

(19)



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(11)

**EP 0 943 263 A1**

(12)

## EUROPEAN PATENT APPLICATION

(43) Date of publication:  
22.09.1999 Bulletin 1999/38

(51) Int. Cl.<sup>6</sup>: **A47B 47/00**, A47B 87/02

(21) Application number: **98610007.1**

(22) Date of filing: **18.03.1998**

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

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### (54) A shelf system and a method for the manufacturing of said system

(57) The shelf system is composed of horizontal shelf members (1) and vertical partition and support members (2,) designed as L-shaped angular members comprising a partition member (9) having upper and lower edges (10, 11) for abutting adjacent shelf members (1) and a backside member (12,) perpendicular to the partition member (9) and having upper and lower edges (13, 14) projecting a predetermined distance

beyond the upper and lower edges (10, 11) of the partition members (9) for joining with said adjacent shelf members (1) by fitting the upper and lower edges (13, 14) of the backside member (12) into grooves (8) extending in the shelf members parallel to front and/or rear edge surfaces (7) thereof and having substantially the same depth as said predetermined distance.

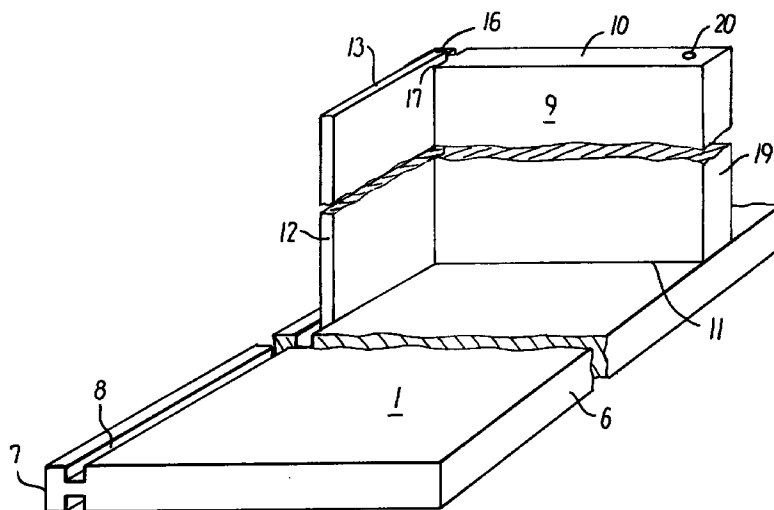


FIG. 5

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## Description

[0001] The present invention relates to a shelf system composed of horizontal shelf members in the form of plate members of wood or a similar material and vertical partition and support members.

[0002] Conventional, unsupported racks and shelf systems most often comprise bottom, top and end members which are permanently joined in a fixed frame structure, in which the horizontal shelf members are placed in normally detachable shelf carriers secured to the end members or to vertical partition walls in the frame structure. Such racks or shelf systems are therefore i.a. comparatively space-demanding during transportation and storing.

[0003] In conventional wall or suspension shelf systems the horizontal shelf members are most often secured in movable positions to a structural member usually composed of vertical rail members secured to a wall, which does, to a considerable degree, make the erecting difficult.

[0004] The object of the invention is to provide a shelf system which may be erected as a freestanding, self-supporting structure consisting of simple construction elements, which require very little space, and having very simple joints, whereby the erection becomes considerably easier than in case of conventional wall or suspension shelves, the structure having at the same time a rigidity and stability which allows the erecting of comparatively big shelf systems.

[0005] To meet this object, the shelf system according to the invention is characterized in that the vertical partition and support members are designed as L-shaped angular members comprising a partition member having upper and lower edges for abutting adjacent shelf members and a backside member perpendicular to the partition member and having upper and lower edges projecting a predetermined distance beyond the upper and lower edges of the partition members for connection with said adjacent shelf members by fitting the upper and lower edges of the backside member into grooves extending in the shelf members parallel to front and/or rear edge surfaces thereof and having substantially the same depth as said predetermined distance.

[0006] Shelf systems according to the invention may thus be supplied as knock-down systems consisting of the horizontal shelf members and the vertical partition and support members, from which shelf systems in various embodiments may be erected solely by joining the shelf members and the vertical partition and support members by said fitting of the upper and lower edges of the backside members of the L-shaped partition and support members into the grooves extending along the rear edges of the shelf members. It has turned out that a satisfactory rigidity and stability may be obtained without the use of adhesive joints or the like, a fact which gives flexible possibilities of rebuilding the shelf system according to demand.

