midposition.

Objects of the present invention are to provide means for yieldingly retaining the actuator in position which is simple and economical in construction, which permits the switch to be adapted for any one of various uses merely by selecting one of various interchangeable parts in the assembling of the switch and which is durable and reliable in use.

According to the present invention the switch comprises a frame including two side portions with a space therebetween, a switch actuator movable back and forth in the space, a detent bar bridging the space with one or more notches therein, and a spring-pressed detent mounted on the actuator for engagement in the notches to hold the actuator in position, so that the switch may be adapted to hold the actuator in any one of various positions by using a detent bar having the notches positioned as desired. Preferably the aforesaid side portions have aligned openings therein and the detent bar has its ends mounted in these openings. In the preferred embodiment the aforesaid notches are in one edge of the detent bar and the actuator is bifurcated to straddle the edge, the spring-pressed detent being mounted in a socket in the actuator.

For the purpose of illustration a typical embodiment of the invention is shown in the accompanying drawing in which

Figs. 1 and 2 are side elevations;

Fig. 3 is a section on line 3—3 of Fig. 1;

Fig. 4 is a bottom end elevation;

Fig. 5 is a section on line 5—5 of Fig. 2; and

Fig. 6 is a side view of a modified detent bar.

The particular embodiment of the invention chosen for the purpose of illustration comprises a one-piece frame 1 having side portions 2 and 3 with a space 4 therebetween, a circular head 6 and a flat bottom portion 7 of reduced thickness. The bottom portion 7 is bifurcated to receive a

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block 8 which has flanges overlapping the edges of the slot in the frame portion 7 and side extensions 9 projecting from opposite sides of the frame. Mounted on the extensions 9 by means of screws 11 and plates 12 are groups of contact springs 13 and 14. The block 8 is secured to the frame by means of a screw 10 extending through the block and threading into the frame.

As shown in Fig. 3 the head 6 of the frame has a vertical opening extending therethrough and pivotally mounted in the opening is an actuator 15 having a ball portion 16, and projecting upwardly therefrom a threaded extension 17 upon which a handle 18 is threaded. The actuator is pivotally mounted in the head 6 by means of a pin 19 extending through the ball portion. The upper end of the head 6 is threaded to receive a nut 21 for mounting the switch on a panel. The pin 19 fits tightly in the frame but loosely in the ball 16 so that the actuator is free to swing freely on the pin. Extending laterally from the actuator 15 are the opposite ends of a pivot pin 22 which carry rollers 23 and 24 for actuating the groups of contacts 13 and 14.

Bridging the space 4 is a detent bar 26 having its opposite ends mounted in the side portions 2 and 3, the end of the bar being held in the openings in any suitable way as by upsetting or expanding the ends after they are inserted in the openings. As shown in Figs. 1 and 5 the upper edge of the bar 26 is provided with three circular notches 27, 28 and 29.

The lower end of the actuator 15 is provided with a socket 31 containing a spring 32 and a ball detent 33, the detent being adapted to seat in any one of the three notches 27, 28 and 29 in the bar 26. The extreme lower end of the actuator 15 is slotted at 34 to straddle the bar 26, the bar fitting the slot loosely so that the actuator may move freely while being guided by the bar.

If the switch is the kind in which the actuator should be yieldingly retained in any one of the three positions until manually moved to another position by means of the handle 18, a bar 26 having three recesses is used. However if the switch is the kind in which the actuator should always remain in one of its side positions but never in its mid position, then the detent bar should be shaped as shown at 26' in Fig. 6, having notches 27' and 29' corresponding to 27 and 29 in Fig. 5 but, instead of the notch 28, having a central protuberance 28'. Thus if the switch is released in mid position it will snap to the right or to the left. By retaining the actuator in position by a

detent bar such as described the switch may be adapted for any one of various kinds of use merely by selecting the proper bar. Thus it is possible to carry in stock switches which are completely assembled except for the detent bar and spring-pressed detent. Then when orders are received these parts may be quickly added to complete the assembly to suit the type of use of the particular customer. By providing the spring-pressed detent in the end of the actuator the actuator need not be changed for different kinds of use and a very compact construction is afforded. By using a one-piece frame in which all portions are integral, a rigid but inexpensive construction is provided.

It should be understood that the present disclosure is for the purpose of illustration only and that this invention includes all modifications and equivalents which fall within the scope of the appended claims.

We claim:

1. An electric switch comprising a frame including two side portions with a space therebetween, a switch actuator movable back and forth in said space, a detent bar bridging the space with one or more notches therein, and a spring-pressed detent mounted on said actuator for engagement in said notches to hold the actuator in position, whereby the switch may be adapted to hold the actuator in any one of various positions by using a detent bar having the notches positioned as desired.

2. An electric switch comprising a frame including two side portions with a space therebetween and aligned openings therein, a switch actuator movable back and forth in said space, a detent bar having its ends mounted in said openings and having one or more notches therein, and a spring-pressed detent mounted on said actuator for engagement in said notches to hold the actuator in position, whereby the switch may be adapted to hold the actuator in any one of various positions by using a detent bar having the notches positioned as desired.

3. An electric switch comprising a frame including two side portions with a space therebetween, a switch actuator movable back and forth in said space, a detent bar bridging the space with one or more notches in one edge, said actuator having a socket facing said edge, and a spring-pressed detent mounted in said socket for engagement in said notches to hold the actuator in position, whereby the switch may be adapted to hold the actuator in any one of various positions by using a detent bar having the notches positioned as desired.

4. An electric switch comprising a frame including two side portions with a space therebetween, a switch actuator movable back and forth in said space, a detent bar bridging the space with one or more notches in one edge, said actuator having a socket facing said edge and being bifurcated to straddle the edge, and a spring-pressed detent mounted in said socket for engagement in said notches to hold the actuator in position, whereby the switch may be adapted to hold the actuator in any one of various positions by using a detent bar having the notches positioned as desired.

5. An electric switch comprising a frame including two side portions with a space therebetween and aligned openings therein, a switch actuator movable back and forth in said space, a detent bar having its ends mounted in said openings and having one or more notches in one edge, said actuator having a socket facing said edge and being bifurcated to straddle the edge, and a spring-pressed detent mounted in said socket for engagement in said notches to hold the actuator in position, whereby the switch may be adapted to hold the actuator in any one of various positions by using a detent bar having the notches positioned as desired.

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