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(54) System for assembling an item of furniture.

(57) The invention relates to a system for assembling an item of furniture, such as a stand or rack, from basic parts, including:

- a base to be placed on the floor,
- a number of columns to be placed vertically thereon,
- a number of carriers coupled or to be coupled to these columns, and
- at least one carrier member, for example a shelf, grid or holder, for bearing objects, such a member to be supported by the set of carriers.

Such a system is known in many embodiments.

The object of the invention is to provide a system which enables placing of an item of furniture very rapidly and without any tools or specialized skills. The invention further has for its object to offer a system with which an item of furniture can be assembled that can be set in free-standing position, that is, without for instance the support of a wall.

In order to achieve the above stated aims the invention provides a system of the type referred to in the preamble which displays the feature that the base can stand on the floor via an undersurface or a number of supports located in two directions at right angles to and at a substantial distance from one another and can be coupled to the columns via

pin/hole connections,

the columns are coupled or can be coupled to one another by means of coupling members, and the arrangement is such that a finished item of furniture can stand independently on the floor.

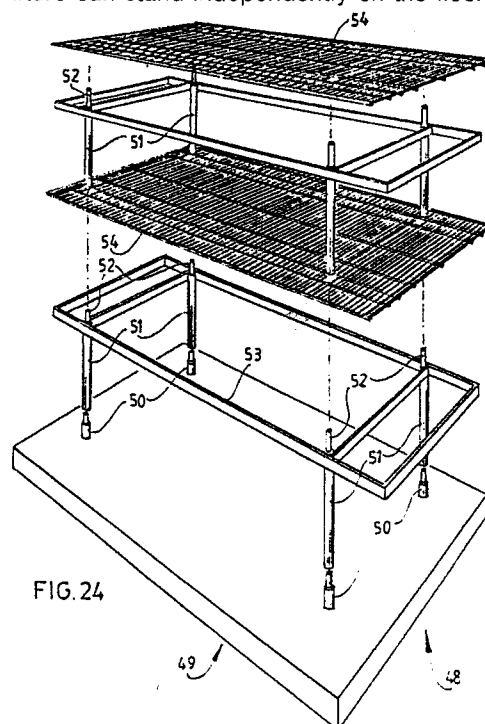


FIG. 24

SYSTEM FOR ASSEMBLING AN ITEM OF FURNITURE

The invention relates to a system for assembling an item of furniture, such as a stand or a rack, from basic parts, including:

- a base to be placed on the floor,
- a number of columns to be placed vertically thereon,
- a number of carriers coupled or to be coupled to these columns, and
- at least one carrier member, for example a shelf, grid or holder, for bearing objects, such a member to be supported by the set of carriers.

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In order to achieve the above stated aims the invention provides a system of the type referred to in the preamble which displays the feature that the base can stand on the floor via an undersurface or a number of supports located in two directions at right angles to and at a substantial distance from one another and can be coupled to the columns via pin/hole connections,

the columns are coupled or can be coupled to one another by means of coupling members, and

the arrangement is such that a finished item of furniture can stand independently on the floor.

The base can for instance be a metal or plastic plate or frame in which holes or bushings are present for receiving the outer ends of the columns. In the case tubular, that is, hollow, columns are used, the base can be provided with pins extending in vertical direction around which the columns can grip. The coupling members may be formed as cross connections between the columns.

In a practical embodiment which enables a great flexibility in dimensioning, the system according to the invention has the feature that a column can be assembled from at least two segments, which segments can be coupled pairwise by means of a pin/hole connecting element which is provided with a support member for co-operation with the upper end of the lower of the two segments.

In the case where the segments consist of tubes, the pin/hole connecting element can be formed as a pin with an external support member, such as a flange. In the case of segments formed as solid rods or also as hollow tubing, use can be

made of a socket coupling having an internal support member, such as a flange, as pin-hole connecting element. In order to ensure that bending moments can be absorbed, the pin-hole connecting element has to co-act with each column segment over a sufficiently great axial distance.

In addition, a support member can be a carrier.

A carrier can also be a coupling member.

Combined functions as stated above can further the simplicity of the system.

The column structure can with advantage display smaller horizontal dimensions than the carrier members. In such an embodiment the system can have the feature that a carrier member displays at least one opening for passage of a column.

In the case of a closed carrier, such as a shelf or glass plate, through-holes can be present, while in the case of a carrier formed as a grid, one or more grid wires can be omitted or interrupted.

For the constructing of a display stand, for example for magazines in a bookshop, the variant can be advantageous which features two carriers with steps, which steps can carry a holder pairwise.

This embodiment can display the particular feature that each holder has a rear edge protruding above the following, higher step, which edge is to be directed towards this step, and that support means are present for support of the front edge of the lowest placed holder.

A further variant of this latter mentioned embodiment, which has the feature that each step is positioned at a small angle to the one preceding such that all the holders from the bottom upward can support on those preceding, offers the purchaser of the books or magazines displayed in such a rack the possibility of being able to obtain a largely unobstructed view of the displayed articles. The construction of such a display rack is nevertheless very simple.

A further embodiment of the system according to the invention is characterized by a clamping member for clamp connecting of two coupling members or carriers, this clamping member comprising:

a plate part extending over adjoining portions of both coupling members or carriers,

edges connecting in transverse direction to that plate part, and

a gripping edge connecting in transverse direction to at least one edge, which gripping edge encloses together with said plate part at least one of said adjoining portions.

this such that the clamping member can be snap fitted over said adjoining portions.

With the exception of the latter described system, the invention also relates to parts evidently intended for this system, such as a base, a column, a column segment, a carrier, a carrier member, a coupling member, a pin-hole connecting element, a holder, a clamping member and so on.

The invention will now be elucidated with reference to a drawing of several random embodiments, to which the invention is however not limited.

In the drawing:

Fig. 1 shows a perspective view of a rack according to the invention;

fig. 2 shows on a larger scale a perspective view, partly broken away, of a part of the rack as in fig. 1;

fig. 3, 4, 5 and 6 show the parts III, IV, V and VI as in fig. 2;

fig. 7 and 8 are two different pin/hole connecting elements;

fig. 9 and 10 show two pin/hole connecting elements with coupling members;

fig. 11 is a magazine display stand;

fig. 12 shows a carrier member in the form of a grid similar to the carrier member XII from fig. 1;

fig. 13 is a carrier member in the form of a grid with side edges;

fig. 14 is a quarter-round, grid-like carrier member;

fig. 15 is a plastic base plate;

fig. 16 is a quarter-round base plate;

fig. 17 is a glass plate with holes serving as a carrier member;

fig. 18, 19, 20 and 21 show by way of example several possible configurations which can be made with base plates as in fig. 15 and 16;

fig. 22 shows a perspective view of a detail of a rack, of which two coupling members are connected to each other between columns by means of clamping members;

fig. 23 is the clamping member XXIII as in fig. 22; and

fig. 24 shows a perspective view of a rack according to the invention in a variant.

