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(54) **Switch assembly for electric appliances, particularly designed for motor vehicles.**

(57) The present invention relates to a switch assembly (1) for electric appliances, in particular one designed for motor vehicles. The switch comprises a switch body (2) supporting a printed board (5) on which are mounted an ideogram LED (10) and an actuated-function LED (11).

With the switch body there is slidably engaged a push-button (20) which supports at least a movable contact, cooperating with fixed contacts connected to the printed board.

With the push-button there is associated a key, with an ideogram insert (31), which can be displayed by the ideogram LED and with a pilot light (36) which can be displayed by the actuated-function LED.

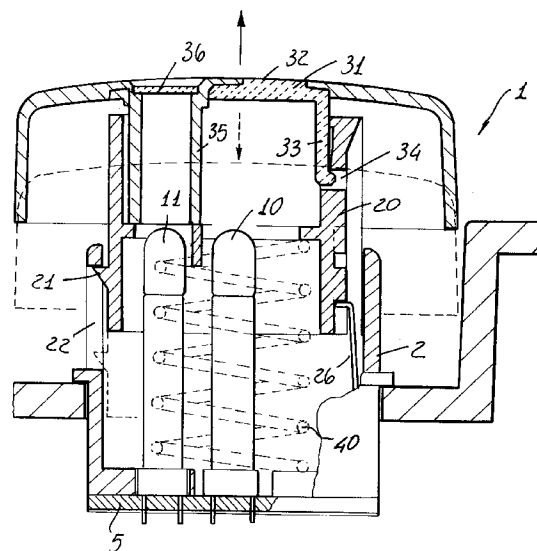


FIG. 1

BACKGROUND OF THE INVENTION

The present invention relates to a switch assembly for electric appliances, which has been particularly designed for motor vehicles.

As is known, a main problem in making motor vehicle appliance switches is that of construction the switches with a very reduced size, while providing them with easily displaying characteristics.

Prior switches for the above mentioned applications usually comprise LED's provided for displaying an ideogram or mark indicating the function of the switch, but these prior switches do not usually include means for displaying the position or condition of the switch, that is if the switch is opened or closed.

Another problem is that prior switches for the above mentioned applications have a comparatively large size which generates great problems for properly arranging these switches in a motor vehicle compartment.

SUMMARY OF THE INVENTION

Thus, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a switch for motor vehicle electric appliances, which has a very reduced size and can be assembled in a motor vehicle compartment in a very quick and simple manner.

Within the scope of the above mentioned aim, a main object of the present invention is to provide such a switch which allows to display, in addition to an usual ideogram or mark, also the condition of the switch, that is its open or closed condition.

Yet another object of the present invention is to provide such a switch, specifically designed for motor vehicles and the like, which is very reliable and safe in operation and which, moreover, can be easily made starting from easily available elements and materials and which, accordingly, is very competitive from a mere economic standpoint.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a switch for electric appliances, specifically designed for motor vehicles, characterized in that said switch comprises a switch body, which can be removably housed in a seat and supports a rigid printed board, to which there are connected an ideogram LED and an actuated-function LED, with said body there being slidably engaged a push-button supporting at least a movable contact cooperating with fixed contacts connected to said printed board, with said push-button there being associated a key, bearing an ideogram, which can be displayed by the ideogram LED, and with a pilot light, which can be displayed by the actuated-function LED.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the present invention will become more apparent from the following detailed disclosure of a switch for electric appliances, particularly designed for motor vehicles and which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figure 1 is a schematic cross-sectional view of the switch, substantially taken along the broken cross-section line I-I of Figure 3, the push-button being in its not actuated condition;

Figure 2 is a cross-sectional view of the switch, the push-button being shown in its actuated condition;

Figure 3 is a top plan view of the push-button included in the switch according to the present invention;

Figure 4 illustrates the switch engaged in its housing seat or recess; and

Figure 5 is a side view of the push-button and clearly illustrates the elements for firmly locating said push-button in its actuated condition.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the number references of the above mentioned figures, the switch for electric appliances, specifically designed for motor vehicles and the like, according to the present invention, which has been generally indicated at the reference number 1, comprises a body 2 which can be housed in a seat 3 as provided on a motor vehicle, the body 2 being advantageously provided with resilient tooth elements 4, engaging with the edge of the seats and allowing said body to be held in its desired position.

