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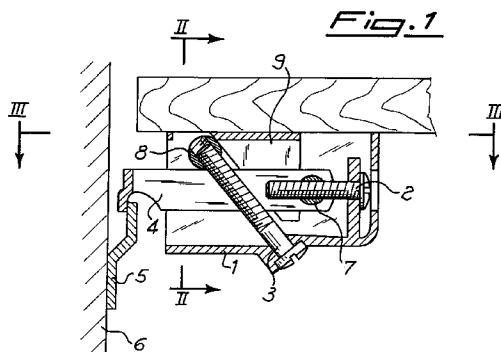
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54 Adjustable supporting device for the positioning of hanging units.

57 An adjustable supporting device for the positioning of hanging pieces of furniture or wall units, including a substantially parallelepipedal box (1) internally and externally shaped, as well as provided with two screws (2, 3) arranged on a same longitudinal plane of the box (1) and axially integral therewith, which act on a hook (4) which frontally comes out of the box (1) to be inserted on suitable means (5) fixed to a wall (6), and are driven to adjust the position of the wall unit (11) in the direction perpendicular to the wall (6) and in the vertical direction, respectively. In particular, the screw (3) for the vertical adjustment is inserted, through the bottom of the box (1), in a diagonal direction until its end is inserted in a cylindrical plug (8), transversely arranged and provided with a threaded through hole, which slidably abuts both on the hook (4) and on the surface of two projections, (9) formed inside the box (1) on the side walls thereof, which are inclined parallel to the screw (3), so that, despite the push exerted on the means (8) by the projections (9) owing to the weight of the wall unit (11), said means (8) is retained between said surfaces by the screw (3), in a position depending on the adjustment carried out by acting on the screw (3).



The present invention concerns the supporting devices for hanging units and in particular refers to an adjustable supporting device for the positioning of wall cupboards.

Two fundamental types of adjustable supporting devices are known, substantially consisting of a box provided with a hook and two adjusting screws which must be fixed inside a wall unit at a rear opening thereof to allow the insertion of the hook on a metallic strip located on a wall. The desired lateral positioning of the wall unit is obtained by shifting it along said strip, while its adjustment in height and depth with respect to the wall is obtained by acting on the two adjusting screws.

In the first type of known devices, simple and cheap, the screw for the depth adjustment is arranged perpendicular to the wall and is frontally accessible by the installer, whereas, on the contrary, the screw for the height adjustment is vertically arranged thus resulting scarcely visible and accessible from inside the unit, and therefore difficult to be acted on by the installer.

In the second type of known devices both adjusting screws are perpendicular to the wall and therefore easily accessible by the installer, but it is clear that such a device must include levers or similar transferring members to deflect by 90 degrees the effect of the vertical adjustment, so that the device is structurally complicated and therefore expensive.

Therefore, the object of the present invention is to provide an adjustable supporting device which is structurally simple and cheap and, at the same time, easy to be used by the installer.

This object is achieved by means of an adjustable supporting device for the positioning of wall units wherein the screw for the height adjustment is diagonally arranged and the adjusting action is transferred in the vertical direction substantially thanks to the inner shaping of the box forming the container of the device.

The advantages of the present invention will be apparent from the following detailed description of an embodiment thereof with reference to the annexed drawings wherein:

Fig.1 is a partially sectional side view of a device according to the present invention in the operating position;

Fig.2 is a sectional view of the same device, taken along line II-II of fig.1; and

Fig.3 is a view of the same device, taken along line III-III of fig.1.

Referring to fig.1, there is seen that the device according to the present invention includes a box 1, substantially parallelepipedal and both internally and externally shaped, wherein two adjusting screws 2, 3 enter whose heads remain accessible from outside by abutting on proper surfaces of box 1, and from which a hook 4 frontally comes out whose end is inserted on

a metallic strip 5 fixed on a wall 6.

The hook 4, as it will be clearer later on, consists of a small bar, preferably metallic, substantially U-shaped and having the ends of the two parallel arms located within box 1. The threaded shank of screw 2 which is inserted in the back of box 1 is interposed between said ends and parallel thereto. The two parallel ends of the small bar forming hook 4 have two coaxial holes wherein a cylindrical plug 7 is inserted, perpendicular to said ends and to the interposed screw 2, provided in turn, in a substantially intermediate position, with a threaded through hole wherein screw 2 is actually inserted.

The screw 3 is diagonally inserted from below into box 1, so as to have its threaded shank interposed between the parallel arms of the U-shaped hook 4 too, however in such a position as not to interfere with the threaded shank of screw 2. The end of screw 3 is inserted in the threaded through hole of a second cylindrical plug 8 being transversely arranged within box 1 and abutting at the bottom on the arms of hook 4. The plug 8 also abuts, in its substantially upper area, on two projections 9, formed within box 1 on the long sides thereof, and having the surface whereon plug 8 abuts parallel to screw 3.