[0007] The shelf members may be manufactured and delivered in varying lengths for the erection of shelf systems of differing size, just as the partition and support members may be supplied in different heights in order to make varying spacing of the shelves possible.

[0008] Advantageous embodiments and features of the shelf system according to the invention are defined in dependent claims 2-12.

[0009] In a preferred embodiment the shelf members and the partition members are designed with the same cross-sectional profile with grooves at both sides of the plate.

[0010] This provides an advantageous and rational production by a manufacturing method which according to the invention is characterized in that shelf members and partition members are cut in lengths from elongate plate pieces having said cross-sectional profile, following which the partition members are joined with backside members.

[0011] The invention will now be explained in detail in the following with reference to the drawing, in which

Fig. 1 illustrates a non-limiting example of a shelf system according to the invention,

Fig. 2 shows an embodiment of a horizontal shelf member,

Figs 3 and 4 two alternative embodiments of the vertical partition and support members,

Fig. 5 illustrates the joining of a shelf member as shown in Fig. 2 with a vertical partition and support member as shown in Fig. 2,

Fig. 6 shows a modification of a partition and support member as shown in Fig. 3, and

Fig. 7 shows a shelf system according to the invention designed as a book tower.

[0012] The detached, self-supporting shelf system of Fig. 1 is generally composed of through-going horizontal shelf members 1 and vertical partition and support members 2 placed between superjacent shelf members. The shelf system may at the top be provided with a special top plate member 3, just as the vertical support members at the ends of the shelf system may be designed as special end members 4. The shelf system may be erected on a conventional base member 5, which does not form part of the present invention.

[0013] In the embodiment shown in Fig. 2, the shelf member 1 is made from wood or a similar material, for instance a hard fibre plate product, of a conventional oblong, rectangular shape with a front edge 6 and a rear edge 7. Parallel with and at a short distance from the rear edge 6, the shelf member 1 is throughout its length provided with a groove 8 of rectangular or square cross-section for receiving a backside member of the partition and support member 2 shown in Fig. 3.

[0014] As shown in Fig. 2, grooves 8 may be provided in both sides of the shelf, but in particular in case of a top plate member 3, as shown in Fig. 1, it may for aes-

thetic reasons be preferred only to provide grooves in the bottom side.

[0015] As shown in Fig. 3, the partition and support member 2 is designed as an L-shaped angular member composed of a partition member 9 with upper and lower edge surfaces 10 and 11 for abutment against adjacent shelf members 1 and a backside member 12 perpendicular to the partition member 9 and having upper and lower edge surfaces 13 and 14 projecting beyond the upper and lower edge surfaces 10 and 11 of the partition member by a predetermined distance corresponding to the depth of the groove 8 in the shelf member 1. The backside member 12 has a thickness which corresponds to the width of the groove 8 in the shelf member 1, such that the partition and support member 2, as shown in Fig. 5, may be connected with the shelf member 1 by fitting the upper or lower edge 13 or 14 of the backside member 12 into the groove 8 on the upper side or the bottom side of the adjacent shelf member 1.

[0016] When the backside member 12 has a thickness of 3 mm, suitable dimensions of the groove 8 may be 3 x 3 mm, just as the distance of the groove 8 from the rear edge surface 7 of the shelf member 1 may conveniently be 3 mm.

[0017] In the embodiment shown in Fig. 3, the partition and support member 2 is, like the shelf member 1, made from wood or a similar material, and the backside member 12 is permanently connected with the partition member 9 by a side edge 16 thereof being glued into a vertical groove 17 parallel to the rear edge surface 18 of the partition member 9.

[0018] The vertical grooves 17 are preferably provided in both sides of the partition member 9, which, from a manufacturing and mounting point of view, has the considerable advantage that shelf members 1 and partition members 9 may be manufactured with the same cross-sectional profile. Thereby, a shelf system may according to the invention be manufactured from only two components, namely a plate member provided with a groove in both sides, from which shelf members 1 and partition members 9 may be cut in variable lengths, and a thinner plate member for the manufacture of the backside members 12.

[0019] The very simple construction of the shelf system with the shelf members 1, as shown in Fig. 2, and the particular L-shaped partition and support members 2, as shown in Fig. 3, has turned out to impart a particularly good rigidity and stability to the shelf structure, in which there is no need for glued joints between the shelf members and the partition and support members.