On the bottom of the body 2 there is provided a rigid printed circuit board, indicated at the reference number 5, to which there are coupled blade-like contacts 6, allowing to provide an easy wiring connection with outside electrical appliances of the motor vehicle.

As shown, on the rigid printed board 5 there is provided an ideogram LED 10, which generally emits a green light and which is centrally arranged and coupled to said printed board, there being moreover provided an actuated-function LED 11 which has advantageously an amber colour and is arranged on a side.

Inside the box-like 2 there is slidably supported a push-button, generally indicated at the reference number 20, which has a substantially square shape and is provided, on its perimeter, with engaging tooth elements 21 effective to limitate the displacement of said push-button and being movably engaged in slots 22 provided through the body 2.

The push-button is provided, on a side surface

thereof, with a guide path 25 for a stop tab 26 or lug, allowing to obtain a stable position of said push-button in its actuated state; to that end, the guide path further comprises a recess 27 which can be engaged by the lug 26.

Moreover, on its side surface, the push-button 20 is provided with at least a movable contact 28 which is removably engaged with fixed contacts as provided on the body 2 and connected to the blade-like contacts 6.

With the push-button 20 there is engaged a key 30 which has a circular configuration and is provided, on the inside surface thereof, with an ideogram insert 31 providing a translucid region 32 for displaying said ideogram, and being provided with pin elements 33 which can be snap engaged in seats or recesses 34 provided on the top of the push-button 20.

Moreover, there is provided a cylinder element 35 housing the LED 11, and being closed at the top thereof by a pilot light 36 allowing to emit a light indication as the push-button is in its actuated condition.

The disclosed construction, which has a very reduced size, is moreover made starting from a small number of component elements since, in addition to the above mentioned elements, that is the body 2, push-button 20 and key 30, there is provided a push spring 40 operating between the bottom of the body 2 and the push-button 20, in order to provide a resilient biasing force during the movement from the actuated position to the disenergized position and vice-versa of the push-button.

From the above disclosure, it should be apparent that the invention fully achieves the intended aim and objects.

In particular, it is desired to point out the great constructional simplicity of the switch, as well as the fact that the switch can be electrically connected in a very easy and quick way.

In making the switch, the used materials, though the best results have been obtained by using plastics material, as well as the contingent size and shapes can be any according to requirements.

Claims

1. A switch for electric appliances, specifically designed for motor vehicles, characterized in that said switch comprises a switch body, which can be removably housed in a seat and supports a rigid printed board, to which there are connected an ideogram LED and an actuated-function LED; with said body there being slidably engaged a push-button supporting at least a movable contact cooperating with fixed contacts connected to said printed board, with said push-button there being associated a key, bearing an ideogram, which can be displayed by the ideogram LED,

and with a pilot light, which can be displayed by the actuated-function LED.

2. A switch according to the preceding Claim, characterized in that said body is provided, on its outside, with blade-like contacts which are connected to the fixed contacts.
3. A switch according to one or more of the preceding claims, characterized in that said body is provided with a plurality of resilient tooth elements for a removable engagement in said seat.
4. A switch according to one or more of the preceding claims, characterized in that said pushbutton is provided, on its outer surface, with abutment tooth elements which are slidably guided through slots formed through said body.
5. A switch according to one or more of the preceding claims, characterized in that said pushbutton is provided, on a side surface thereof, with a guide path, which can be engaged by a resilient lug for locking in a set actuated position said switch, said guide path having a recess which can be engaged by said lug.
6. A switch according to one or more of the preceding claims, characterized in that said pushbutton is provided with a translucid portion bearing said ideogram and including small tooth elements for snap engaging in seats formed on the push-button.
7. A switch according to one or more of the preceding claims, characterized in that said pushbutton comprises a cylindric body closed by pilot means for housing therein the actuated function LRD.

