

12

EUROPEAN PATENT APPLICATION

21 Application number: **89850353.7**

51 Int. Cl.⁵: **H01H 3/14**

22 Date of filing: **16.10.89**

30 Priority: **17.10.88 SE 8803700**

43 Date of publication of application:
25.04.90 Bulletin 90/17

64 Designated Contracting States:
AT BE CH DE ES FR GB IT LI NL SE

71 Applicant: **ALTA-DESIGN AB**
Box 124
S-543 01 Tibro(SE)

72 Inventor: **Magnusson, Lennart**
Robin Granes Väg 23
S-541 51 Skövde(SE)

74 Representative: **Bjellman, Lennart Olov Henrik**
et al
DR. LUDWIG BRANN PATENTBYRA AB
Drottninggatan 7 Box 1344
S-751 43 Uppsala(SE)

54 **Device in foot-operated switches.**

57 The present invention relates to device whereby a cord switch (11) can be used as a foot-operated switch. The device includes a base plate (1), operating means (2) and a casing (3), the base plate (1) and casing (3) being intended to enclose a cord switch (11) and a part of the operating means (2). The means (2) is pivotable in relation to the base plate (1) and thereby to the switch (11), and a boss (18) projecting out from the means (2) such as to extend over the operating button (25) of the switch acts on this button when the means is pivoted. A part of the means (2) projects out through a slot in the casing (3) for actuation by treading on it. The base plate (1) and casing (3) are provided with mutually coacting locking means for locking these parts together on assembly.

EP 0 365 507 A2

DEVICE IN FOOT-OPERATED SWITCHES

The present invention relates to foot-operated switches and more particularly to an operating housing for a switch arranged on the electric cord itself (hereinafter designated "cord switch") whereby a foot-operated switch is achieved.

Foot-operated switches which are in use today are comparatively complicated structures. The reason for this is that sufficient strength must be obtained so that the switching unit is not broken in operation, even if it is stepped on, and it must also be mounted securely on the cord so that the cord conductors cannot be pulled out and exposed.

It is most usual to use specially designed foot-operated switches. Such require that the cord on which they are to be mounted is cut, the wires stripped and fastened in the switch itself, parts of the cord projecting from the switch being fastened to the housing itself, after which the housing is screwed together. However, it has become more and more usual to provide cords to different kinds of lamps and the like with both a plug and core switch from the factory. Such cord switches can neither be used nor permitted to be used as foot-operated switches.

A type of cord switch which is generally available is of the push-type, where a spring-biased pin projects from a housing, current being switched off and on for alternate depressions of the pin. In the actual switch constituting a part of the cord switch, the conductors must be fastened in the complicated way mentioned above for foot-operated switches, and even though there are such cord switches built into different types of housings for operation as foot-operated switches, there are many work operations which must be carried out, which results in a comparatively expensive final product.

The cord switch which is at present most usual is of the push-button type with an actuating part inserted in a small housing, this part being rocked about 30° for each operation, such as to close in one position and open in the other position to interrupt the current through the switch. This type of switch is simply made and is molded or heat-sealed directly on to the cord purely mechanically and it is not openable or exchangeable. A cord with such a switch will thus be easy to mass produce and it will be very cheap, although without the least reduction of strength and electrical safety.

For some time it has therefore been desirable to utilize such a switch in a foot-operated structure, i.e. to achieve a foot-operated switch of the push-button type and simultaneously produce one which is simple, reliable and cheap.

The present invention has the object of mitigat-

ing the disadvantages found in previously known foot-operated switches and to provide such a switch of the mentioned type, which satisfies the above-mentioned desires.

This object is achieved by a device of the kind disclosed in the claims, from which the characterizing features of the invention will be apparent.

The invention will now be described in more detail in the following and with reference to the accompanying drawings, where

Figure 1 is a view from above of a bottom plate including a device in accordance with invention,

Figure 2 is a section taken along the line II-II in figure 1,

Figure 3 is a side view of an operating means included in a device in accordance with the invention,

Figure 4 is a view from above of a casing included in a device in accordance with the invention,

Figure 5 is a section taken along the line V-V in Figure 4,

Figure 6 is a section taken along the line VI-VI in Figure 4,

Figure 7 is a view from above illustrating a cord switch and an operating means mounted on a base plate,

Figure 8 is a partially sectioned view taken along the line VIII-VIII in Figure 7 with a casing placed over the cord switch and operating means, and

Figure 9 is a partially sectioned end view taken along the line IX-IX in Figure 8.

