



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11)

EP 1 396 443 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
10.03.2004 Bulletin 2004/11

(51) Int Cl.7: **B65D 90/02, B65D 90/08**

(21) Application number: **02020011.9**

(22) Date of filing: **05.09.2002**

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

(72) Inventor: **Trujillo, César Antonio
Zuniga y Asociados
Panama, Republic of Panama (PA)**

(74) Representative: **Zardi, Marco
M. Zardi & Co.SA,
Via Pioda, 6
6900 Lugano (CH)**

(71) Applicant: **W.M.B. World Move Box Anstalt
9490 Vaduz (LI)**

(54) **Box for military camp equipment**

(57) Box particularly for military camp equipment (1) comprising a metal structure (2), in turn composed of a top grid (3), a bottom grid (4), opposite sides (5) and

opposite side panels (6), that can be transported, stocked and stacked to several levels, and that is resistant to both mechanical stress and to atmospheric agents.

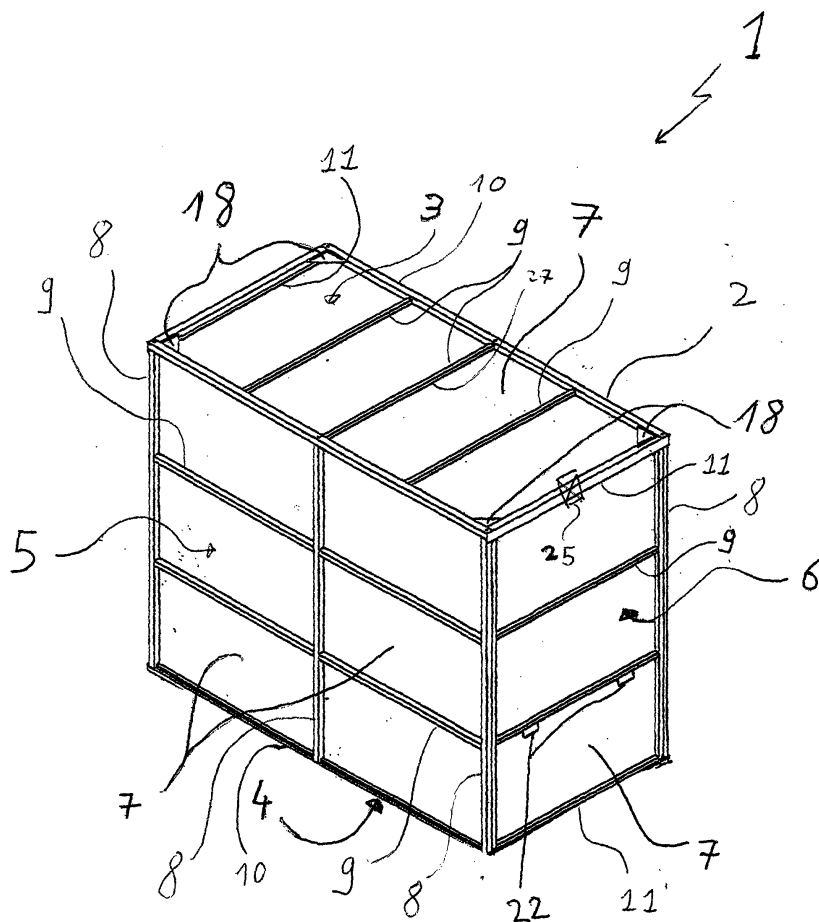


FIG. 1

EP 1 396 443 A1

Description

Field of the invention

[0001] In its most general aspect, this invention concerns a box particularly for military camp equipment. In particular, this box can be transported and stocked in various environments such as warehouses, ship holds, marine containers, and stocking areas in general, even outdoor, and is composed of a structure that is made up of a bottom grid, a top grid, opposite sides and opposite side panels.

Prior art

[0002] It is a well-known fact that military camp equipment needs to be transported and stocked in a simple and economical manner.

[0003] Standard sized wooden boxes are currently used to satisfy this need. These boxes possess good mechanical resistance, are easy to assemble, but are expensive to manufacture.

[0004] Cardboard boxes have been employed, light, easy to produce, and much cheaper to manufacture. However they have a limited work life, are not so resistant to wear and tear, and are not environment-friendly; in short, because of these problems, cardboard boxes can generally only be used once because the basic material of which they are made deteriorates rapidly. Moreover they are marked by a poor water resistance, high maintenance costs, need to use straps, belts and the like to ensure staunchness, high disposal costs, high risk of theft of the contents, fast deterioration of the box.

Summary of the invention

[0005] The problem at the basis of the present invention, is that of creating a box particularly for military camp equipment that can solve the drawbacks of the prior art described above.

[0006] These problems are overcome, according to the present invention, by a box particularly for military camp equipment of the specified type, which is characterised in that said structure is metallic.

[0007] Further characteristics and advantages of the box according to the invention will be better shown from the detailed description of an example of realization, made hereinafter with reference to the enclosed drawings, with illustrative and non limiting purpose.

Brief description of the drawings

[0008]

Figure 1 shows schematically a perspective view of a box particularly for military camp equipment according to the present invention;

Figure 2 shows schematically a perspective view and in separated parts of the box in figure 1;

Figures 3a and 3b show schematically a perspective enlarged view of the fixing system for the box sides, respectively in cross section and in perspective;

Figure 4 shows schematically a perspective view of the separated parts and a detail of the box;

Figure 5 shows schematically a perspective view of the box stacking with another identical box.

Figure 5a shows a perspective view of a detail of the stacking system shown in figure 5;

Figure 5b shows schematically a detail of the stacking system shown in figure 5;

Figures 6a and 6b and 6c show schematically the characteristics of the stacking system of two boxes according to the invention;

Figures 7a, 7b and 7c show a perspective view of an enlarged detail of the box shown in figure 1;

Figures 8a, 8b, and 8c show a view of the successive steps of assembly of the box shown in figure 1.

Detailed description of the drawings

[0009] With reference to figure 1, with 1 a box particularly for military camp equipment according to the present invention and comprising a metal structure 2 is generally indicated.

[0010] Said metal structure 2, generally in parallelepiped form, is composed in turn (fig. 2) of a top grid 3, a bottom grid 4, opposite sides 5, and opposite side panels 6.

[0011] Said top grid 3, and bottom grid 4, are rectangular metal frames, as similarly are rectangular metal frames said opposite sides 5, and said opposite side panels 6.

[0012] Said metal frames are generally built from closed sections commercially available; advantageously said sections are square.

[0013] In particular, the opposite sides 5, and the opposite side panels 6, are comprise at least two uprights 8 each and a plurality of crossbars 9 fixed to the uprights 8 by weldings or other known methods.

[0014] The top grid 3 and bottom grid 4 are made of opposite long sides 10, opposite short sides 11 and a plurality of crossbars 9, made of the above mentioned sections, said crossbars being fixed to said long sides 10 by welding or other known methods.

[0015] According to a preferred but non-limiting embodiment, said crossbars 9, are arranged in perpendicular

ular fashion to said uprights 8, in the case of the opposite sides 5, and the opposite side panels 6, and are arranged in perpendicular manner to said long sides 10, in the case of the top grid 3 and bottom grid 4.