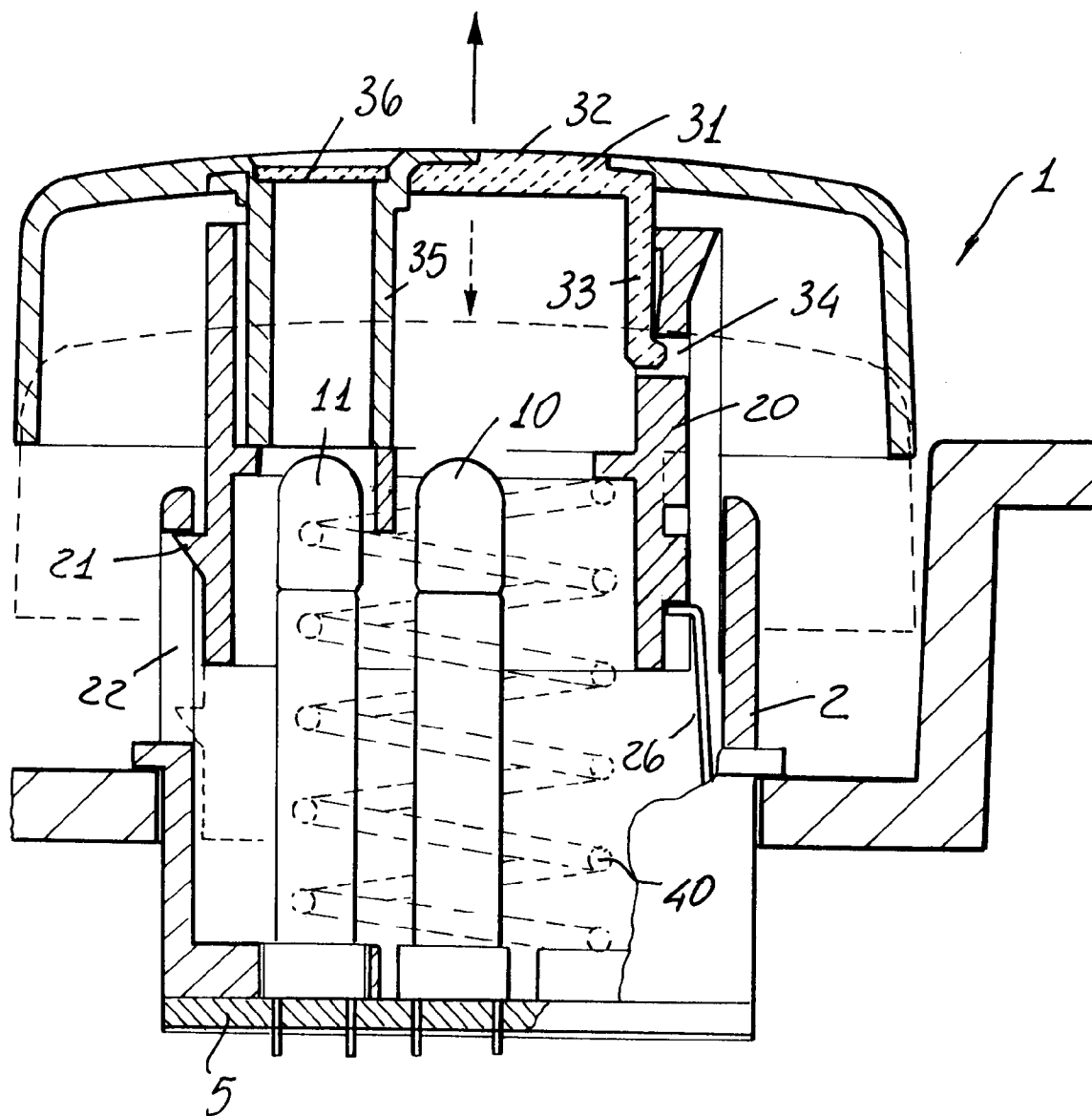


FIG. 1

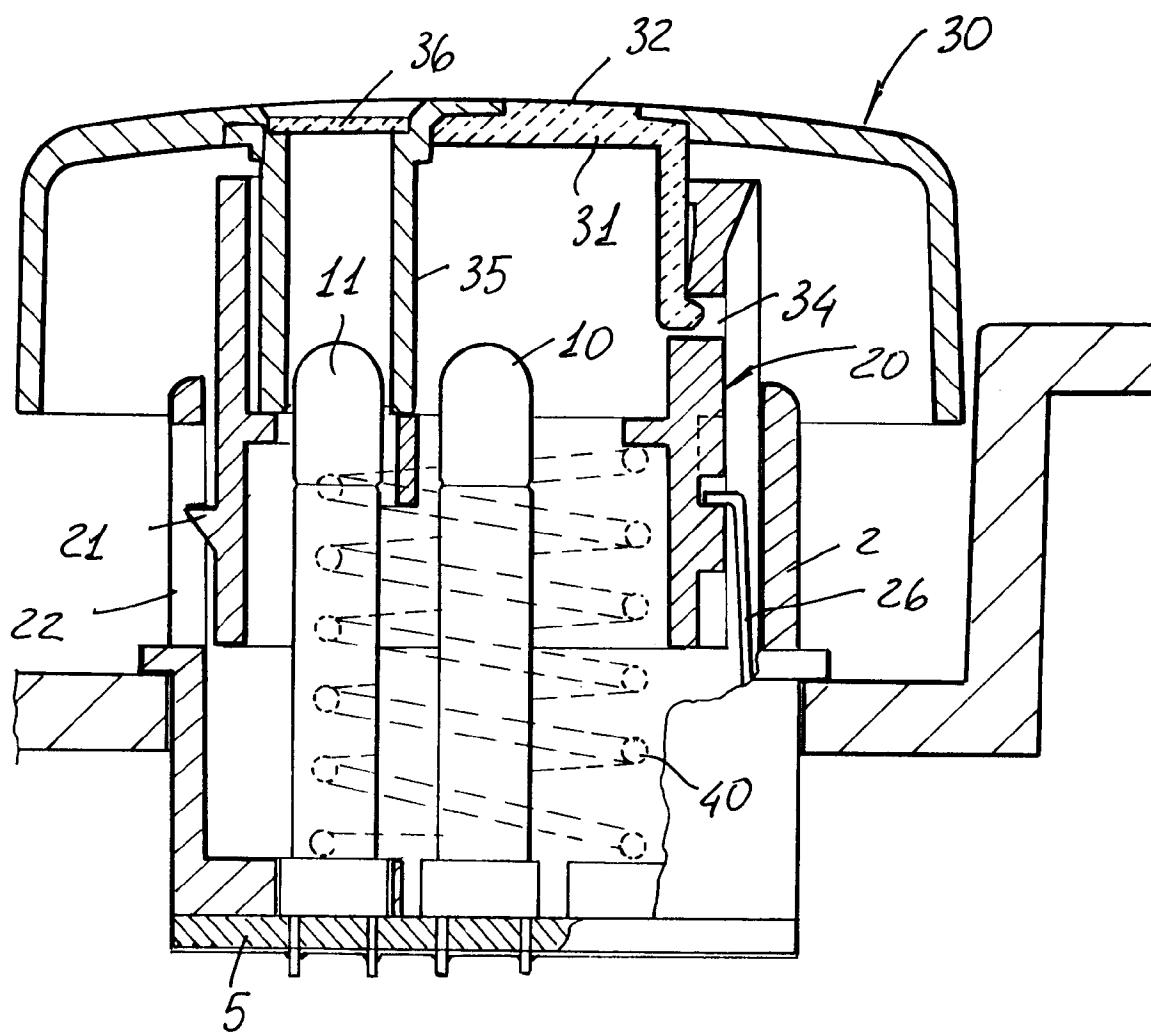
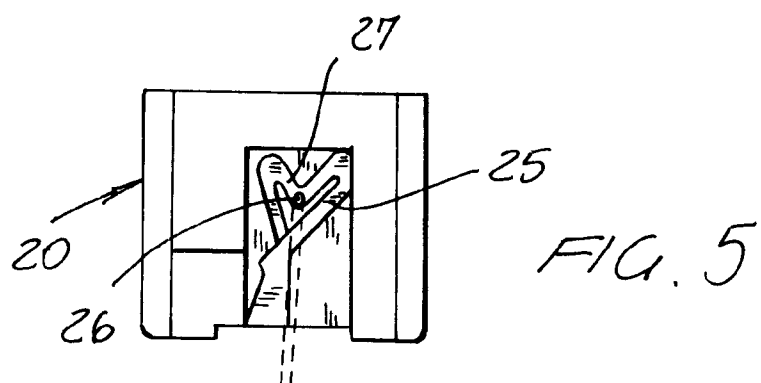
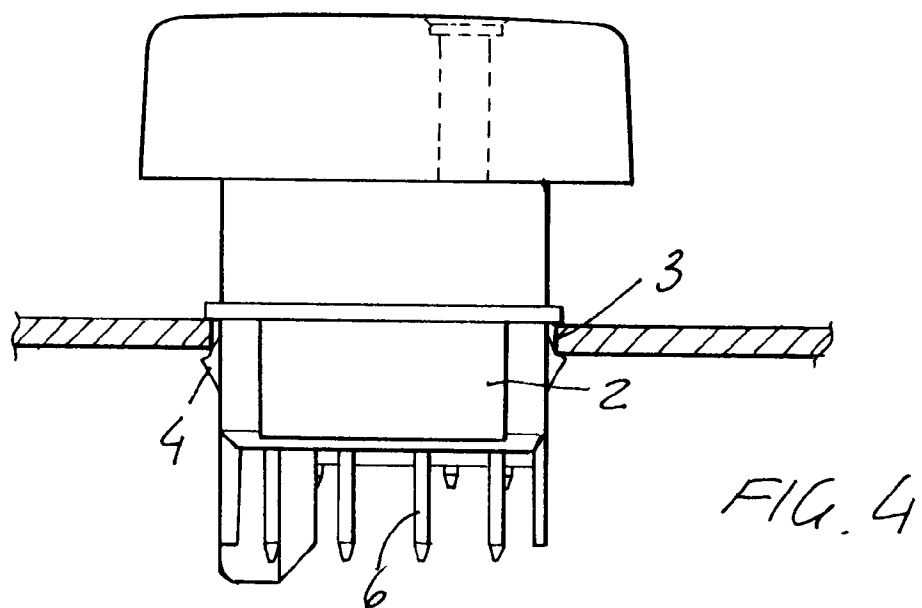
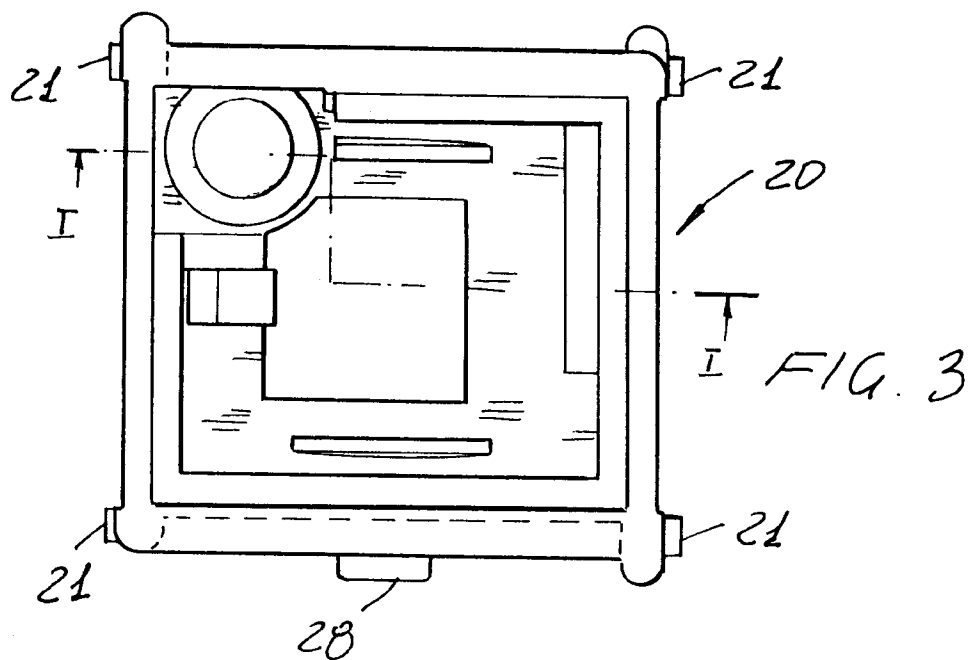


FIG. 2





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0015

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
P,X Y	US-A-5 252 798 (KAMADA) * abstract; claims 1,2; figures 1,2 * & JP-U-2 118 862 (...) ---	1 2-6	H01H9/16 H01H9/18
X Y	DE-A-33 46 594 (SWF AUTO-ELECTRIC) * page 17, last paragraph * * page 19, last paragraph; figures 1-4 * ---	1 2	
A Y	EP-A-0 024 620 (SIEMENS) * page 3, line 1-25; figures * ---	1 3,5	
A Y	DE-A-27 27 763 (PETRICK) * page 9, paragraph 1; figures * ---	1 4	
A Y	FR-A-2 557 352 (C & E FEIN) * claim 7; figures * ---	1 5	
A Y	DE-A-40 26 290 (SWF AUTO-ELECTRIC) * column 2, line 66 - column 3, line 51; figure 1 * -----	1 6	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			H01H
The present search report has been drawn up for all claims			
Place of search BERLIN		Date of completion of the search 15 April 1994	Examiner Nielsen, K
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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