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54 **A control panel for the automatic and manual actuation of a window winder, particularly designed to be mounted on motor vehicles.**

57 The invention consists in a control panel for the automatic and manual control of a window winder, particularly for motor vehicles, comprising a box-like body closed internally by a rigid printed circuit, and supporting at least one push button for actuating a manual movable contact and an automatic movable contact. The push button can slide against the action of a first elastic element to carry the manual movable contact into contact with the printed circuit, and against a second elastic element, with a greater elastic constant than the first elastic element, to carry the automatic movable contact into contact with the printed circuit.

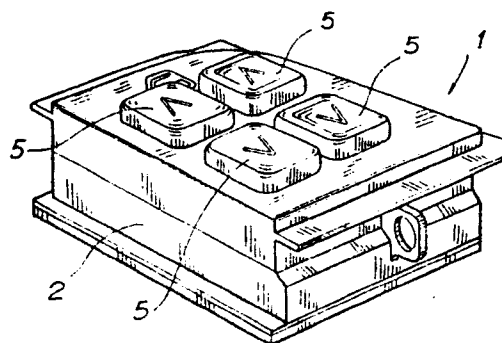


Fig. 1

- 1 -

"A control panel for the automatic and manual actuation of a window winder, particularly designed to be mounted on motor vehicles"

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The subject of the present utility model is a control panel for the automatic and manual actuation of a window winder, particularly designed to be mounted on motor vehicles.

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As is known, in motor vehicles which have an electric window winder for the side windows, there is currently provided a control panel having a push button for raising and a push button for lowering each window.

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With control panels of the known type the displacement of the windows is only effected by maintaining the corresponding push button depressed, with the necessity therefore of actuating the push button itself for several seconds in such a way as to obtain complete lowering or raising of the window.

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This type of arrangement is particularly inconvenient, above all, for the driver, who, even if for only a short time, must take his attention away from the driving operations, with the possible associated problems.

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Another problem which occurs in control panels of the known type is constituted by the fact that these latter have a rather complex and consequently expensive structure.

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The object of the present invention is that of solving the above explained problems by providing a control panel for automatic and manual actuation of window winders, suitably designed for motor vehicles, which will give the possibility of manual actuation, understood as displacement of the window for as long as the corresponding push button is actuated, and automatic actuation, understood as a single actuation which triggers an electro magnet or other electrically equivalent component to obtain complete raising or lowering of the window without the necessity of continuing to actuate the corresponding push button.

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Within the ambit of the above explained object, a particular object of the invention is that of providing a control panel which will give the possibility of having a single push button which allows both the manual actuation and the automatic actuation uniquely independent on the different pressure which is exerted thereon.

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The present control panel for the control of the window winder is structured in such a way as to have a simplified assembly and to offer the widest guarantees of reliability and safety in use.

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The present control panel for window winder control with manual and automatic actuation is easily obtainable

starting from commonly available materials and, moreover, has a very contained cost.

5 The above explained objects, as well as the objects listed and others which will become more clearly apparent hereinbelow, are achieved according to the invention by a control panel for automatic and manual actuation of window winders, particularly for motor vehicles, characterised by the fact that it comprises a
10 box-like body closed below by a rigid printed circuit and supporting at least one push button for actuating a manual movable contact and an automatic movable contact, the said push button being slidable against the action of a first elastic element to carry the said manual
15 movable contact into contact with the printed circuit and against the action of a second elastic element, with a greater elastic constant than this first elastic element, to carry the automatic movable contact into contact with the printed circuit.

20 Further characteristics and advantages of the subject of the present utility model will become more clearly apparent from a study of the description of a preferred, but not exclusive embodiment of a control panel for the
25 automatic and manual actuation of the window winder control, particularly for motor vehicles illustrated by way of indicative, but non-limitative example with the aid of the attached drawings, in which:

Figure 1 schematically shows the control panel
30 according to the invention in perspective view;

Figure 2 shows the control panel seen in plan;

Figure 3 illustrates the control panel sectioned along the line III-III of Figure 2;

Figure 4 represents the control panel in section, with the manual movable contact suitably sectioned.

5 With reference to the numerical symbols of the said Figures, the control panel for the automatic and manual actuation of the window winder control, particularly designed for motor vehicles, which is indicated generally with the reference numeral 1, comprises an outer box-like casing 2 which can have any suitable
10 shape.

The box-like casing 2 is closed below by a rigid printed circuit 3 which is fixed to the box-like body by means of bolts 4 and has its contacts on the inwardly directed
15 face.

