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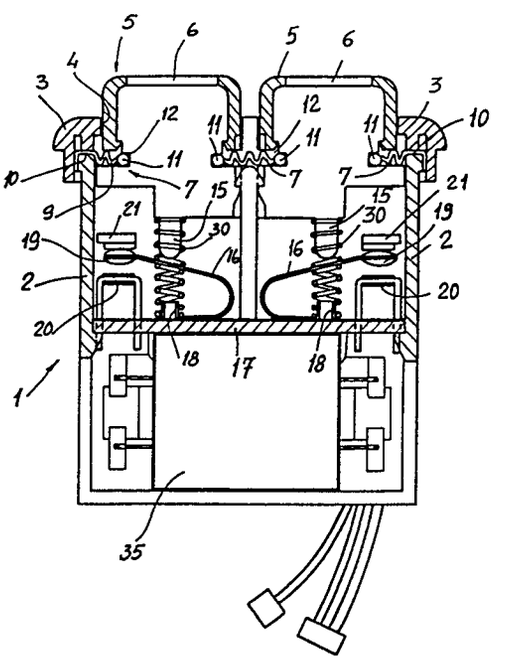
(71) Applicant: **CAVIS CAVETTI ISOLATI S.p.A., Via Roma, 31, I-15023 Felizzano (Alessandria) (IT)**

(72) Inventor: **Codrino, Giuseppe, Via Stazione, 2, I-15028 Quattordio (Alessandria) (IT)**

(74) Representative: **Cicogna, Franco, Ufficio Internazionale Brevetti Dott.Prof. Franco Cicogna Via Visconti di Modrone, 14/A, I-20122 Milano (IT)**

(54) A switch structure for motor vehicle electrical window winders.

(57) A switch structure for motor vehicle electric window winders is characterised by the fact that it comprises a box-like body closed at the top by a frame, which defines seatings for housing a plurality of push-buttons contacting a resilient, electrically conductive, movable blade supported at one end by a fixed contact on a printed circuit connected to the motor, and at the other end movable between a negative fixed contact and a positive fixed contact.



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"A switch structure for motor vehicle electrical window winders"

The present invention relates to a switch structure, for motor vehicle electrical window winders.

As is known, electrical window winders for motor vehicles are provided with an electric motor which controls the raising and lowering of the windows in a manual or automatic manner according as a complete raising is attainable by maintaining the pressure on the actuating push-button or simply by means of an impulse.

Switches currently utilised to effect the control of the motor are generally of rather complex structure and, moreover, are subject to frequent breakdowns because of the inevitable infiltration of dust or water into the body of the switch, with the possibility of creating variations in the perfection of the necessary electrical contacts.

Another disadvantage of prior art switches is constituted by the fact that known switches are made by assembling numerous components, which have relatively

high costs and which require a significant input of manual labour.

The object of the invention is that of eliminating the above-mentioned disadvantages by providing a switch structure, particularly for electrical window winders, in which there will be the possibility of providing contacts in an effective and secure manner with a reduced number of component elements.

Within the scope of the above explained object, a particular object of the invention is that of providing a switch structure for electrical window winders which is perfectly isolated from the exterior thus preventing the infiltration of dust and water with a consequent significant improvement in the precision of operation of the switch itself.

Another object of the present invention is that of providing an electrical switch structure which is of significantly reduced size and which, moreover, is able to offer the widest guarantees of reliability and safety in use.

A further object of the present invention is that of providing an electrical switch structure which is easily obtainable starting from elements and materials which are commonly commercially available and which, moreover, has a very restricted cost.

The above explained object, as well as the objects listed and others which will become more apparent hereinbelow, are achieved according to the invention by

a switch structure for motor vehicle electrical window winders, characterised by the fact that it comprises a box-like body closed at the top by a frame which defines seatings for housing a plurality of push-buttons contacting respective resilient electrically conductive blade supported at one end by a fixed contact on a printed circuit connected to a motor, and at the other end movable between a negative fixed contact and a positive fixed contact.

Further characteristics and advantages of the subject of the present utility model will become more clearly evident through a study of the detailed description of a switch structure particularly for motor vehicle electrical window winders, illustrated by way of indicative, but non limitative, example with the aid of the attached drawings, in which:

Figure 1 represents, in section, the structure of a switch according to the invention;

Figure 2 shows the switch according to the invention seen from above;

Figure 3 schematically illustrates a detail of the internal illumination of the switch body.

