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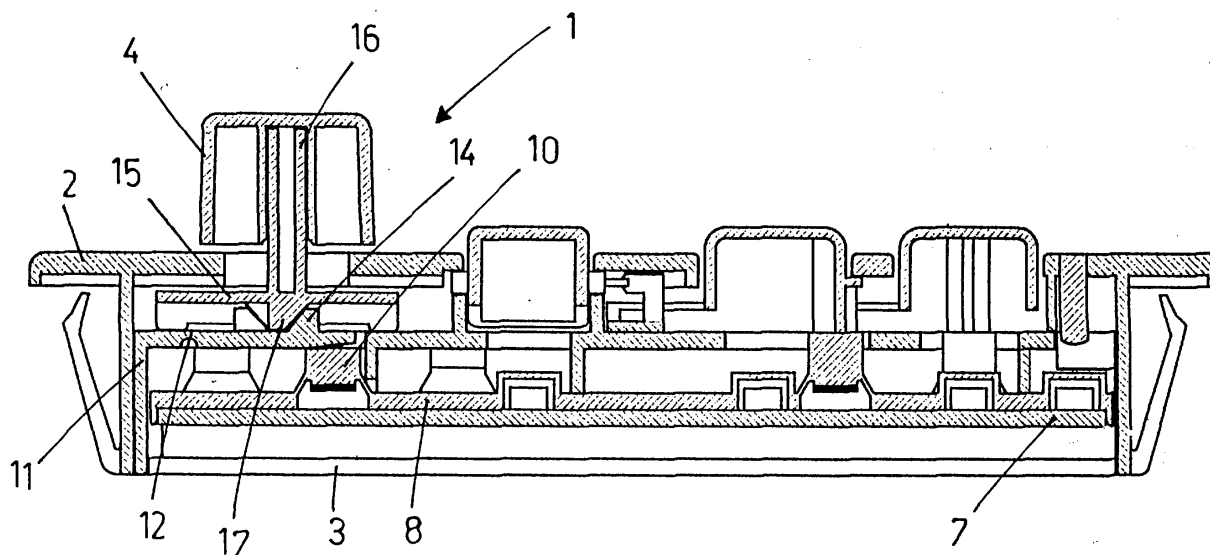
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(54) **Activating device for a sliding electrical switch**

(57) The description relates to an activating device for a sliding electrical switch, comprising a control grip (4) and a containing body inside which some mobile contacts (10) move, made up of at least one lever (11) which is provided with a projection (14) presenting a wall

which is inclined at about 45 degrees and which is suitable for interacting with another similar wall which is obtained on the projection (17) of a sliding element (15), which is connected to the control grip (4), in order to push the said lever against a silicone bubble as a result of the translation of the sliding element (15).



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Description

[0001] The present invention relates to an activating device for a sliding electrical switch, for example for controlling the motors of an adjustable seat or other equipment present in an automotive vehicle. The activating mechanism of sliding switches of the latest kind usually acts on a pair of snap elements, which are also called bubbles, made out of silicone rubber.

[0002] Particles of electro-conductive material are embedded in the silicone at pre-defined points and, once the bubble has been "snapped", they permit the closure of the circuits present in the printed circuit underneath.

[0003] Switches known in the art present certain constructive details which increase the costs, due both to a greater number of assembly operations and to the necessity for delicate workmanship which is of a high cost.

[0004] The aim of the present invention is to produce an activating mechanism for a sliding switch which is both reliable and cost-effective.

[0005] The above and other aims and advantages will be achieved by means of an activating mechanism for controlling electrical devices in an automotive vehicle, which presents the characteristics described in Claim 1.

[0006] There will now be described the structural and functional characteristics of a preferred but nonlimiting form of embodiment of the switch according to the present invention, with reference to the single attached drawing which shows a transverse section of the sliding switch associated with other push switches.

