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(71) Applicant: **BTICINO S.P.A.**
20154 Milano (IT)

(72) Inventor: **Fabrizi, Fabrizio**
24100 Bergamo (IT)

(74) Representative: **Maggioni, Claudio et al**
c/o JACOBACCI & PERANI S.p.A.
Via Visconti di Modrone, 7
20122 Milano (IT)

(54) A sectional structure for electrical devices, with a support fitting for a switch button

(57) The invention consists of a sectional structure (1) for the wall mounting of switches, the structure having a fitting (60) which provides for the use of buttons (50) having larger dimensions than the associated switches (4); this avoids the need to introduce modifications to the structures or to the switches, which are usually produced with standard dimensions in order to provide coordinated sets of modular products.

In particular, the support fitting (60) provides a bearing point for a portion of the button (50) which projects from the body (41) of the switch and, by virtue of a hinged coupling between a bracket (56) and a pin (61), enables it to perform a pivoting movement together with the active element (42) of the switch.

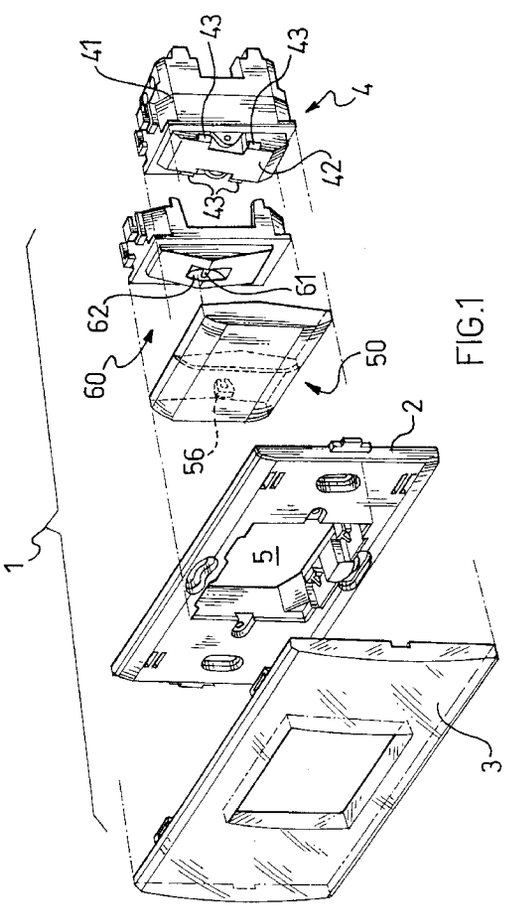

FIG.1

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Description

The subject of the present invention is a sectional structure for the wall mounting of electrical devices, comprising a support frame which is intended to be fixed to the wall and has a seat for the mounting of the devices, the seat containing at least one switching device having a body housing its electrical contacts, a button being associated with the body, on the opposite side to that corresponding to the wall, and acting on the contacts by means of a pivoting movement.

The structures referred to herein are well known in the field of electrical systems for domestic environments and the like. In fact, as is known, most electrical devices commonly found in dwellings nowadays are fitted in corresponding sectional structures of the type referred to above; this sectional arrangement is intended to enable various devices to be mounted interchangeably in the same structure, thus providing sets of coordinated products, which can achieve considerable advantages from both the production and the commercial points of view. For greater clarity, the case of the switches which are commonly found in dwellings may be considered: these usually have frames fixed to the wall, similar to those also used for wall sockets; in fact, these frames are generally produced in standard shapes and sizes so that their seats can house the bodies of the switches or those of the socket contacts interchangeably.

Before the description is continued, it should be also pointed out that the expression switching device or, more simply, switch is intended to indicate generally two types of electrical device: simple, single-pole, contact-breaking switches also known by the acronym SPST (single pole-single throw) and single-pole, contact-switching switches also known by the acronym SPDT (single pole-double throw).

It is also appropriate to point out that the definition electrical device should be understood in a broad meaning which includes, in addition to the switches already mentioned, wall sockets, push-buttons, keyboards and knobs for various applications such as the usual bells, thermostatic regulators or timing devices, light or sound indicators for alarm systems and the like, fuses, sockets for television aerials or for the connection of coaxial cables of other kinds, as well as anything else which may be used in electrical systems.

The range of coordinated products belonging to the same set mentioned above is generally quite large in order to meet customers' requirements; for example, sets of products in which the structures have cover plates with various colours or the seats for housing the devices have dimensions such as to enable a different number of devices to be fitted according to need are currently on the market.

