(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 080 670 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
07.03.2001 Bulletin 2001/10

(51) Int Cl.[7]: **A47B 96/06**

(21) Application number: **99830547.8**

(22) Date of filing: **06.09.1999**

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(71) Applicant: **Vetreria Felice Voleno & C. s.n.c.**
23880 Casatenovo (Lecco) (IT)

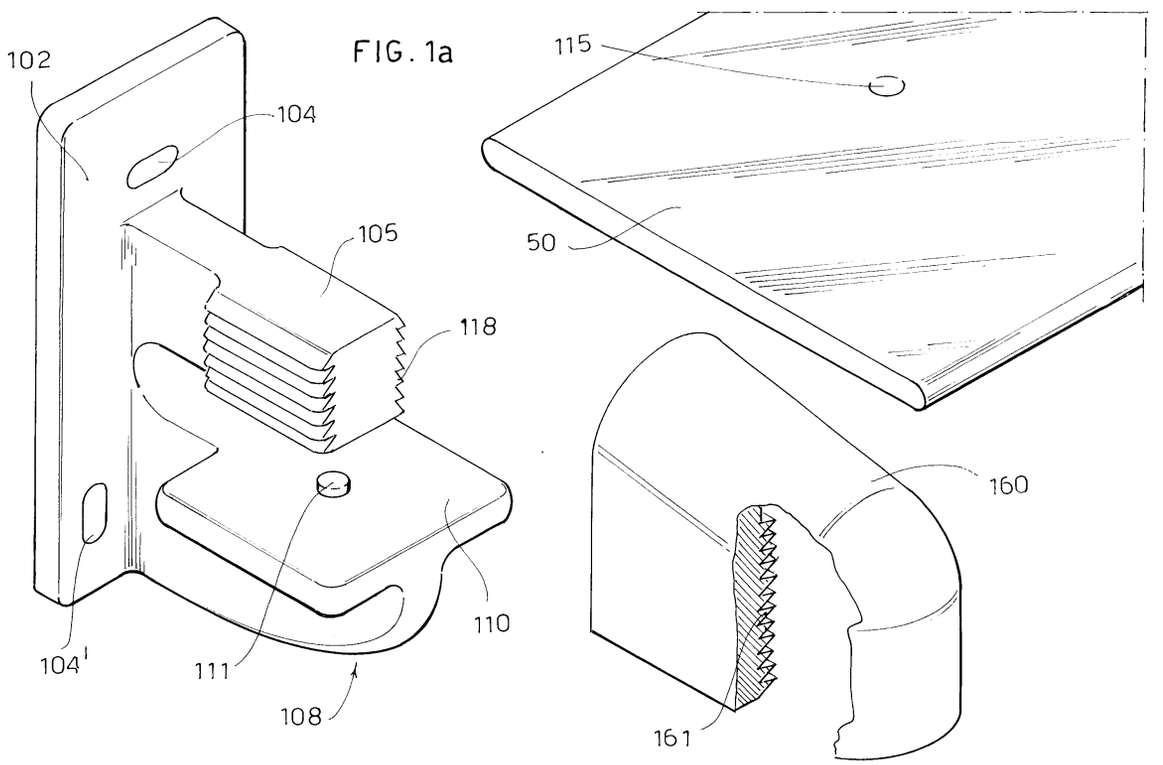
(72) Inventors:
- **Pagnucco, Gilbert**
  2100 Dijon (FR)
- **Pagnucco, Hervé**
  2100 Dijon (FR)

(74) Representative: **Petruzziello, Aldo et al**
Racheli & C. S p A
Viale San Michele del Carso, 4
20144 Milano (IT)

(54) Mounting device for shelves and shelf assembly

(57) A mounting device (100; 1) for shelves (50), suitable for being attached to a wall or to a wall fastening element (3) anchored to a wall or partition, comprising an upper retaining fin (105; 5) and a lower retaining fin (108; 8), both projecting horizontally therefrom and at least one of said projecting fins forming a horizontal plane distanced vertically from the other fin by a distance such as to allow the insertion of a shelf (50), so that the shelf (50) is arranged horizontally between the upper and lower retaining fins (5, 8) and a cap (160), suitable for being attached to a retaining fin (105) so that its edges abut against the surface of said shelf (50), allowing its correct positioning.

FIG. 1a



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Description

[0001] The present invention relates to a mounting device for shelves, particularly in glass, for the formation of single shelves or shelf assembly for shelf units, more particularly for the furniture and interior design markets and for structures for finishing buildings and the like.

[0002] Various systems for the attachment of shelves to supports are currently available on the market. These generally known attachment systems involve drilling of the shelf and its attachment using screw or bolt means or nails. This system has disadvantages due to the fact that, through the clearance and tolerances of the holes formed in the shelf, the shelf is not maintained perfectly horizontal. Moreover these problems increase, above all, in the case of shelves in a material other than wood, such as glass, which is not suitable for drilling.

[0003] Mounting of shelves according to the prior art is somewhat complex and generally requires expert assemblers who have to make the relevant holes in the shelves with precision. The kit for assembly of a shelf according to the known technique is also supplied with numerous parts due to the use of screw or bolt means for attachment of the shelf.

[0004] The object of the present invention is to eliminate the disadvantages of known attachment means, providing a mounting device for shelves which allows these shelves to be maintained in a perfectly horizontal position.

[0005] Another object of the present invention is to provide a mounting device for shelves which allows fast and easy mounting of shelves.

[0006] A further object of the present invention is to provide such a mounting device for shelves which is highly flexible and versatile and can be applied and adapted to different mounting and application requirements.

[0007] Another object of the present invention is to provide a mounting device for shelves which is economical and simple to manufacture.

[0008] Yet another object of the present invention is to provide such a mounting device for shelves which allows the formation of shelf assembly for shelf units.

