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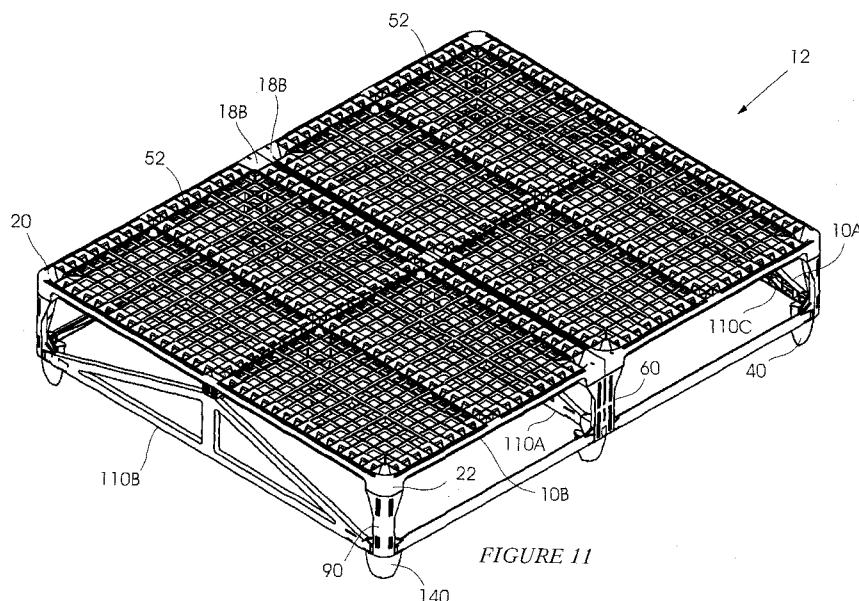
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(54) **Title:** BED BASE



(57) **Abstract:** A bed base (12) formed from two panels (10A, 10B) each of which is moulded from a plastics material. Each panel (10A, 10B) has a frame (14) which bounds and supports a planar grid structure (36). The panels (10A, 10B) abut each other with the respective grid structures (36) coplanar and are supported above ground level by a number of legs (60, 80, 90) which, additionally, keep the panels (10A, 10B) secured to each other.

BED BASE

BACKGROUND OF THE INVENTION

[0001] This invention relates to a base for a bed.

[0002] A bed base can be made from a number of panels or sections, of wood or plastic, which are glued or otherwise secured together before being upholstered. This type of bed base, which is assembled under factory conditions, can be difficult to handle and, due to its size, expensive to transport.

[0003] Various alternative constructional techniques have been proposed to facilitate manufacture of a bed base or to allow for adjustability. Reference is made, for example, to the specifications of the following US patents and patent applications: 6134724, 685714, 4788727, T101501, 2010/0031440, 7631375, 4319370, 2009/0139027, 6857148 and 4319370.

[0004] In most instances the bed bases require substantial quantities of material and, consequently, are heavy. Other bed bases do not address the requirement of a compact arrangement which can reduce storage and transport problems.

[0005] An object of the present invention is to provide a bed base which, at least in a preferred embodiment, can be mass-produced, is of relatively low weight, and can be stored and transported in a compact form, and which lends itself to easy assembly.

SUMMARY OF THE INVENTION

[0006] The invention provides, in the first instance, a panel for use in a bed base which includes a rectangular frame, a grid structure which is bounded by the frame

and respective securing formations located at least at corners of the rectangular frame.

5 **[0007]** The invention further extends to a bed base which includes at least two panels, each panel being of the aforementioned kind, the panels being positioned with opposed sides abutting each other and with the grid structures in a coplanar configuration, and a plurality of legs which include respective fixing formations which are engaged with the respective securing formations.

[0008] The securing formations may be of complementary shape to the fixing formations.

10 **[0009]** The fixing formations may be of any suitable size and shape to ensure sound inter-engagement with the respective securing formations.

15 **[0010]** Each securing formation may for example include at least one socket. The corresponding fixing formation may include at least one spigot of complementary shape to the socket which is engageable with the socket. Additionally each fixing formation may include at least one recessed formation and the corresponding securing formation may include at least one projection or flange which extends into the recessed formation.

20 **[0011]** The grid structure in the panel may comprise a plurality of elements which define mesh apertures arranged in a regular array. Each mesh aperture may be substantially square or rectangular and may be bounded by elements which are oriented to ensure that each element displays maximum rigidity or load-bearing capability.

[0012] Additional reinforcing elements may be included in the grid structure.

[0013] The panel may have four sides which define a first pair of corners each of which is curved or rounded and a second pair of corners each of which has surfaces of the sides at a right angle to each other.

5 **[0014]** Reinforcing ribs on what, in use, is an underside of the grid structure may intersect at one or more locations and preferably at least at a location which is centrally positioned in an underside of the grid structure.

10 **[0015]** The legs which are included in the bed base may be placed in different categories. Preferably the categories of legs include, at least, corner legs which are respectively engageable with rounded corners of each panel and centre legs which are respectively engageable with abutting square corners of the panels. The centre legs, apart from providing elevated support for the grid structures, above a ground surface, act to secure panels with abutting sides to each other.

15 **[0016]** The bed base may include at least two truss sections. Each truss section may include opposed extremities which are respectively engageable with two spaced legs of the plurality of legs and a central formation which is positioned to abut an underside of at least one panel.

[0017] The bed base may include a number of rails with each rail being positioned between, and engaged with, a respective adjacent pair of legs. The rails and the truss sections may be positioned to interconnect the lower ends of the legs.

20 **[0018]** Each panel and the various other components referred to may be constructed from any appropriate material and preferably is moulded from a plastics material. In this connection use may be made, as appropriate, of recycled plastics material.

[0019] An advantage of the arrangement described is that two panels, which are included in a bed base, can, in a disassembled state, be placed adjacent each other

thereby to define a cavity between opposing surfaces of the panels in which the legs can be located. This characteristic substantially facilitates storage and transport of the bed base in a knockdown or disassembled form. The truss sections can be strapped or otherwise attached to the assembly.

5 **[0020]** The principles of the invention can be utilised to make a bed base of any appropriate size and the invention is not limited in this respect.

