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(19)

(54) AN ARRANGEMENT FOR FASTENING AN ELECTRICAL COMPONENT IN A RECEIVING MEMBER

(71) We, SWF-SPEZIALFABRIK FUR AUTOZUBEHOR GUSTAV RAU GMBH, a joint stock company organised under the Laws of Germany of Stuttgarter Strasse 119, 712 Bietigheim Bissingen, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to means for fastening a first member in a receiving member, particularly where the first member is an electrical switch or another electrical component.

In order to achieve, in mass production, working without problems, it is desirable to use as few as possible screws and screw connections in the assembly of, for example, small switches. Because of this, nonlocking switches, and also steering column switches, are already mounted on a receiving member via locking or clamping connections. This receiving member may be the instrument panel, a housing embracing the individual switches or a mounting plate. An electric tumbler switch is known which is secured to an instrument panel by means of resilient holding elements formed on a housing portion of the switch. A disadvantage of this arrangement is that an exact installation position with respect to tolerances cannot be guaranteed. In addition, an eventually necessary removal (demounting) is not simple and involves the danger of scratching the instrument panel or the switch housing. Especially in embodiments with a sharp-edged locking lug, a relatively large force has to be applied for overcoming the locking force, for which purpose a screw driver is normally used. This kind of fastening means has the disadvantage that in the locking direction a small clearance will always appear.

It is an object of the present invention to provide fastening means for switches of all types or other elements which, on the one hand, guarantees an exactly defined installation position with given tolerances and within play and, on the other hand, makes possible simple assembly and removal.

According to the present invention there is provided an arrangement comprising a first member and a receiving member, the first member being an electrical switch or another electrical component, and means for fastening the first member in the receiving member including a resilient holding element carried by the first member which can be demountably locked by its own resilience with a shoulder on the receiving member, and a further resilient element carried by the first member, the further resilient element serving to urge the first member in the direction out of the receiving member and to couple them together, the further resilient element having a force vector approximately perpendicularly directed with respect to the force vector of the resilient holding element, which resilient holding element can be unlocked by external means for demounting purposes, the resilient holding element and the further resilient element being connected to the first member via a common resilient web, and the resilient holding element, the further resilient element and the web being integral with the first member.

An embodiment of the invention will now be described with reference to the accompanying drawing, which shows somewhat schematically and partially in section a switch secured in a receiving member therefor.

A switch 21, for instance a steering column switch comprising switching arrangements for switching a direction indication and of a light change over, is pushed into a receiving member 2 which is secured to a steering tube (not shown). A resilient holding element 25 and a further tensioned (resilient) element 26 are designed in one piece, and they are connected

to the switch by a flexible resilient web 20. The elements 25 and 26, the web and the switch 21 are integral. The element 26 is supported on a back wall 7 of the receiving member 2, and the holding element 25 by means of a locking lug 8 locks behind a shoulder 9 of the receiving member 2. Due to the co-operation of "spring" forces (force vectors) of the resilient holding element 25 and the former resilient element 26, which forces are directed approximately perpendicularly to one another, the switch 21 is urged away from the back wall 7 and comes to rest with the locking lug 8 on the shoulder 9.

The web 20 in its spring characteristic is substantially softer than the riblike connection of the holding element 25 with the element 26. From a mere theoretical point of view, the holding element 25 could be made absolutely rigid. However, because of a need for a reliable compensation for play, a slight resiliency is maintained therein. Whereas the holding element 25 and element 26 are shown in inserted conditions at the upper part of the figure, the rest (uninserted) position is shown in the lower part of the figure in dash-dotted lines. It can easily be seen that the switch 21 can be particularly simply inserted into the receiving member 2, and a holding effect of the holding element 25 only appears after the further element 26 has reached the back wall 7 of the receiving member 2 and been compressed somewhat. The removal of the switch is effected via projecting release key 211 connected to the locking lug 8. Release via a tool, inserted in an aperture (not shown) in the receiving member 2 in the area of the locking lug 8 to press the holding element towards the switch, would also be possible.

Once the locking lug 8 has been disengaged from the shoulder 9 the further resilient element 26 urges the switch 21 a little bit out of the receiving member 2, so that the switch 21 can be manually seized without difficulties.

By the design of the present invention it is possible to secure a switch in a receiving member very exactly with respect to tolerances. The switch is always fixedly pressed against a locking shoulder. Simultaneously the clearance is thereby eliminated. The danger of damaging the switch during removal (demounting) is very small. It is only necessary to overcome the locking of the holding element by pressing the switch against the further resilient element, whereafter it can very easily be unlocked from outside. The spring action of the further resilient element then urges the switch sufficiently far out of the receiving member that it can be seized without a tool.

Because the further resilient element and the holding element are working like a whip, the holding element can directly rest upon the switch during the insertion movement and only after the further resilient element has reached a countersurface in the receiving member is the holding element pressed against the limiting wall until the locking lug snaps behind the shoulder. Thereby the proper locking can very easily be acoustically supervised.

WHAT WE CLAIM IS:—

1. An arrangement comprising a first member and a receiving member, the first member being an electrical switch or another electrical component, and means for fastening the first member in the receiving member including a resilient holding element carried by the first member which can be demountably locked by its own resilience with a shoulder on the receiving member, and a further resilient element carried by the first member, the further resilient element serving to urge the first member in the direction out of the receiving member and to couple them together, the further resilient element having a force vector approximately perpendicularly directed with respect to the force vector of the resilient holding element, which resilient holding element can be unlocked by external means for demounting purposes, the resilient holding element and the further resilient element being connected to the first member via a common resilient web, and the resilient holding element, the further resilient element and the web being integral with the first member.

2. An arrangement as claimed in claim 1, wherein the first member is a switch and on one side of the switch not adjacent the resilient holding element the further resilient element is supported by an adjacent wall of the receiving member.

3. An arrangement as claimed in claim 1 or claim 2, wherein the spring characteristic of the web is substantially softer than the connection of the resilient holding element and the further resilient element.

4. An arrangement as claimed in any one of the preceding claims, wherein at least a part of the resilient holding element comprises a release key which extends into an area accessible from the outside for demounting purposes.

5. An arrangement as claimed in any one of claims 1 to 3, wherein in the receiving member an opening is provided for influencing the resilient holding element for demounting purposes.

6. A switch and a receiving member substantially as herein described with reference to the accompanying drawing.

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1596713 COMPLETE SPECIFICATION

1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