[0016] To said frames are associated buffer panels 7, glued to said frames so to be placed in the interior part of structure 2 of box 1; said buffer panels 7, are composed of sheets made of a material with adequate mechanical resistance to contain and protect the camp equipment packed in box 1, manufactured, for example, from different kinds of elastomer materials. Said panels 7 can be easily replaced individually in the case of brackage, without having to intervene on the structure 2, or the remaining panels 7.

[0017] With reference to figures 2, 3a and 3b, said opposite sides 5 are connected to said top grid 3 and said bottom grid 4 using male-female engagement means 12 and fixing means 14.

[0018] Said engagement means 12 are composed of male connecting and centring elements 12a, and female elements 12b. Said male elements are composed of cylindrical pins 13a arranged on the sides 5, in particular on the most external crossbars 9, at the uprights 8, and on the opposite side of these uprights 8 and are inserted into said female engagement means 12b, which are composed of housings 13b of the bottom grid 4, and the top grid 3, made out in correspondence of said pins 12b on sides 5.

[0019] Said housings 13b are provided with circular holes with predetermined size adapted to allow the passage of the cylindrical pins 12b; the depth of said housings 13b is preferably the same as the length of the pins 12b.

[0020] The fixing means 14 described above include a screw 14a, a hole 14b in the base of the housings 13b, with a diameter smaller than the diameter of the pins 12b, co-axial with said pin and located on the opposite side compared to the insertion hole for the pin 12b, a threaded cavity 14c drilled inside each pin 12b and co-axial with said pin 12b, sized so that each pin 12b can be fixed in its corresponding housing 13b using a screw 14a passing through said hole 14b and screwing into said threaded cavity inside each pin 12b.

[0021] According a preferred embodiment, as illustrated in figure 4, the two opposite side panels 6, are provided with side fins 15, said fins 15 being integral part of the uprights 8 of said side panels 6. In particular, said fins are generally rectangular in shape, elongated, and completely surround the upright 8 of which they are part.

[0022] Moreover, said fins, are located on the part of side panels 6 towards the exterior of box 1, protruding in the direction of the corresponding uprights 8 of sides 5, and resting on said corresponding uprights 8 of sides 5.

[0023] Advantageously the top grids 3 and bottom grids 4 are provided with container rims 16 and 17 respectively, located on and forming part of the sections that constitute the respective short sides. Said container

rims 16 and 17, are positioned on the parts of grids 3 and 4 that face the exterior of the box 1, on the part of the respective side panels 6. In particular, the container rims 16 of the top grid 3 protrude in the direction of the bottom grid 4, and vice-versa, the container rims 17 of the bottom grid 4 protrude in the direction of the upper grid 3.

[0024] Said container rims 16 and 17 permit simple and rapid insertion of the opposite sides against the grids 3 and 4 and sides 5, completing the structure 2 of box 1, and, together with the side fins 15, they allow stable and safe blocking of side panels 6 against grids 3 and 4, and against sides 5.

[0025] Figures 8a, 8b and 8c show the sequence followed for assembling the side panels 6 and the subsequent obtaining of the structurally complete box 1.

[0026] Firstly (fig. 8a) the side panel 6 is made to knock against the sides 5 in proximity of the top grid 3, and the upper part of said side panel 6 is inserted into the cavity formed between the top grid 3 and the corresponding upper container rim 16 until it lays on said top grid 3.

[0027] At this point the side panel 6 is rotated (fig. 8b) around its support point on the top grid 3, that acts as hinge axis, so that the lower part of the side panel 6 is moved nearer to the bottom grid 4 until contact is made between the side panel 6 and the sides 5, using the handles.

[0028] When the side panel 6 is completely supported by sides 5, it is slid downwards (fig. 8c) until it touches the bottom grid 4 and is housed between the sides 6 and the lower container rim 17 associated with said bottom grid 4.

[0029] In order to prevent accidental opening of the box sides, closing systems 26 have been provided (fig. 1), for example security seals made of a numbered plastic band or made of the traditional lead wire, that is has to be broken to open the box 1.

[0030] According to one characteristic of the present invention, it is possible to stack several boxes 1 (figs. 5a e 5b). In particular, according to a preferred embodiment, boxes 1 can be stacked three levels high.

[0031] This is advantageously obtained thanks to the presence, in correspondance of the four edges of the top grid of said box 1, of fine metal plates 18 fixed to the frame at a predetermined depth at each corner formed by the intersection between the long sides 10 and to the short sides 11 of the top grid 3 of said box 1.

[0032] Said metal plates 18 are preferably triangular in shape, more precisely a right-angled isosceles triangle, with the cathetus attached to the long side 10 and to the short side 11 that intersect at the corresponding angle, and with the unattached hypotenuse.

[0033] Moreover, each bottom grid 4 of said box 1 is provided with support feet 19.

[0034] Four feet 19 of the box are positioned on the bottom grid 4 near the intersection between the long sides 10 and the short sides 11, at predetermined dis-

tances from said sides 10 and 11 so that they can rest on the metal plates 18 of a box underneath, and against said long side 10 and said short side 11 that intersect near said metal plate 18, blocking each other automatically once stacked.

[0035] Furthermore, the box 1 is preferably provided with two further support feet 28, located on a crossbar 26 of the bottom grid 4, parallel to said short sides 11 and linked in central position as regards the long sides 10. Said feet 28, when the box 1 is stacked onto a second box, rest on a crossbar 27 of the top grid of said second box, linked in central position as regards the long sides 10.

[0036] The bottom grids 4 of the boxes 1 further comprises advantageously a plurality of sections 20 (fig. 6b) of predetermined size associated, preferably welded, to the underside of said bottom grids 4 on the long sides 10.

[0037] According to the invention, said sections 20 are arranged two for each long side 10, in parallel and in contact for their total length with said long sides 10, spaced and extending from the ends of said long sides 10 towards the centre of said long sides 10, in order to create a passage 24 between the respective internal ends of said sections 20, for the lift truck forks 21 (fig. 6a) from both long sides 10.

[0038] In addition, a passage 25 for said lift truck forks 21 is formed under the respective short sides 11, delimited only by the support feet 19 (fig. 6c).

[0039] Preferably the passages are all the same width as to allow the use of a single lift truck with a single fork.

[0040] As shown in figure 6a, this results in a box 1 that can be raised with forks on all four sides, with an improved easiness in handling and stacking.

[0041] Advantageously the side panels 6 are provided with handles 22, inserted into screw eyes 23, attached to the bottom surface 24 of at least one crossbar 9 of said side panels 6.

[0042] Said handles 22 are preferably forged from a metal rod of predetermined size, bent in four points in order to provide said handles 22 with the characteristic "omega" shape, the feet of the "omega" corresponding to the pins of the handle 22, inserted into the respective screw eyes 23.

[0043] These handles are movable and can be moved up to a 90° angle (fig. 7b) between a protruding position for handling purposes, and the rest position that is recessed in the box side so that it is flush with the surface.