10 **[0021]** A lower side of the bed base is, usually, elevated above ground level. This space can be utilised effectively for storage. To achieve this runner structures which extend downwardly from the base can be attached to the base in any appropriate way e.g. by clipping. The runner structures include runner formations which are slidably engageable with complementary formations on a custom-made drawer.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The invention is further described by way of example with reference to the accompanying drawings in which:

15 Figure 1 is a plan view from below of a panel used in a bed base according to the invention;

Figure 1A shows details of a frame of the panel on an enlarged scale;

Figure 2 is a view in cross-section from one side of the panel shown in Figure 1 taken on a line marked 2-2 in Figure 1;

20 Figure 3 shows two panels, on a reduced scale, from above, each panel being of the kind shown in Figure 1, assembled in a coplanar and abutting relationship;

Figure 4 is a perspective view, on an enlarged scale, of a centre leg which is used in an assembled bed base;

Figure 5 is a perspective view of a middle leg used in the bed base;

Figure 6 is a perspective view of a corner leg used in the bed base;

Figure 7 illustrates, in perspective, a truss section which is used in the bed base;

Figure 7A shows on an enlarged scale, an end of the truss section;

Figure 8 is a perspective view on an enlarged scale of a cosmetic leg which is used
5 with the bed base;

Figure 9 is a side view of a rail used in the bed base;

Figure 10 is an end view of the rail on an enlarged scale, in the direction of an arrow
marked 10 in Figure 9;

Figure 11 is a perspective view from above of an assembled bed base according to
10 the invention;

Figure 12 is a perspective view from below of the assembled bed base shown in
Figure 11;

Figure 13 is a view in cross-section of an elongate runner member;

Figure 14 depicts how an upper end of the runner member in Figure 13 can be
15 engaged with a bed base; and

Figure 15 illustrates a drawer which is slidably engaged with two spaced apart runner
members.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0023] Figure 1 of the accompanying drawings illustrates, in plan, from below, a
20 panel 10 which is used in a bed base 12 according to the invention. Figure 2 shows
the panel in cross-section taken on a line 2-2 in Figure 1, and Figure 3 illustrates two
panels in plan, from above.

[0024] The panel 10 includes a substantially rectangular frame 14 which, in this
example of the invention, has opposed short sides 16A and 16B respectively, and
25 opposed longer sides 18A and 18B respectively. The sides 16A and 18A intersect at

a rounded corner 20. The sides 16B and 18A intersect at a rounded corner 22. The sides 16A and 16B intersect the side 18B at corners 24 and 26, respectively which are defined by portions of the sides which are at a right angle to each other.

5 **[0025]** The frame 14 includes a strong, rigidifying, triangular section 30 which is shown in enlarged detail in Figure 1A. A grid structure 36 is bounded by the frame 14. The structure includes a plurality of small, substantially square, apertures 38, each of which is surrounded by walls 40 which are orientated so that, in use, a longer dimension of the wall is vertical thereby to confer maximum rigidity and load-bearing capability on the grid structure.

10 **[0026]** Additional reinforcing ribs or elements 44, which are of increased dimensions relative to the walls 40 and which are shown in darker lines, are provided in a fairly large grid configuration further to strengthen the grid structure.

15 **[0027]** The panel, along a centre line 48, has a substantial rigidifying rib 50 which is generally of the shape shown in Figure 1A and a second rigidifying rib 50B (located on the line 2-2 in Figure 1) that is transverse to the reinforcing rib 50.

[0028] An upper side 52 of the grid structure, see Figure 3, is planar. This, in use, is a side which presents upwardly and which is used for supporting a mattress or bedding.

20 **[0029]** Figure 4 is a perspective view of a centre leg 60 which is used in a bed base 12 which is assembled from two panels 10A and 10B – see Figures 11 and 12. The centre leg has a flat face 62 which is apertured to provide fixing formations and to reduce material content. A pedestal 64 projects downwardly. Shaped opposing spigots 66 and 68 project laterally. A third, similar, spigot 70 projects rearwardly. At what, in use, is an upper end of the centre leg two angular formations 72 and 74 are

positioned substantially side-by-side but with a slot 76 between opposing surfaces of the angular formations. The angular formations 72 and 74 are set back from a surface of the face 62 thereby to form a small shoulder 78.

5 **[0030]** Figure 5 shows, in perspective, a middle leg 80. The leg has a cross-shaped section formed by four vertically extending sheets 82 which are braced by gussets 84. A lower ground-engaging end of the leg has a flat surface 86. At an opposing end each sheet 82 terminates in a pair of opposed clip formations 88.

10 **[0031]** Figure 6 shows, in perspective, a corner leg 90. A lower end of the leg has a formation 64A which is similar to the pedestal 64 shown in Figure 4. A vertical outer surface 92 of the leg is rounded and extends through 90° (viewed in plan).

15 **[0032]** At a junction of the outer surface 92 and the formation 64A the leg has two spigot-like projections 94 disposed at a right angle to each other. At an opposing end the leg has a curved structure 96 which is offset inwardly relative to the surface 92 thereby to form a small externally located shoulder 98. The structure 96 is flanked by spigot-like projections 100. Each projection is spaced from the curved structure 96 by a respective narrow slot 102.

20 **[0033]** Figure 7 shows, in perspective, a truss structure 110 which includes a horizontal beam 112, and two inclined beams 114 and a vertical brace 116 which extend to a vertex 118, at which upstanding projections 120, which are spaced apart by a slot 122, are located.

[0034] The horizontal beam 112 terminates in a U-shaped formation 124 at each of its opposing ends. This formation is shown in enlarged detail in Figure 7A. The U-formation has a clip formation 126 and, on opposing walls 128 and 130, small projections 132 and a rounded rib 134 are provided.

[0035] Figure 8 shows on an enlarged scale and in perspective a cosmetic leg 140. The leg is cup-shaped, increasing in dimension from a base 142 to an upper rim 144. A wall 146 is formed with a vertically aligned channel 150.

[0036] Figure 9 is a side view of a rail 160 which has a generally U-shaped profile in cross-section and which is reinforced by means of ribs 162. At opposed ends the rail has two formations 166. Each formation 166, shown on an enlarged scale and from one end in Figure 10, is substantially the same as the formation 124 shown in Figure 7 and Figure 7A.

[0037] Figure 11 is a view in perspective from above of a bed base which is constructed from components of the kind shown in Figures 1 to 10. Figure 12 is a perspective view from below of the bed base which includes two panels 10A and 10B which are positioned with long sides 18B in an abutting relationship so that the upper surfaces 52 are coplanar.