It is clearly not expedient, however, to have too great a variety in the product range in view of the costs as well as production and industrial difficulties in general which would otherwise arise; for example, it should be borne in mind that most parts of the sectional structures can be made of plastics material and additional moulds and operations, with all of the related expenditure of resources which may result therefrom, are therefore necessary for each differentiation introduced.

Sometimes, however, practical considerations nevertheless require equivalent products belonging to the same set to be differentiated; for example, this is the case for products intended for export to various countries. In fact, it is not rare for the technical standards or the customers' tastes to differ slightly, in similar circumstances, from nation to nation, thus creating the need to introduce modifications to similar products intended for the various markets.

A typical example of this is represented by light-switch buttons; in some markets, particularly European markets, they are required to have larger dimensions than those in use in other countries. At the moment, in addition, of course, to the modification of the buttons themselves this involves, in practice, the need to introduce modifications to the switches, which results in the disadvantage of the need to differentiate between these products in batches intended for the various countries.

More particularly, a known solution for meeting this need consists of the formation of the body of the switch, which is the portion housing the electrical components (contacts, terminals, etc.), with larger dimensions so that it fits the larger button which is mounted thereon by a snap-engagement of known type. It should be pointed out that, in these devices, the aforementioned electrical components are nevertheless the same as those used in switches with standard dimensions and the space available inside the larger body is thus clearly underused; it should be pointed out that, in the prior art, according to a preferred embodiment, the body of the switch is formed with dimensions multiples of those corresponding to a normal device so that it can occupy a space corresponding to one or more devices in the seat of the frame in which it is housed, according to need.

It is clear from the foregoing that a solution of this type is certainly not optimal; in fact, as well as being larger than necessary in view of what was stressed above, the bodies of switches formed according to the known teaching cannot provide a modular response to the requirement already mentioned. In other words, the production of switch bodies with different dimensions according to those of the buttons itself involves an increase in the range of products to be produced which is contrary to the tendency to limit excessive proliferation of products within the same set; in fact, since it is clearly necessary to produce different buttons in any case, it would be expedient, in the light of the foregoing, at least to avoid the production of bodies provided specifically solely to fit these buttons, thus limiting the number of products to be manufactured for the same set.

The object of the invention is therefore to provide a sectional structure for electrical devices of the type considered at the beginning of this description, in which it

is possible to use buttons having various dimensions without the adverse consequences which arise in the prior art described above.

This object is achieved by a sectional structure defined in the claims which follow this description.

For a better understanding of the invention, its further characteristics and of the advantages achieved thereby, an embodiment thereof is described below purely by way of non-limiting example, with reference to the appended drawings, in which:

Figure 1 is an exploded, axonometric view of the structure of the invention,

Figure 2 is an axonometric view of a button of a switch of the structure of Figure 1,

Figures 3 and 4 are sectioned side views of a detail of Figure 1, in respective operative conditions.

On the basis of the drawings summarized above, these show a structure according to the invention, generally indicated 1; this structure includes a frame 2 to be fixed on a wall and a cover plate 3 which is coupled to the frame by snap-engagement, in known manner. A switch 4 is housed in a seat 5 in the frame 2, to which it is fixed releasably by resilient engagement means of known type which are therefore not described in detail in this description; these means are, in any case, provided both in the seat and on the body 41 of the switch and are visible, although not numbered, in Figure 1.

As already stated, the switch 4 comprises a body 41 which houses its electrical elements (terminals, contacts etc.), not shown in the appended drawings, and a rocker element 42 which can perform a snap pivoting movement about an axis transverse the body; this rocker element is situated at the front of the body 41 when the body is fitted in the seat 5 in the frame, the rocker acting on the electrical elements in order to activate the electrical contacts of the switch.

At the same time, the rocker element also acts as means for the fixing of a switch button 50; more precisely, the button 50 just mentioned is fixed releasably to the rocker element 42 by the snap engagement of ribs 53 and 43 formed on a projecting rim 54 and on a partition 55 of the former (see Figure 2) as well as on the principal sides of the latter (see Figure 1), respectively.

With reference to Figure 2, it can in fact be seen that the face of the button 50 which faces towards the body of the switch is divided into two portions by the partition 55, the first portion being intended to be coupled frontally with the body 41 on the ribs thereof, whereas the latter has a bracket 56 which is intended to house a pin 61 of a fitting 60 for supporting the switch button. This fitting is essentially an element of a shape similar to that of the switch-body half, having the same resilient-engagement mounting means as the latter, and occupying the same space in the seat 5; the pin 61 mentioned above is formed in an opening 62 disposed at the apex of a surface projection on the side of the fitting which faces towards the button 50 when the structure is in the assembled condition.