The device in accordance with the invention, with the aid of which a cord switch can be utilized in a foot-operated switch, includes three parts, a base plate 1, an operating means 2 and a casing 3. These parts are suitably produced in plastics, e.g. by injection moulding.

The base plate 1 has a generally rectangular shape and at its outer peripheral edge an upwardly projecting wall 4, outside which there is a narrow edge 5, which is intended to join up against the casing 3 when the parts have been assembled. The wall 4 has an outwardly directed ridge 6 on the outside, which is intended to snap into a corresponding recess 7 in the inner wall of the casing 3 when the parts are assembled. In the two opposing short sides there are openings 8, through which a cord is intended to pass. These openings 8 are placed somewhat closer to one long side. In this long side there are a pair of upstanding projections 9, which in coaction with corresponding projections 10 on the walls of the short sides, one on either

side of the respective opening 8, are intended to locate the cord switch 11, which is to be enclosed in the inventive device. In the base plate 1 there is also a short, upwardly projecting ridge 12 extending transverse the base plate 1 and terminated with a pair of projecting flanges 13. This ridge 12 is intended to be the fulcrum of the operating means 2.

The operating means 2 comprises an elongate, relatively thin body which can be hollow or solid. At its lower end the means 2 has a V-shaped recess 14, the apex 15 of which is intended to rest against the ridge 12 of the base plate 1 such as to permit pivoting of the means 2. On either side of the V-shaped recess 14 the bottom edge the operating means 2 extends obliquely upwards in either direction at an angle of approximately 15° from the plane of the base plate 1. This means that the operating means 2 can be pivoted a total 30° between the end positions.

The apex 15 thus constitutes the fulcrum of the operating means 2, and the ends 16 are given an arcuate curve with a radius from this fulcrum so that they lie on the same arcuate line the whole time when the operating means 2 is pivoted. Directly above the apex 15 bosses 17, 18 project out at right angles to the body on either side. The boss 17 is intended to guide the means 2 in the casing 3 while the boss 18 projects out over the cord switch 11 such as to operate it.

The casing 3 is a rectangular box-shaped member with generally the same form as the base plate 1. It has a peripheral vertical wall 20, the lower end edge 21 which is intended to rest against the narrow edge 5 on the base plate 1 on assembly, and on the inside of the wall 20 there are recesses co-acting with the outwardly directed ridges 6 on the walls 4 of the base plate 1. The upper side has its greatest height at the centre and slopes downwardly towards the short sides, thus being similar to a gable roof. There is a longitudinal slot 22 in the upper side, through which the upper part of the operating means 2 is intended to project. The highest part of the upper side is directly above the ridge 12, thus providing space for the underlying bosses 17, 18 of the means 2. In the walls of the short sides of the casing 3 there are openings 23, complementary to the openings 8 in the walls on the short sides of the bottom plate 1, so that a cord can be passed through them.

Figures 8-9 illustrate the inventive device in an assembled, operative state. It will be seen how the push-button type cord switch 11 is kept in place on the bottom plate 11 with the aid of the projections 9, 10 and how it is kept down against the bottom plate 1 by the projections 26. Assembling the device is readily accomplished, since it contains so few parts and since there are now screws or other

elements requiring special treatment. The cord switch 11 is thus laid on the base plate 1, the operating means 2 is placed over the ridge 12 and the casing 3 is then put into place and pressed downward with a light pressure so that the ridges 6 snap into the recesses 7, the cord switch thus being converted to a foot-operated switch.

If the inventive device should fall apart or be broken apart, something which is not likely per se, the cord switch 11 is still intact and there is no risk of anyone being injured by exposed, live parts. If it is desired to definitely prevent opening the inventive device, glue can be applied between the connecting walls 4, 20.

