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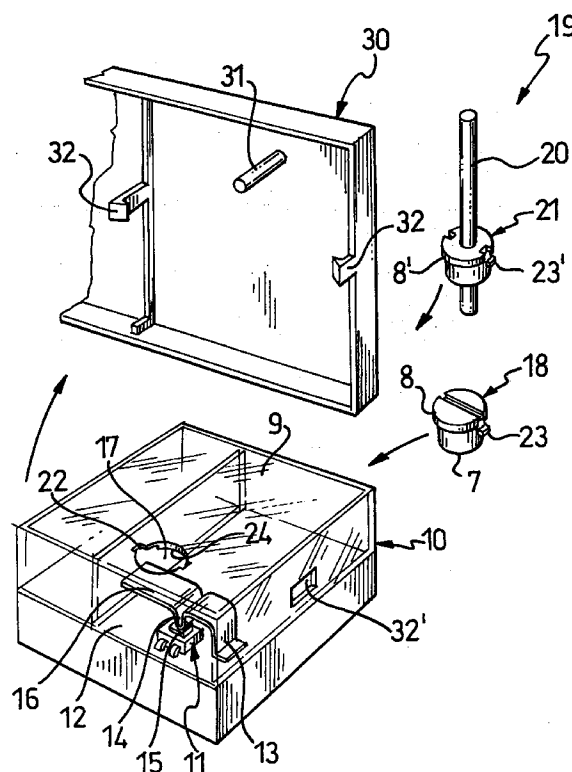
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(54) **Electrical equipment for anti-theft installations or similar**

(57) A piece of electrical equipment is described, comprising a box-shaped supporting structure (10) with an aperture (17) in one of its walls, a switch (11) integral with the supporting structure (10) and a member for actuating the switch (18, 19, 31). To provide equipment which may be used advantageously in different configurations, the operating member (18, 19, 31) is fixed removably to the supporting structure (10) and is selected from the group comprising a closing and actuating element (18) which closes the aperture (17) and acts on the switch (11), an actuating unit (19) which can be fixed to the aperture (17) and has a push rod which acts on the switch (11) when it is pressed, and a rod (31) projecting from a mounting element (30) which acts on the switch (11) when the supporting structure (10) is mounted on the mounting element (30).



EP 0 834 847 A1

Description

The present invention relates to electrical installations for civil and industrial applications and, more particularly, to a piece of electrical equipment with a switch device and corresponding actuating member, usable particularly in anti-theft installations and installations for indicating break-in or tampering.

There are known applications of electrical equipment of this type in which the removal or the opening of a panel causes the triggering of an alarm or indicator device following the opening or closing of an electrical contact or the actuation of an equivalent device included in the equipment. For this purpose, use is made, for example, of mechanical push-button switches or magnetically operated switches, fitted in a box-shaped structure together with other components of the installation, in a predetermined position with respect to the panel, in such a way that their actuating member interacts with the panel when this is in position.

In some applications, different pieces of equipment of this type may be fitted together, for example in a box embedded in a wall, but not all of them are to be activated by the removal of the covering panel of the box. In these cases, it is necessary to modify the actuating member of the switch device of the equipment which is not to be activated, for example by shortening in the case of a rod, to prevent any interaction with the panel, or to change the circuit in such a way as to make it insensitive to the actuation of the switch. This requires operations which reduce the speed of installation of the equipment, and which may also result in irreversible modifications of the equipment, so that it can no longer be used in such a way that it is activated by the removal of the panel, but, if this becomes necessary, must be replaced.

These disadvantages are overcome by the equipment according to the invention as specified and characterized in a general way in Claim 1.

The characteristics and advantages of the invention will be more clearly understood from the following description of a preferred embodiment of the invention, which is chosen by way of example and is therefore not restrictive, with reference to the attached drawing, in which the single figure is a perspective view of an embodiment of the electrical equipment according to the invention with three separate parts which may be used as alternatives to each other.

The equipment which is illustrated comprises a box-shaped structure 10, made of transparent plastic for example, containing a push-button switch 11 fitted on a printed circuit board 12 together with other components which are not shown because they are irrelevant for the purposes of the description of the invention.

A flat spring 13, shaped in such a way that it has a projection 14 in the proximity of the operating element 15 of the switch 11 and an end arm 16, is fixed to, and projects from, the board 12.

The box-shaped structure 10 has a circular aperture 17 in its upper wall 9, next to the arm 16 of the spring 13.