[0009] These objects are achieved, in accordance with the invention, with the features listed in the accompanying independent claim 1.

[0010] Preferred embodiments of the invention will be made clear from the dependent claims.

[0011] The mounting device for shelves according to the invention includes a particular support, which can be attached directly to a wall or on vertical uprights for wall fastening. This support fulfils the purpose of holding a shelf in a horizontal position to arrange a single shelf or several shelves to form a shelf unit.

[0012] The support can also be used to hold a mirror positioned behind the shelf in a vertical position.

[0013] This support is designed in such a way as to allow self-clamping of the shelf/shelves, in a horizontal position, through means to be placed between the support and shelf/shelves, for example a retaining cap, double-adhesive tape or spacer shims; or through reciprocal engagement means, such as notch-ribbing, serration-milling, pinhole and the like.

[0014] The mounting of a system of shelf assembly is extremely simple: it is sufficient to insert the shelf in the support and apply the cap so as to clamp it in a perfectly horizontal position. Alternatively it is sufficient to insert the shelf in the support, obtaining self-centring of the same.

[0015] The support according to the invention can be adapted to shelves of differing thickness thanks to the possibility of adjustement of the retaining cap, or by providing spacers which are placed between the support and the shelf.

[0016] The support according to the invention can be produced by moulding in order to fulfil market demands and maintain production costs low.

[0017] Further features of the invention will be made clearer by the following detailed description, referring to purely exemplary and therefore non-limiting embodiments thereof, illustrated in the accompanying drawings, in which:

Fig. 1 is a perspective view showing a mounting device for shelves, according to a first embodiment of the invention, applied to a wall and engaging a shelf, shown partially;

Fig. 1a is an exploded view of the mounting device of Fig. 1;

Fig. 2 is a side view, from the left, of the mounting device for shelves of Fig. 1;

Fig. 3 is a front view of the mounting device for shelves of Fig. 1;

Fig. 4 is a sectional view along the plane of section IV-IV of Fig. 3;

Fig. 5 is a sectional view, enlarged, taken along the plane of section V-V of Fig. 4;

Fig. 6 is a perspective view showing a mounting device for shelves, according to a second embodiment of the invention, applied to a wall support and engaging a shelf shown partially;

Fig. 7 is a side view, from the left, of the mounting device for shelves of Fig. 6;

Fig. 8 is a front view of the mounting device for shelves of Fig. 6;

Fig. 9 is a plan view from above of the mounting device for shelves of Fig. 6;

Fig. 10 is a side view, like Figs. 2 and 7, showing a third embodiment of the mounting device for shelves according to the invention;

Fig. 11 is a side view, like Figs. 2 and 7, showing a fourth embodiment of the mounting device for shelves according to the invention.

[0018] Figs. 1 - 5 show a first embodiment of a mounting device 100 according to the invention. Fig. 1 shows

the mounting device 100 positioned at the end of a shelf 50 which is shown only partially. However it has to be considered that, in general, in order to support a shelf, at least two mounting devices are required according to the invention, arranged near the two ends of the shelf.

[0019] The mounting device 100 comprises a body 102 formed by a plate having at least two through slot holes 104, 104', designed to hold means for attachment to a wall, such as screws or the like. More particularly a horizontal slot 104 and a vertical slot 104' are provided to allow a small mounting adjustments in these two directions.

[0020] The mounting device 100 has an upper retaining fin 105 and a lower retaining fin 108, both projecting at the front from the body 102. The upper retaining fin 105 has a substantially parallelepiped shape and, as shown in Fig. 5, has at least part of its lateral surfaces shaped like saw teeth 118.

[0021] The lower retaining fin 108 has a substantially T-shaped section and a horizontal plane 110 substantially at right angles to the body 102. A centring pin 111 is provided on the upper surface of the horizontal plane 110.

[0022] The shelf 50 is inserted between the upper retaining fin 105 and the lower retaining fin 108 so that it rests on the horizontal plane 110. The shelf 50 has a hole 115 which engages with the pin 111 of the lower retaining fin 108 to allow centring of the shelf 50 and prevent its horizontal translations.

[0023] A cap 160 is inserted on the upper retaining fin 105 so that the lower edge 170 of the cap 160 comes into contact with the upper surface of the shelf 50, clamping it in position on the lower retaining fin 110 and preventing its vertical movements. The cap 160 is preferably made of plastic or rubber or another appropriate soft material in order to exert a certain grip on the shelf 50.

[0024] The cap 160 is open at the rear in order to be inserted horizontally, with its lower edge creating friction on the upper surface of the shelf 50. The cap 160 locks onto the upper retaining fin 105.

[0025] The cap 160 thus enables the shelves 50 with a plurality of different thicknesses to be clamped very easily in position.

[0026] As shown in Fig. 4, the cap 160 has a substantially U-shaped section and, on the internal surface, is configured with saw teeth 161 (Fig. 5), suitable for engaging with corresponding saw teeth 118 of the upper retaining fin 105.

[0027] The cap 160, in addition to the rear opening, may have a base opening surrounded by said lower edge 170. Therefore the cap can also be inserted on the upper retaining fin 160 vertically and from above. In this case the cap 160 is lowered onto the upper retaining fin 105 so that its lower edge abuts against the upper surface of the shelf, ensuring a good hold of the shelf 50. The cap 160 is in any case extracted horizontally as the complementary configurations of the saw teeth 161 and 118 prevent extraction from above. In order to improve the grip of the lower edge 170 of the cap 160 on the shelf 50, this edge 170 can be covered with a rubber lining.