The casing is so strong that if it is trodden on it withstands the pressure thus occurring without being damaged. If the operating means 2 is trod on too hard, all that happens is that the lower edge of the means 2 is pressed against the base plate 1 without the boss 18 being pressed in any injurious way against the press button 25.

The present invention has thus achieved the object set forth in the introduction. Certain modifications are possible to one skilled in the art however, but such are intended to lie within the scope of the accompanying claims.

Claims

1. Device for providing foot operation of a cord switch (11), i.e. a switch arranged on an electric cord itself, said device including a base plate (1), an operating means (2) and a casing (3), the plate (1) and casing (3) being intended to inclose a cord switch (11), characterized in that locating means (9, 10, 13, 26) are arranged to give the cord switch (11) a predetermined position on the base plate (1), in that the operating means (2) is pivotable in relation to the plate (1) and thereby to the cord switch (11), the means (2) also having a boss (18) projecting out above the operating button (25) of the switch (11) for activating this button when the means (2) is pivoted.

2. Device as claimed in claim 1, characterized in that the base plate (1) and casing (3) are provided with co-acting means (6, 7) for mutual locking on assembly.

3. Device as claimed in claim 1 or 2, characterized in that the operating means (2) projects out through a longitudinal slot (22) in the upper side of the casing (3).

4. Device as claimed in any one of the preceding claims, characterized in that the operating means (2) has a V-shaped recess (14) at its lower edge, this recess being intended to rest above a short ridge (12) projecting up from the base plate (1), in that the apex (15) of the recess (14) is

intended to engage against the top of the ridge (12), and in that the lower edge of the means (2) is configured on either side of the recess (4) such that the means (2) can be pivoted a limited amount before the lower edge comes into contact with the base plate (1) in the extreme pivoting positions.