[0044] According to a preferred embodiment, there are two handles 22 on each side panel 6, both on the same crossbar 9, at a predetermined distance from each other, and at a predetermined distance from the uprights 8 on which said crossbar 9 is welded.

[0045] Thanks to the presence of said handles 22 it is possible to handle the side panels 6 easily during assembly operations.

[0046] According to a preferred embodiment, the metal material used for the modular structure 2 of box 1 is

steel. In particular, galvanised steel is the preferable material.

[0047] According to a preferred form of embodiment, the long sides 10 of grids 3 and 4 have a length between 210 and 230 centimetres, and the short sides 11 of the grids 3 and 4 have a length between 110 and 130 centimetres, while the uprights 8 of sides 5 and side panels 6 have a length between 200 and 250 centimeters.

[0048] In this manner, the box results modular, which is that when stored or stacked with other identical boxes, it occupies the exact internal space of larger structures such as a container.

[0049] Boxes particularly for military camp equipment according to the present invention have excellent structural resistance permitting the stacking of up to three boxes on top of each other, thus allowing an increased stocking density, obtaining a considerable saving in storage surface.

[0050] The use of sections for assembling of the parts of the structure of the boxes permits an easy, rapid and economical construction of the boxes thereof.

[0051] Moreover, on one hand the box structure according to the present invention is solid and sturdy, thanks to the use of steel, and on the other hand it is corrosion resistant thanks to the galvanised finish.

[0052] Thanks to the buffer panels in elastomer material, the box 1 is splash-proof and is practically waterproof; furthermore, said panels ensure a good barrier against splashing, and provide hygienic insulation for the contents against insects and parasites such as woodworm, moths, caterpillars and mould inside the box, without having to resort to chemical and thermal treatments. This means the boxes can be used for all purposes even in damp tropical climates and can also be stocked out of doors.

[0053] Moreover, the use of elastomer guarantees good heat resistance qualities, and this aspect places the boxes according to the invention in an avant-guard position from the point of view of safety and accidents.

[0054] Therefore, for the reasons listed previously, boxes for military camp equipment according to the invention offer the advantages of being highly resistant and long-lasting, they can be used repeatedly, they have low maintenance costs, and are easy to assemble, all of which overcome many of the problems associated with the prior art.

[0055] In addition, another important aspect of the present invention is the easy maintenance for rapid and simple replacement of any elements that may be damaged, such as a side panel, with a new element kept in stock as a spare part. Said box can furthermore be completely dismantled, allowing its stock and transport with a minimal encumbrance.

[0056] Moreover, because of the predetermined size described above, and to the forcability on four sides, it is possible to easily load up to eleven boxes inside a transport container.

[0057] Last but not least advantage of a box particu-

larly for camp equipment according to the invention, is the very strong structure that prevents infraction by non-authorised persons.

[0058] Still further, a box according to the invention may be suitably equipped with an identification system, thanks to, for example, a metal plate wearing a barcode and respective number or by the application of an electronic "microchip" survey device.

[0059] The finding thus conceived is susceptible to further variants and modifications to satisfy all types of specific or different needs, all of which fall within the scope of protection of the finding itself, as defined by the following claims.

Claims

1. Box particularly for military camp equipment (1) comprising a structure (2), in turn comprising a top grid (3), a bottom grid (4), opposite sides (5) and opposite side panels (6), **characterised in that** said structure (2) is made of metal. 20
2. Box particularly for military camp equipment according to claim 1, **characterised in that** said top grid (3) and said bottom grid (4) are rectangular metal frames. 25
3. Box particularly for military camp equipment according to claim 1, **characterised in that** said opposite sides (5) are rectangular metal frames. 30
4. Box particularly for military camp equipment according to claim 1, **characterised in that** said opposite side panels (6) are rectangular metal frames. 35
5. Box particularly for military camp equipment according to previous claims **characterised in that** said metal frames are composed of at least one metal section. 40
6. Box particularly for military camp equipment according to claim 5, **characterised in that** the material constituting said metal frames is steel. 45
7. Box particularly for military camp equipment according to claim 6, **characterised in that** the steel constituting said metal frames is galvanised. 50
8. Box particularly for military camp equipment according to claim 7, **characterised in that** said top grid (3) and bottom grid (4) said sides (5) and said side panels (6) are respectively associated with at least one buffer panel. (7). 55
9. Box particularly for military camp equipment according to claim 8, **characterised in that** said buffer panel (7) is a sheet of material that possesses an adequate mechanical resistance for containing and protecting the camp equipment contained in box 1.
10. Box particularly for military camp equipment according to claim 9, **characterised in that** said buffer panel (7) is a sheet of elastomer material.
11. Box particularly for military camp equipment according to claim 8, **characterised in that** said buffer panel (7) is glued to the respective frame with which it is associated.
12. Box particularly for military camp equipment according to claim 11, **characterised in that** said buffer panel (7) is positioned inside the structure (2) of the box (1).
13. Box particularly for military camp equipment according to claim 7, **characterised in that** it includes engagement means (12) and fixing means (14) between said opposite sides (5), and said top grid (3) and bottom grid (4).
14. Box particularly for military camp equipment according to claim 13, **characterised in that** said engagement means (12) comprises cylindrical pins (13a) and housings (13b).
15. Box particularly for military camp equipment according to claim 14, **characterised in that** it comprises screws (14a) for fixing said top grids (3) and bottom grids (4) to said opposite sides (5).
16. Box particularly for military camp equipment according to claim 7, **characterised in that** said side panels (6) are provided with side fins (15).
17. Box particularly for military camp equipment according to claim 16, **characterised in that** said side fins (15) have an elongated rectangular shape and are part of the uprights (8) of said side panels (6).
18. Box particularly for military camp equipment according to claim 7, **characterised in that** said top grid (3) is provided with container rims (16).
19. Box particularly for military camp equipment according to claim 7, **characterised in that** said bottom grid (4) is provided with container rims (17).
20. Box particularly for military camp equipment according to claim 7, **characterised in that** said bottom grid (4) is provided with support feet.
21. Box particularly for military camp equipment according to claim 20, **characterised in that** a fine metal plate (18) is fixed at each corner formed by the intersection of a long side (10) and a short side

(11) of the top grid (3), attached to said sides (11) and (12) to form a housing to insert the support foot of the bottom of a stacked box.