[0028] Figs. 6 - 9 show an assembly device 1 according to a second embodiment of the invention. The assembly device 1 comprises a body 2 formed by a section bar with a substantially C-shaped section, suitable for engaging in a wall fastening element or vertical upright 3 also formed by a C-shaped section bar which is attached vertically to a wall or partition. The mounting device 1 is anchored to the wall fastening element 3 by means of pins or bolts 4, arranged laterally.

[0029] The mounting device 1 has an upper retaining fin 5 which projects at the front from the body 2, forming a perfectly horizontal plane, substantially at right angles to the plane of the front surface of the body 2.

[0030] Under the upper retaining fin 5, a support 6 projects, from the body 2, at the front, and is elbow-curved so as to define a concave surface 7 under the upper retaining fin 5. The support 6 ends in a lower retaining fin 8 which defines a horizontal plane perfectly parallel to the plane defined by the upper retaining fin 5.

[0031] As shown more clearly in Fig. 7, the elbow-shaped support projects horizontally from the body 2, with a length substantially equal to the length of the upper retaining fin 5, and the lower retaining fin 8 has an approximately equal length. The vertical distance between the lower surface of the upper retaining fin 5 and the upper surface of the lower retaining fin 8 is normally greater than the potential thickness of a standard shelf 50.

[0032] To assemble the shelf 50, it is sufficient to insert one end 10 of the shelf 50, slanting obliquely, as shown by a dotted line in Fig. 7, in the cavity formed between the lower surface of the upper retaining fin 5 and the concave surface 7 of the elbow support 6. When the shelf 50, is let free it pivots on the edge of the lower retaining fin 8, until the upper surface of the end 10 of the shelf 50 abuts against the lower surface of the upper retaining fin 5, while part of the lower surface of the shelf 50 rests on the lower retaining fin 8, in such a way that the shelf 50 is arranged in a perfectly horizontal position.

[0033] According to the thickness of the shelf 50, a spacer 20 may be provided and placed between the lower retaining fin 8 and the shelf 50, so as to ensure that the shelf 50 always remains perfectly horizontal. As can be seen in Fig. 8, the spacer 20 has a dovetail projection 21, which engages in a housing 22 formed in the lower retaining fin 8, to avoid any movements of the spacer 20.

[0034] In order to centre the shelf 50 perfectly on the mounting device 1 and to avoid accidental release of the shelf 50 from the mounting device 1, the shelf 50 may have milling 30 and the upper retaining fin 5 may have a serration 31 which projects downward from its lower edge. In this way the serration 31 engages in the milling 30, preventing sliding of the shelf on a horizontal plane.

[0035] In the description of the subsequent embodiments of the invention, reference numerals identical to

those used in the second embodiment are utilised to denote the same or corresponding parts.

[0036] Fig. 10 shows a third embodiment, substantially similar to the second embodiment. In this third embodiment the shelf 50 has at one end ribbing 51 arranged at right angles to the plane of the shelf 50 so as to form a substantially L-shaped section.

[0037] Correspondingly the upper retaining fin 5 of the mounting device 1 has a curved part 55 projecting from the body 2 and ending in a plane 56 substantially parallel to the lower retaining fin 8. The curved part 55 defines a notch-shaped housing 57 turned towards the concave surface 7 of the support 6 of the lower retaining fin 8. In this way the ribbing 51 of the shelf 50 engages in the notch-shaped housing 57, avoiding any horizontal sliding of the shelf 50.

[0038] Fig. 11 shows a fourth embodiment of the invention, substantially similar to the second embodiment, wherein the spacer 20, the serration 31 of the upper retaining fin 5 and the milling 30 of the shelf 50 have been eliminated. In this fourth embodiment, in order to avoid horizontal sliding of the shelf, two strips of double-adhesive tape 60, 61 are provided, positioned on the lower surface of the upper retaining fin 5 and on the upper surface of the lower retaining fin 8 respectively. In this way the shelf 50 is held, sandwiched, between the two strips of double-adhesive tape 60, 61.

[0039] Obviously changes can be made. For example, in the first embodiment, other engagement and centring means can be provided between the shelf 50 and the lower retaining fin 108, such as serration-groove or double-adhesive surfaces.

[0040] In the subsequent embodiments other means can be provided to aid self-centring of the shelf 50 and to avoid any horizontal sliding. For example other complementary engagement means, such as pin and hole or the like, can be provided between the shelf 50 and assembly device 1.

[0041] Obviously, in all the embodiments of the invention, bodies 102 and 2 can be provided indiscriminately, suitable for being attached directly to a wall or to a wall fastening 3 respectively.

[0042] In the case of very long shelves, several mounting devices 100 or 1, distanced horizontally, can clearly be used.

[0043] In the case of mounting of shelf assemblies, several mounting devices 100 are used, attached to a wall, or several mounting devices 1, attached to the same wall fastening element 3 and distanced from each other vertically are used, so as to obtain a shelf unit formed by a shelf assembly distanced vertically and parallel to each other.

[0044] Variations, modifications and changes, within the reach of a skilled in the art, made to the aforesaid embodiments, in any case come within the scope of the invention defined by the accompanying claims.

Claims

1. A mounting device (100; 1) for shelves (50), suitable for being attached to a wall or to a wall fastening element (3) anchored to a wall or partition, characterised in that said mounting device (100; 1) comprises an upper retaining fin (105; 5) and a lower retaining fin (108; 8), both projecting horizontally therefrom, at least one of said retaining fins forming a horizontal plane distanced vertically from the other fin by a distance equal at least to the thickness of a shelf (50), so that said shelf (50) can be arranged horizontally between said upper and lower retaining fins (5, 8), clamping means being provided to clamp the shelf (50) in position.

2. A device according to claim 1, characterised in that a cap (160) is provided, engaging with one of said retaining fins (105) so that the edge of said cap (160) abuts against the surface of said shelf (50), clamping it in position.