With particular reference to the numeral symbols of the said figures, the switch structure particularly designed for motor vehicle electrical window winders, according to the invention, which is generally indicated with the reference numeral 1, comprises a box-like body 2 which is closed at the top by a small frame 3 snap-engaged or press fitted thereto, which defines the seatings 4 for housing a plurality of

push-buttons indicated 5.

The push-buttons 5 advantageously have illuminated ideograms on their visible surfaces, which are applied to a plate 6 fitted thereto and which are made of polycarbonate or by means of co-moulding.

An important peculiarity of the invention is constituted by the fact that the push-buttons 5 are sealingly connected to the box-like body 2 by means of a rubber seal 7 which is interposed between the push buttons themselves and the region of connection between the frame 3 and the box-like body 2.

The rubber seal 7 has a central bellows portion 9 which is interposed between an edge 10 which is gripped between the box-like body 2 and the frame 3, and an annular enlargement 11 which is housed in a groove 12 defined on the push-button 5.

In this way, with extremely simple means, it is possible to obtain a perfect closure with the internal switch contact zone being sealed against the exterior, thus guaranteeing a considerable operating precision.

The key 5 has in its lower part a tail 15 which acts by contact on a movable resilient blade 16 substantially folded into a U-shape or open loop which, at one end, is supported by a rigid printed circuit 17 and connected to a fixed contact 18 connected to a motor.

At its other end the resilient movable blade 16 has a terminal contact 19 which is movable between a fixed

positive contact 20 and a fixed negative contact 21 for the various electrical connection requirements.

Moreover, there is provided a spring 30 which acts between the printed circuit 17 and the push-button 5 in the region of the tail 15 to resiliently urge the push-button itself upwardly.

For completeness of the description it is appropriate to state that within the box-like body, as is schematically illustrated in Figure 3, it is possible to provide an electric lamp 40 which serves the function of illuminating the ideograms provided on the push-buttons 5.

It is necessary to state that the adoption of the seal 7, as well as preventing the ingress of dust and water, also prevents the escape of light towards the exterior, thus avoiding the unaesthetic frame of light which surronds switches of the prior art.

From what has been described hereinabove it will be seen how the invention achieves the proposed objects.

In particular, it is to be emphasised that a switch is obtained having a structure and conception which is considerably simplified, but which is nevertheless able to present notably improved characteristics.

Under the printed circuit there can be provided an electromagnet, indicated 35, which is housed within the box-like body 1.

In practice, any materials, dimensions and contingent forms can be used according to requirements as long as these are compatible with the specific use.

Claims:

1. A switch structure for motor vehicle electrical window winders, characterised by the fact that it comprises a box-like body closed at the top by a frame which defines seatings for housing a plurality of push-buttons contacting respective resilient, electrically conductive movable blade supported at one end by a fixed contact on a printed circuit connected to a motor, and at the other end movable between a negative fixed contact and a positive fixed contact.

2. A switch structure according to the preceding Claim, characterised by the fact that there are provided sealing means acting between the push-buttons and the said seatings.

3. A switch structure according to the preceding Claims, characterised by the fact that the said sealing means are constituted by a rubber seal having a central body of bellows shape and an edge clamped between the frame and the box-like body, there being further provided an annular enlargement housed in seats defined by the said push-buttons.

4. A switch structure according to one or more of the preceding Claims, characterised by the fact that the said resilient movable blade has a substantially U-shape open loop conformation.

5. A switch structure according to one or more of the preceding Claims, characterised by the fact that there are provided resilient means for resiliently

biasing the push-buttons, acting between the tail and the printed circuits.

6. A switch structure according to one or more of the preceding Claims, characterised by the fact that it includes, within the box-like body, an electrical illumination lamp for displaying to the outside possible ideograms provided on the push-buttons.