Fig. 1 shows a stand 1 assembled with the system according to the invention. The stand 1 is of the modular type, that is, the composite basic parts to be described hereinafter are all geared to one another via well considered dimensioning. Making use of a limited number of standard parts a large number of diverse items of furniture can thus be assembled with the system according to the invention.

The rack 1 shown in fig. 1 consists of three, separate identical parts that are coupled to one another, and which are designated for the sake of clarity with the reference numerals 2, 3 and 4.

Fig. 2 shows the construction of the embodi-

ment 1. The frame 5 shown in fig. 3, which has screws 6 for horizontal levelling of the frame, carries vertically upward extending pins 7 around which can grip tubular columns 8 which form part of the column unit in 9 shown in fig. 4. This unit 9 comprises four columns 8 coupled for bending rigidity with one another by coupling members 10, 11. For positioning on column unit 9 of an identical column unit 12 the H-shaped coupling members 13 shown in fig. 5 are placed on the columns 8 on the right hand side, while on the left hand side use is made of T-shaped pin/hole connecting elements 14 with carrier.

The upper surface of the coupling member 10, 11, which also serve as carriers, and the upper surface of the carriers 15, 16 of the respective pin/hole connecting elements and coupling members 13, 14 all lie in the same horizontal plane. In the rack 1 shown in fig. 1 they bear the grid-like, flat carrier member 17 shown in fig. 12 which in this embodiment comprise a number of evenly spaced grid wires. The grid wires are omitted at two positions indicated by 19, which results in space being created for passage of the column segments 8.

The fig. 7 and 8 show two different embodiments of a pin/hole connecting element, designated respectively with 20 and 21. The element 20 is pin-shaped and fits inside tubular column segments 8. A flange 22 serves to hold pin/hole connecting element 20 in its required, roughly symmetrical position. This ensures that the column segments are coupled to one another with bending rigidity. Fig. 8 shows a socket coupling with internal flange with which a solid or hollow column segment 23 can be coupled with a similar element.

Fig. 9 and 10 show how the pin/hole connecting elements 20 and 21 can be coupled to each other by means of coupling members 24, which also serve as positioning means and if required as carrier.

Fig. 11 shows a magazine display stand 25. It comprises a plastic base plate 26 (see fig. 15) with four holes 27 for receiving columns 28, 29. Columns 29 are formed integrally and take a substantially U-shaped form. On their upper end facing away from base plate 26 they are connected to each other by an intermediate coupling part. Not drawn are means for coupling columns 28 and rods 29 to each other. Use can be made of a column unit 9.

Connected to columns 28 are curved rods 29 which support against the U-shaped rod unit 29. The rods 29 bear steps formed as stiff wires 30 which pair-wise can carry a holder 31. Each holder 31 has a rear edge 32 protruding above the step located behind it. The front edge 33 of the lowest holder 31 is supported by the top ends of columns

28. Since each step is positioned in the manner shown in fig. 11 at a small angle to the one preceding, all the holders 31 from the bottom upward can in this way support on the ones preceding.

Fig. 13 shows a carrier member 34 formed as a grid with a front edge and a rear edge 35. These edges can serve to prevent articles, products or goods falling from the carrier grid 34. Edges 35 are substantially L-shaped in cross section, whereby the upper element of the L displays a rib which is attached to the wires of carrier grid 34.

Fig. 14 shows a quarter-round carrier grid 36.

Fig. 15 shows the plastic base plate 26 already discussed above.

Fig. 16 shows a base plate 37 adapted to the form of the carrier grid 36, this plate being suitable for use together with base plate 26.

Fig. 17 shows a glass plate 38 with four holes 39 for the passage of columns.

The fig. 18, 19, 20 and 21 shows by way of example possible configurations which can be assembled with base plates of the type shown in fig. 15 and 16.

Fig. 22 shows two U-shaped coupling members 40 analogous to the coupling member 24 as in fig. 9. Coupling members 40 have two straight portions 41 running parallel to each other and are connected to each other at their L-shaped adjoining corner parts by means of clamping members 42.

Clamping members 42 each comprise, as will also be apparent from fig. 23, a plate portion 43 extending over adjoining parts of the coupling members 40, an edge 44 extending in transverse direction relative thereto and having connected to it in turn an edge 45 which together with plate portion 43 can enclose coupling members 40. Further arranged on the plate portion 43 are comparatively small bent edges 45, 46 which can be fitted in the manner shown in fig. 22 into the free space between and outside the coupling members 40.

As is shown in fig. 23 the clamping member can be placed in the position shown in fig. 22 by being moved over in the direction of arrow 47. In this position the corners of coupling members 40 are completely covered, while coupling members 40 are moreover connected with bending rigidity to each other.

Fig. 24 shows a rack 48 in a variant of the invention. This rack comprises a base plate 49 with four upright pins 50 for co-operation with tube parts 51, as in the case of the pins 7 and the columns 8. The tube parts 51 serving as column segments bear on their upper end pins 52 with the same form as pins 50 so that the columns may be stacked in the previously described manner. Tube parts 51 bear a frame 53 which may fulfil the same function as the parts 14, 15, 16 discussed inter alia with

reference to fig. 2. Frame 53 can carry wire racks 54.

In fig. 24 the various composite parts are shown at some distance from one another for the sake of clarity. It will be apparent that in exactly the same way as above described embodiments the rack lends itself to further vertical extension as a result of its modular construction.

At variance with the previously discussed embodiments the rack 48 in this embodiment does not lend itself to coupling with other similar racks. It will however be apparent that the integrated unit consisting of frame 53, tube parts 51 and pins 52 can possess still greater mechanical strength.

Claims

1. System for assembling an item of furniture, such as a stand or a rack, from basic parts, including:

- a base to be placed on the floor,
- a number of columns to be placed vertically thereon,

- a number of carriers coupled or to be coupled to these columns, and

- at least one carrier member, for example a shelf, grid or holder, for bearing objects, such a member to be supported by said set of carriers,

characterized in that

said base can stand on the floor via an undersurface or a number of supports located in two directions at right angles to and at a substantial distance from one another and can be coupled to said columns via pin/hole connections,

said columns are coupled or can be coupled to one another by means of coupling members, and

the arrangement is such that a finished item of furniture can stand independently on the floor.

2. System as claimed in claim 1, **characterized in that** a column can be assembled from at least two segments, which segments can be coupled pair-wise by means of a pin/hole connecting element which is provided with a support member for co-operation with the upper end of the lower of said two segments.

3. System as claimed in claim 2, **characterized in that** a support member is also a carrier.

4. System as claimed in any of the foregoing claims, **characterized in that** a carrier is also a coupling member.

5. System as claimed in any of the foregoing claims, **characterized in that** a carrier member displays at least one opening for passage of a column.

6. System as claimed in any of the foregoing claims, **characterized by** two carriers with steps, which steps can bear a holder pair-wise.

7. System as claimed in claim 6, **characterized in that** each holder has a rear edge protruding above the following, higher step which edge is to be directed towards this step, and that support means are present for support of the front edge of the lowest placed holder.