The pin 61 and the bracket 56 are in practice a hinge-like coupling which allows the button 50 to perform a rotary movement about the pin 61 (see Figures 3 and 4) but prevents relative translations which would move the button away from the fitting; moreover, by virtue of the resilience of the bracket which, like the cover 50, in a preferred embodiment, is made of plastics material, it is nevertheless possible to remove the button from the pin in order to disassemble the structure if necessary.

When the structure of the invention is in the assembled configuration, the fitting 60 and the switch 4 are mounted side by side in the seat 5 and the button 50 is engaged with the rocker element 42 to which it is fixed for the pivoting movement thereof; at the same time, the hinge-like coupling of the pin 61 with the bracket 56 provides a support for the button which is therefore supported in a balanced manner relative to the partition and can thus be pressed from the front at any point without danger of being detached from the rocker element.

It will also be noted that the hinge-like pin-bracket coupling does not obstruct the pivoting movement of the button together with the rocker element at this stage.

It can therefore be understood that the structure of the invention achieves the object set at the beginning since it permits the use of buttons with larger dimensions without the need for appropriate modification of the structure itself or of the normal switching devices but, on the contrary, achieves compatibility with those already existing. In the light of the foregoing description, it is in fact clear that a button 50 of any width larger than that of a normal switch, that is, a switch corresponding to the production standard may be selected, the switch nevertheless being able to be used as described in the example and thus mounted in a structure also of standard type; for this purpose, it is hardly necessary to indicate that it will be sufficient to ensure that the configuration defined by the partition 55 and by the projecting rim 54 of the lever 50 seen in the foregoing example, including the ribs 51, reproduces the shape of a standard button.

Thus, in summary, in order to fit a button with larger dimensions in the structure of the present invention, there is no need for modifications or alterations of the structure or for a specifically adapted switch body, but it is sufficient to provide for the use of the fitting 60; this can be mass produced preferably with the same dimensions as a device since it can thus occupy the same space in the mounting seat. It will also be noted that, if necessary, several fittings may be mounted in the same structure; in this connection, the case of a switch lever having a width equal to three or more electrical devices intended for the structure may be considered; it would certainly be advantageous to have at least two fittings

arranged in the seat in the frame, on opposite sides of a switch, both supporting the button which is engaged with the rocker element of the switch. In this case it would simply be necessary to provide two brackets and two partitions in the button instead of one of each as indicated in the foregoing example, forming a variant of the embodiment described above which would nevertheless fall within the teaching of the present invention as is clear from the description and the following claims.

Claims

1. A sectional structure for the wall mounting of electrical devices, comprising a support frame (2) which is intended to be fixed to the wall and has a seat (5) for the mounting of the devices, the seat containing at least one switching device (4) having a body (41) housing its electrical contacts, a button (50) being associated with the body on the opposite side to that corresponding to the wall, and acting on the contacts by means of a pivoting movement, characterized in that a portion of the button projects from the body of the device into the mounting seat in which a fitting (60) is situated for forming a hinge-like coupling with the projecting portion of the button about an axis substantially parallel to that of the pivoting movement thereof.

2. A structure according to Claim 1, characterized in that the fitting has a body provided with resilient engagement means for its releasable mounting in the seat.

3. A structure according to Claim 2, characterized in that the resilient engagement means of the fitting are the same as those of the devices designed for the structure.

4. A structure according to any one of Claims 1 to 3, characterized in that the button (50) is fixed removably to a rocker element (42) which is mounted peripherally in the body of the switching device and can perform a pivoting movement.

5. A structure according to any one of Claims 1 to 4, characterized in that the fitting has a width equal to that of the devices designed for the structure.

6. A structure according to any one of Claims 1 to 5, characterized in that the portion of the body of the fitting (60) which is disposed adjacent the button of the switch when the structure is in the assembled condition has a projection in which there is a hole (62) bearing a transverse pin (61).

7. A structure according to any one of Claims 2 to 6, characterized in that the button has a projecting rim (54) around its profile, as well as a partition (55) dividing the face of the lever which is intended to face the switch into at least two portions of which one has means (51) for engagement with the rocker element and the other, corresponding to the projecting portion of the button, has a bracket (56) which can house the pin of the fitting, forming the hinge-like coupling.

8. A structure according to any one of Claims 1 to 7, characterized in that the fitting and the button of the switch are formed of plastics material.