3. A device according to claim 2, characterised in that engagement means (161, 118) are provided, suitable for allowing engagement, at an adjustable height, of said cap (160) on said retaining fin (105).

4. A device according to claim 3, characterised in that said engagement means are teeth (118, 161), provided on the external lateral surfaces of said retaining fin (105) and on the internal lateral surfaces of said cap (160) respectively.

5. A device according to any one of the preceding claims, characterised in that means (115; 111; 30, 31; 51, 57; 60; 61) are provided to allow centring of the shelf (50) and/or to avoid horizontal sliding of the shelf (50).

6. A device according to claim 5, characterised in that said means for allowing centring of the shelf (50) and/or for avoiding horizontal sliding of the shelf (50) are means for reciprocal engaging between said shelf (50) and said upper and/or lower retaining fins (5, 8), comprising a hole (115) or milling (30) on the surface of the shelf (50) and a pin (111) or serration (31) on the surface of one of the two retaining fins.

7. A device according to claim 6, characterised in that said reciprocal engagement means are ribbing (51) at the end of the shelf (50) and a notch housing (57) formed in the upper retaining fin (5).

8. A device according to claim 5, characterised in that said means for avoiding horizontal sliding of the shelf (50) comprise at least one double-adhesive strip (60, 61) positioned on the lower surface of the

upper retaining fin (5) and/or on the upper surface of the lower retaining fin (8) respectively.

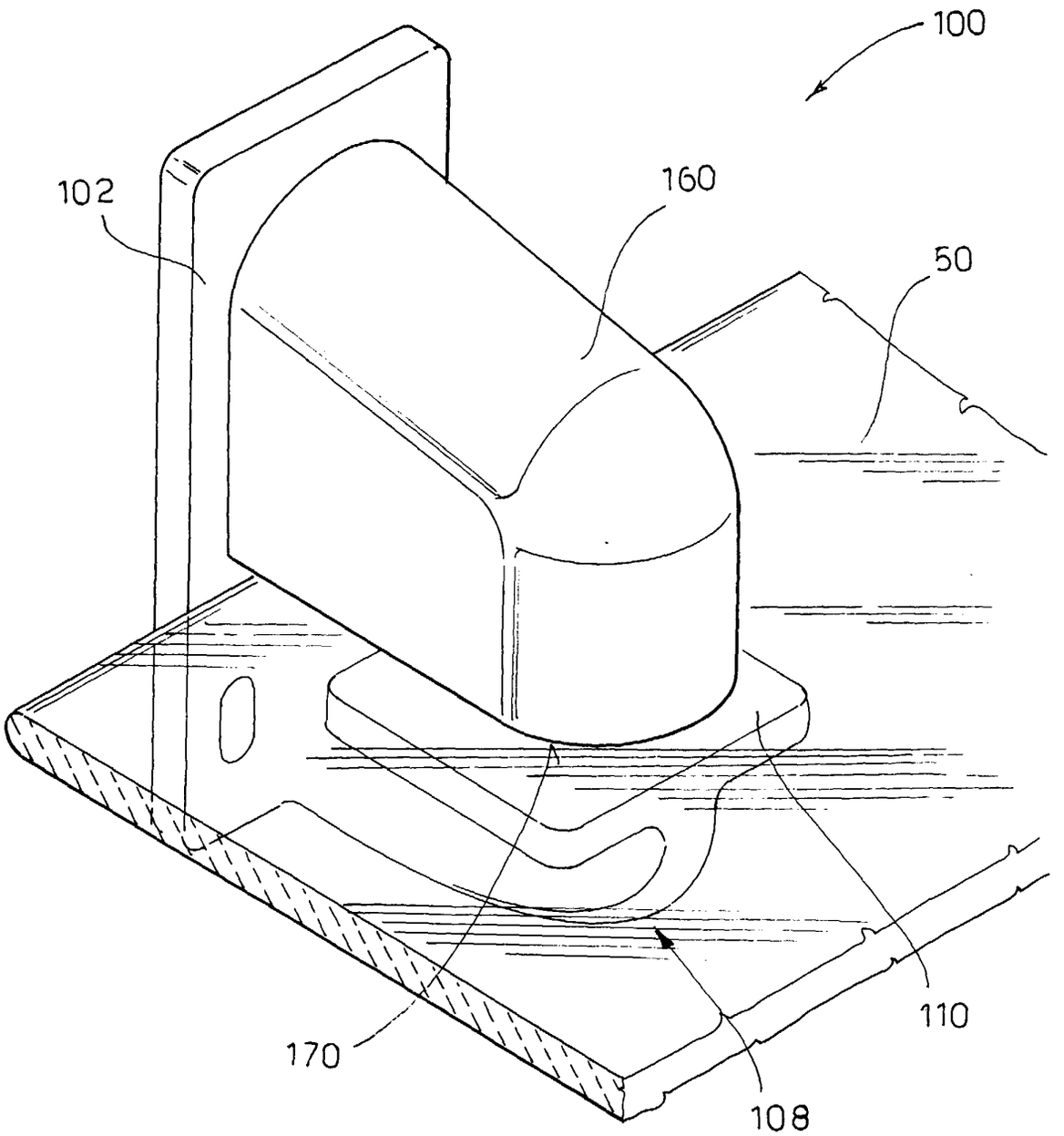
9. A device according to claim 1, characterised in that said lower retaining fin (8) is held by a curved support (6) connected to the mounting device (1), forming a concave surface (7) turned towards the upper retaining fin (5), so that said concave surface can hold one end (10) of the obliquely slanting shelf during assembly.

10. A device according to any one of the preceding claims, characterised in that spacer means (20) are also provided, suitable for being placed between the shelf (50) and said lower and/or upper retaining fin (8, 5).