[0038] Two centre legs 60, of the kind shown in Figure 4, are positioned opposing each other at junctions of the two panels, on longer sides of the bed base. The angular formations 72 and 74 of each centre leg slip directly into corresponding sockets 72A and 74A respectively on undersides of the panels, see Figure 1. Each slot 76 defines a gap into which sections of the sides 18B are inserted. In this way the two panels are coupled securely together.

[0039] A truss section 110A, of the kind shown in Figure 7, is positioned on an underside of the two panels, at a central location – see Figure 12. The slot 122 at the vertex of the truss section receives abutting edge sections of the two sides 18A and 18B. The two panels are thereby further tied together.

[0040] A corner leg 90 is then positioned at each respective rounded corner 20, 22 of the panels. In each instance the curved structure 96 at an upper end of the leg is inserted into a corresponding socket 96A at the rounded corner (See Figure 1). The slots 102 which flank the curved structure 96 define a space into which a wall of the socket is located. In this way the corner legs are firmly secured to the panels.

[0041] Thus not only do the legs support the panels above ground level but, additionally, some of the legs serve to maintain the adjacent panels in secure abutment with one another.

[0042] Subsequently truss sections 110B and 110C are respectively engaged with opposed sides of the assembled panels. The respective projections 120 are coupled to corresponding formations at centre locations on these opposed sides in substantially the same manner which has been described in connection with the central truss section 110A.

[0043] Four rails 160A, 160B, 160C and 160C are then coupled to, and between, lower ends of the corner legs 90 and the centre legs 60 respectively. The U-shaped formations 166 engage with a clip and locking action with respective spigot projections 94 on the corner legs and with corresponding spigot projections 66 or 68, as the case may be, on the centre legs 60.

[0044] Opposing ends of the centre truss section 110A are engaged with a clip action with the spigot projections 70 on the centre legs. Similarly the end truss sections 110B and 110C are engaged with a clip action with the corresponding spigot projections 94 on the corner legs.

[0045] In a final step, six cosmetic legs 140, each of the kind shown in Figure 8, are engaged with lower ends of the corner legs and of the centre legs.

[0046] If appropriate, a middle leg 80 of the kind shown in Figure 5, is engaged with a clip action with an underside of each panel at a central location – see Figure 12. The clip formations 88 face upwardly and the reinforcing ribs 50 and 50B at points of intersection, on an underside of each panel, can fit into the slots between the formations 88 with a clip action.

[0047] The components of the bed base are, as noted, preferably made from a recycled plastics material. An integrated space-frame type of construction is adopted to ensure maximum rigidity and strength with minimal material usage. The base is provided in a modular form so that it can be stored and transported in a compact arrangement. Assembly is readily effected and no tools are required. All components are interconnectable with a fit and snap action. The resulting product is rigid and provides adequate support for a mattress or for bedding material. If required, sheet material sections, not shown, can be attached to outer faces of the legs thereby to enclose a volume which is below the panels.

[0048] When the base is disassembled the two panels 10A and 10B can be positioned opposing each other with the respective surfaces 52 facing outwardly. A fairly deep cavity is formed between opposing respective surfaces 32 of the panels and this provides a storage volume for the legs and rails. The three trusses are simply strapped to the assembly for transport and storage purposes.

[0049] A volume of reasonable size is formed between a lower surface of the bed base and a floor on which the bed base stands. This space can be used effectively and at low cost for storage purposes. Figure 13 is a view in cross-section of an elongate runner member 180 which has, at a lower end, an elongate upwardly facing channel runner formation 182 and, at an upper end, clip formations 183.

[0050] Figure 14 shows a portion of a panel 10. The clip formations 183 are easily engaged with one of the components which make up the grid structure. The runner formation 182 is then close to but lower than an underside 10X of the panel.

[0051] Two of the runner members 180 are fixed at spaced apart locations to the panel parallel to each other, as shown in Figure 15. A drawer 184, custom-made for the purpose, has guide formations 186 at upper edges of two opposed sides 188. These guide formations are of complementary shape to and are slidably engageable with the respective runner formations. The dimensions of the components are such that a lower side of the drawer is spaced with adequate clearance from the level of a floor on which the bed base rests.

CLAIMS

1. A bed base (12) which includes at least two panels (10A, 10B), each panel respectively including a rectangular frame (14), a grid structure (36) which is bounded by the frame and respective securing formations (72, 74, 96A) located at least at corners (20, 22, 24, 26) of the rectangular frame, the panels (10A, 10B) being positioned with opposed sides (18B) abutting each other and with the grid structures (36) in a coplanar configuration, and a plurality of legs (60, 80, 90) which include respective fixing formations which are engaged with the respective securing formations.
2. A bed base according to claim 1 wherein the legs support the panels at an elevated position above ground level and additionally secure the panels to one another.
3. A bed base according to claim 1 or 2 wherein, in each panel (10), the grid structure (36) in the panel comprises a plurality of elements (40, 44) which define mesh apertures arranged in a regular array.
4. A bed base according to claim 1, 2 or 3 wherein each panel (10) respectively has four sides (16A, 16B, 18A, 18B) which define a first pair of corners (20, 22) each of which is curved or rounded and a second pair of corners (24, 26) each of which has surfaces of the sides at a right angle to each other.
5. A bed base according to claim 4 wherein the plurality of legs comprise at least, corner legs (90) which are respectively engageable with rounded corners of each panel and centre legs (60) which are respectively engageable with abutting square corners of the panels and wherein the

centre legs additionally act to secure panels with abutting sides to each other.

- 5 6. A bed base according to any one of claims 1 to 5 which includes at least two truss sections (110), each truss section respectively including opposed extremities (24) which are respectively engageable with two spaced legs of the plurality of legs and a central formation (120) which is positioned to abut an underside of at least one panel.
- 10 7. A bed base according to any one of claims 1 to 6 which includes a number of rails (160) with each rail being positioned between, and engaged with, a respective adjacent pair of legs (90, 60).
- 15 8. A bed base according to any one of claims 1 to 7 which includes first and second runner members (180), with runner formations (182), which are attached, spaced apart from each other, to at least one panel (10) and which extend downwardly, and a drawer (184) which includes guide formations (186) which are of complementary shape to, and which are slidingly engaged with, the runner formations.