9. A fitting for a structure according to any one of Claims 1 to 8.

10. A button for a structure according to any one of Claims 1 to 8.

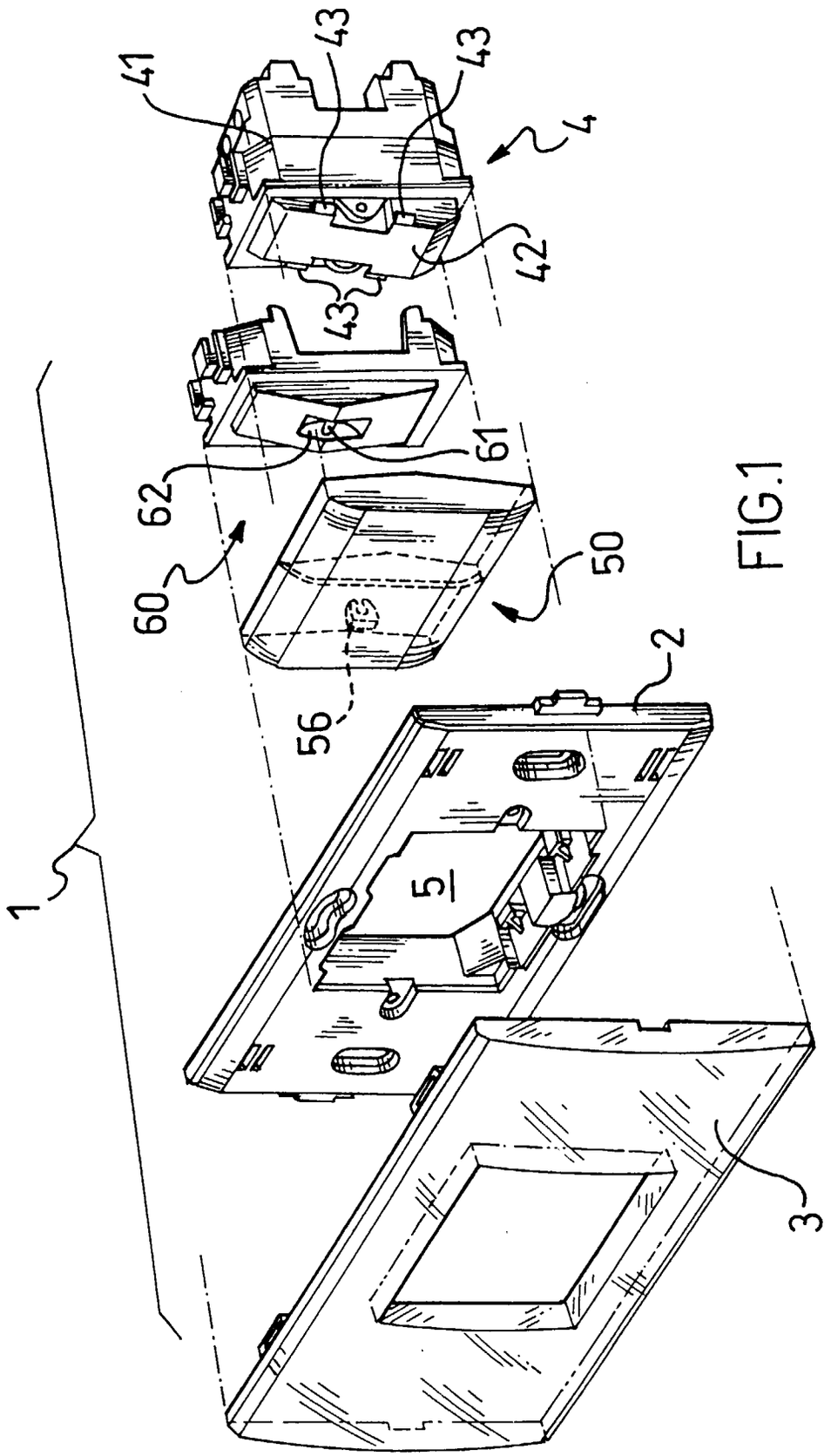

FIG.1

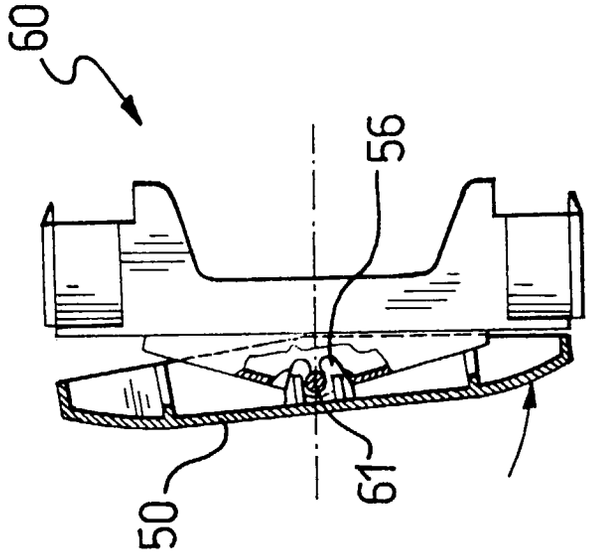

FIG.4

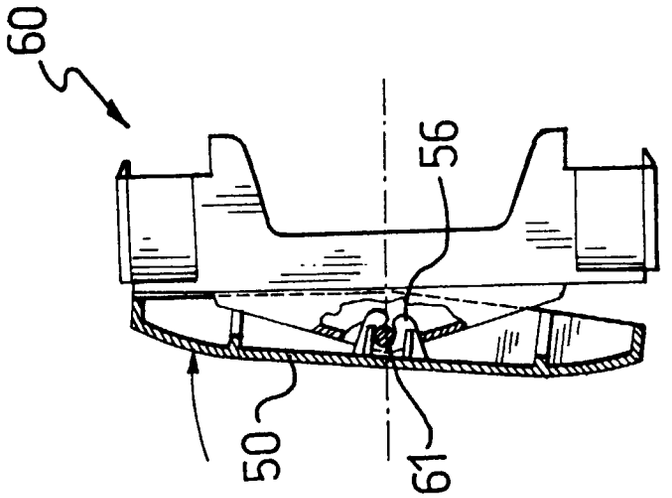

FIG.3

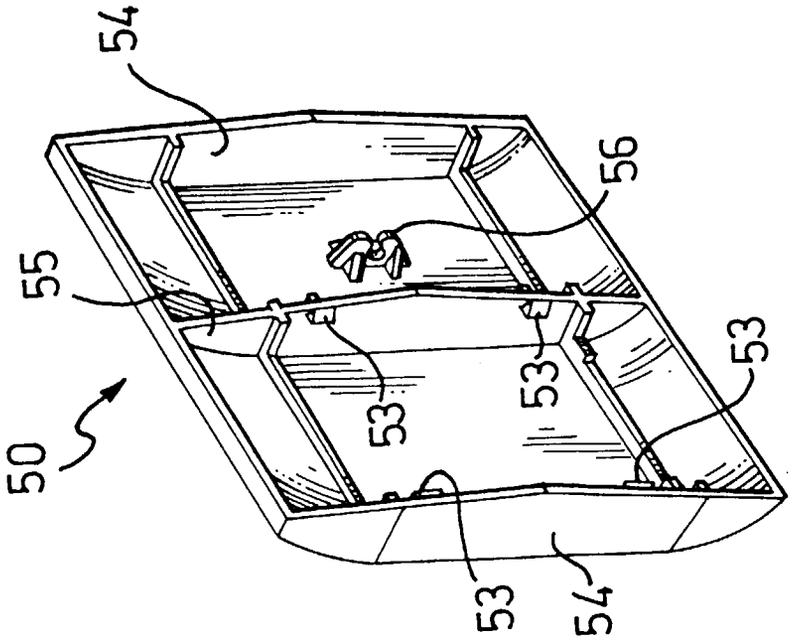

FIG.2

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EUROPEAN SEARCH REPORT

Application Number
EP 96 20 1441

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)
Y	AU-A-3 454 889 (H.P.M. INDUSTRIES PTY) 7 December 1989 * claim 1; figures 1,5,6 *	1	H01H23/14 H01H23/04
Y	US-A-4 429 200 (GLENN ROBERT L ET AL) 31 January 1984 * column 3, line 47 - line 62; figures 4-7 *	1	
Y	DE-U-92 18 404 (SIEMENS) 27 January 1994 * page 3, line 19 - page 4, line 22; figures *	1	
A	US-A-5 213 204 (MOLEX INC) 25 May 1993 * abstract; figure 2 *	1	
A	US-A-3 254 191 (KENNETH REINER) 31 May 1966 * column 4; figures 3,4,8 *	1	

TECHNICAL FIELDS SEARCHED (Int.Cl.6)

H01H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	22 July 1996	Janssens De Vroom, P

CATEGORY OF CITED DOCUMENTS

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