Push buttons, generally indicated 5, project from the upper face of the box-like casing 2 and, in the illustrated embodiment, are constituted by the passenger
20 side raising push button and the passenger side lowering push button.

The push buttons 5, which preferably have a shaped body with a perimetral flange 6 which engages the inner face
25 of the box-like body 2, are connected to a shaped inner body 7 which, as will be explained more clearly hereinbelow, effects the actuation of the contacts.

In the illustrated example the driver side push buttons
30 are both of automatic actuation, whilst the passenger side push buttons are of manual actuation.

Obviously, there is no conceptual change if all the push

buttons have the possibility of automatic actuation.

5 The automatic actuation push button has a manual movable
contact 10 which is supported by a resilient rubber
diaphragm 11 which, in the region which supports the
contact 10, defines a bell-shape part 12 which overlies
the printed circuit 3.

10 The movable contact 10 is advantageously made of
conductive rubber or other similar material.

15 There is also provided, again supported by the rubber
diaphragm 11, an automatic movable contact indicated 20
advantageously disposed spaced from the manual movable
contact 10.

20 The shaped body 7 is connected to the diaphragm 11,
preferably in the support region of the manual movable
contact 10, by means of a second resilient element which
can be constituted by a spring 30 or other equivalent
resilient means which has the peculiarity of having a
greater elastic constant than the first resilient means,
constituted by the diaphragm 11, in its cup-shape
portion 12.

25 The shaped body 7 further has a pressing projection 31
which is disposed over the automatic movable contact 20.

30 The manual contact 10 has the property of effecting the
actuation of the window, to raise or lower it, for the
whole of the time period for which the movable manual
contact 10 is in contact with the printed circuit 3,
whilst the automatic contact 20 functions to actuate an

electro magnet or other corresponding electrical component, which activates the electrical supply circuit of the motor for the actuation of the window winder during the whole of the period of time necessary to
5 effect the complete raising or lowering movement.

In the illustrated example, adjacent the automatic actuation push button 5 there is provided a manual actuation push button 5 which is conceptually analogous,
10 with the single difference that the key has an inner body 7a which acts directly on the cup-shape part 12 carrying the associated movable manual contact 10.

For completeness of the description it is appropriate to
15 emphasise that the shaped body 7 has a projecting tooth 40 which engages with a resilient reinforcing tongue 41.

This latter serves to make the passage from the actuation of the manual contact to actuation of the
20 automatic contact sensitive to the touch.

In practice, by exercising a moderate pressure on the push button 5 the resilient bias exerted by the cup-shape part 12 is overcome, as illustrated in Figure
25 4, and the movable manual contact 10 is carried into contact with the printed circuit 3, causing actuation of the window for the whole of the time in which the pressure is exerted.

30 At this stage, the tooth 40 comes into contact with the resilient reinforcing tongue therefore making the pressure to be exerted perceptible to the touch of the utiliser.

By exerting a further pressure there is caused the compression of the second resilient element 30 with consequent actuation of the movable automatic contact 20 by the projection 31, by a further downward displacement
5 of the push button 5.

In these conditions, the window is moved to the end of its path without the necessity of exerting further pressure on the push button.
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From what has been described hereinabove, it will be seen how the invention achieves the proposed objects.

In particular, with an extremely simple structure there
15 is provided a control panel which allows manual or automatic actuation to be effected in dependence on the pressure which is exerted by utilising the presence of two resilient elements having a different elastic
constant from one another in such a way as to obtain two
20 different movements for the push button with, consequently, two different actuations.

Further, another important aspect of the invention is constituted by the fact that the presence of the
25 resilient diaphragm over the printed circuit protects it from contact with the external environment, thereby avoiding the infiltration of dust or other elements which could damage and modify the precise action of the contacts.

30 The invention, thus conceived, is capable of numerous modifications and variations, all lying within the ambit of the inventive concept.

Moreover, all the constructional details can be replaced by other, technically equivalent elements.

5 In practice, any materials may be used, and likewise,
any dimensions and contingent forms according to
requirements, as long as they are compatible with the
specific use.