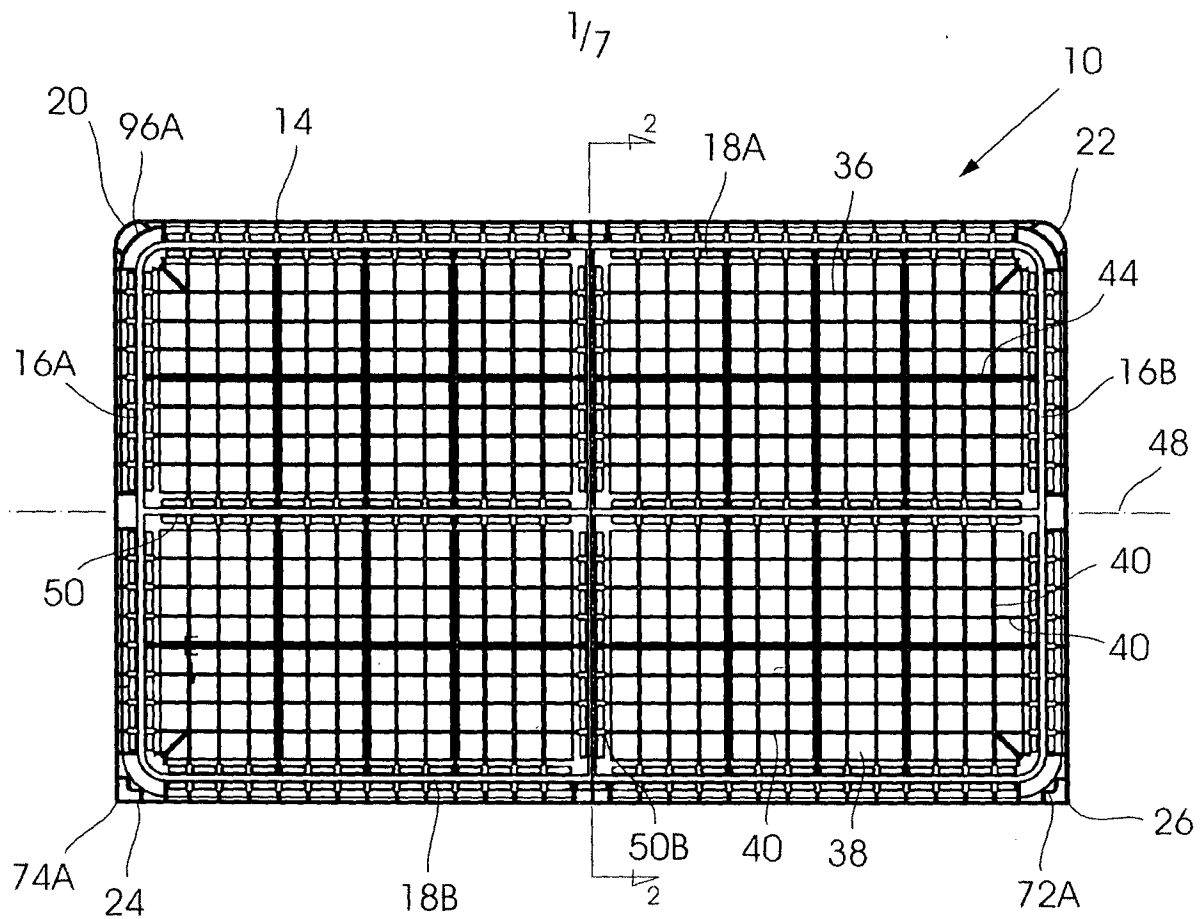


FIGURE 1

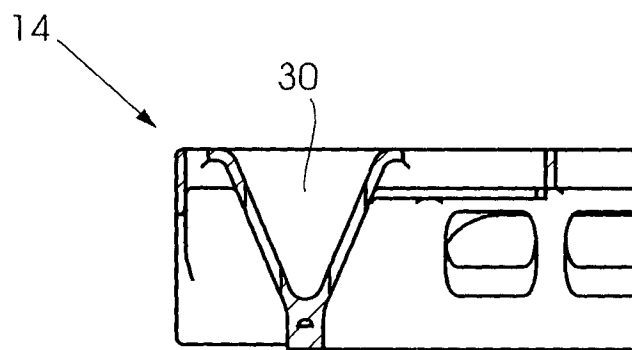


FIGURE 1A

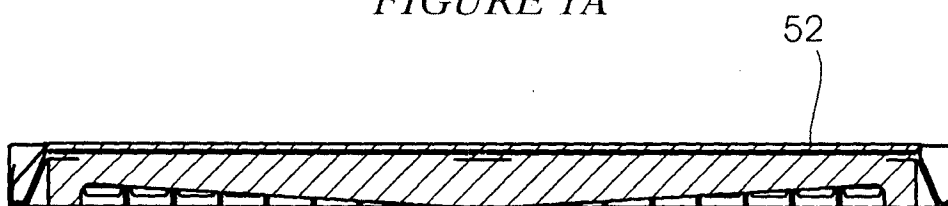