[0020] If an improved safety as to positioning is desired in respect of the partition and support members 2 relative to the shelf members 1, an engaging joint may be provided for instance in the vicinity of the front edge surface 19 of the partition member 9, for instance a mortise or dowel joint as shown by a pin or a dowel hole 20 in Fig. 3.

[0021] By the alternative embodiment shown in Fig. 4,

a partition and support member 15 may be manufactured in one piece as an angled metal sheet member 21, for instance with a thickness of 1.25 mm. Of course, the dimensions of the groove 8 in the shelf members 1 have to be adapted accordingly. Corresponding to the upwards and downwards projecting upper and lower edges 13, 14 of the backside member 12 in Fig. 3, the backside member 22 of the metal sheet member 21 in Fig. 4 is provided with upwards and downwards extending edge protrusions 22a at the upper edge and the bottom edge, whereas at its front edge the partition member 23 is reinforced by e.g. a square bracing profile 23a.

[0022] Fig. 6 shows an alternative embodiment of the partition and support member, in which the backside member 12a is permanently connected with the partition member 9a by glueing in a rebate 24 at the rear edge 18a of the plate member 9a.

[0023] In Fig. 7 the shelf system according to the invention is shown in a particular embodiment as a book tower with a substantially square base. The shelf members 25 have a square outer outline and a groove 26, which extends circumferentially in a substantially square form and has groove sections 26a extending in parallel with exterior edges 27 of the shelf member 25' in a distance corresponding to the width of the partition members 9 of the partition and support members 2, which may be manufactured as shown in Fig. 3, or alternatively as shown in Fig. 4.

## Claims

1. A shelf system composed of horizontal shelf members in the form of plate members of wood or a similar material and vertical partition and support members (2, 21), **characterized** in that the vertical partition and support members (2, 21) are designed as L-shaped angular members comprising a partition member (9, 23) having upper and lower edges (10, 11) for abutting adjacent shelf members (1) and a backside member (12, 22) perpendicular to the partition member (9, 23) and having upper and lower edges (13, 14, 22a) projecting a predetermined distance beyond the upper and lower edges (10, 11) of the partition members (9, 23) for connection with said adjacent shelf members (1, 25) by fitting the upper and lower edges (13, 14, 22a) of the backside member (12, 22) into grooves (8, 26) extending in the shelf members parallel to front and/or rear edge surfaces (7, 27) thereof and having substantially the same depth as said predetermined distance.
2. A shelf system according to claim 1, **characterized** in that said partition and support members are formed by angular metal sheet members (21) with a bracing profile (23a) at a front edge of the partition member (23).

3. A shelf system according to claim 1, **characterized** in that the partition and support members (12) are composed of angled plate members (9, 12; 9a, 12a) of wood or a similar material in a permanent mutual connection, the partition member (9, 9a) having a substantially bigger thickness than the backside member (12, 12a). 5
4. A shelf system according to claim 3, **characterized** in that the backside member (12, 12a) is secured in a recess (17, 24) extending along a rear edge (18) of the partition member. 10
5. A shelf system according to claim 4, **characterized** in that said recess comprises a groove (17) parallel to the rear edge (18) of the partition member (9), said groove having substantially the same cross-section as the grooves (8) in the shelf members (1). 15
6. A shelf system according to claim 4, **characterized** in that said recess comprises a rebate (24) along the rear edge of the partition member (9a). 20
7. A shelf system according to any of claims 1 - 6, **characterized** by comprising a horizontal top plate member and a vertical L-shaped end member with grooves (8, 17) in one of the sides of the plate only. 25
8. A shelf system according to any of claims 1 - 6, **characterized** in that it is designed as a book tower with substantially square base form and comprises shelf members (25) with outer edges (27) following said base form and having a groove (26) extending circumferentially in a substantially square form in at least one side of the shelf member, said groove being composed of groove sections (26a) extending parallel to the outer edges (27) at a distance therefrom corresponding to the width of the partition members (9). 30 35 40
9. A shelf system according to any of the preceding claims, **characterized** in that the partition and support members (2) are connected with the shelf members (1) by joints, e.g. mortise or dowel joints (20), provided at the front edges (19) of the shelf members and the partition members (9). 45
10. A shelf system according to claim 5, **characterized** in that the partition member (9) is provided with grooves (17) at both sides of the plate. 50
11. A shelf system according to any of the preceding claims, **characterized** in that the shelf members (1) are provided with grooves (8) at both sides of the shelf. 55
12. A shelf system according to claim 10 and 11, **characterized** in that the partition member (9) and the

shelf members (1) are designed with the same cross-sectional profile.