Referring to fig.2, there are seen both of said projections 9 which project inside box 1 so as to constitute a solid support for the ends of the cylindrical plug 8 but, anyway, so as not to interfere with the parallel arms of hook 4 between which the threaded shank of the inclined screw 3 is visible. Fig.2 also shows a snap-in fixing pin 10 which, together with an identical parallel pin (not visible), allows the mounting of the device according to the present invention inside a piece of furniture 11.

Finally referring to fig.3, there may be better appreciated the shape of hook 4 and the arrangement, inside box 1, of the cylindrical plug 7 and of screw 2 interposed between the arm ends of hook 4.

For what said above, it is apparent that the device according to the present invention allows, in addition to the conventional adjustment of the lateral position of the piece of furniture, also the adjustment in the direction perpendicular to wall 6 which is carried out by acting on screw 2. In fact, since hook 4 is substantially fixed, a rotation of screw 3 causes the sliding of its threaded shank through the cylindrical plug 7 and therefore the shifting of the whole device and of the piece of furniture integral thereto.

As far as the vertical adjustment of the piece of furniture is concerned, it should be noted that its weight rests, through projections 9, on the cylindrical plug 8 which, being retained by screw 3 inserted therein, transfers the load to the arms of hook 4 which is inserted on the metallic strip 5 integral with wall 6. Therefore, the cylindrical plug 8 is substantially blocked between hook 4 and projections 9 which form the basic inner shaping of the device box 1. Owing to

this, the relative shifting of the cylindrical plug 8 and of screw 3 is obtained by acting on said screw 3, and therefore the shifting of the whole device and of the piece of furniture integral therewith is obtained, in particular through the sliding of projections 9 on the upper area of the cylindrical plug 8.

Thus, the raising of the piece of furniture 11 will be obtained by screwing the adjusting screw 3, whereas the lowering thereof will be obtained, of course, by unscrewing said screw 3, and it should be noted that this adjustment is extremely easy thanks to the inclined position of screw 3 which is perfectly accessible by the installer considering that, in particular, the device according to the present invention is usually fixed inside a piece of furniture and in the upper part thereof.

The box which serves as a container of the device, preferably made of a plastic material, may have any shape suitable for the purpose, but it will be necessary anyway that the area intended for housing the head of screw 3 is such as to have the screw arranged parallel to the surface of projection 9 whereon the cylindrical plug 8 abuts, since otherwise the box would undergo anomalous mechanical stresses with consequent malfunctioning of the device and possible breaking of box 1.

The cylindrical inserts 7, 8, preferably metallic, may be replaced by rods, plates or similar members suitably shaped to fit the surfaces of hook 4 and, in particular, of projections 9 whereon they must abut, as well as provided with a threaded through hole, so as to keep the above-described functionalities unchanged.

It is apparent that hook 4 too may have any different shape suitable for this purpose.

Claims

1. An adjustable supporting device for the positioning of wall units, including a substantially parallelepipedal box (1) internally and externally shaped, and provided both with means (10) for the fixing to a wall unit (11) and with a hook (4) which, being substantially U-shaped and having the ends of the two parallel arms retained within the box (1), frontally comes out of the box (1) to be inserted on suitable means (5) fixed to a wall (6), as well as provided with two screws (2, 3) arranged on a same longitudinal plane of the box (1) and axially integral therewith, which are driven to adjust, through members inside the box which act on the hook (4), the position of the wall unit (11) in the direction perpendicular to the wall (6) and in the vertical direction, respectively, said device being characterized in that the screw (3) for the vertical adjustment is inserted, through the bottom of the box (1), in a diagonal direction