22. Box particularly for military camp equipment according to claim 21, **characterised in that** said fine metal plate (18) has a right-angled isosceles triangle shape. 5
23. Box particularly for military camp equipment according to claim 7, **characterised in that** said bottom grid (4) comprises a plurality of sections (20) attached to the underside of the grid (4) to form passages (24; 25) for inserting lift truck forks. 10
24. Box particularly for military camp equipment according to claim 7, **characterised in that** said side panels (6) are provided with handles (22). 15
25. Box particularly for military camp equipment according to claim 7, **characterised in that** said top grid (3) and bottom grid (4) comprise two long sides (10) and two short sides (11), said sides (5) comprising at least two uprights (8) and said side panels (6) comprising at least two uprights (8). 20 25
26. Box particularly for military camp equipment according to claim 25, **characterised in that** said long sides (10) have a length between 210 and 230 centimetres, and said short sides (11) have a length between 110 and 130 centimetres, said uprights (8) have a length between 200 and 250 centimetres. 30

35

40

45

50

55

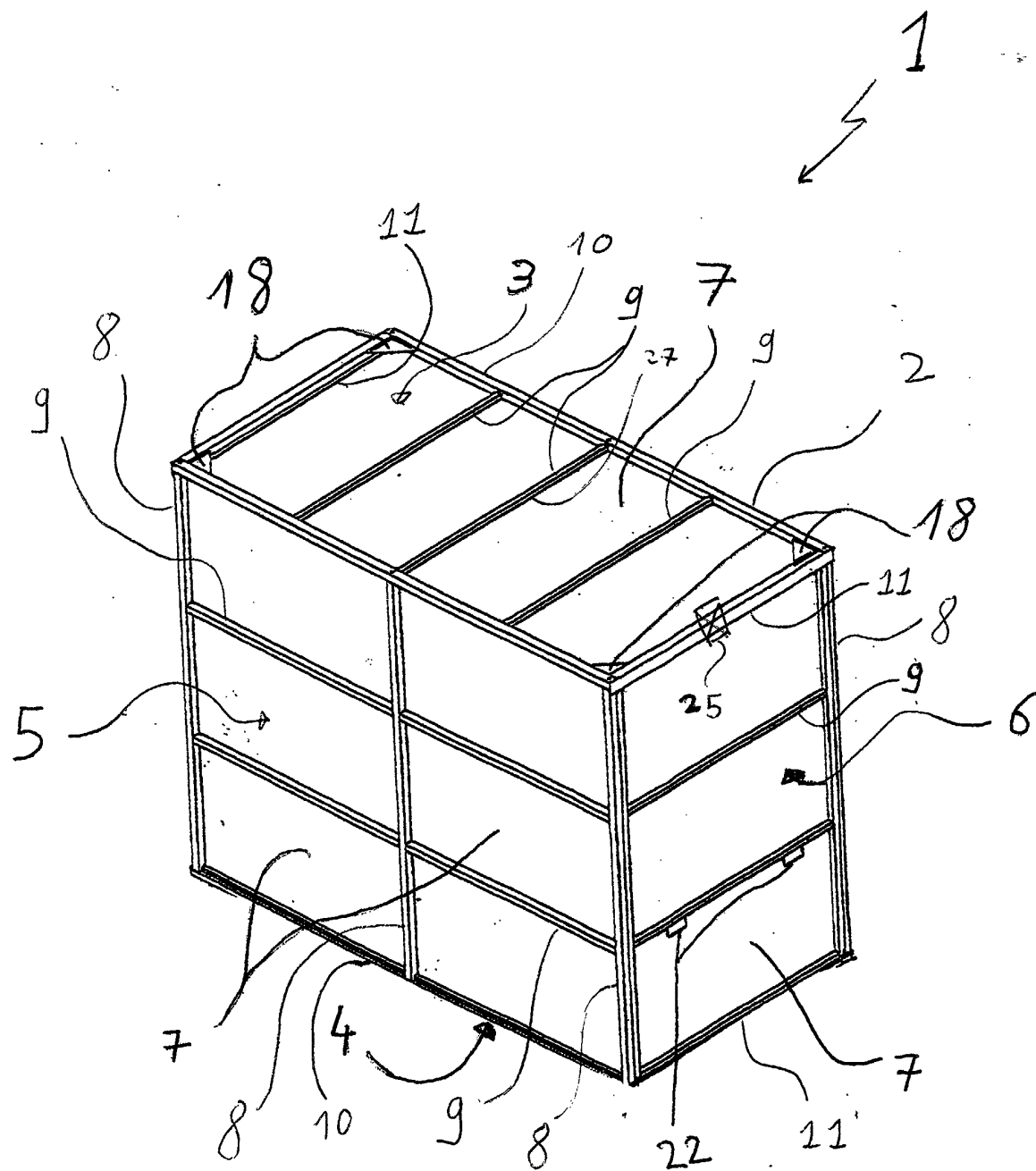


FIG. 1

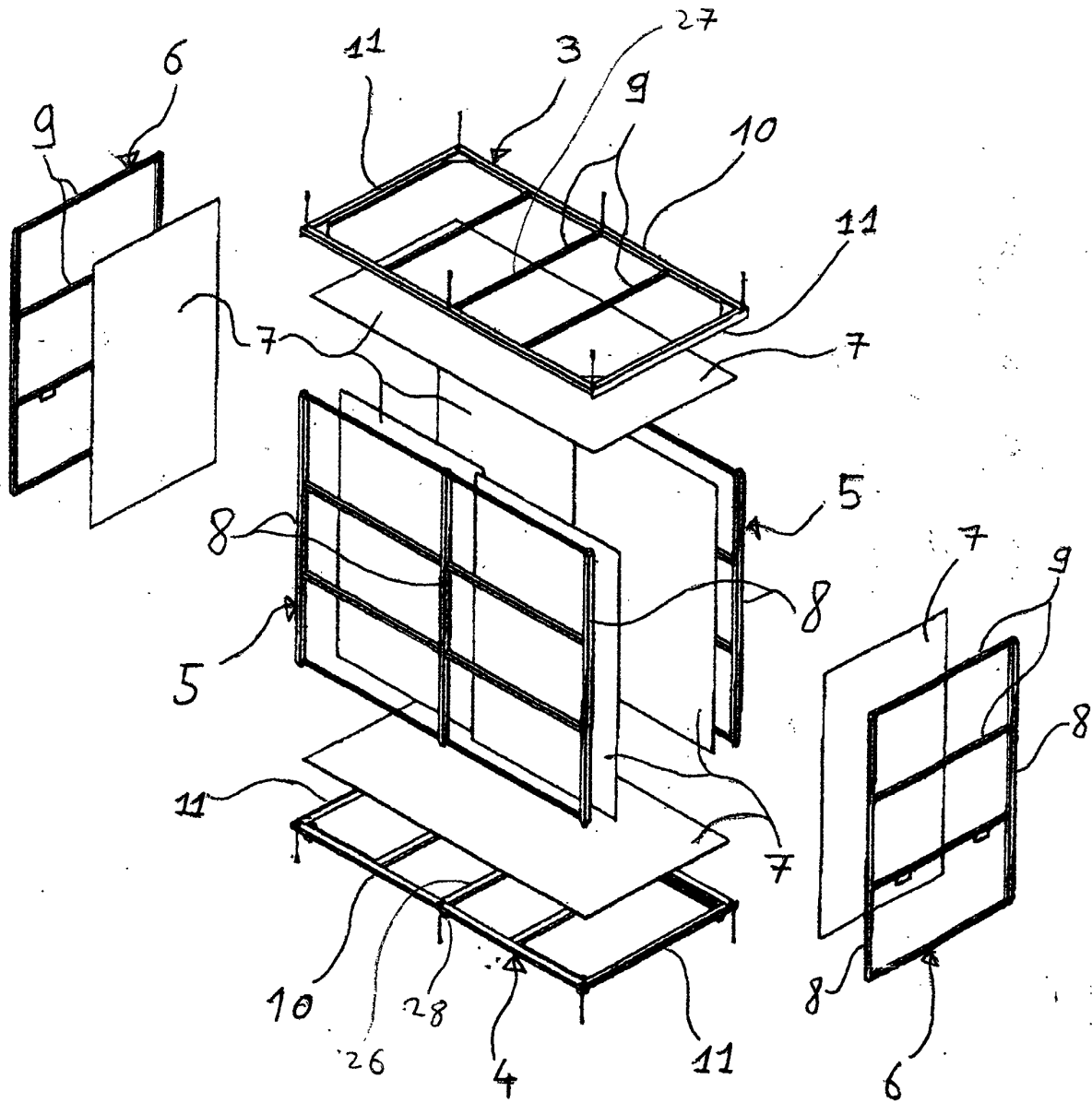
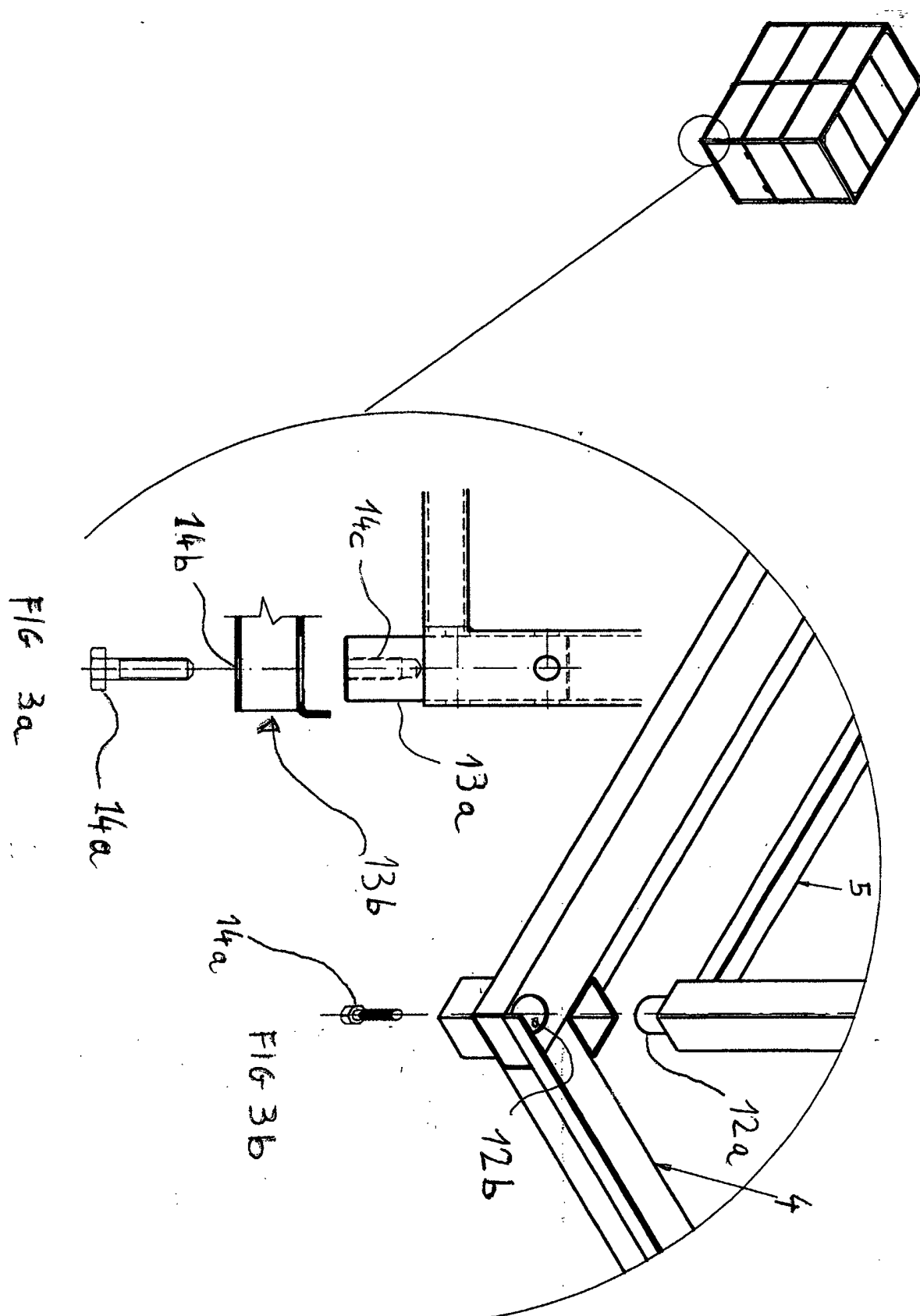