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Claims:

1. A control panel for the manual and automatic
actuation of window winder controls and particularly for
motor vehicles, characterised by the fact that it
5 comprises a box-like body closed below by a rigid
printed circuit and supporting at least one push button
for actuating a manual movable contact and for the
actuation of an automatic movable contact, the said push
button being slidable against the action of the first
10 resilient element, to carry the said manual movable
contact into contact with the printed circuit, and
against a second resilient element, with a greater
elastic constant than that of the first resilient
element, to carry the automatic movable contact into
15 contact with the printed circuit.
2. A control panel according to the preceding Claim,
characterised by the fact that the said push button is
connected to a shaped body interacting with the said
20 manual and automatic movable contacts.
3. A push button according to the preceding Claims,
characterised by the fact that the said automatic and
manual movable contacts are made of rubber pads of
25 electrically conductive rubber.
4. A control panel according to one or more of the
preceding Claims, characterised by the fact that the
first resilient element is constituted by a resilient
30 rubber diaphragm defining a cup-shaped portion where the
said manual movable contact is provided.
5. A control panel according to one or more of the

preceding Claims, characterised by the fact that the second resilient element is constituted by a spring interconnected between the resilient diaphragm and the shaped body of the key interconnected with the said push
5 button.

6. A control panel according to one or more of the preceding Claims, characterised by the fact that the shaped body of the key has a projection for the
10 actuation of the automatic movable contact.

7. A control panel according to one or more of the preceding Claims, characterised by the fact that the shaped body has a tooth operable to engage with a
15 resilient reinforcing tongue operable to make the pressure to be exerted for the actuation of the said automatic movable contacts detectable to the touch.

8. A control panel for the manual actuation of the
20 window winder control, characterised by the fact that it comprises a box-like body closed below by a rigid printed circuit and supporting at least one push button for the actuation of a manual movable contact supported by a cup-shape part of a rubber diaphragm overlying the
25 printed circuit, the said cup-shape part being able to constitute a first resilient element for raising this push button.

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Fig. 3

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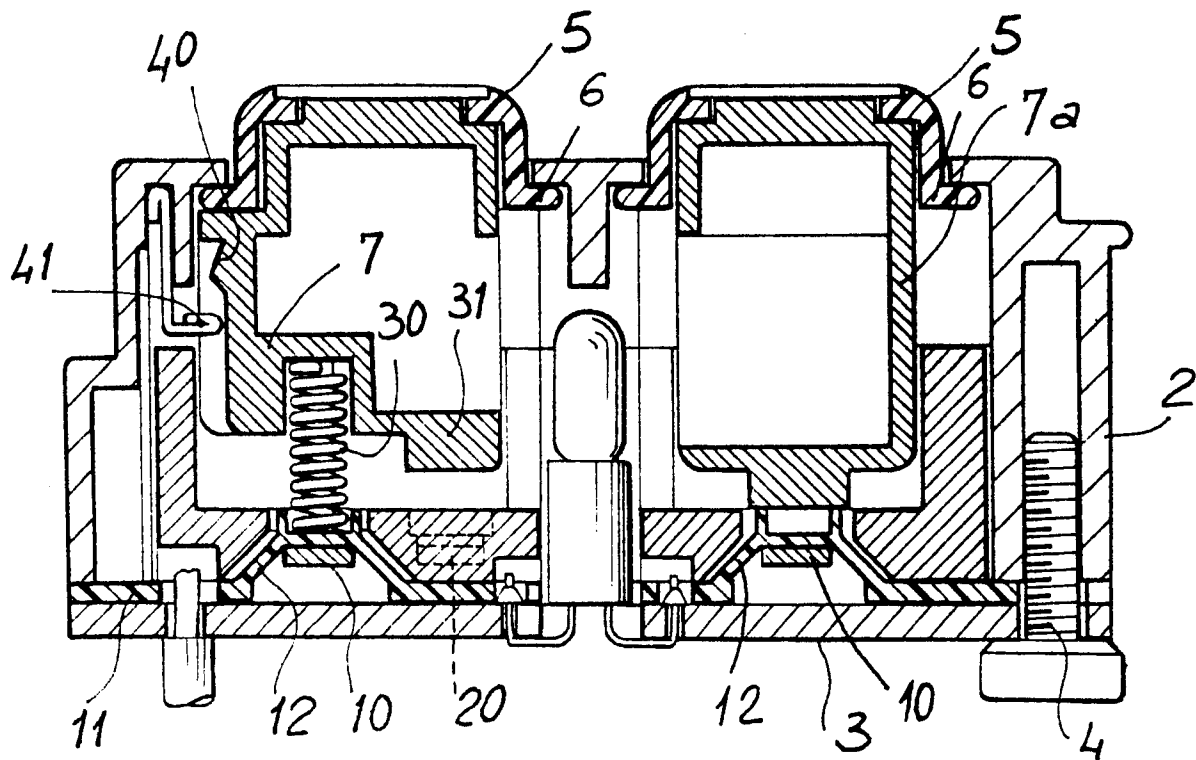


Fig. 4

