

United States Patent [19]
Field

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[54] ELECTRIC SWITCHES

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[51] Int. Cl. H01h 13/52
[58] Field of Search 200/160, 159 A, 159 R,
200/153 LA

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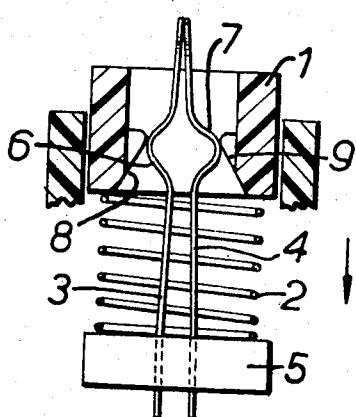
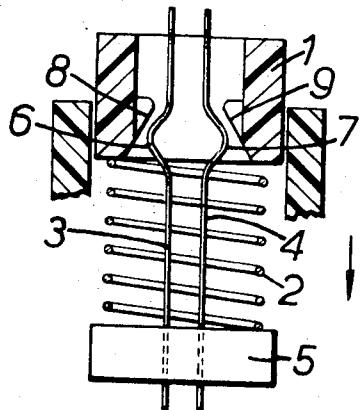
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[57] ABSTRACT

A push-button switch comprises a springy wire which constitutes a switch contact and is so shaped and arranged that in response to the depression of the push-button which is spring-biased a cam deflects the switch contact whereby the contact makes momentary contact with another switch contact to provide contacts closure. Thereafter during the depression of the push-button the first mentioned switch contact disengages from the other wire contact and the cam is shaped so that as the push-button restores to its unoperated position under the action of its biasing spring the springy wire switch contact is deflected without the momentary switching action being repeated.

1 Claim, 8 Drawing Figures



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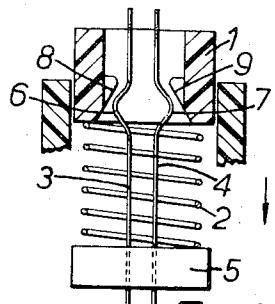


FIG. 1a.

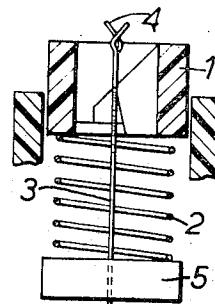


FIG. 2a.

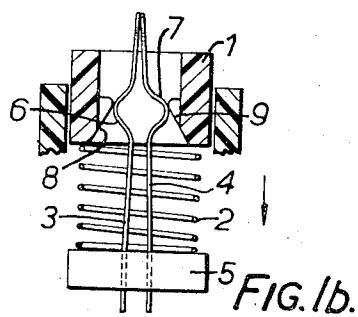


FIG. 1b.

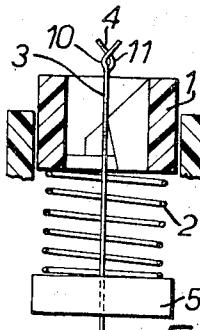


FIG. 2b.

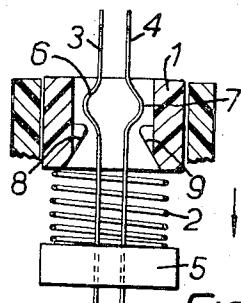


FIG. 1c.

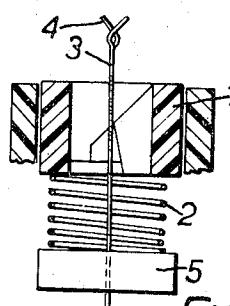


FIG. 2c.

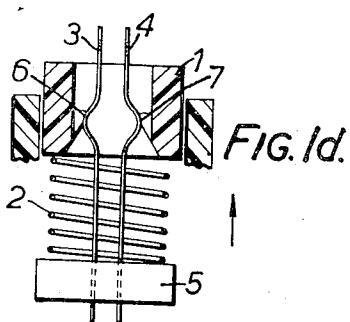


FIG. 1d.