FIG. 2



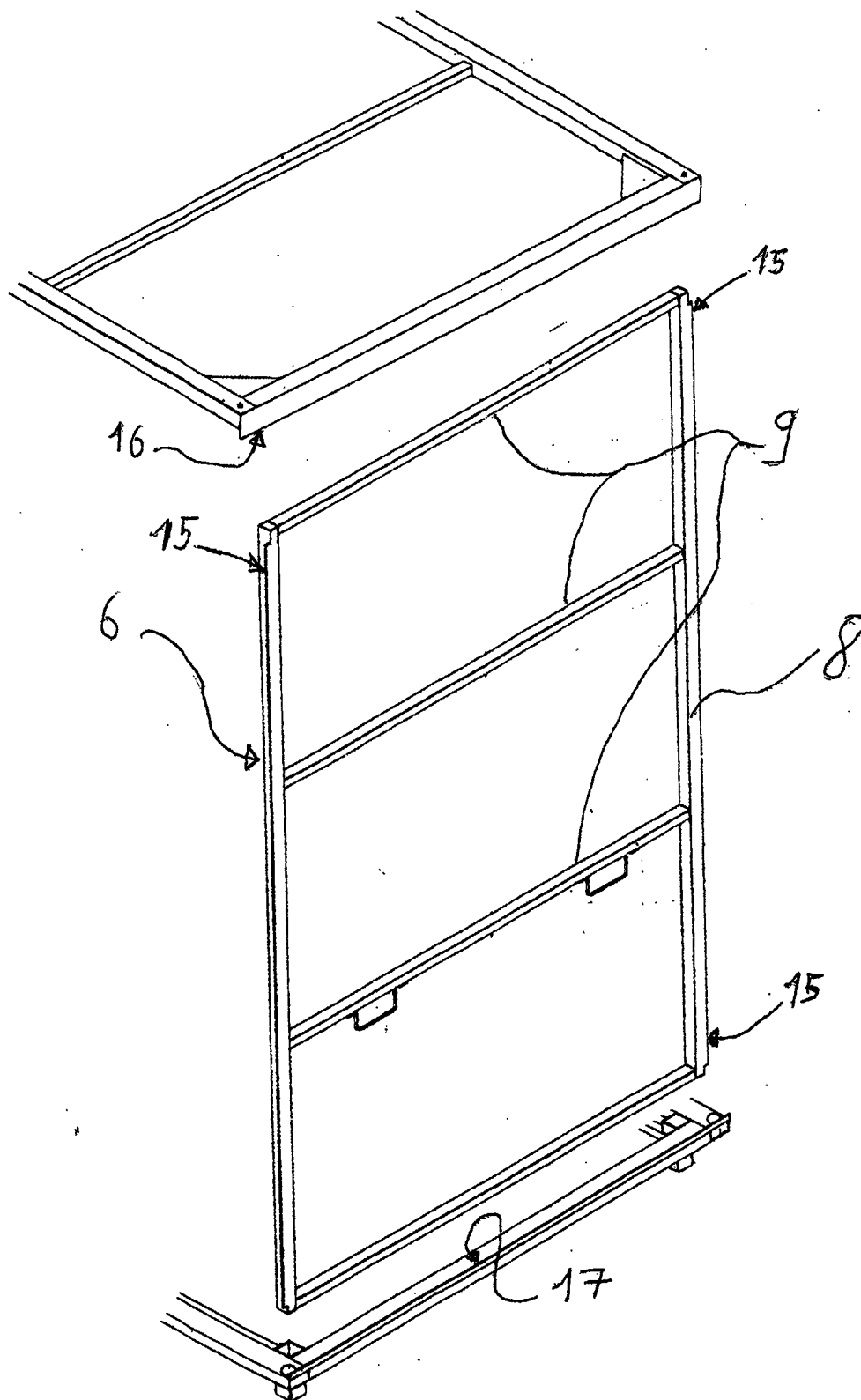
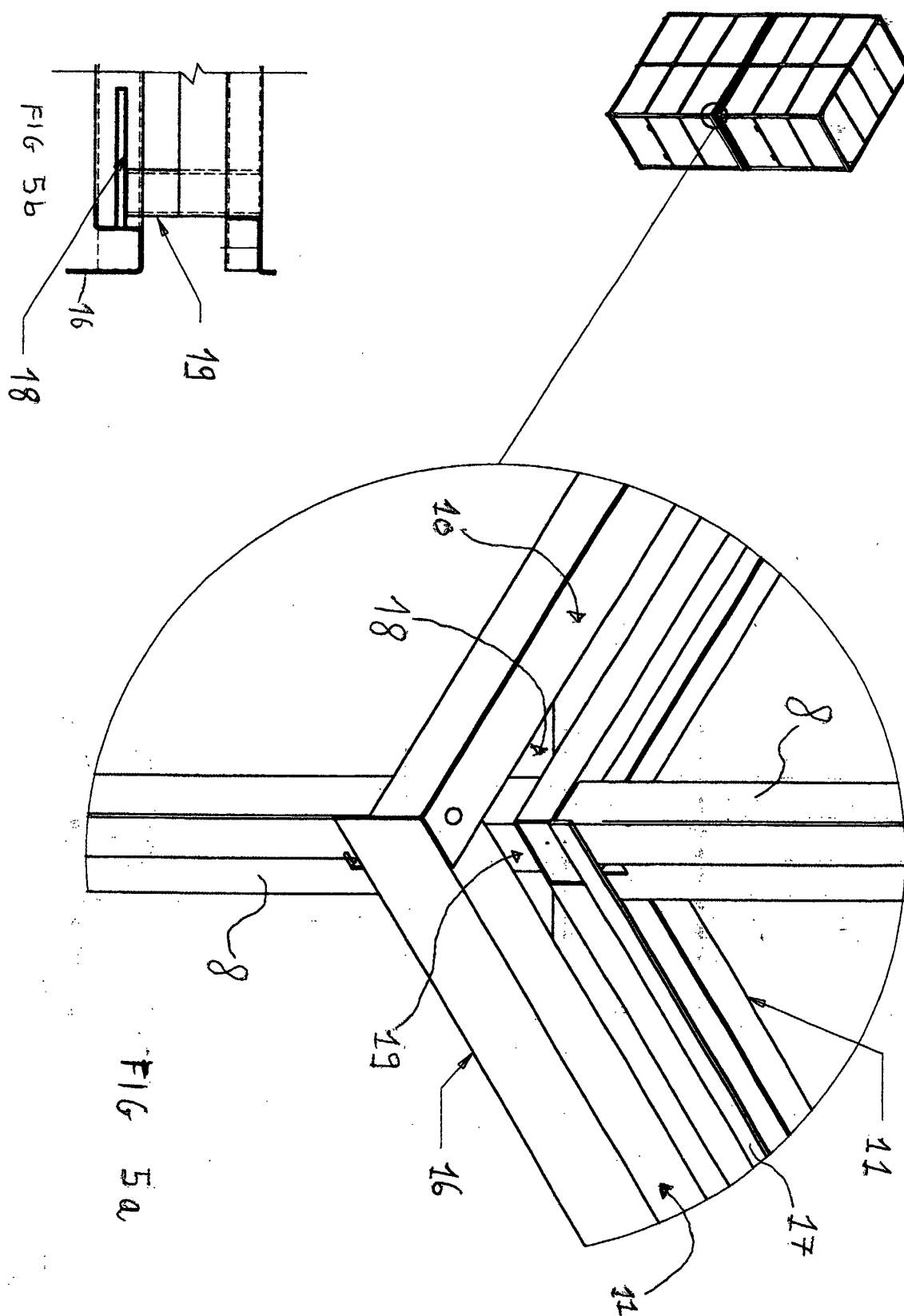
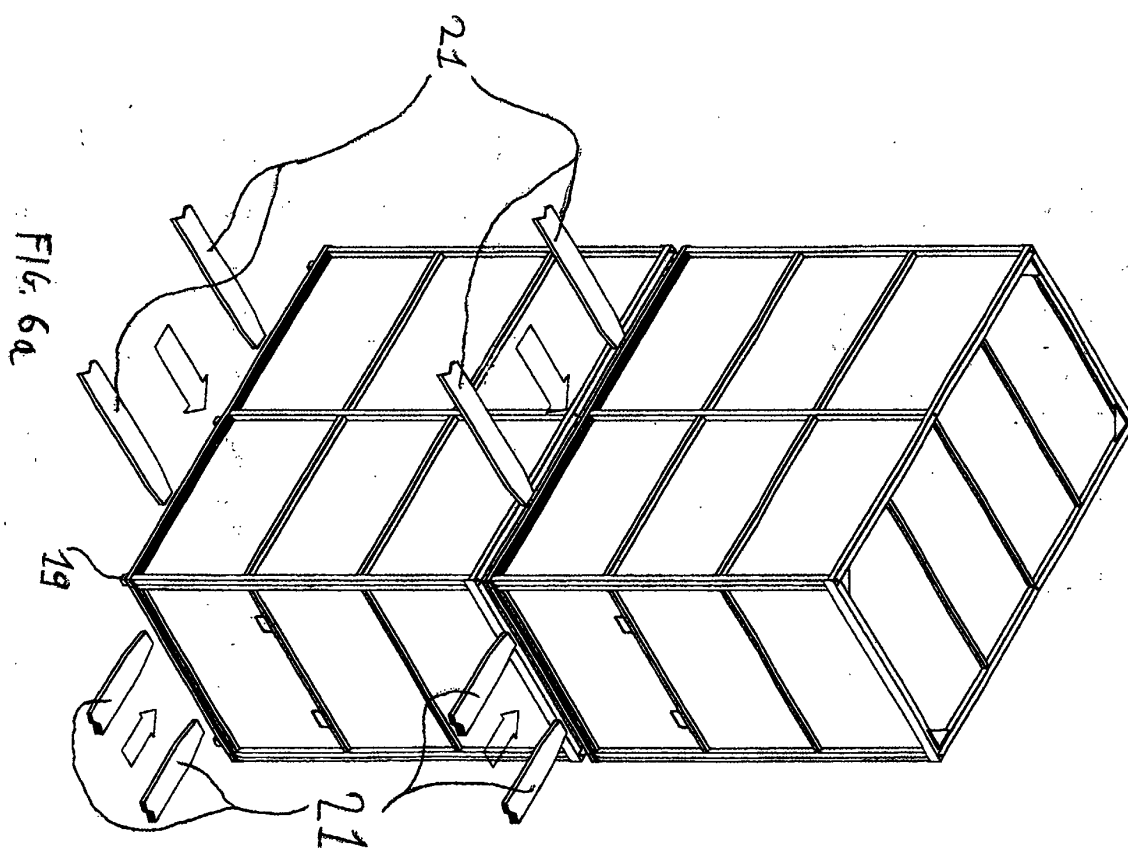
