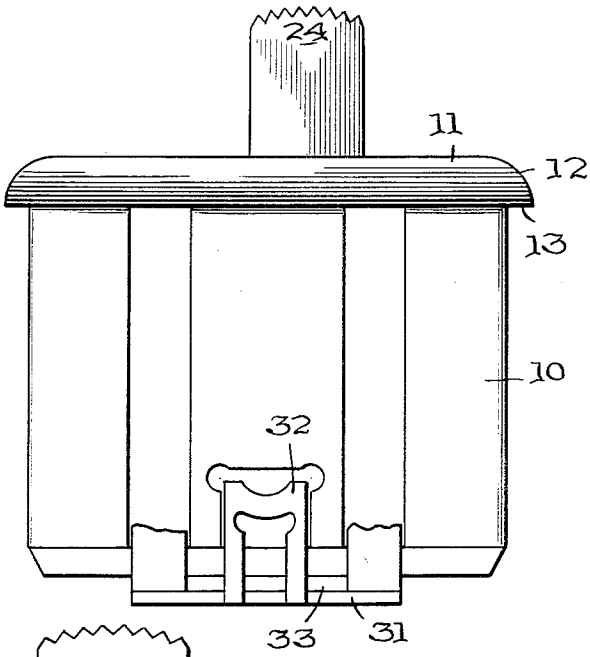
Dec. 20, 1955 P. H. WINTER 2,727,956

SLIDING HANDLE SNAP SWITCH

Filed March 2, 1953

FIG. 1.



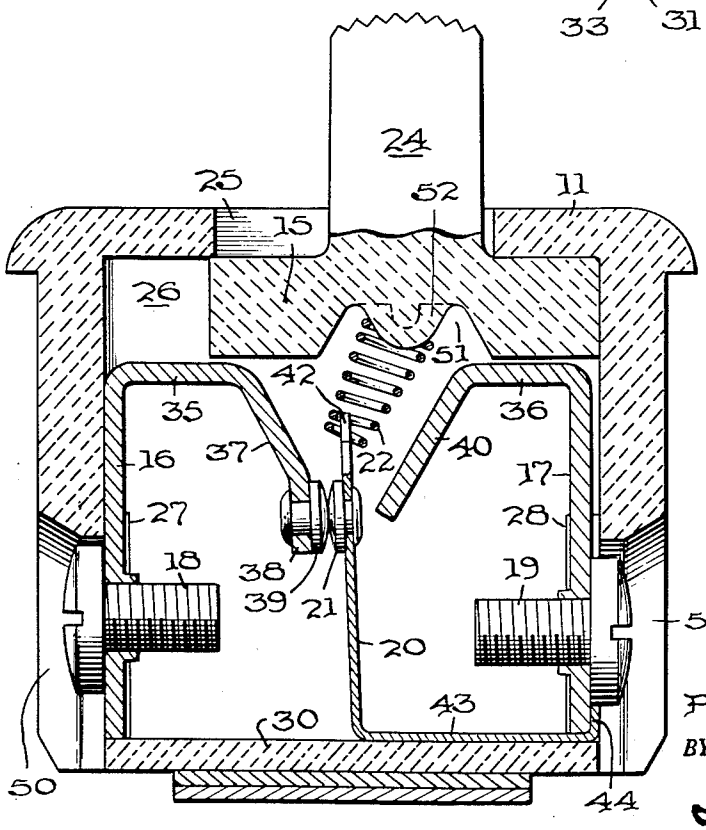


FIG. 2.

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SLIDING HANDLE SNAP SWITCH

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Application March 2, 1953, Serial No. 339,539

4 Claims. (Cl. 200—67)

This invention relates to switches, and more generally to snap switches of the slide button type.

It is a general object of the present invention to provide a novel and improved slide button snap switch of the oscillating contact type.

More particularly it is an object of the invention to provide, in a snap switch of the type described, a spaced stationary contact and a back stop, a movable contact carried by a cantilever spring for operation between these two and a helical compression spring arranged between the free end of the cantilever spring and the sliding button.

An important feature of the invention resides in the manner of arranging the housing and the contact carrier and back stop to provide for guiding the sliding button in its longitudinal path for actuating the switch to closed or open position.

Another important feature of the invention resides in the arrangement of an open back housing, a sliding actuating block movable against the front wall thereof and having a button extending through a slot therein and combined terminal and stationary contact or back stop supporting plates, each having a portion thereof parallel to and spaced from the inner surface of the front wall to form therewith a guiding channel for the sliding actuating block.

Other and further objects and features of the invention will be more apparent to those skilled in the art upon a consideration of the accompanying drawing and following specification, wherein is disclosed a single exemplary embodiment of a tool handle switch constructed in accordance with the present invention, with the understanding that such changes and modifications may be made therein as fall within the scope of the appended claims without departing from the spirit of the invention.

In said drawings:

Fig. 1 is a side elevation of a sliding button, oscillating contact, type of double snap switch; and

Fig. 2 is a longitudinal vertical central section thereof showing the switch in the closed circuit position.