8. System as claimed in claim 7, **characterized in that** each step is positioned at a small angle to the one preceding such that all the holders from the bottom upward can support on those preceding.

9. System as claimed in any of the foregoing claims, **characterized by** a clamping member for clamp connecting of two coupling members or carriers, said clamping member comprising:

a plate part extending over adjoining portions of both coupling members or carriers,

edges connecting in transverse direction to that plate part, and

a gripping edge connecting in transverse direction to at least one edge, which gripping edge encloses together with said plate part at least one of said adjoining portions,

this such that the clamping member can be snap fitted over said adjoining portions.

10. Parts evidently intended for a system as claimed in any of the foregoing claims.

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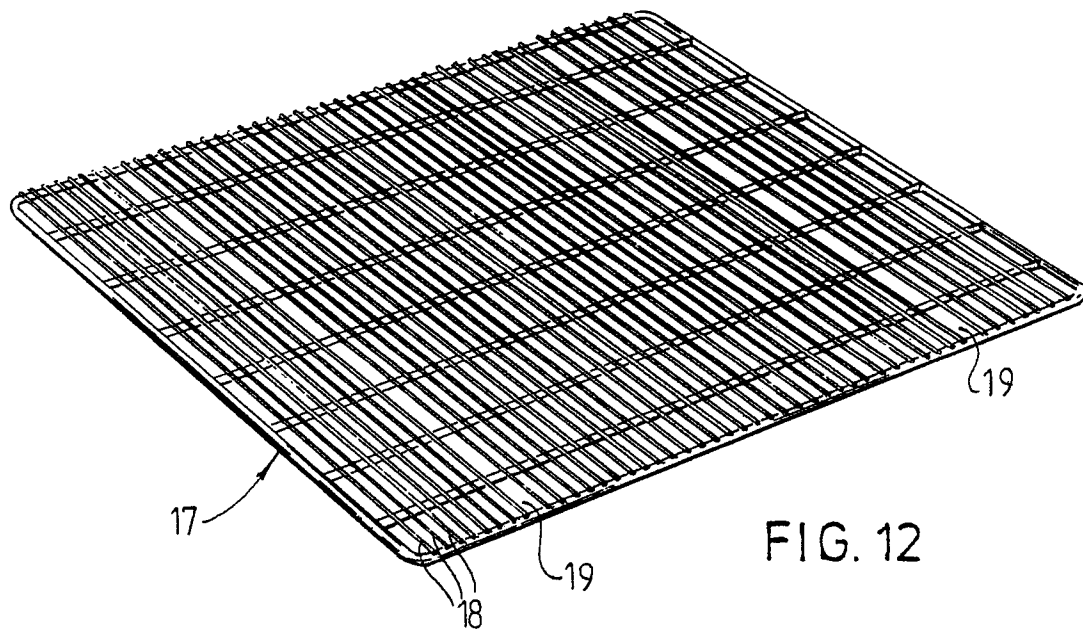