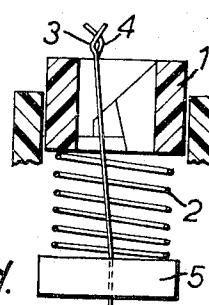


FIG. 2d.

ELECTRIC SWITCHES

DISCLOSURE:

This invention relates to electric switches of the push-button type and relates more specifically to such switches which provide a momentary switching action during the operation thereof and which may be advantageously employed in electronic keyboards affording so-called key rollover facilities.

The present invention provides a simple and relatively inexpensive push-button switch comprising at least one springy wire which constitutes a switch contact and which is so shaped and arranged that in response to the depression of the push-button which is spring-biased a cam deflects said switch contact whereby the latter makes momentary contact with or disengages from another switch contact to effect contacts closure or contacts opening and thereafter during the depression of the push-button the first switch contact is allowed to restore to its former position thereby disengaging from or engaging with said another contact the cam being shaped so that as the push-button restores to its unoperated position under the action of its biasing spring the springy wire switch contact is deflected without the momentary switching action being repeated.

In carrying out the invention it is preferred to arrange that both of the switch contacts are of springy wire in which case the contacts can be of identical size and shape.

To facilitate deflection of the spring (s) by the cam the spring (s) may be provided with a deformation which is engaged by the cam as the push-button is depressed. The cam may be formed integrally with the push-button.

The invention will be better understood from the accompanying schematic drawing in which:

FIGS. 1a, to 1d show cross-sectional views of a push-button keyswitch according to the invention in the unactuated and actuated stages; and,

FIGS. 2a to 2d show cross-sectional views corresponding to those of FIGS. 1a and 1d but taken along lines at right-angles thereto.

Referring to the drawing a push-button keyswitch according to the present invention comprises an insulated push-button, part of which is shown at 1, which is biased upwards by means of a coiled depression spring 2. The push-button is shown in its normal unoperated position in FIGS. 1a and 2a.

The switch has two cantilever contacts which consist of springy wires 3 and 4 conveniently sealed through a

base member 5 of the switch and biased to the right as viewed in FIG. 2a. As can be seen in FIGS. 1a to 1d the wire contacts 3 and 4 are deformed at 6 and 7 so that as the push-button is depressed against the action of

5 spring 2 cam surfaces 8 and 9 engage the deformities 6 and 7 and the wire contacts 3 and 4 are deflected into contact with each other to effect contacts closure as shown in FIG. 1b. By referring to FIGS. 2a and 2d it will be seen that the top end parts of the respective wire 10 contacts 3 and 4 are bent at an angle to the main parts of the appertaining contacts so that electrical contact is made in the FIG. 2b switch condition at the point where the two end parts 10 and 11 cross one another. Upon further depression of the push-button to its fully 15 depressed state as depicted in FIGS. 1c and 2c the deformities 6 and 7 pass upwards beyond the cam surfaces 8 and 9 so that the wire contacts 3 and 4 can now spring apart to interrupt electrical contact as shown in FIG. 1c.

20 Thus it will be appreciated that the switch provides a momentary 'make' contact action during the depression of the push-button. When however the push-button is released it restores upwards under the action of spring 2 as shown in FIG. 1d towards the position shown in FIG. 1a. As the push-button moves upwards the wire contacts are deflected as shown in FIG. 2d slide around the cam without the contacts closing during return of the switch to the condition shown in FIG. 1a.

30 The embodiment of the switch described above with reference to the drawing is particularly useful in electronic keyboard applications and it presents a simple and relatively cheap construction of the switch. As will be apparent from the foregoing, although the particular contact action provided by the switch specifically described is a 'make' action it will be clear that a 'break' switching action or a 'change-over' switching action could be provided.

35 40 What we claim is:

1. A push-button electric switch comprising a pair of identical springy wire co-operating switch contact members having deformed parts which in response to the depression of the push-button which is spring-biased are deflected simultaneously by cam means on said button for causing momentary contact make or momentary contact break and for permitting the push-button to restore to its unoperated position under the action of its biasing spring without causing said momentary switching action to be repeated.

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