13. A method for the manufacture of a shelf system according to claim 12, **characterized** in that shelf members (1) and partition members are cut in lengths from elongate plate pieces having said cross-sectional profile, following which the partition members (9) are joined with backside members (12).

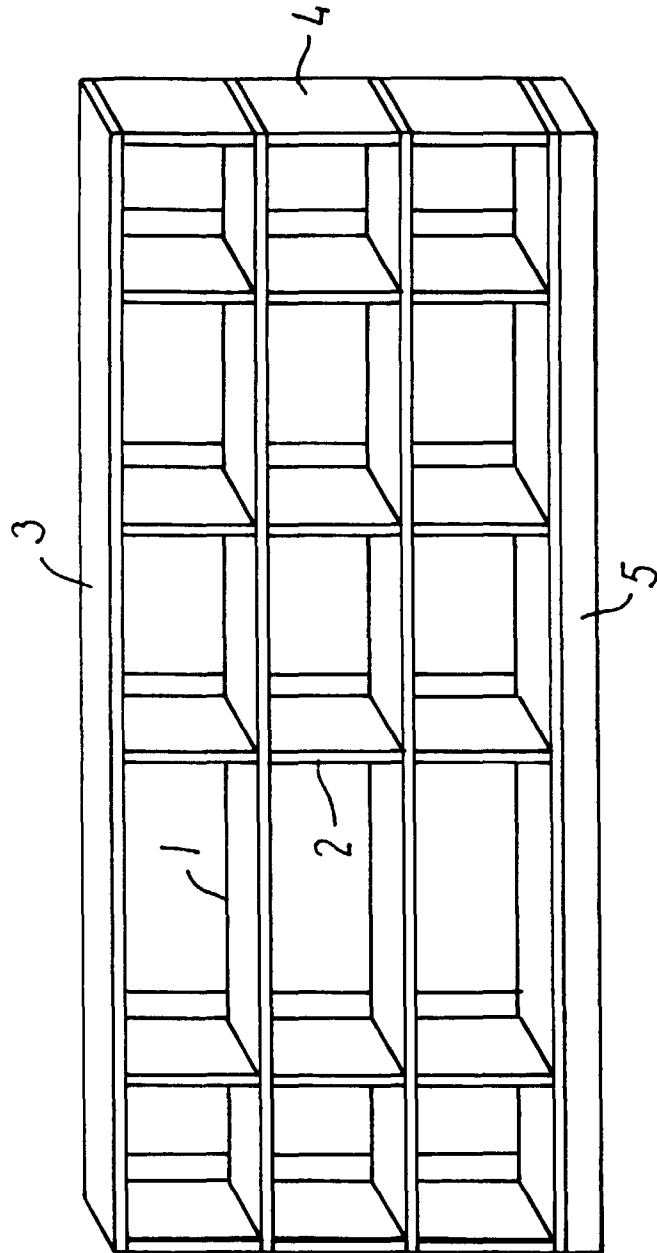
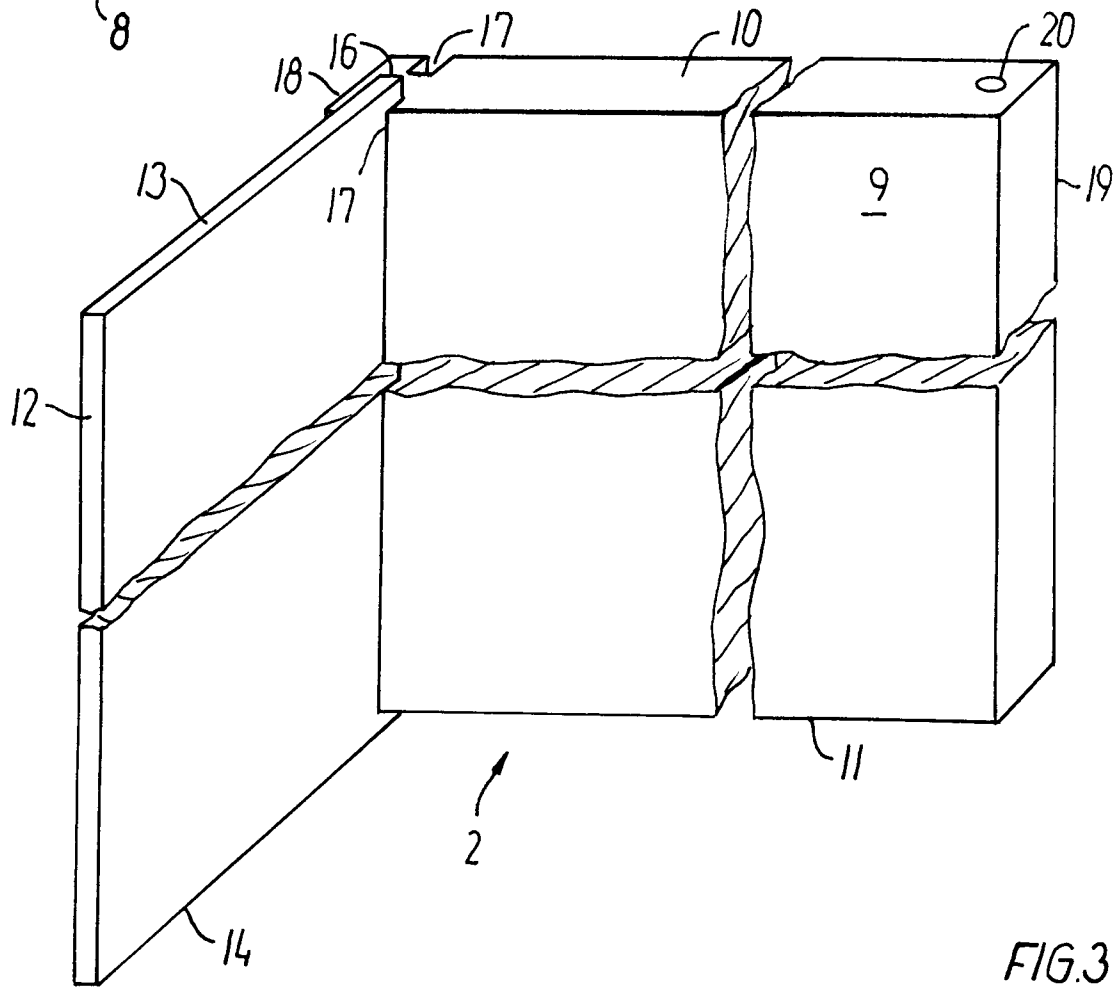
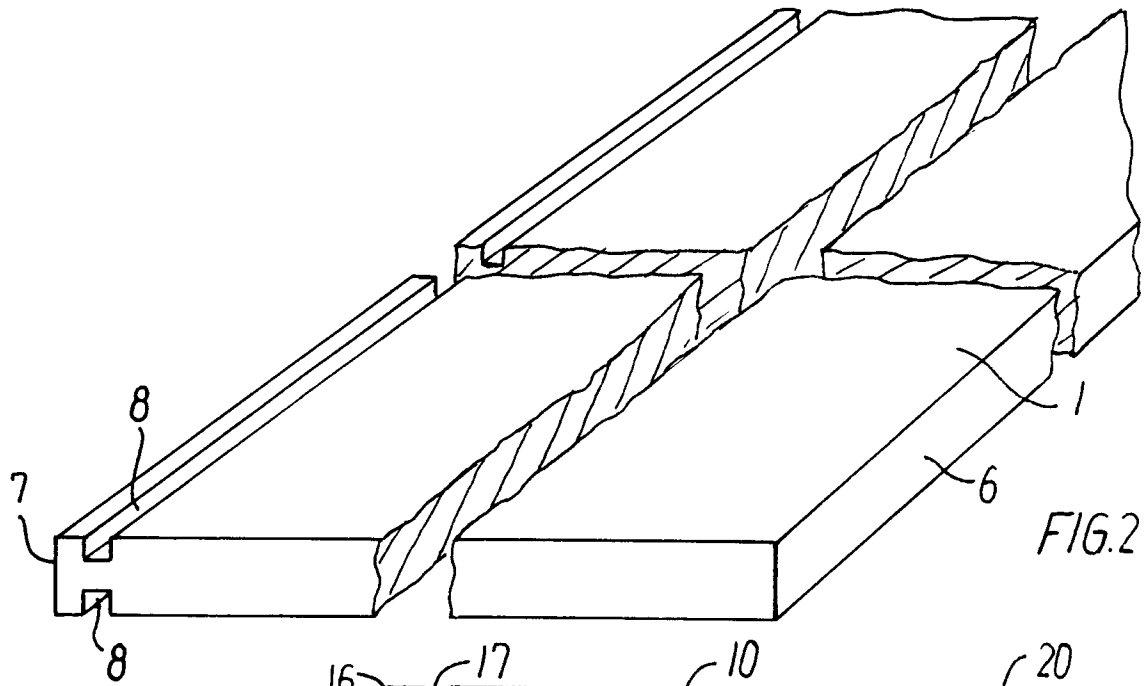