A closing and actuating element 18, in the form of a cylindrical plug with a flange 8, may be inserted into the aperture 17 and fixed removably; once fixed, this element presses with its end part 7 on the arm 16 of the spring in such a way that it acts on the operating element 15 and thus actuates the switch 11.

As an alternative to the plug 18, an actuating unit 19 may be inserted and fixed removably in the aperture 17. This actuating unit comprises a push rod 20 which is axially slidable inside a bush 21 which is of cylindrical shape and has a flange 8' so that it can be inserted and fixed removably in the aperture 17 in the same way as the plug 18. Once in position, the push rod 20 has its inner end in contact with the arm 16 of the spring but does not move it. If a sufficient axial force is applied to the outer end of the push rod 20, the elastic resistance of the spring is overcome and the projection 14 of the spring is moved in such a way that it acts on the operating element 15 and thus actuates the push-button switch 11.

For the fixing of the plug 18 or of the actuating unit 19, the aperture 17, which has a diameter slightly larger than that of the plug 18 and of the bush 21, has two diametrically opposed notches 22, and the plug and the bush have two corresponding projections, indicated by 23 and 23' respectively. The edge of the aperture 17 also has two inclined planes 24 which enable the plug 18 or the unit 21 to be fastened in the aperture by the interference between the flange 8 or 8', the wall 9 and the projections 23 or 23'.

It is clear from what has been disclosed above that the equipment described may be used in two separate configurations, namely with the plug 18 inserted and therefore with the switch 11 permanently actuated, or with the actuating unit 19 inserted and therefore with the switch actuated only when the push rod 20 is pressed. It is thus possible to use identical pieces of equipment fitted together in the same box and, by using the plug or actuating unit selectively, making only one piece of equipment or only some of the equipment sensitive to the removal of the covering panel of the box. It is also possible, when necessary, to change the initial disposition simply by replacing a plug with an actuating unit, or vice versa.

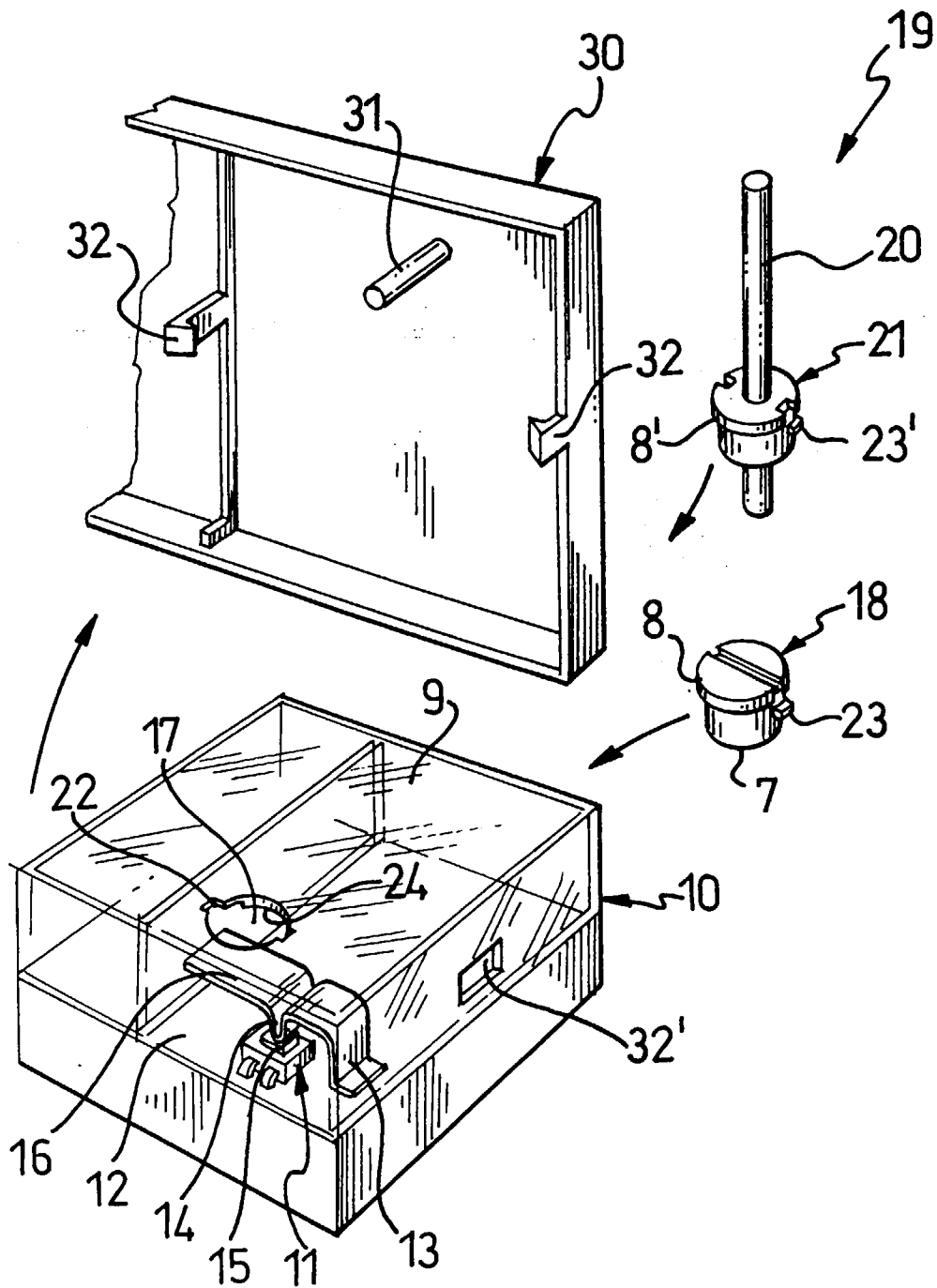
The structure described above is also suitable for being fitted upside down on a surface of a mounting element, for example on the base of a box which in turn is fixed to a wall. In this case the box, indicated by the number 30 in the drawing, is provided with a rod 31 projecting from the base and integral with it, and has a shape and size such that it has a housing in which the box-shaped structure 10 may be fixed removably by suitable fixing means 32, 32'. When the structure 10 is mounted in its housing, the rod 31 is inserted into its aperture 17 and engages with the arm 16 of the spring,