Fig. 1

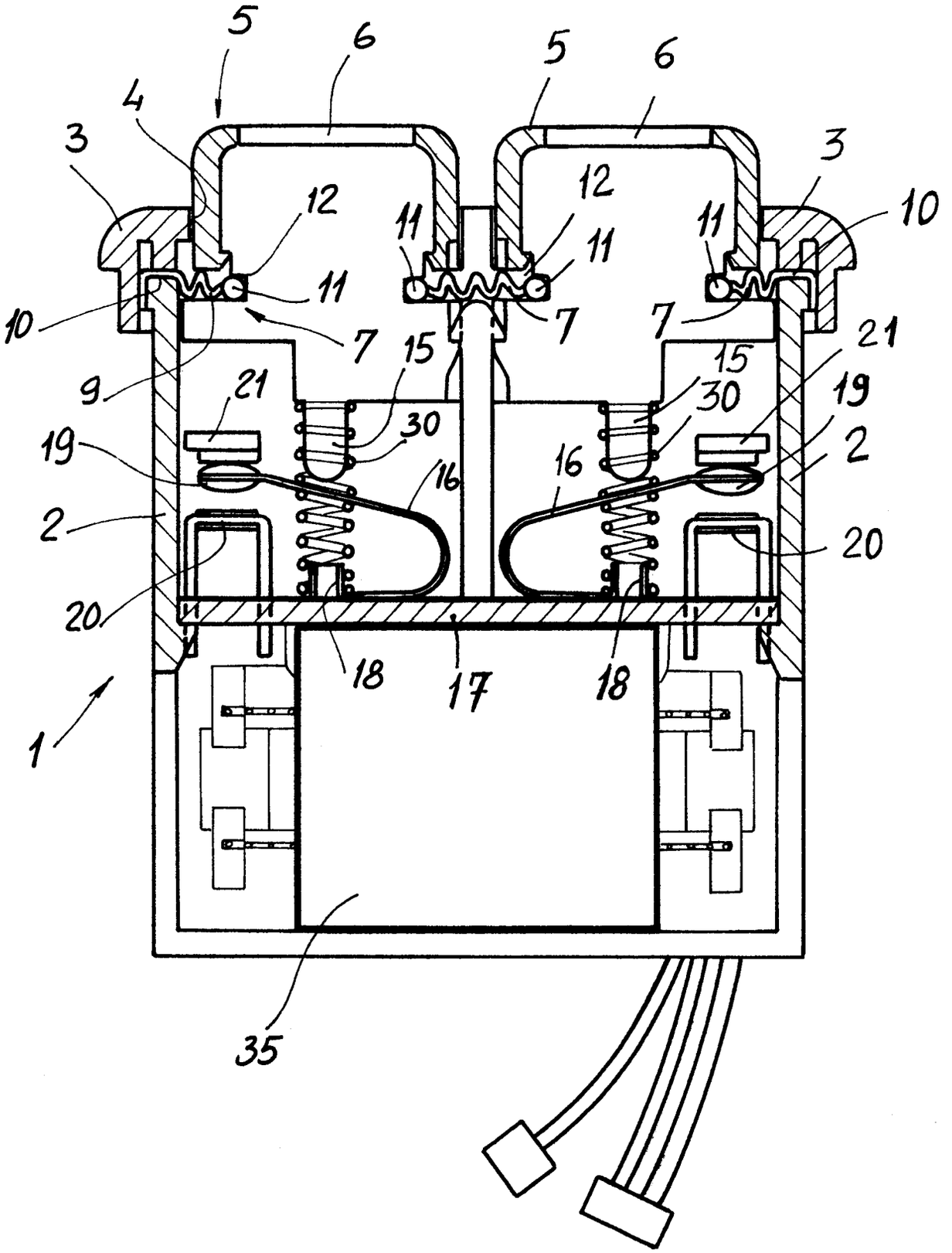
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Fig. 2

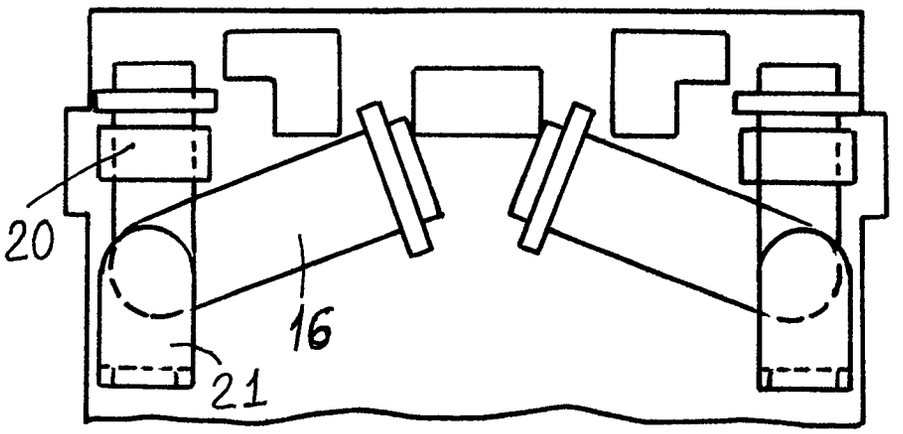

Fig. 3