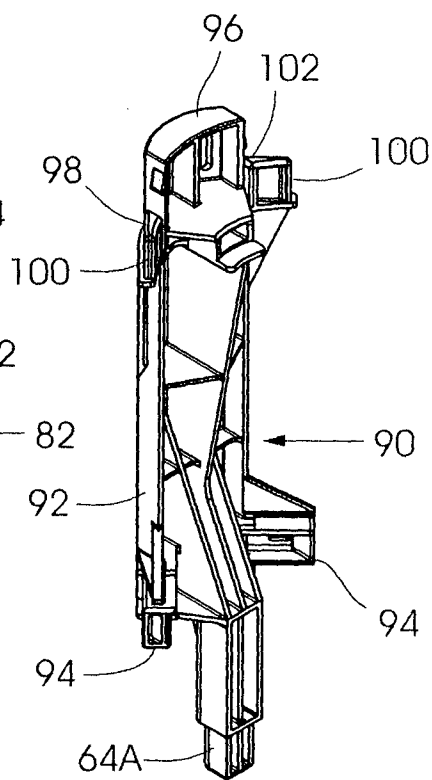
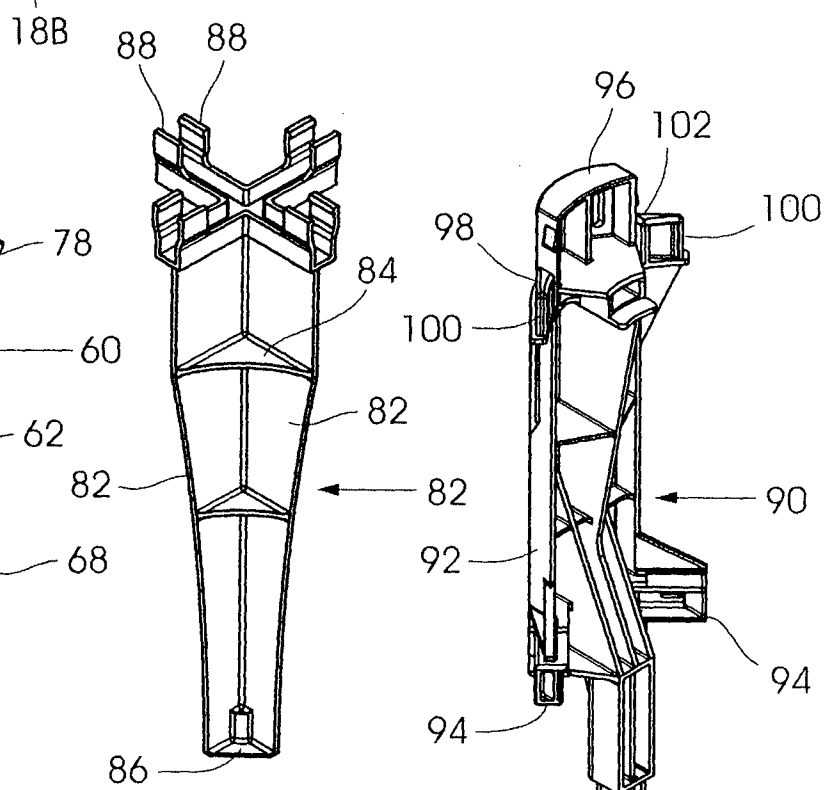
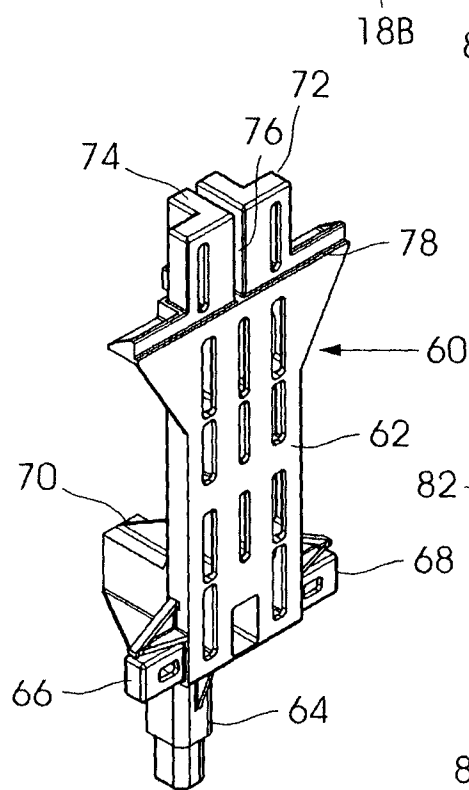
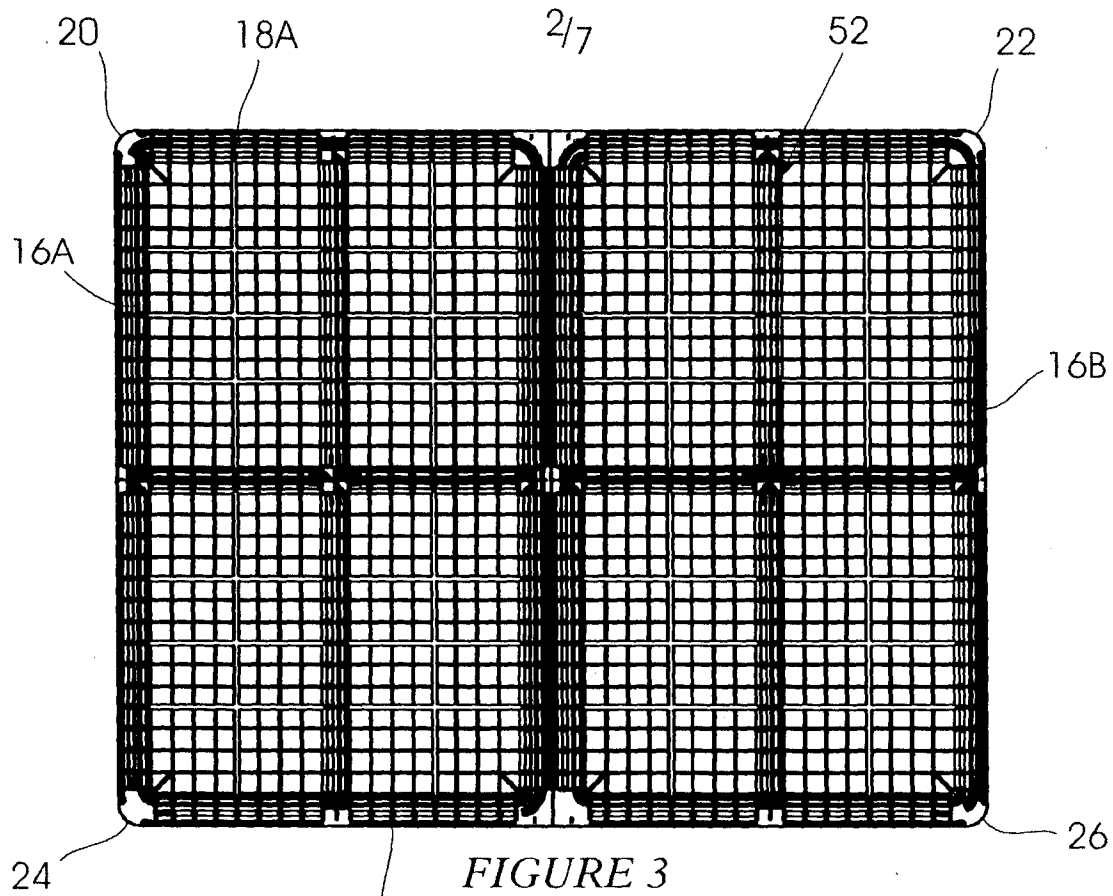