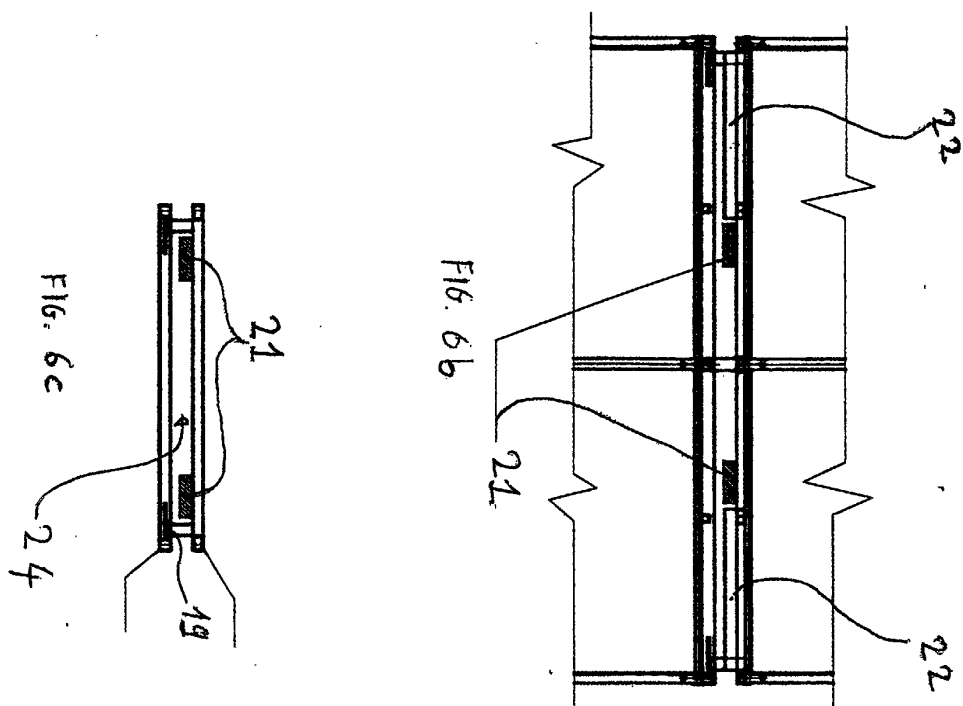
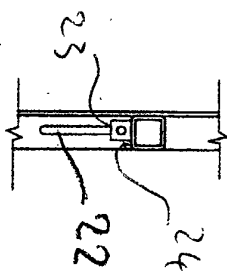
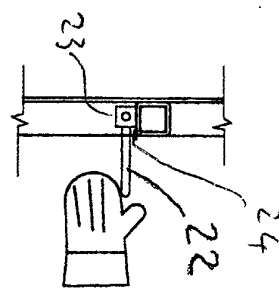
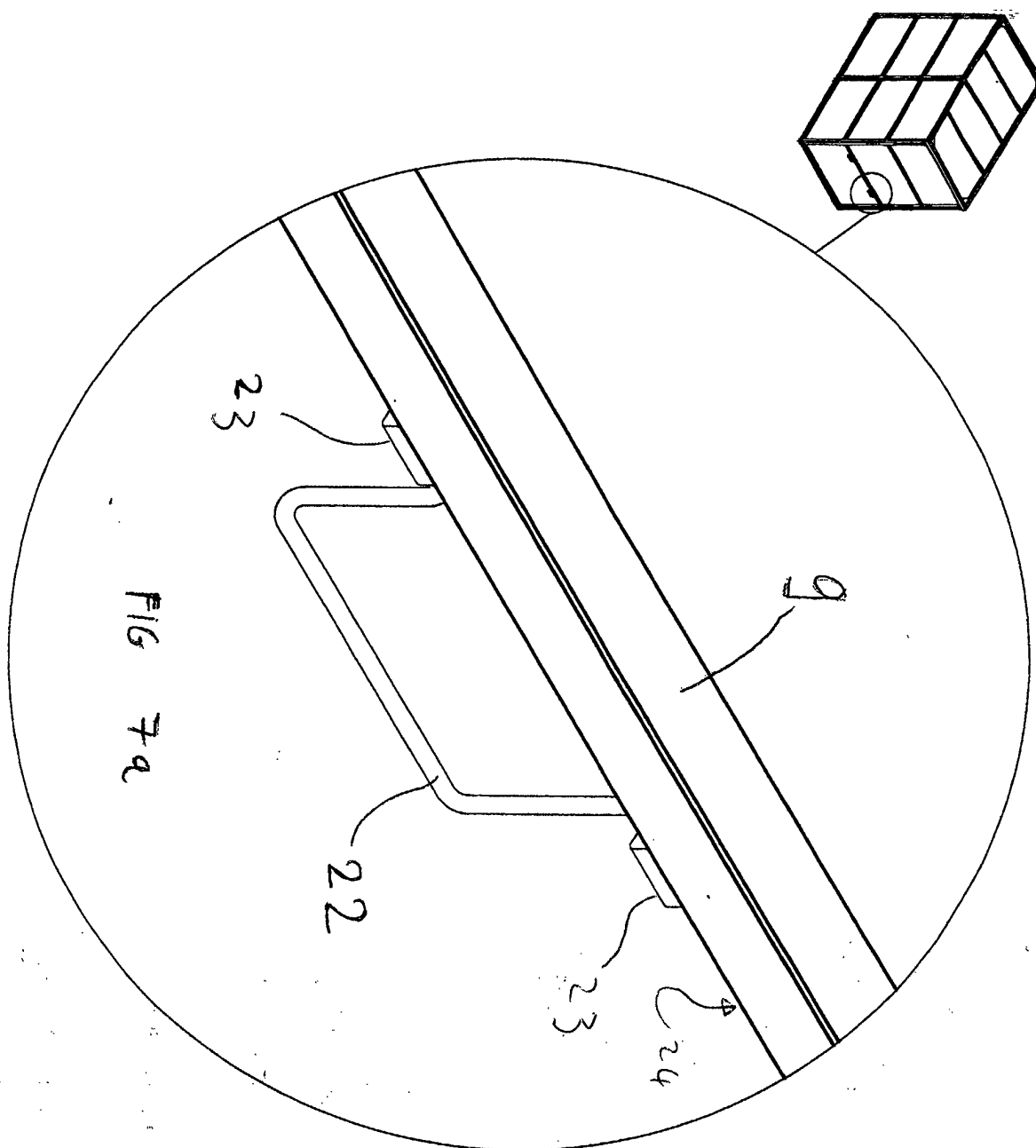