The switch of the present invention is primarily designed as a tool handle or similar usage switch and is intended to be mounted with all but its operating button and top cover or flange housed within a handle or appliance. The switch is operated upon a simple sliding of the button from one end of its stroke to the other. As shown in the drawings the switch is encased in a one piece housing **10** rectangular in horizontal section for entrance through a punched opening in a sheet metal tool handle or the like. The edges and corners of its closed top **11** are nicely rounded at **12** for appearance and convenience and overhang the main portion **10** by virtue of side and end flanges **13** which rest on the outer surface of the mount. Suitable snap devices forming part of the bottom closure, but not shown in detail, may engage beneath the metal of the tool handle and

hold the switch in position, but other mountings are available.

Fig. 2 shows the whole interior of the housing to be open to accommodate the sliding block **15**, the terminal plates **16** and **17** and portions of their accompanying terminal screws **18** and **19**, the cantilever spring **20** with its movable contact **21**, and the helical operating spring **22**.

The sliding operating block **15** is rectangular and has projecting from its upper center the operating button **24** working through a slot **25** in the top wall of the housing. The block is sufficiently shorter than the overall length between the end walls of the housing to provide an appropriate range of sliding equivalent to the space indicated by the reference character **26**.

The terminal plates **16** and **17** are of heavy, rigid sheet metal, each fitted with side flanges, not shown, to be received in channels **27** and **28** respectively in the side walls adjacent the end walls of the housing, thus holding the terminal plates in the positions shown with the aid of the bottom closure **30** of insulating material fitting nicely within the end of the opening in the housing and being held in position by a metal plate **31** and its bent-over fastening tabs **32**, each of which is received in a channel in one of the side walls of the housing and later flared at its end in a known manner to lock the assembly together. A resilient insulation strip **33** insures adequate tensioning of the parts.

The closure **30** bearing against the ends of the terminal plates pushes their flanges into the bottoms of the channels **27** and **28** and makes a secure assembly. The terminal plates extend up alongside the end walls almost to the under surface of the block **15** and are there bent inwardly toward each other providing the flat top portions **35** and **36** spaced from the under surface of the top wall of the housing a distance just slightly greater than the thickness of the block **15** and forming with this wall a chamber for guiding the block in its transverse sliding in the housing.

The terminal plate **16** has its inner end bent downwardly as at **37** from the portion **35** and finally bent substantially parallel to its main portion at **38** to receive and position the stationary contact **39**, shown in the form of the head of a rivet. Terminating exactly opposite this is the inclined end **40** of the terminal plate **17** forming a back stop for the contact and its supporting cantilever spring **20**.

This cantilever spring **20** is of light resilient metal having the upstanding central portion carrying the movable contact **21** and extending upwardly beyond it a short distance and provided with a narrowed upper end **42**. The portion **43** of the spring is bent substantially at right angles to the active portion and lies along the surface of the closure **30**. It then passes through a notch in the lower end of terminal plate **17** and is bent up at **44** along the outer face of this terminal plate, the channel **28** being sufficiently wide for this purpose. The screw **19** and/or its head may pass through the portion **44** of the spring and of course the screw and its companion has threaded engagement with the terminal plate. The screw heads are accommodated in channels **50** having the flared walls as shown and extending clear to the bottom of the end walls of the housing to permit easy insertion of the terminal plates with their assembled screws.

The under surface of the sliding block **15** is provided with a recess as at **51** and near its center is mounted the generally hemispherical spring pivot **52** receiving the upper end of the tapered helical spring **22** expanded between it and the reduced end **42** of the cantilever spring.

Operation of the switch will be obvious from an inspection of Fig. 2. When the button **24** is pushed toward the left, before it has reached the end of its stroke the

center of the pivot **52** has passed to the left of a vertical through **42** and the cantilever spring is forced to the right, while the helical spring takes over and moves the block **15** to the left until its motion is terminated. The cantilever spring thus separates the movable from the stationary contact and the former comes to rest against the stop **40**. Reverse movement of the button **24** returns the contact to the position shown in the figure.

The construction is simple and easy to assemble and provides a switch with a minimum number of parts consistent with good operating characteristics and extremely long life.

I claim:

1. In a dual snap switch in combination, a hollow insulating housing including a flat front wall with a slot therethrough, a pair of metal terminal plates, each having an angled guide area thereon, means separately mounting said plates in said housing with said areas spaced below said wall, an insulating block slidable in the space between said wall and guide areas and having an operating knob extending through said slot, a cantilever blade mounted intermediate the said plates and having a free end, a stationary contact carried by one of said plates and a stop by the other for selective cooperation with the blade, a coil spring compressed between said free end and the under surface of said block, an extension on said cantilever blade opposite said free end engaging one of said terminal plates and a closure plate for the rear of said housing, said closure engaging said extension to oppose the thrust of said coil spring.

2. In a switch in combination, a hollow insulating housing including a front wall having a slot therethrough, flat side and end walls and an open bottom, an insulating block slidable beneath said front wall and having an operator extending through said slot, an insulating closure for said bottom, a cantilever blade extending from said closure toward said block intermediate said end walls, a coil spring compressed between a fulcrum on said block and the free end of said blade to snap the latter when the block is slid, spaced stops to limit blade movement by engaging it below said free end, a contact on one of said stops, a cooperating contact on the blade and means connecting the blade electrically to the other stop.

3. The switch of claim 2 in which said stops incorporate guide means for the under surface of said block.

4. The switch as defined in claim 3 in which said stops and guide means extend from terminal plates each substantially adjacent one of said end walls, each plate being laterally widened beyond the width of the end walls, said side walls being grooved to receive said widened parts and said bottom closure engaging the bottoms of said plates to hold them assembled in said side wall grooves.

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