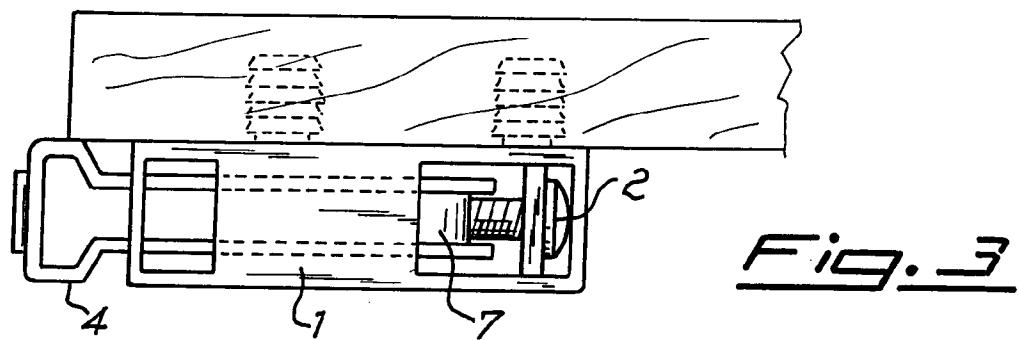
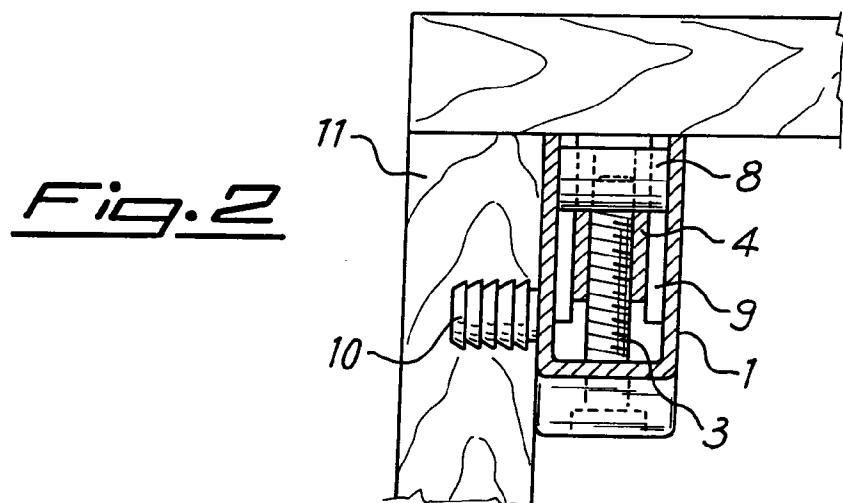
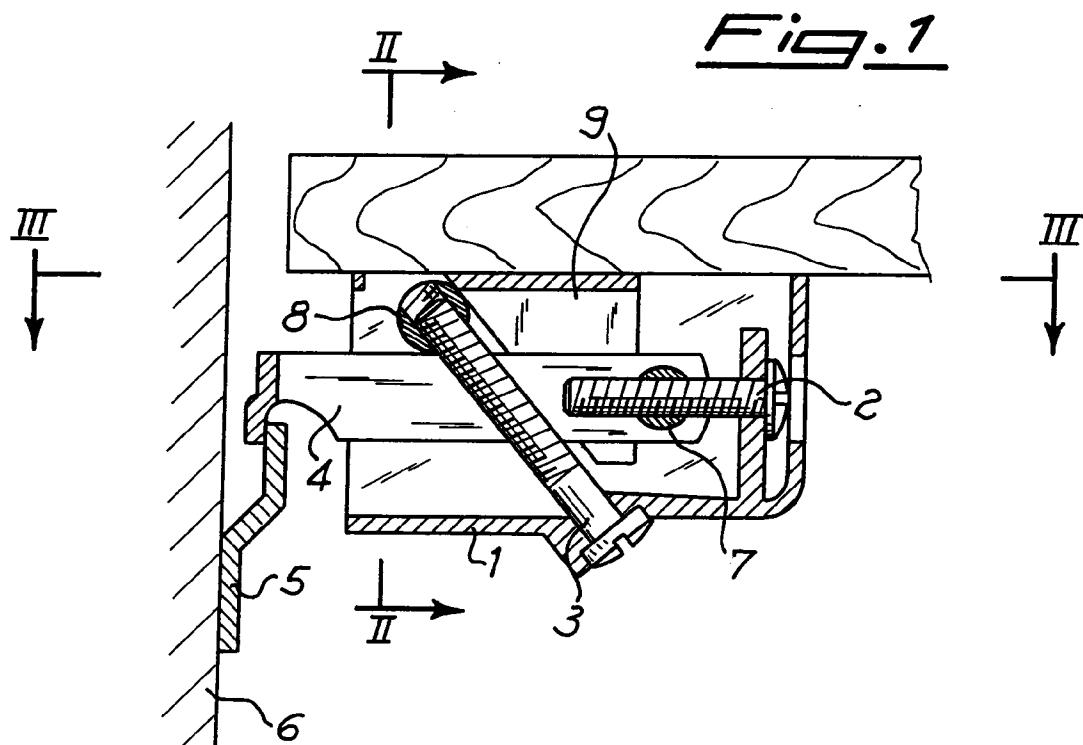
5 and with its threaded shank passing between the parallel arms of the hook (4), until its end is inserted in a means (8), transversely arranged and provided with a threaded through hole, which slidably abuts both on the upper surface of the parallel arms of the hook (4) and on the surface of two projections, (9) formed inside the box (1) on the side walls thereof, which are inclined parallel to the screw (3), so that, despite the push exerted on the means (8) by the projections (9) owing to the weight of the wall unit (11), said means (8) is retained between said surfaces by the screw (3), in a position depending on the adjustment carried out by acting on the screw (3).

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2. A device according to claim 1, characterized in that the means (8) consists in a cylindrical plug.

3. A device according to claim 1, characterized in that the means (8) consists in a shaped plate.





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 93 83 0319

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	
X	AT-B-328 132 (JULIUS BLUM GESELLSCHAFT M.B.H.) * page 3, line 47 - page 3, line 55; figures 1-2 *	1,3	A47B95/00
A	AT-B-380 632 (JULIUS BLUM GESELLSCHAFT M.B.H.) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
			A47B
<p>The present search report has been drawn up for all claims</p>			
Place of search	Date of compilation of the search	Examiner	
THE HAGUE	5 November 1993	NOESEN, R	
CATEGORY OF CITED DOCUMENTS		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	
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