11. A device according to any one of the preceding claims, characterised in that it comprises a plate (102) with slot holes (104) suitable for holding means for attachment to a wall.

12. Device according to any one of claims 1 to 10, characterised in that it comprises a body (2) having a substantially C-shaped section, suitable for being attached to a wall fastening element. (3).

FIG.1



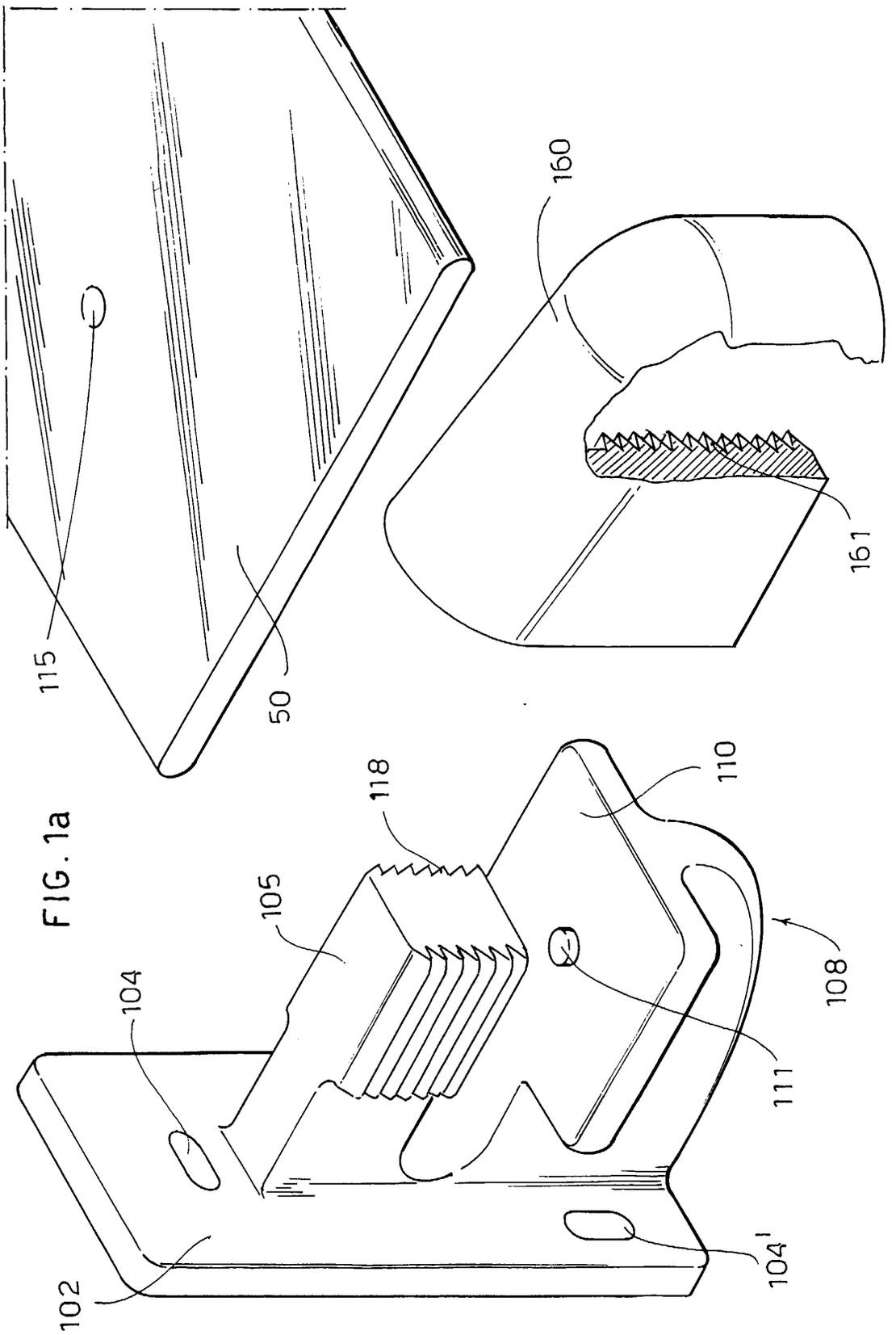


FIG. 1a

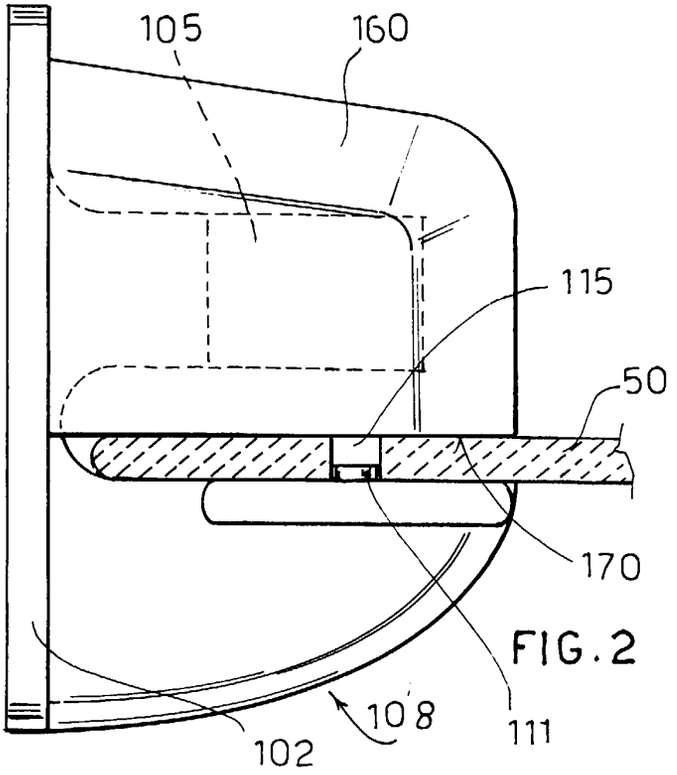


FIG. 2

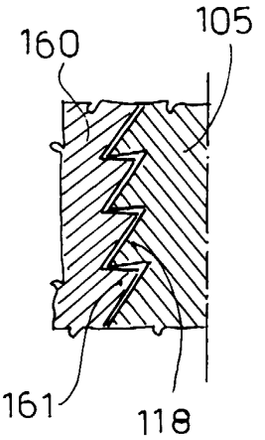