so that the push-button switch 11 is actuated. In this case, therefore, the actuating member of the switch consists of the rod 31, and the triggering of an alarm or indicator device associated with the electrical equipment is caused by the detachment of the structure 10 from its housing in the box 30.

It is clear that, although the equipment according to the invention is suitable for use with particular advantage in association with other identical equipment, it may also be used on its own, combined with any of the actuating members described. In all cases, therefore, there is the advantage of being able to form different configurations of anti-theft installations or similar, using a single basic piece of equipment adaptable from time to time to specific requirements, with an evident saving in terms of costs of manufacture and storage.

Claims

1. Electrical equipment comprising:
 - a box-shaped supporting structure (10) having a wall (9) with an aperture (17),
 - a switch device (11) integral with the supporting structure (10) and having an operating element (15) and
 - a member for actuating the operating element (15),
 characterized in that the actuating member (18, 19, 31) is fixed removably to the supporting structure (10) and is selected from the group comprising:
 - a closing and actuating element (18) which closes the aperture (17) in the wall (9) and has an end part which acts on the operating element (15),
 - an actuating unit (19) having means (21) for fixing to the aperture (17) in the wall (9) and a push rod (20) which acts on the operating element (15) when it is pressed, and
 - a rod (31) projecting from a surface of a mounting element (30) on which the supporting structure (10) is mounted, which acts on the operating element (15).
2. Equipment according to Claim 1, in which the aperture (17) is circular and has fixing means (24) on its edges and the closing and actuating element (18) has the shape of a cylindrical plug with a flange and with means (23) for fixing the plug (18) to the edges of the aperture (17).
3. Equipment according to Claim 2, in which the means (21) for fixing the actuating unit (19) are substantially identical to the means for fixing the plug.
4. Equipment according to Claim 1, in which the mounting element on which the supporting structure (10) is mounted is a box (30) with a housing for the removable fixing of the supporting structure (10).
5. Equipment according to any of the preceding claims, in which the push-button switch (11) is fitted on a printed circuit board (12) and in which a flat spring (13) fixed to the printed circuit and shaped and positioned in such a way that it acts on the operating element (15) when it is pressed by the actuating member (18, 19, 31) to act on the operating element (15).





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EUROPEAN SEARCH REPORT

Application Number
EP 97 20 0123

| 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.6) |
| A | DE 86 16 036 U (S. FRANZEN SÖHNE) * page 15, line 9 - page 18, line 3; figure 4 * | 1-5 | G08B29/04 |
| A | FR 2 602 078 A (SIGNAL VISION S.A.) * the whole document * | 1-3 | |
| | | | TECHNICAL FIELDS SEARCHED (Int.Cl.6) |
| | | | G08B |
| The present search report has been drawn up for all claims | | | |
| Place of search | | Date of completion of the search | Examiner |
| THE HAGUE | | 15 January 1998 | Sgura, S |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> | | | |

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