FIG. 1



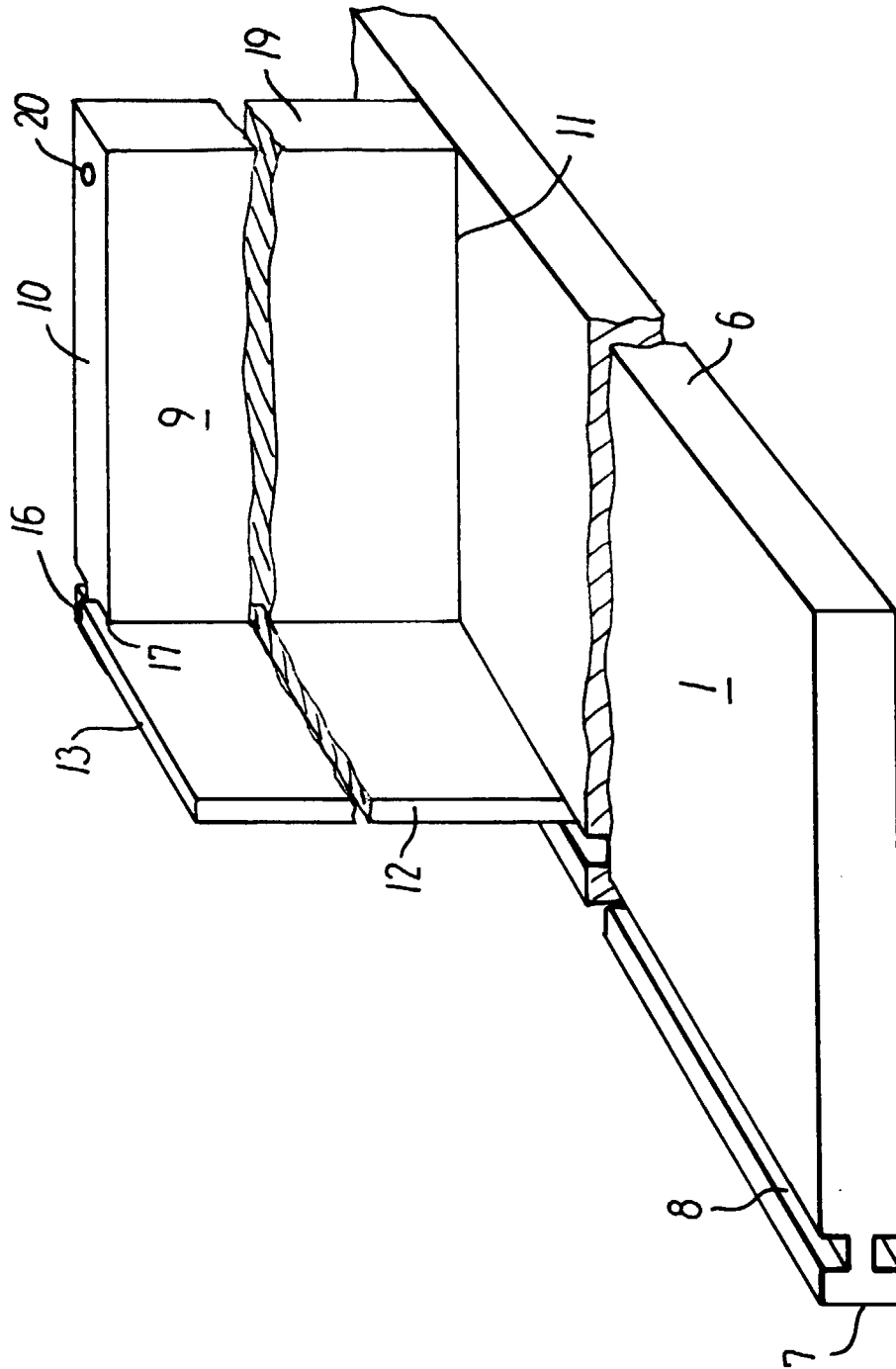