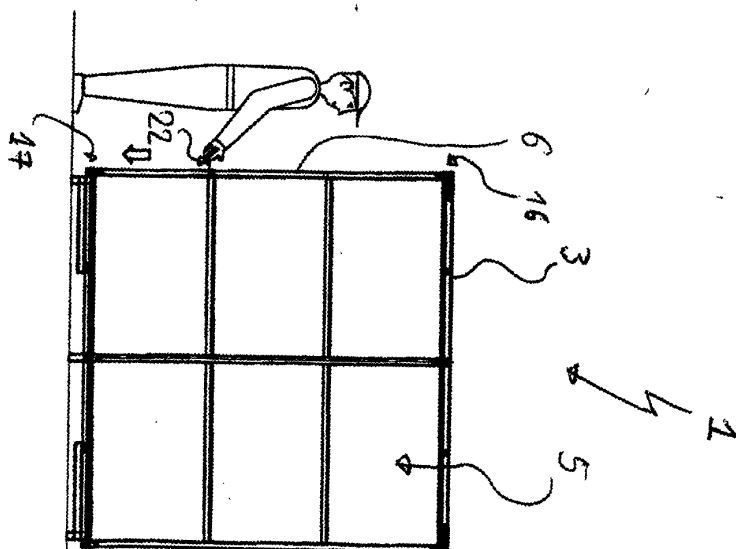
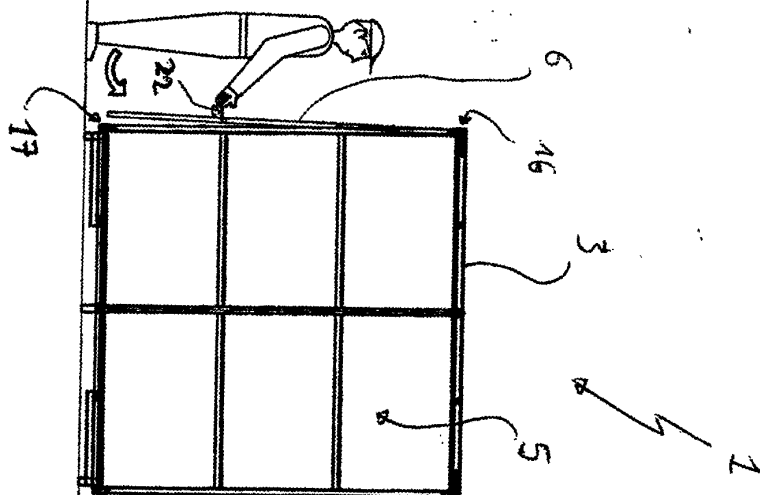
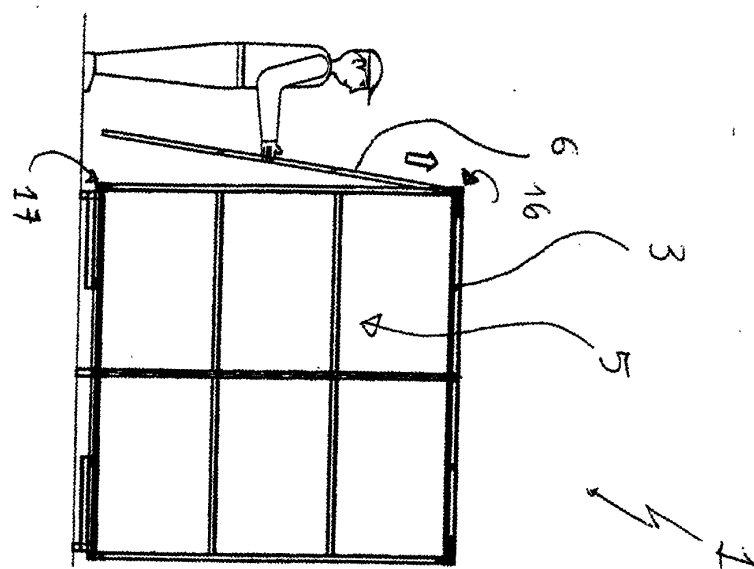