FIG. 5

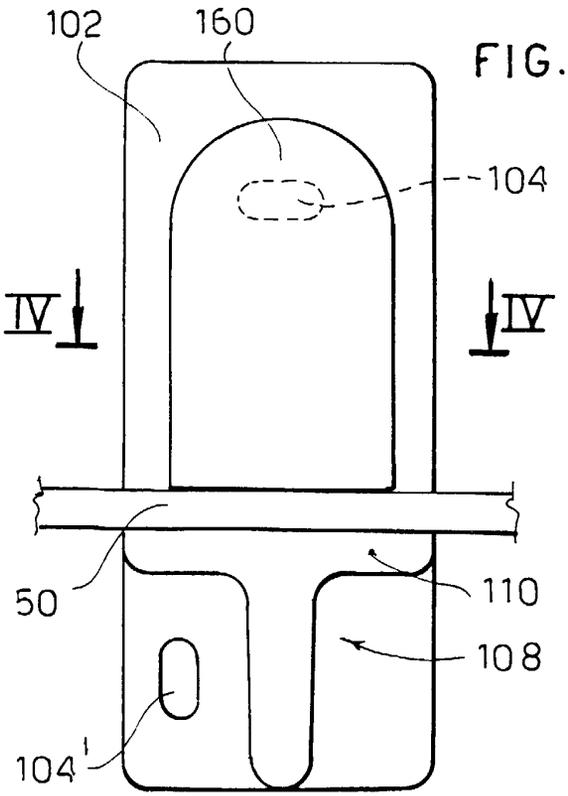


FIG. 3

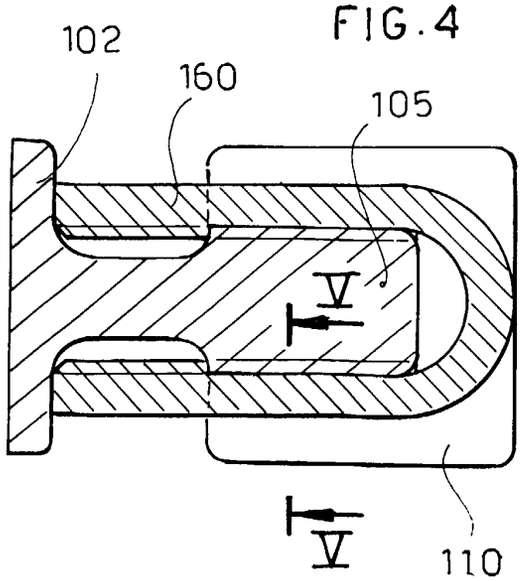


FIG. 4

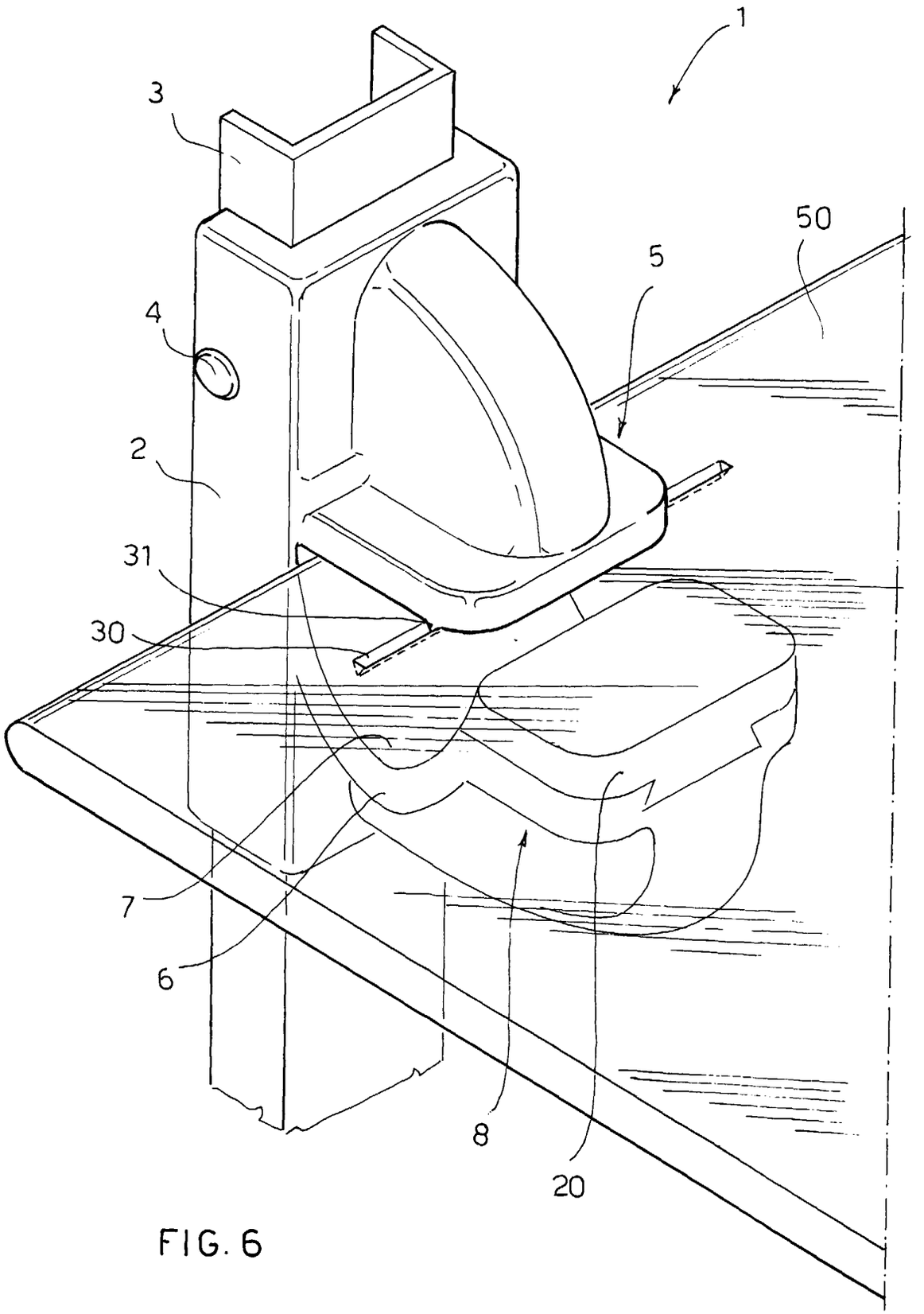


FIG. 6

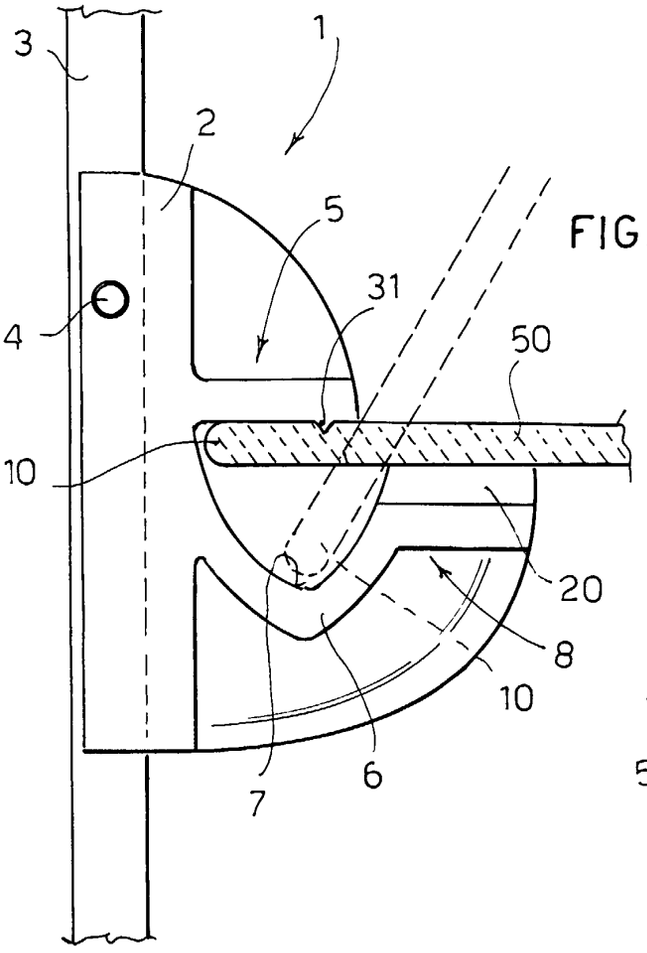
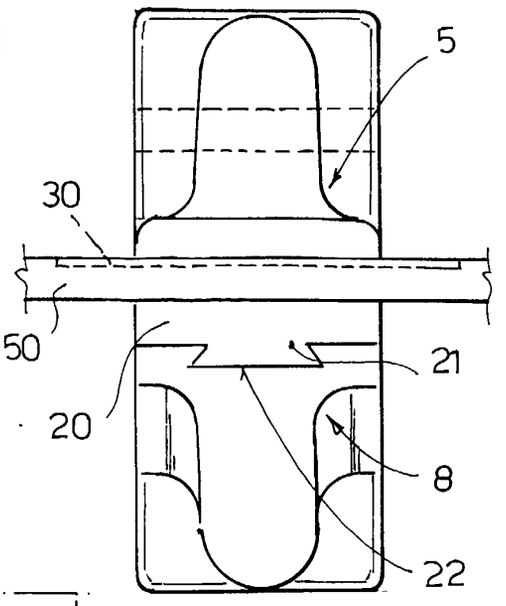