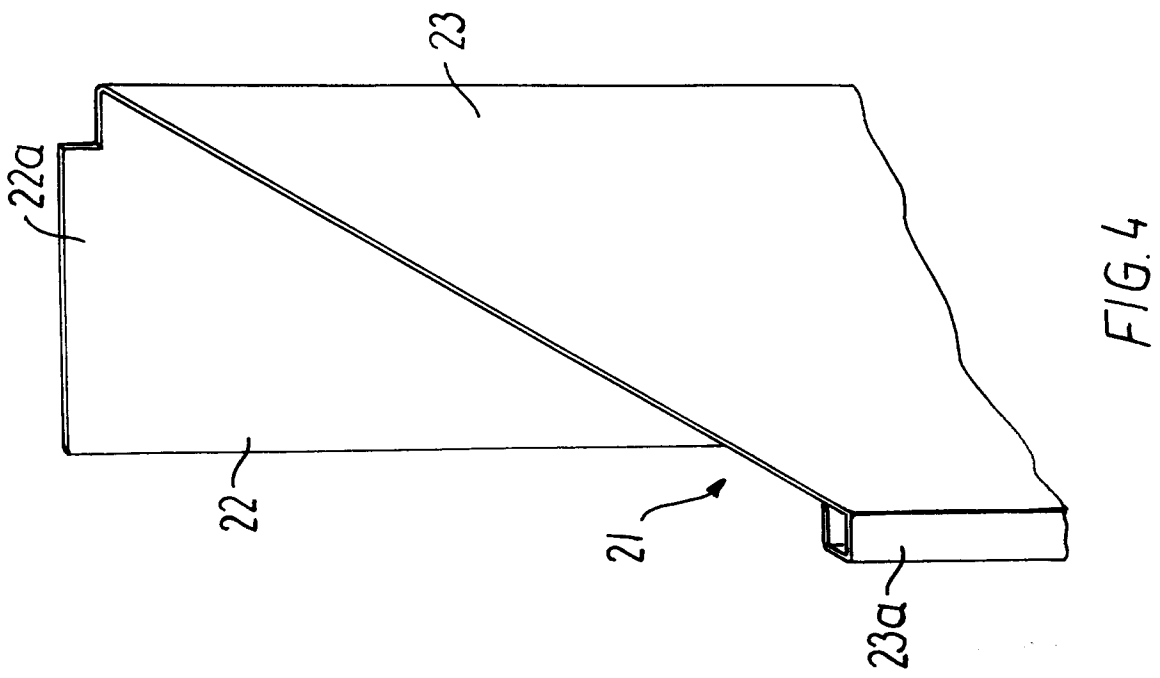
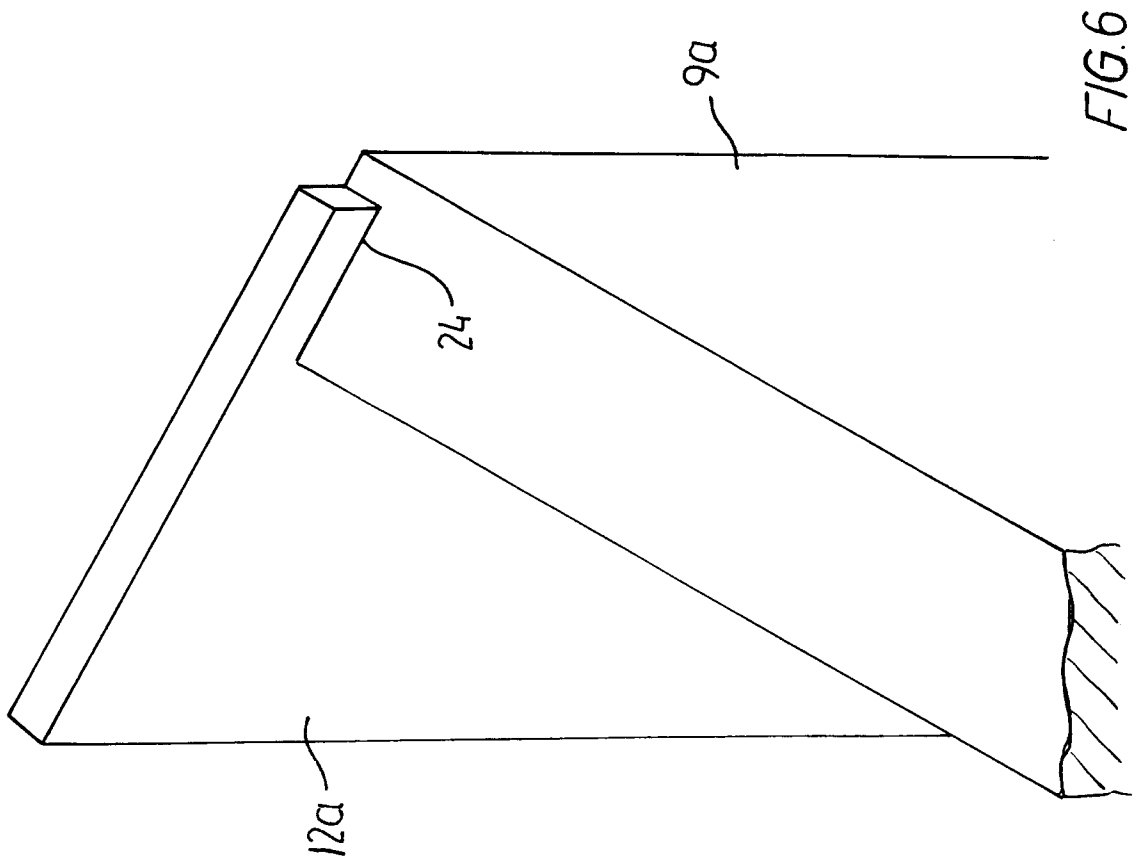