FIG 4











European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 02 02 0011

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)
X	WO 01 51387 A (SEVERI PAOLO) 19 July 2001 (2001-07-19)	1-12,23	B65D90/02 B65D90/08
A	* page 4, line 21 - page 15, line 2; figures 1-3,5 *	13,15, 20,25,26	

X	GB 1 507 042 A (REKLITIS E) 12 April 1978 (1978-04-12)	1-10,13, 14,20, 24-26	
A	* page 1, line 46 - page 2, line 117; figures 1-5 *	12,16,17	

X	GB 2 206 098 A (GKN CHEP LTD) 29 December 1988 (1988-12-29)	1-9,13, 20,23,25	
A	* page 4, line 20 - page 7, line 33; figures 1-3 *	12,21,22	

A	EP 1 043 239 A (VSI HOLDING AS) 11 October 2000 (2000-10-11) * paragraph [0021]; figure 1 *	1,7	

A	US 4 231 453 A (MINOR WILLIAM F) 4 November 1980 (1980-11-04) * abstract; figures 2,3 *	1,24	TECHNICAL FIELDS SEARCHED (Int.Cl.7) B65D

The present search report has been drawn up for all claims			
Place of search MUNICH		Date of completion of the search 7 February 2003	Examiner Galli, M
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	

EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 02 02 0011

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

07-02-2003

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 0151387	A	19-07-2001	WO 0151387 A1	19-07-2001
			AU 2128700 A	24-07-2001
			EP 1246766 A1	09-10-2002

GB 1507042	A	12-04-1978	NONE	

GB 2206098	A	29-12-1988	AU 1947988 A	19-01-1989
			BE 1000786 A3	04-04-1989
			DE 3820999 A1	05-01-1989
			ES 2009005 A6	16-08-1989
			FR 2617130 A1	30-12-1988
			WO 8810223 A1	29-12-1988
			LU 87243 A1	13-12-1988
			NL 8801600 A	16-01-1989
			ZA 8804207 A	29-03-1989

EP 1043239	A	11-10-2000	EP 1043239 A2	11-10-2000
			AU 7389101 A	24-12-2001
			WO 0196214 A1	20-12-2001

US 4231453	A	04-11-1980	NONE	