[0007] With reference to the drawing, the number 1 indicates in general the external body of a switch to be used, for example, for controlling the position of adjustable seats. This is made up of a lid 2 and a base 3, and is provided with a control grip 4 which can slide in both directions. The body 1 is snap fitted onto a part of the interior compartment of an automotive vehicle (which is not illustrated). The grip 4 is mobile between three positions, one of which is neutral and two of which are active, in order to control, in the illustrated example, the activation in one direction or the other of the electrical motors which are used for adjusting the various parts of the seat.

[0008] On the base 3 of the body of the switch there is a printed circuit 7 as well as connections (which are not illustrated) for connecting it to the electrical system. An elongated elastic element 8, called a carpet by experts in the field and made of silicone material and provided with "bubbles" 10, is placed on the printed circuit 7. The silicone bubbles serve to supply the sensation of the activation of the switch. In particular, they create a non-linear progression of force in relation to stroke, which increases to the point where the bubble reaches an unstable geometrical condition and once this point is surpassed the bubble collapses with a sudden decrease in force and a consequent increase in the speed of movement of the system. In this way, the classical snap

of the switch, which is defined "snap" in the English language by experts in the field, is created. Another function of the silicone bubbles is that of supplying compression force to the contact elements, in particular between the contacts on the bubble and the printed circuit 7, which is necessary for the electrical functioning of the switch.

[0009] According to the present invention, the silicone bubbles are compressed by plastic L-shaped levers 11, where the base of the L forms the support of the shank which is arranged in a horizontal position above a silicone bubble and is provided with a molded film hinge 12. Such a hinge permits a downward bending movement in order to compress the bubble and make it snap in order to obtain the desired contact. A projection 14 which presents a wall which is inclined at an angle of about 45 degrees is obtained on the upper wall of the shank. A sliding element 15, which is connected to the sliding grip by means of a hollow pin 16, presents a projection 17 with an inclined wall which substantially copies the inclination of the wall of the projection 14 and which is turned towards the latter in order to come into direct contact with it when the sliding element is made to translate by means of acting on the grip 4. In order to obtain a double action, or rather to act in the two sliding directions of the slide 15, the same L-shaped lever 11 will be placed on the second bubble in order to be able to act on the latter by means of the interaction of a pair of projections of the same kind as those which have previously been described and which act in the same way.

[0010] Other forms of coupling between the slide and the lever may be used in the production of the switch, without in any way compromising the range of the present invention as it is defined in the attached Claims.

[0011] The switch according to the present invention functions as described below, with reference to the attached drawing.

[0012] When the grip 4 is either pushed or pulled, a translation in one of the two directions in which movement is permitted is caused, and in each case pressure is exercised on an inclined wall of the lever by means of the corresponding inclined wall of the projection on the slide. When the pushing action is continued, the two inclined walls slide against each other causing the shank of the lever to move in a downwards direction so that the lever acts on the silicone bubble. When the point of equilibrium has been surpassed, the bubble collapses, which means that it abuts against the printed circuit 7 and closes the desired control circuit.

Claims

1. Activating device for a sliding electrical switch for controlling electrical equipment in an automotive vehicle, comprising a control grip (4) and a containing body inside which move some mobile contacts (10) which are suitable for opening or closing an

electrical circuit, **characterised by** the fact that the activating device of said mobile contacts is made up of at least one lever (11) preferably L-shaped and made of plastic material, which is arranged above a silicone bubble and which is provided with a molded film hinge (12), said lever (11) being provided with a projection (14) which presents a wall which is inclined at an angle of about 45 degrees and which is suitable for interacting with a similar inclined wall which is obtained on the projection (17) of a sliding element (15) which is connected to the grip (4) in order to push the said lever against the silicone bubble as a result of a translation of the slide (15).

2. Activating device according to Claim 1, **characterised by** the fact that the slide (15) is connected to the grip (4) by means of a pin (16) which is integral to the grip itself.

3. Activating device according to Claim 1 **characterised by** the fact that there are at least two levers (11) and they are activated independently of each other by means of the slide (15).

4. Activating device according to Claim 1 **characterised by** the fact that the slide (15) is provided with a double projection (17).