FIG. 5





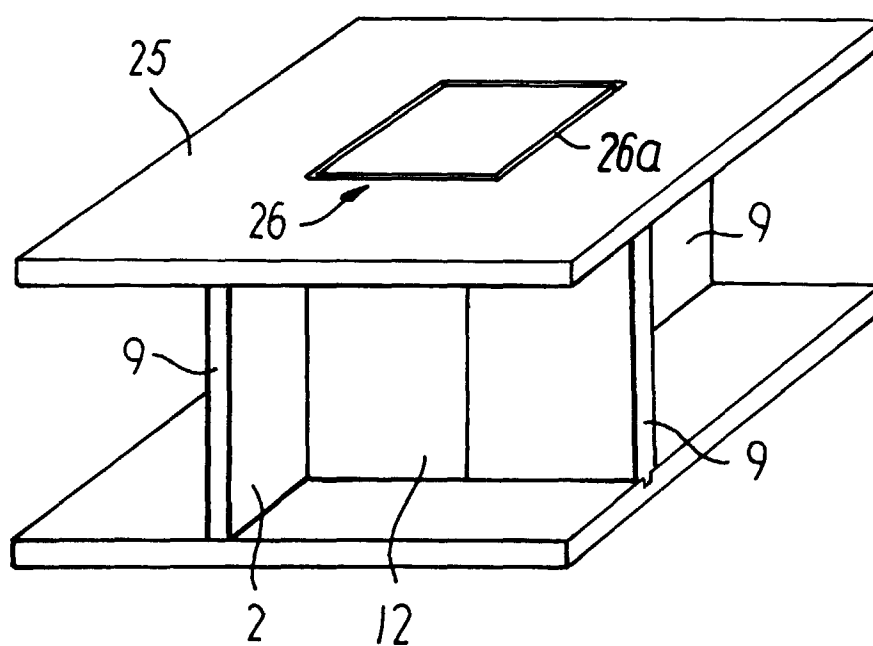


FIG. 7



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# EUROPEAN SEARCH REPORT

Application Number  
EP 98 61 0007

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	FR 2 731 477 A (LIARD) 13 September 1996 * abstract; figures 1,2 * ---	1	A47B47/00 A47B87/02
A	DE 92 06 527 U (PLASTICS DESIGNERS & CONSULTANTS GMBH) 10 September 1992 * claims 1,4; figure 2 * ---	1-3	
A	US 4 232 916 A (DANIEL CORREIA) 11 November 1980 * abstract; figure 3 * * column 3, line 28 - line 32 * ---	1,3,4	
A	US 3 644 008 A (OVERBY) 22 February 1972 * abstract; figure 1 * -----	1	
			TECHNICAL FIELDS SEARCHED (Int.Cl.6)
			A47B
The present search report has been drawn up for all claims			
Place of search <b>THE HAGUE</b>		Date of completion of the search <b>18 August 1998</b>	Examiner <b>Jones, C</b>
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