5

10

15

20

25

30

35

40

45

50

55

4

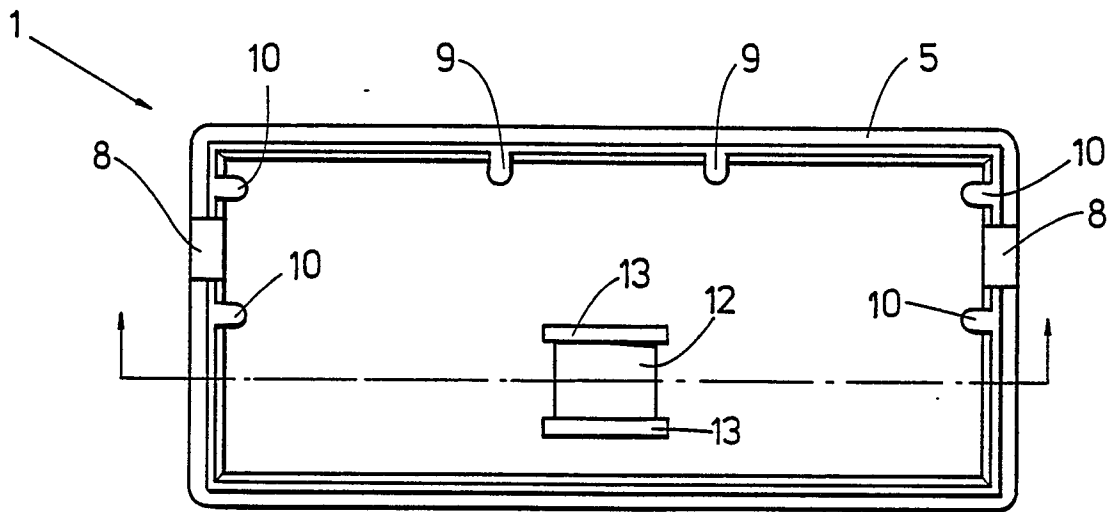


Fig. 1

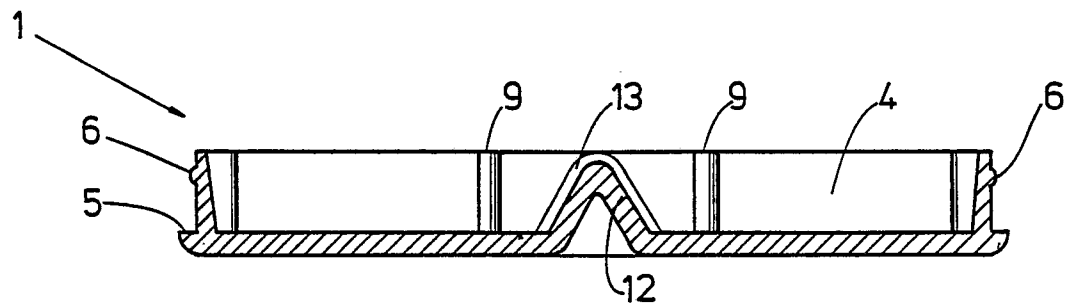


Fig. 2

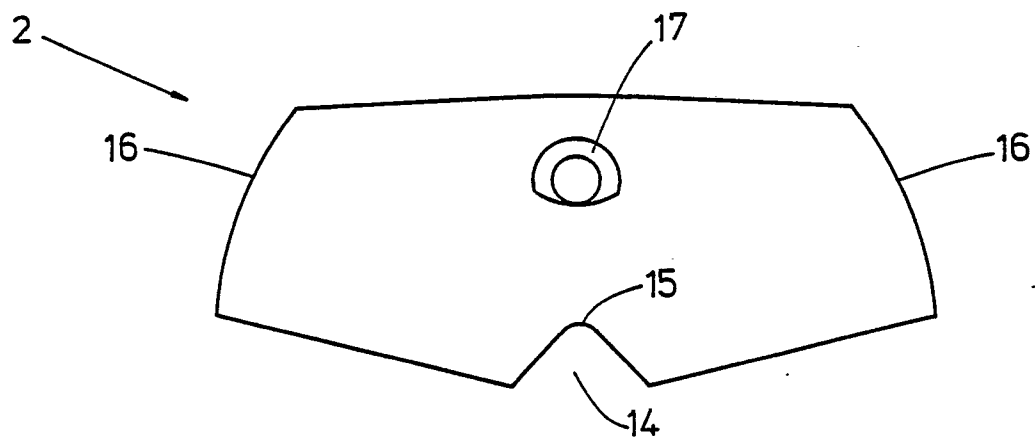