FIGURE 2



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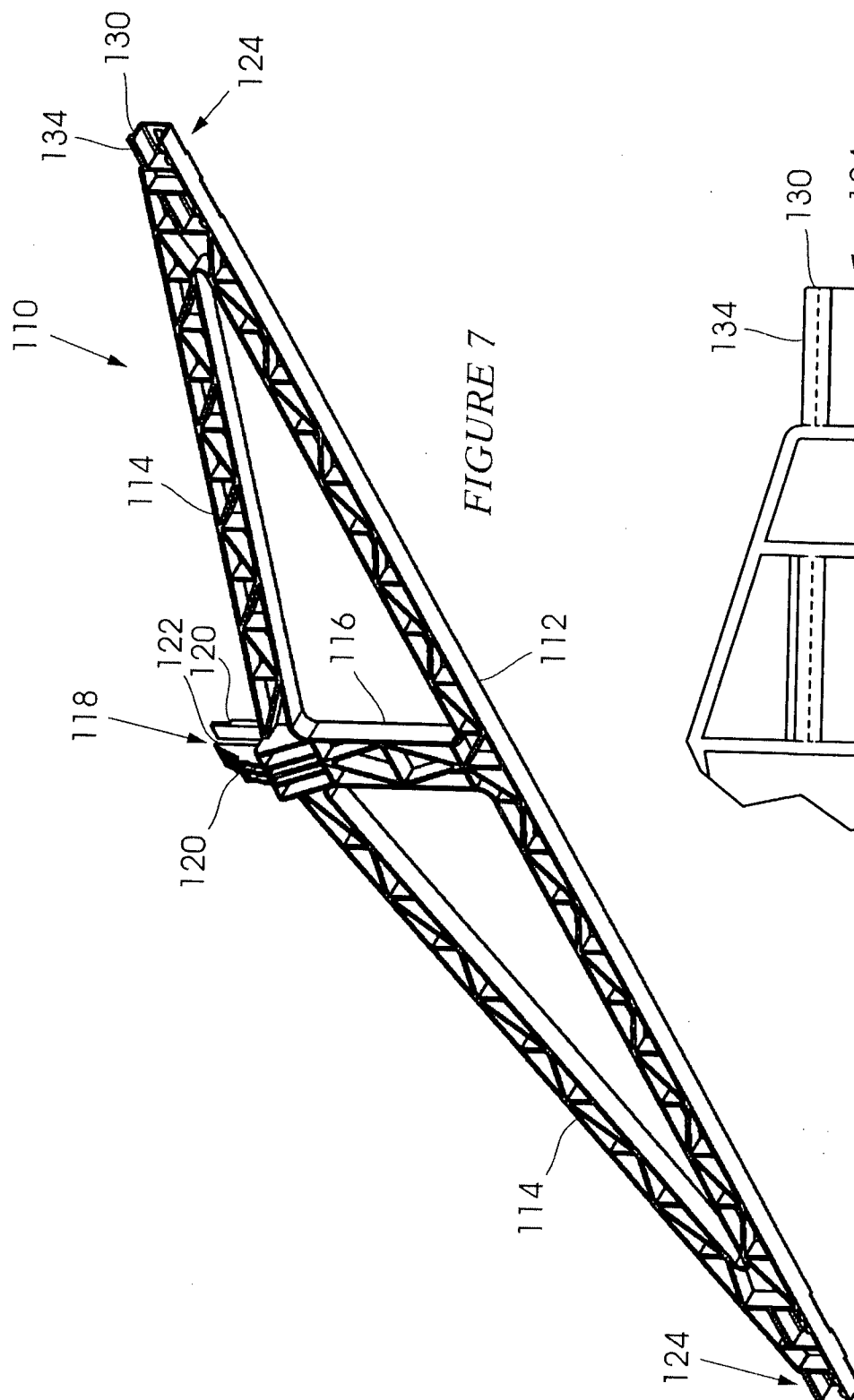