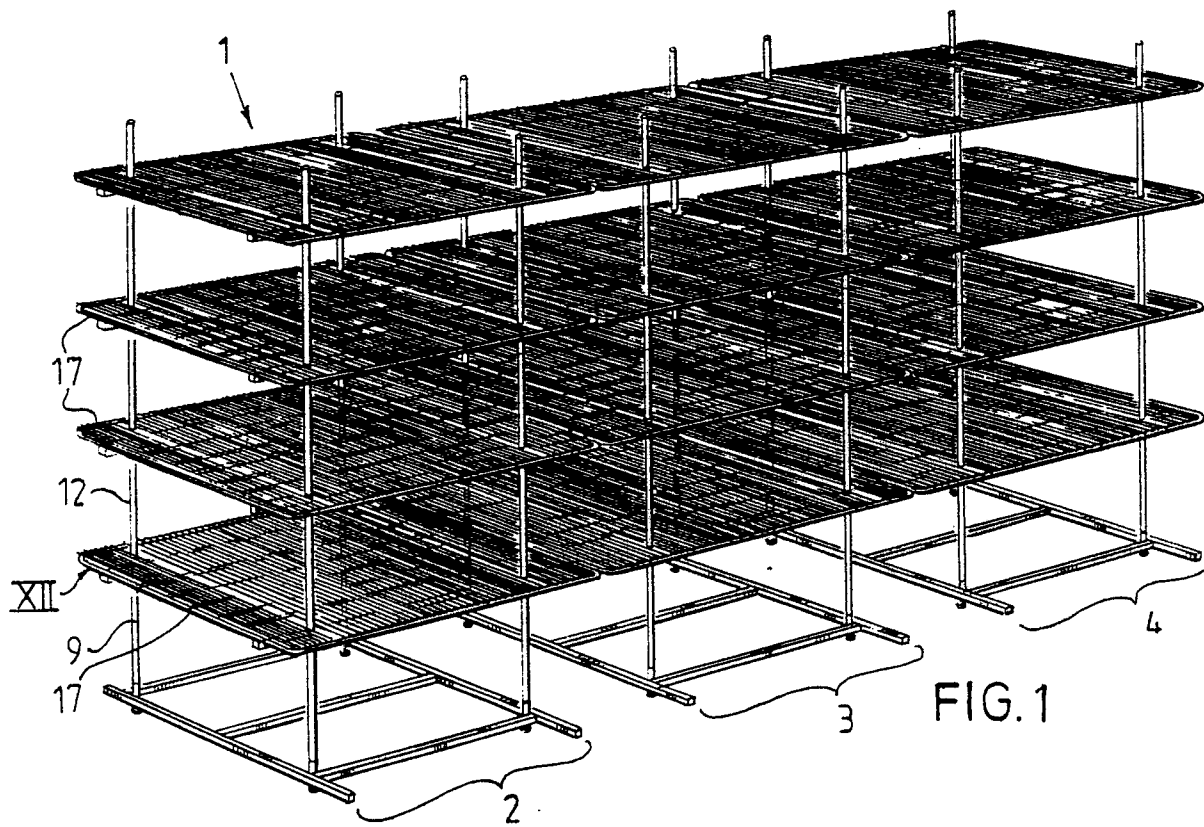
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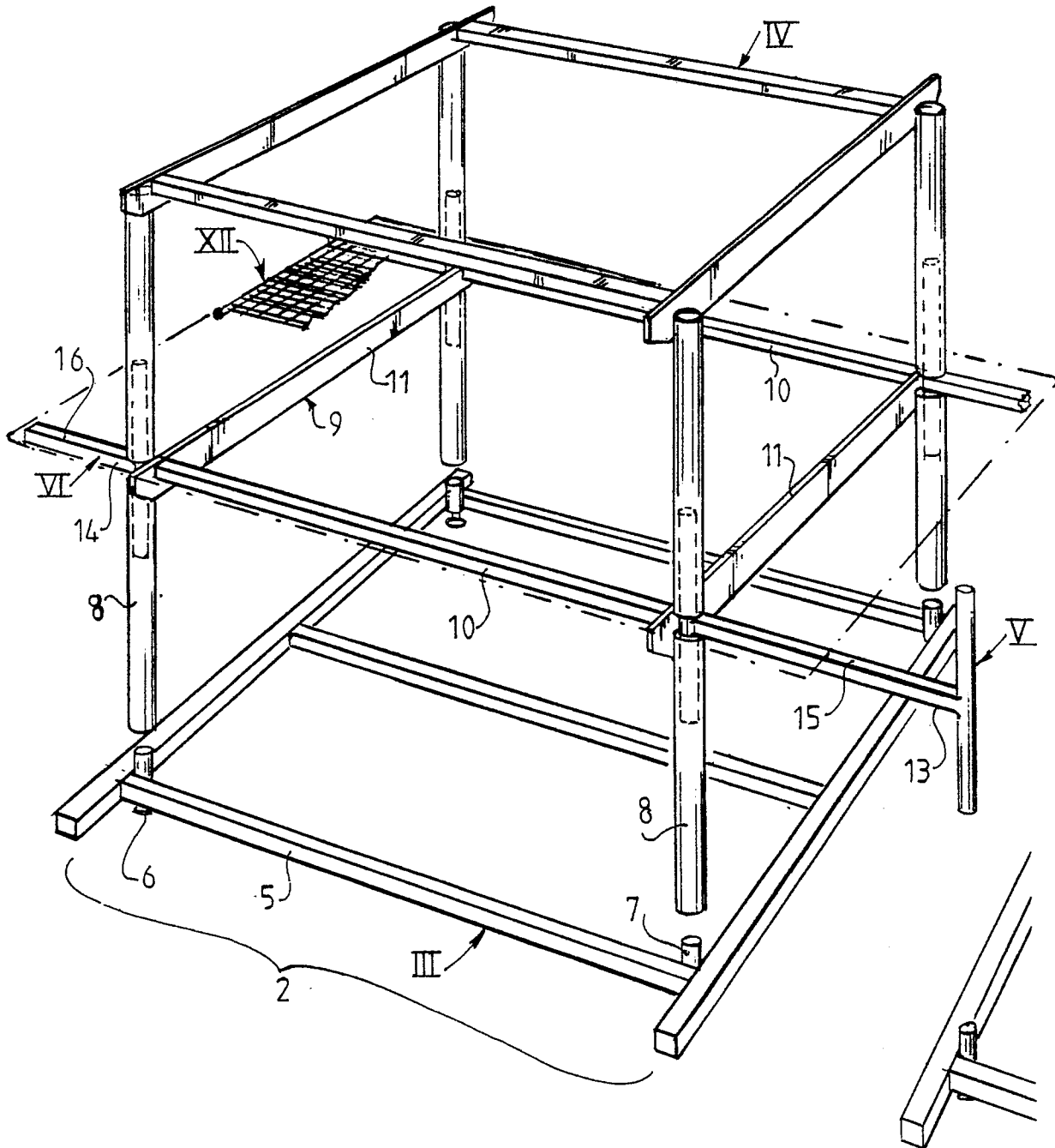
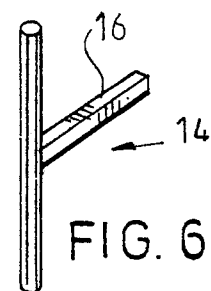
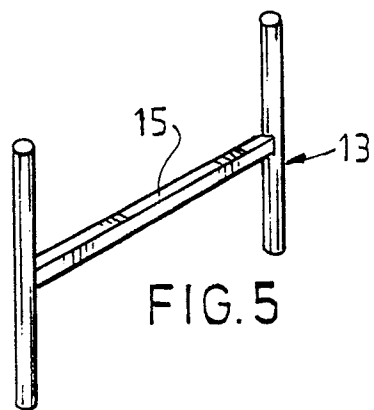
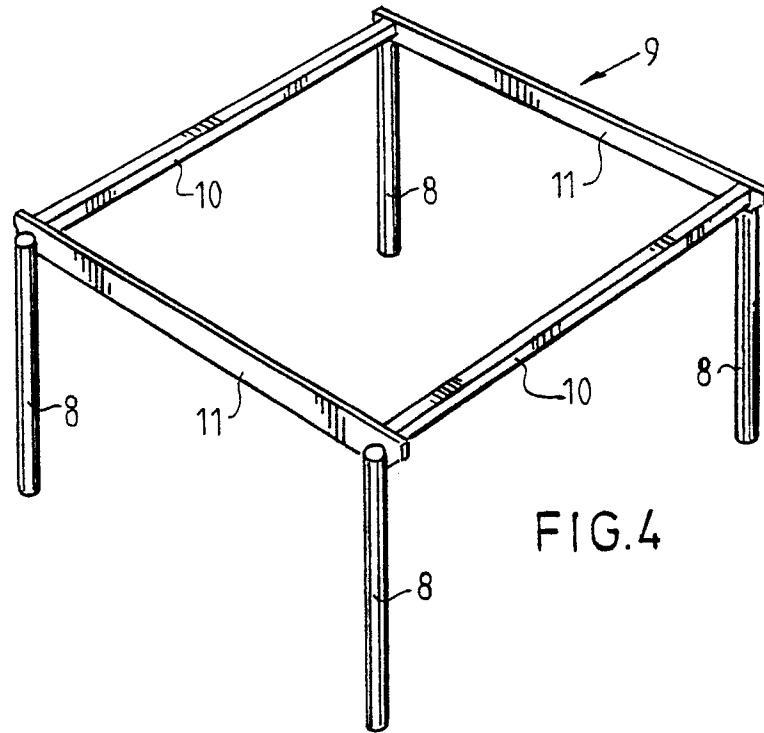
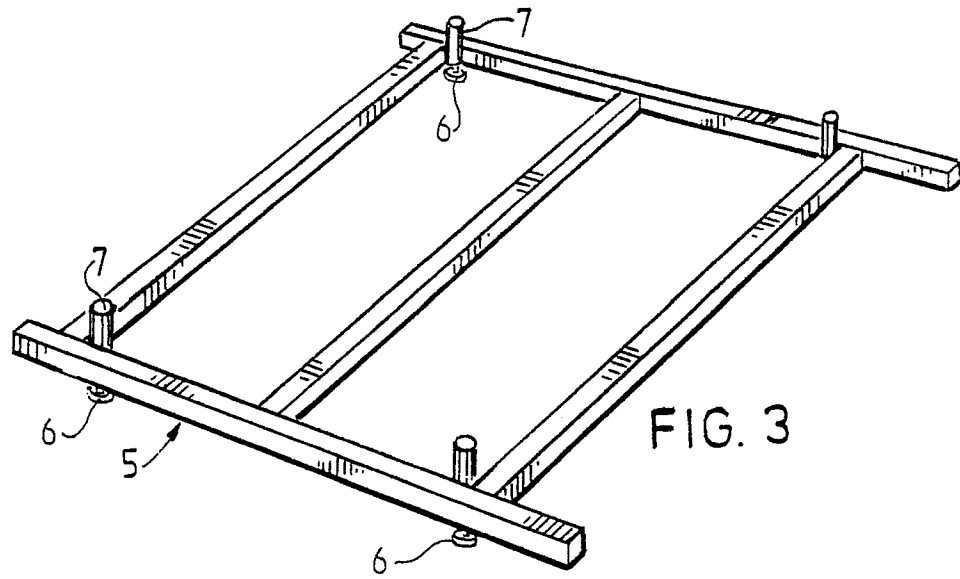
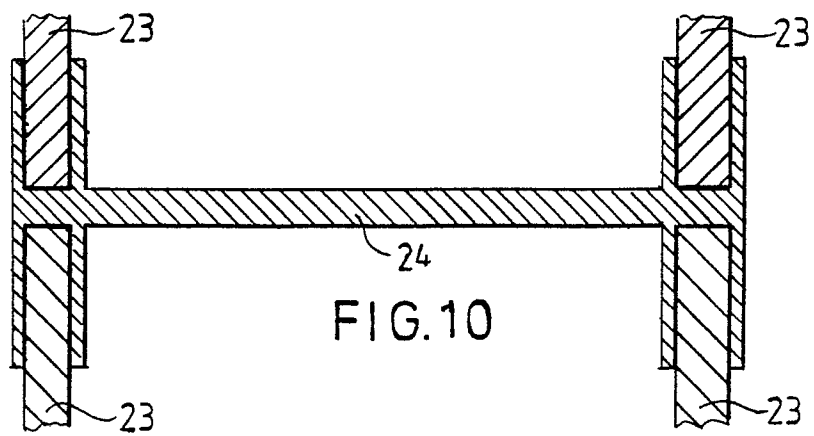
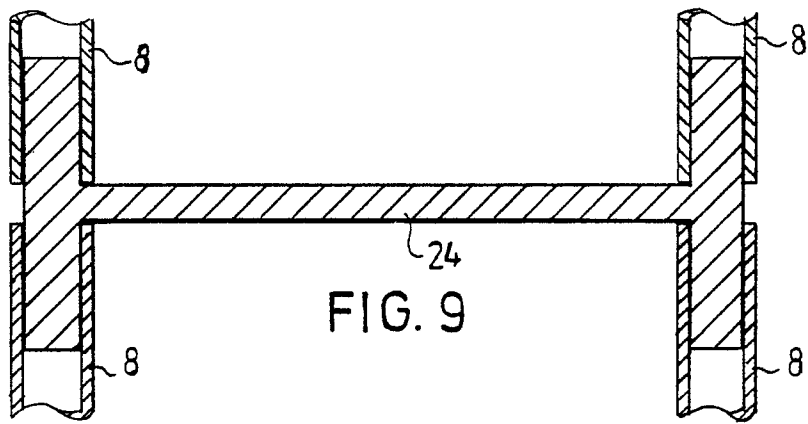
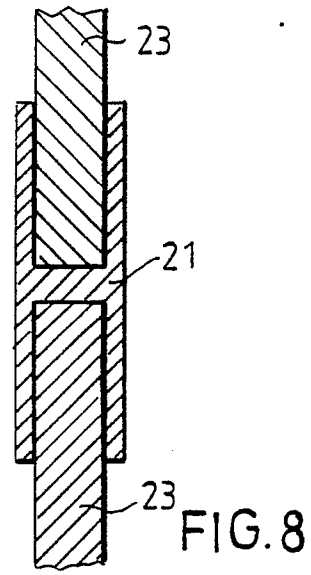
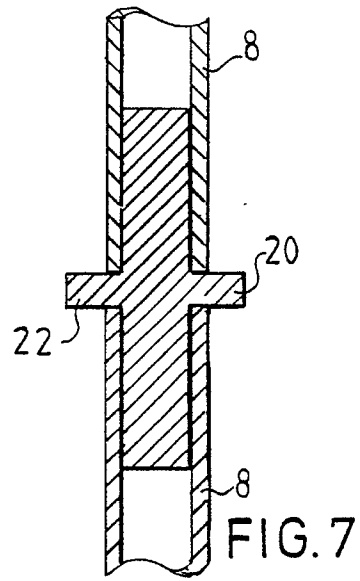