Fig. 3

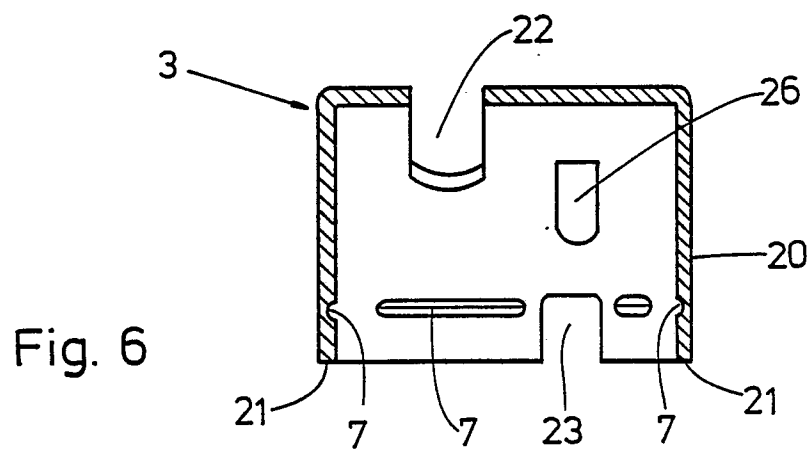
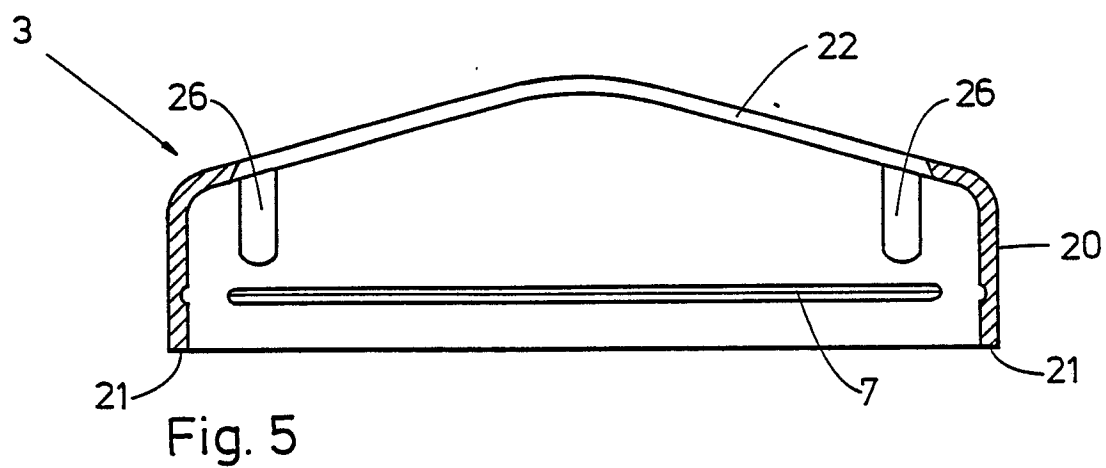
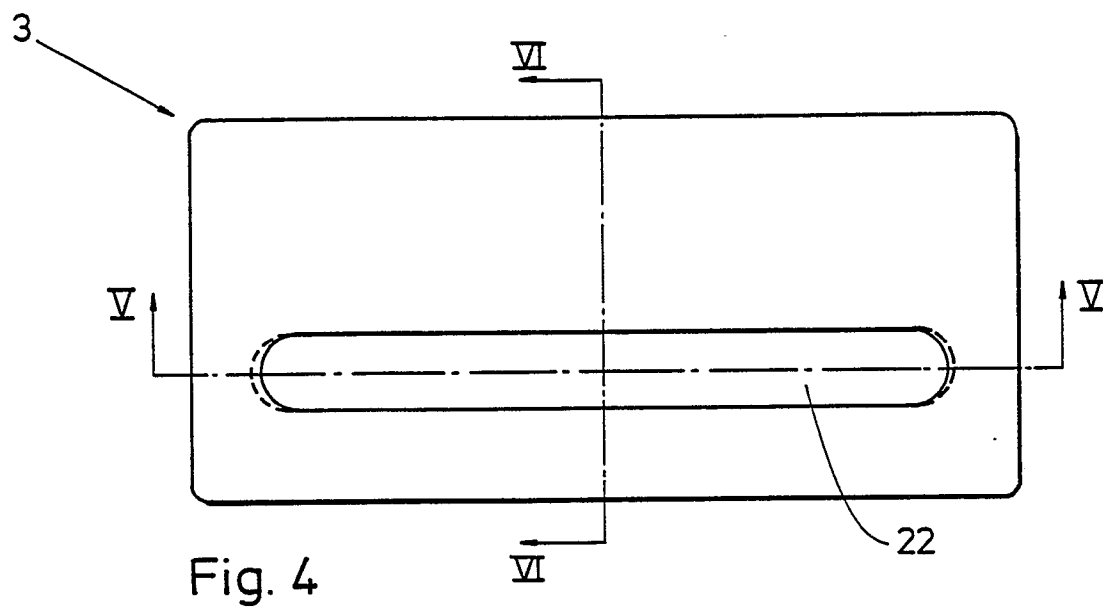
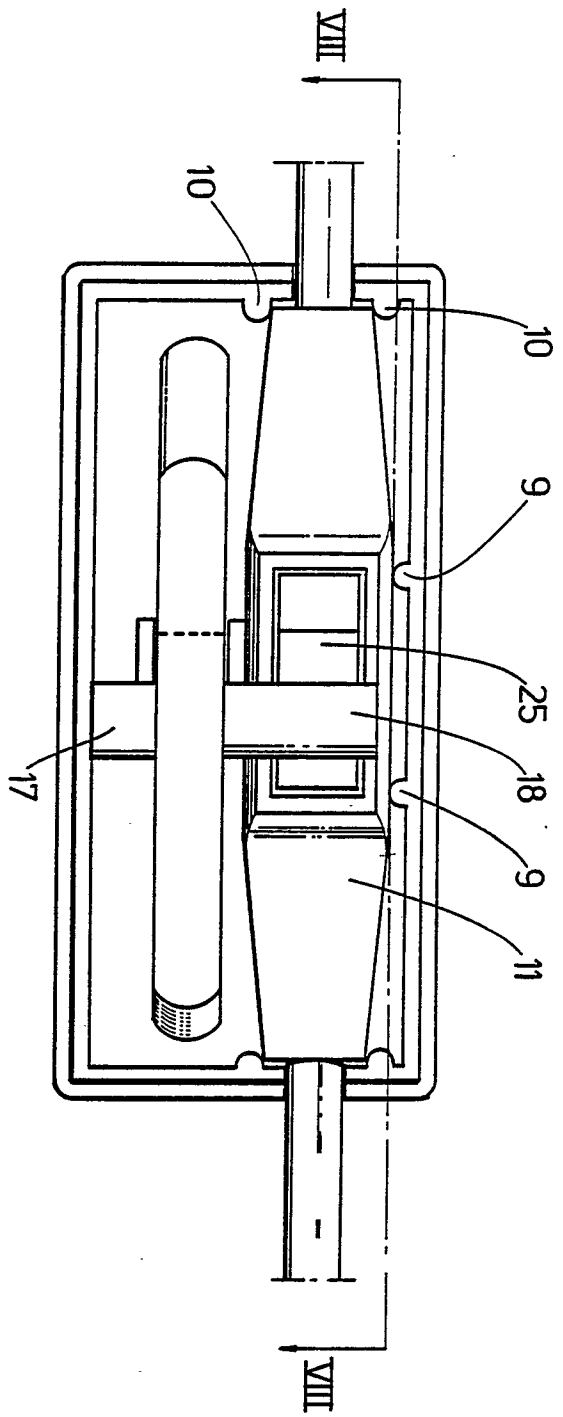