FIGURE 7

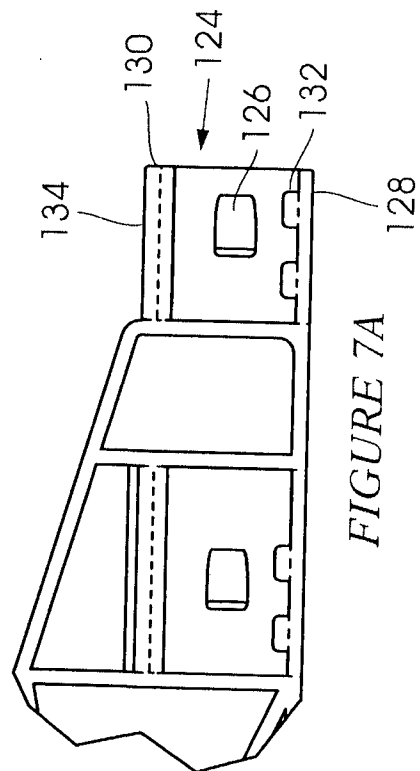


FIGURE 7A

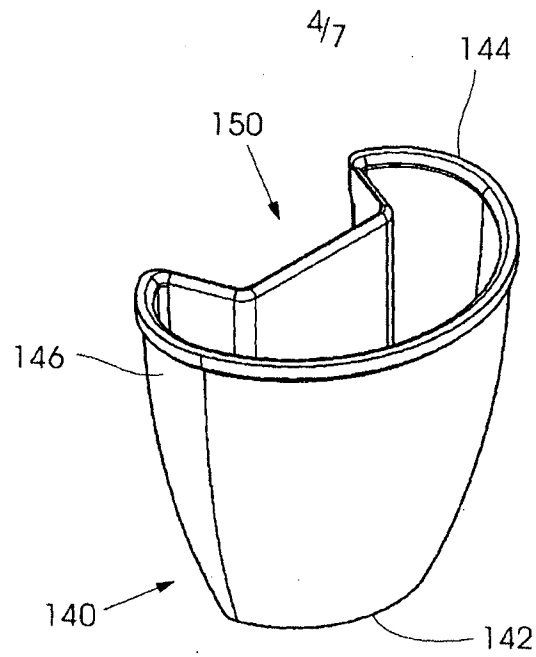


FIGURE 8

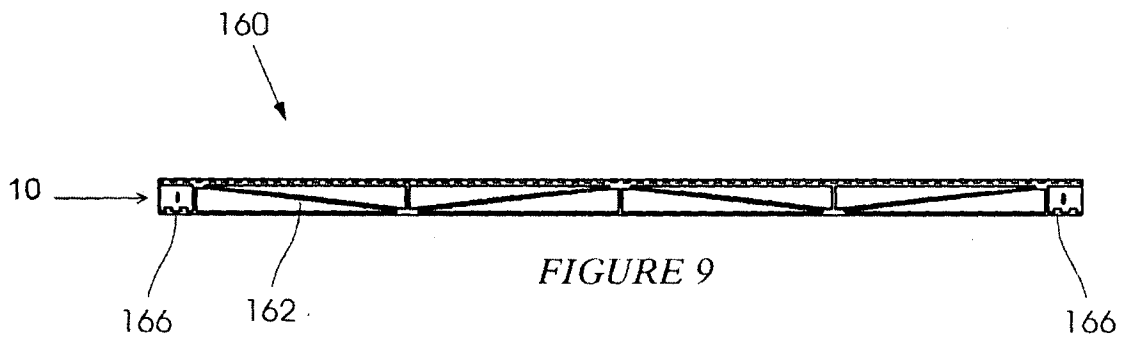


FIGURE 9

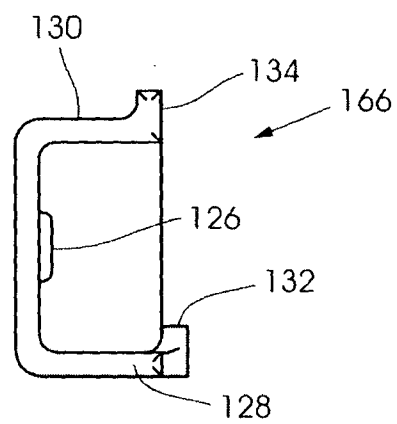
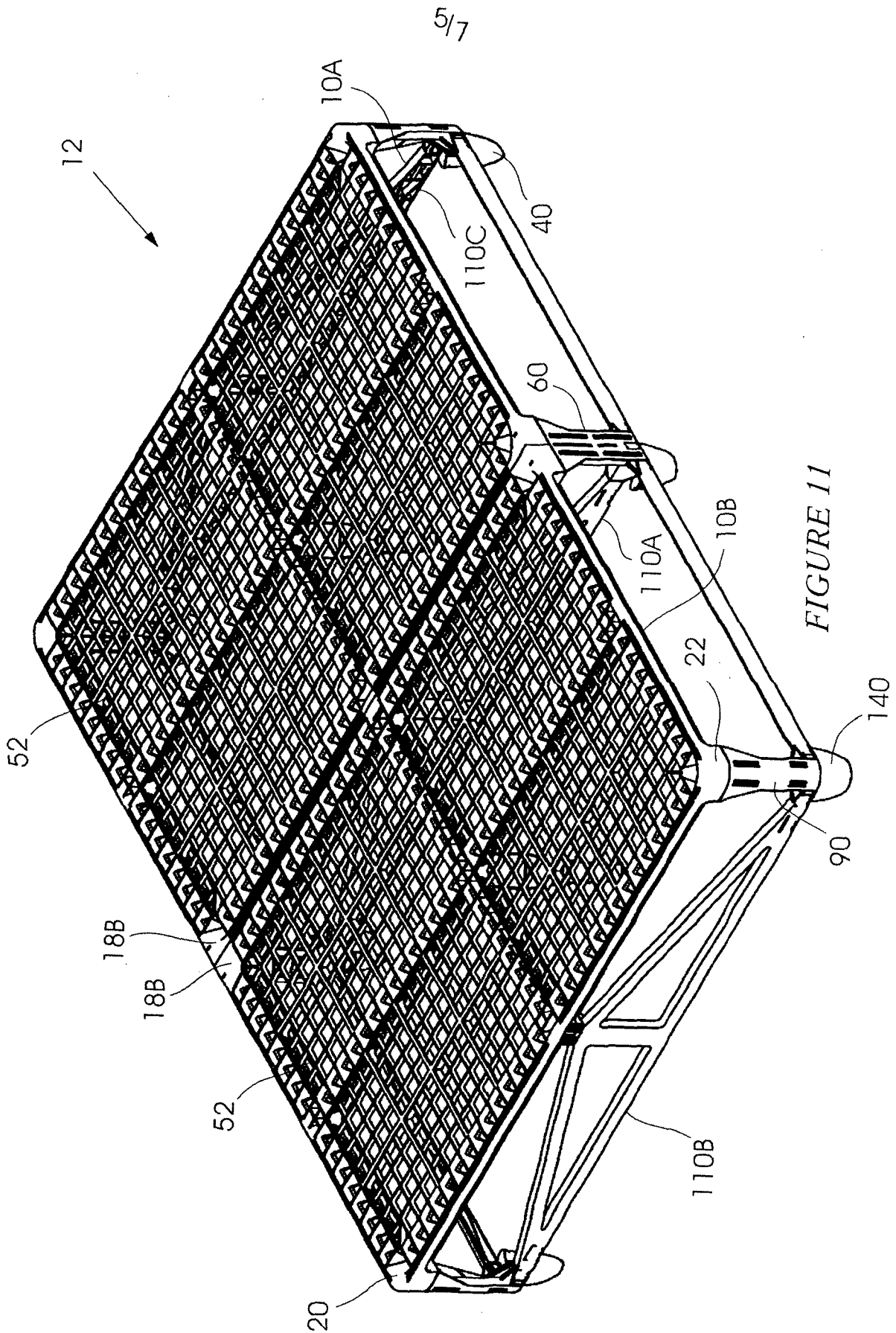