FIG. 2





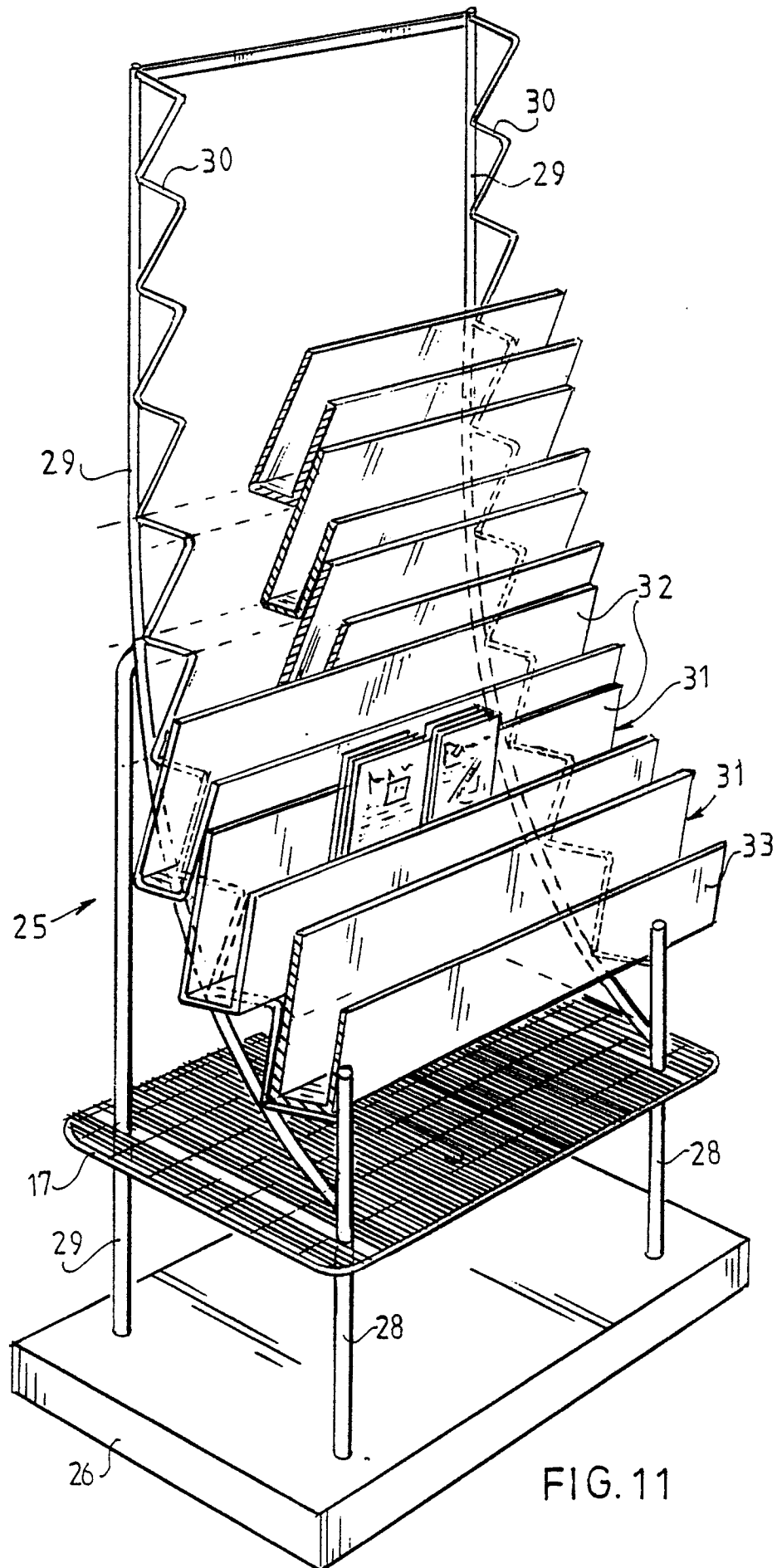
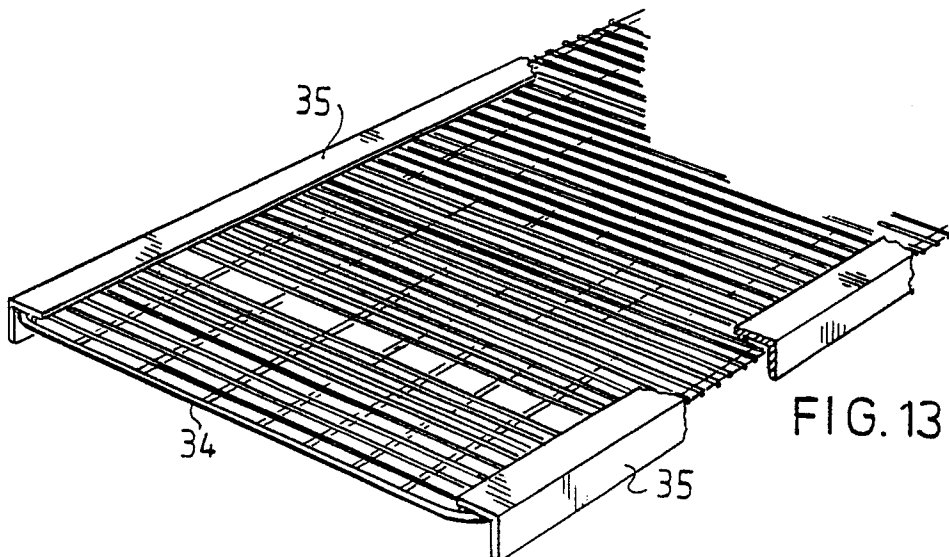
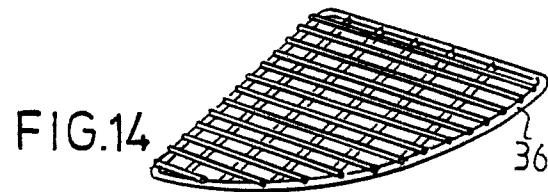
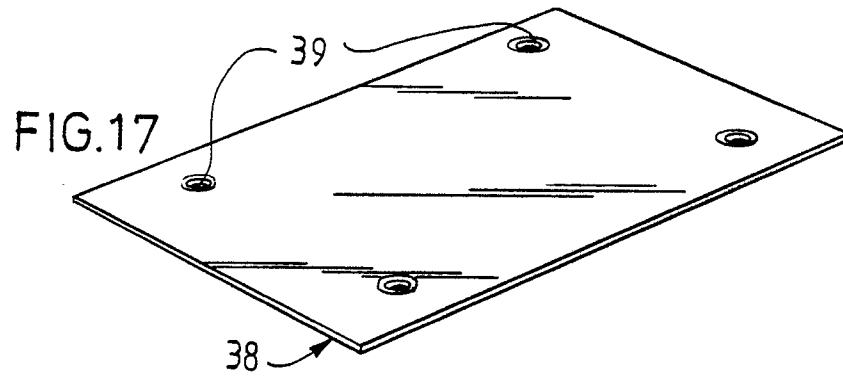
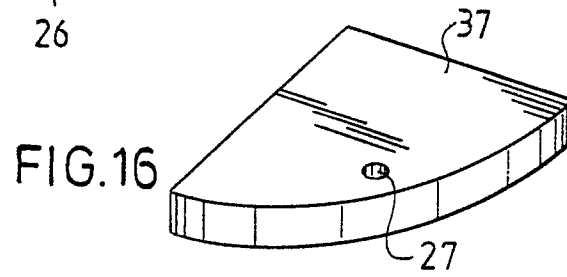
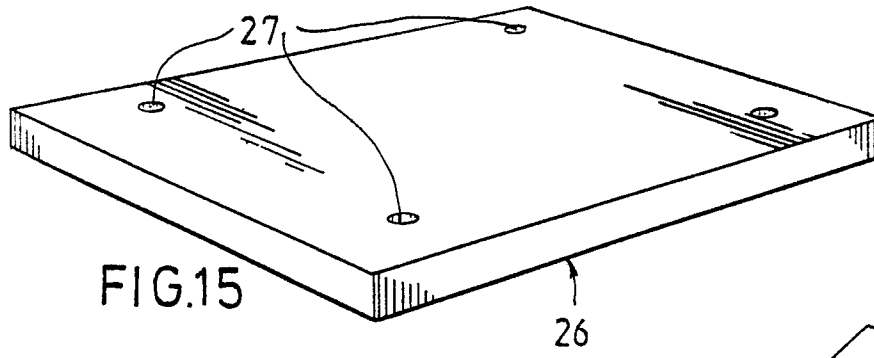
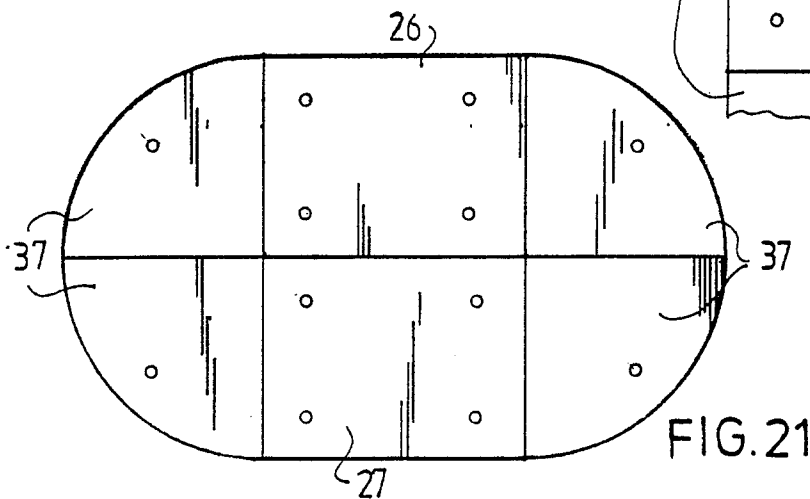
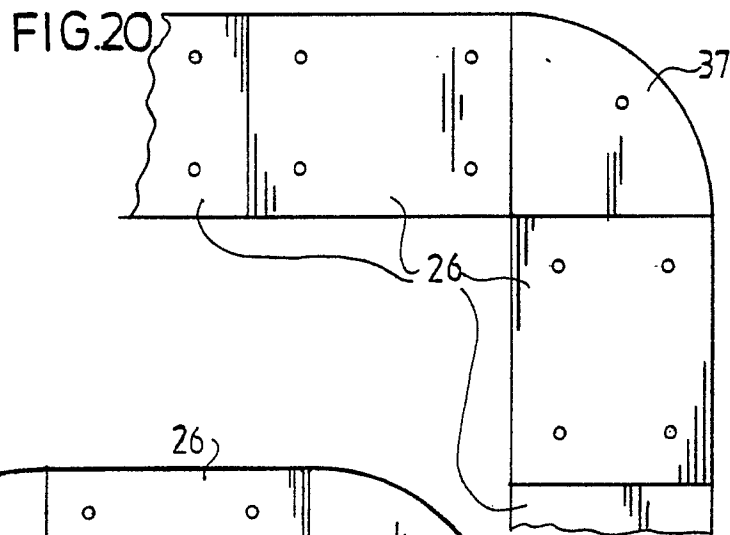
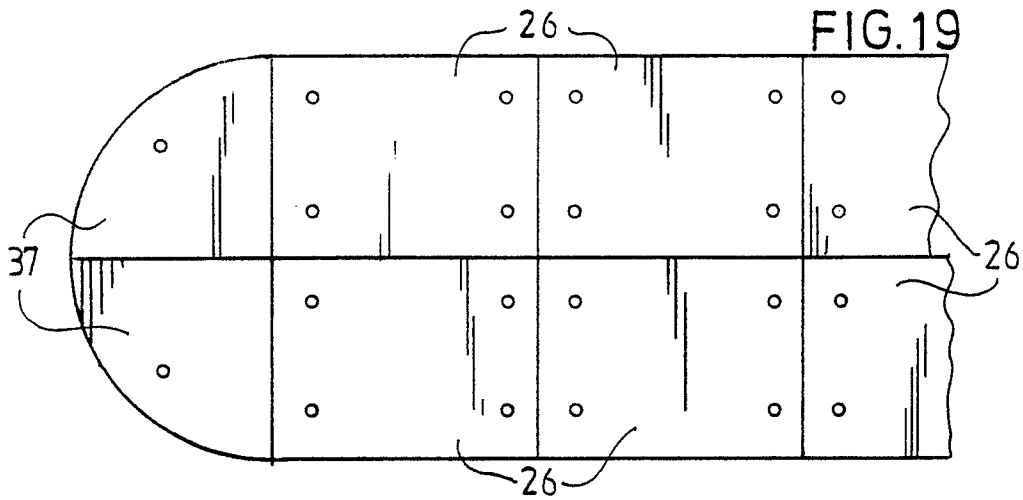
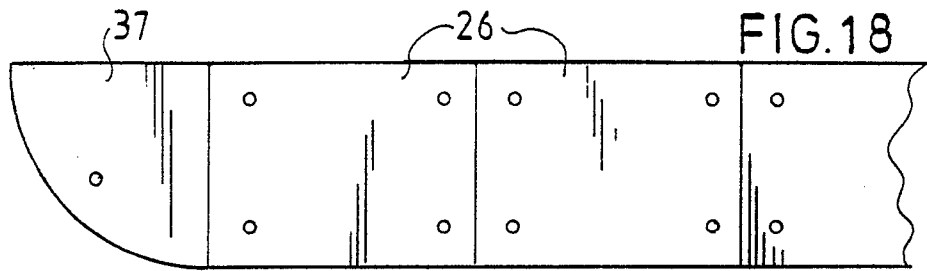
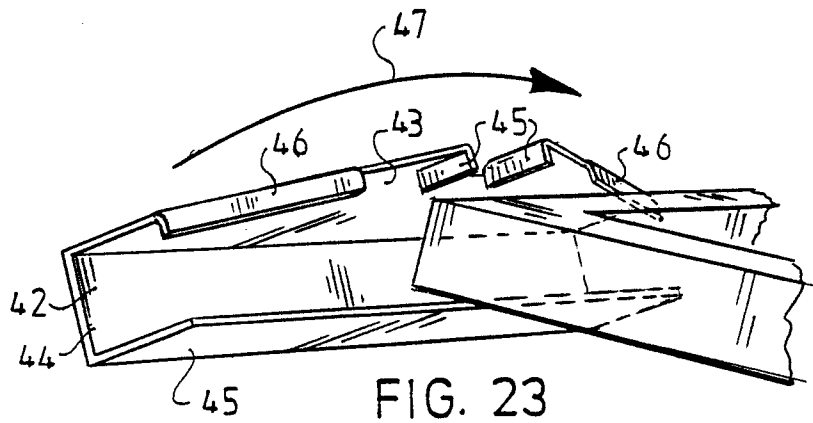