FIG.7

FIG.8



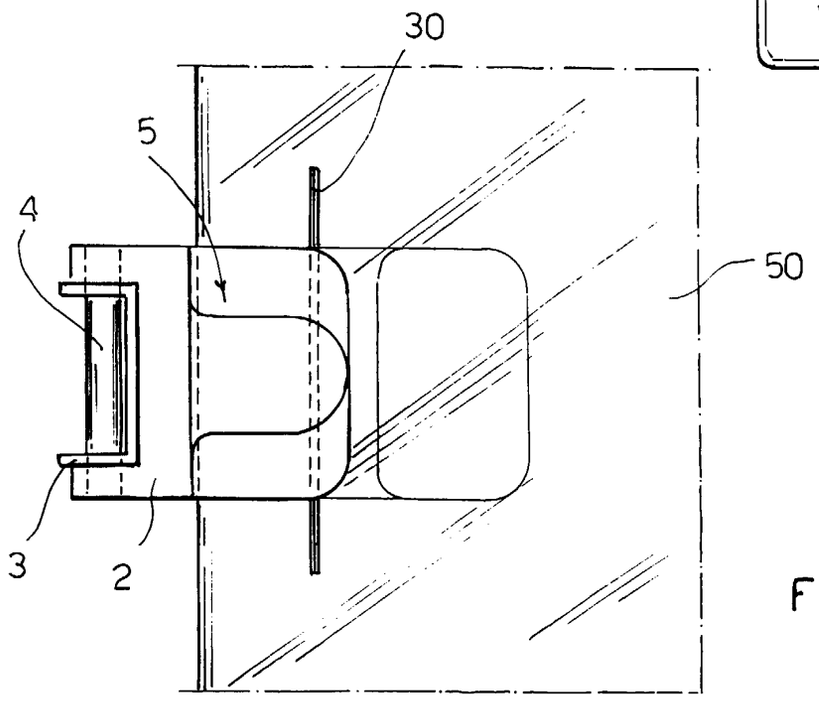


FIG.9

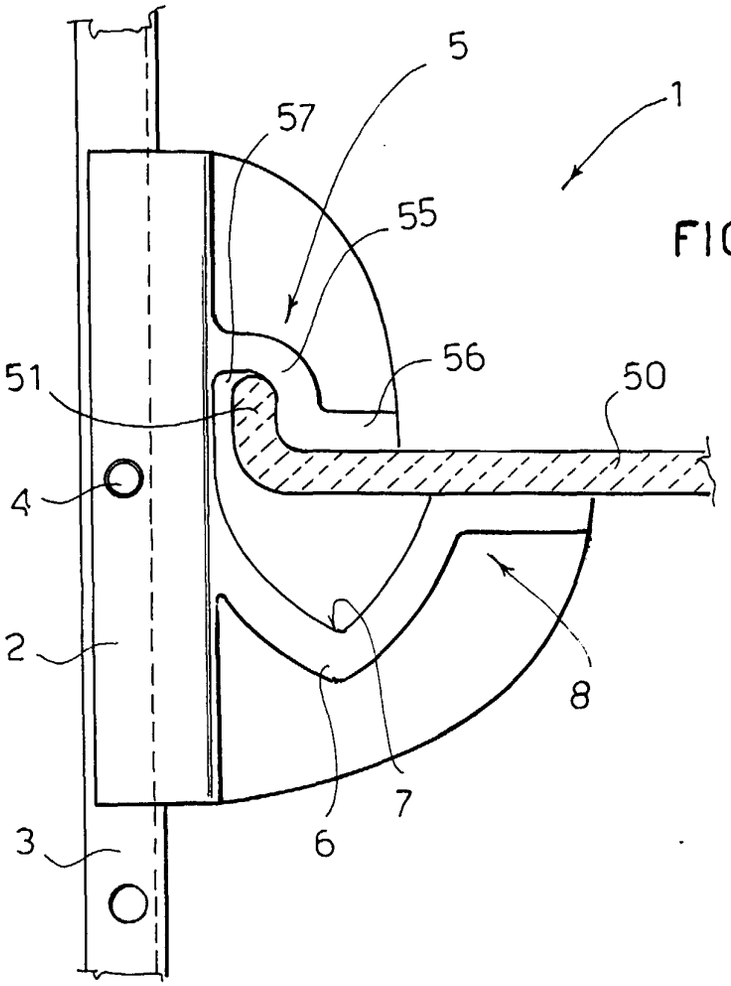


FIG. 10

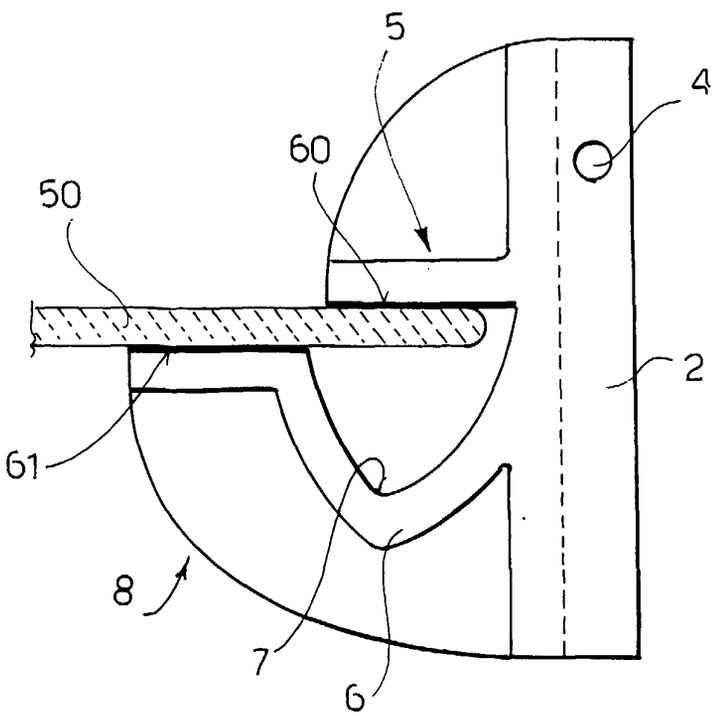


FIG. 11

European Patent Office

EUROPEAN SEARCH REPORT

Application Number
EP 99 83 0547

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.7)
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A		12	

X	DE 38 22 468 A (LIMBERG KLAUS; HUETTISCH HANSPETER DIPL. DESIG. (DE)) 31 August 1989 (1989-08-31) * abstract * * figures 1,2 *	1,10	
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A	US 4 735 325 A (REMMERS LEE) 5 April 1988 (1988-04-05) * abstract * * figures 1,1A,11 *	11,12	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
BERLIN	19 January 2000	Schaeffler, C

CATEGORY OF CITED DOCUMENTS

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19-01-2000

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB 368048 A		NONE	
DE 3822468 A	31-08-1989	NONE	
US 4735325 A	05-04-1988	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82