FIGURE 10



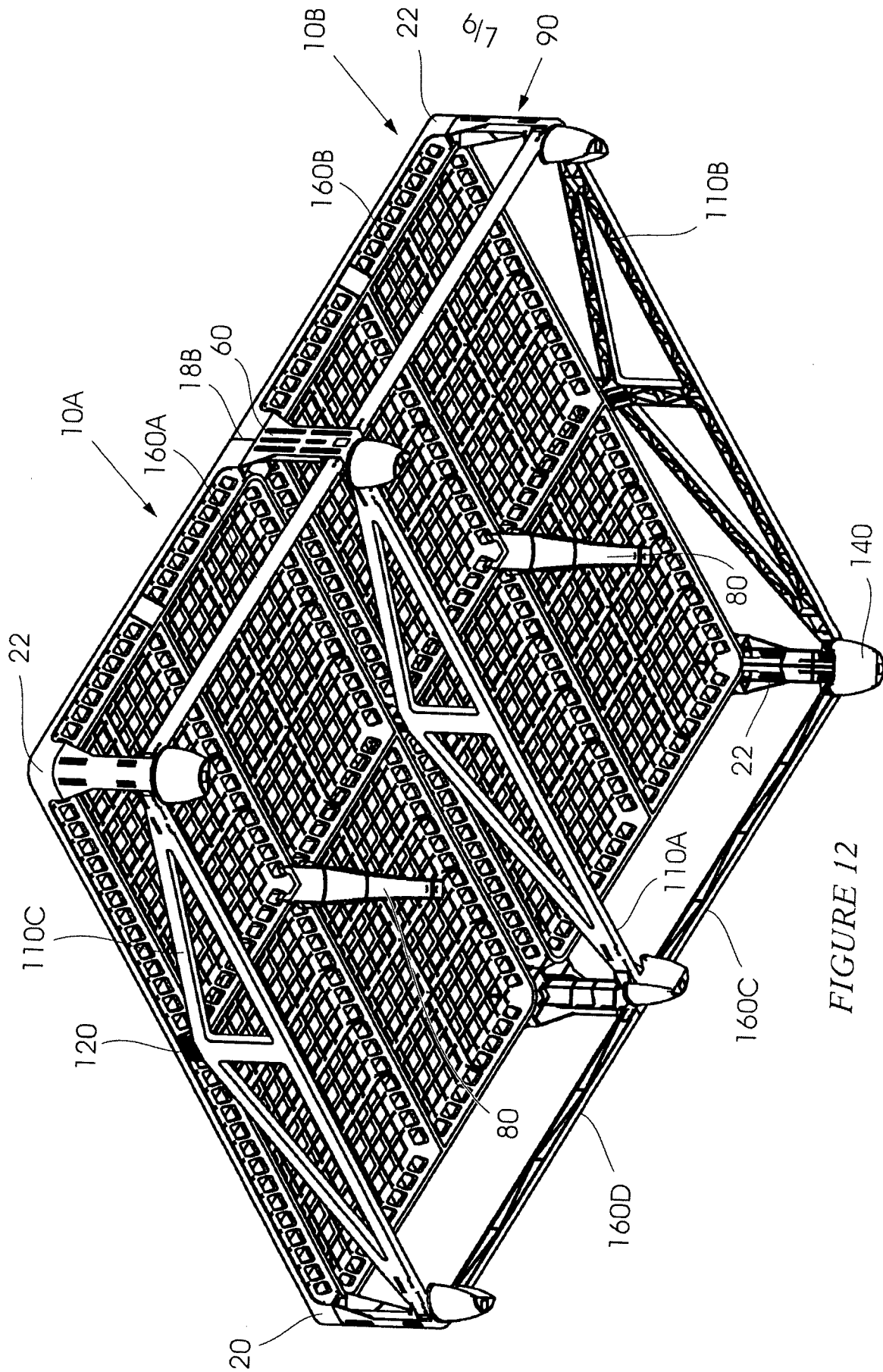


FIGURE 12

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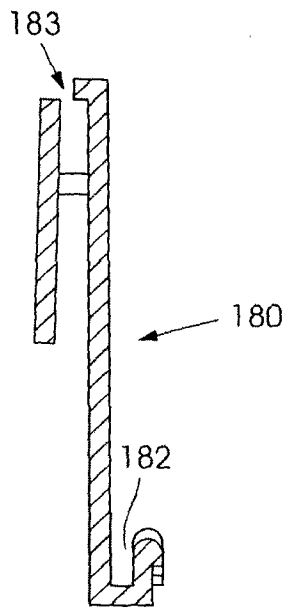


FIGURE 13

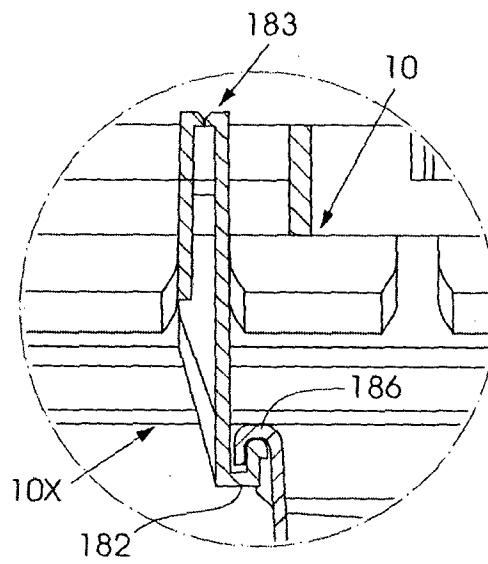


FIGURE 14

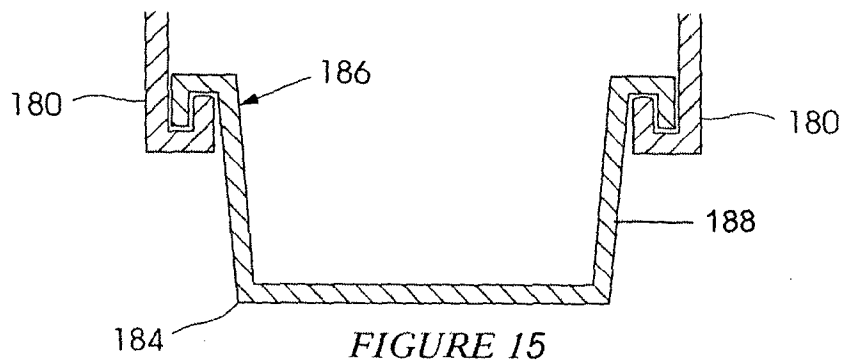


FIGURE 15

INTERNATIONAL SEARCH REPORT

International application No

PCT/ZA2012/000029

A. CLASSIFICATION OF SUBJECT MATTER

INV. A47C19/02 A47C19/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 198 04 239 C1 (ROESSLE & WANNER GMBH [DE]) 15 July 1999 (1999-07-15)	1,2,4,5
Y	claims 1-6; figures 3,4,6,7	3,7,8
A		6
Y	----- US 2008/172799 A1 (CONSTANTINESCU EUGEN [US] ET AL) 24 July 2008 (2008-07-24) claim 1; figures 1,5,8	3
Y	----- US 4 729 136 A (SANTO PHILIP J [US]) 8 March 1988 (1988-03-08) column 5, line 57 - column 6, line 17 column 3, lines 8-20; figures 1,2,11	7,8
A	----- US 2006/213008 A1 (POLEVOY RICHARD S [US] ET AL) 28 September 2006 (2006-09-28) abstract; figure 4	6



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

7 September 2012

Date of mailing of the international search report

17/09/2012

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Authorized officer

Amghar, Norddin

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/ZA2012/000029

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