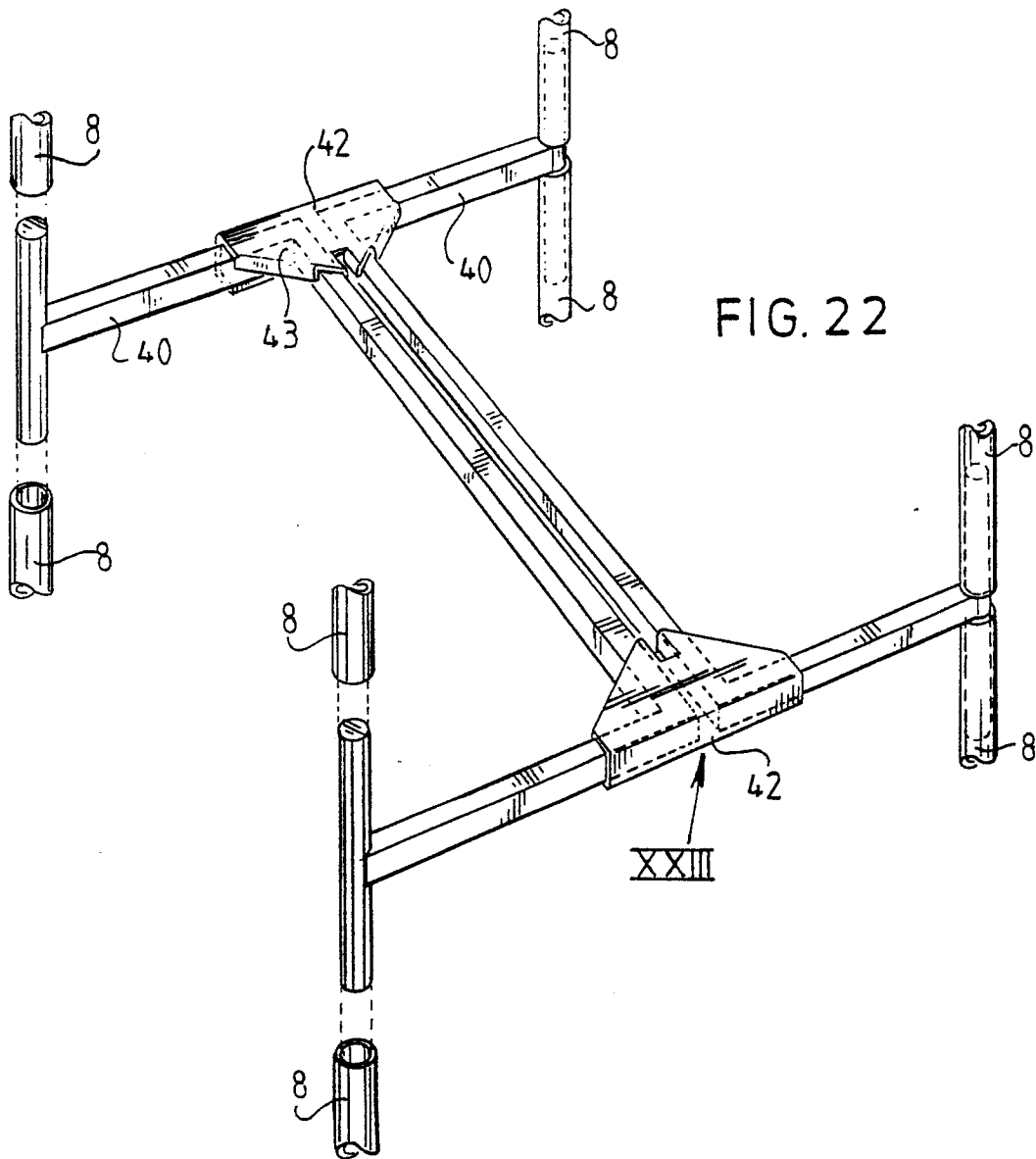
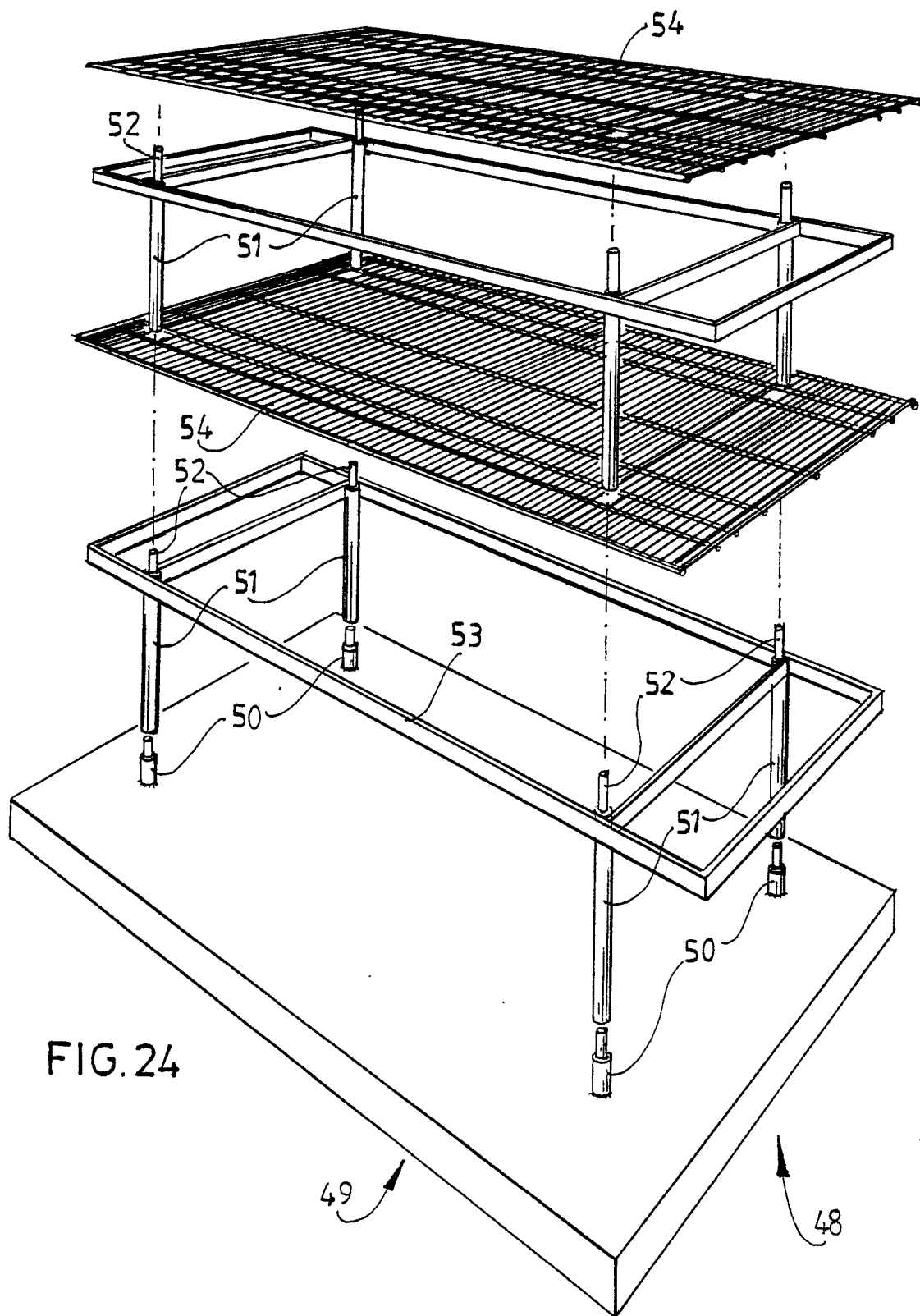


FIG. 11











European Patent
Office

EUROPEAN SEARCH REPORT

Application Number

EP 88 20 0341

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.4)
X	DE-A-2 118 089 (JÜRGENS) * Figure 1; pages 1-2 * ---	1,5,10	A 47 B 47/02
X	GB-A-2 068 714 (COX DENHOLM LTD.) * Figure 2; lines 55-73 * ---	1	
X	CH-A- 347 708 (ETS. LAPRASSE FRERES) * Figures 1-2; pages 1-2 * ---	1,2	
A		5-10	
X	FR-A-2 343 445 (HENRIET) * Figure 1; claim 1; pages 2-4 * ---	1,3,4	
X	BE-A- 841 176 (PANNEKOEK) * Figures 1-2; pages 2-3 * -----	1,3,4	
			TECHNICAL FIELDS SEARCHED (Int. Cl.4)
			A 47 B B 42 D A 47 F
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 06-06-1988	Examiner NOESEN R.F.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		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	