Fig. 7



3

Fig. 8

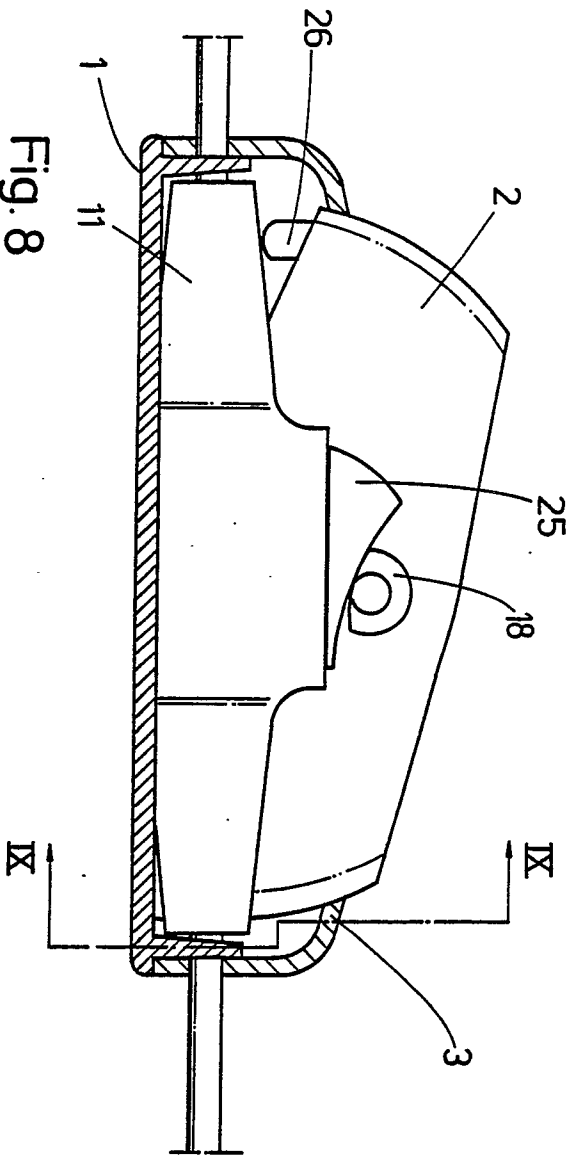


Fig. 9

