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

(11) EP 1 394 058 A1

# (12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
**03.03.2004 Bulletin 2004/10**

(21) Application number: **03077648.8**

(22) Date of filing: **25.08.2003**

(51) Int Cl.[7]: **B65D 19/24**, B65D 19/31, B65D 19/32, B65D 19/44, B65D 85/46

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

(30) Priority: **26.08.2002 BE 200200502**

(71) Applicant: **Servaes, Jan**
**2320 Hoogstraten (BE)**

(72) Inventor: **Servaes, Jan**
**2320 Hoogstraten (BE)**

(74) Representative: **Donné, Eddy**
**Bureau M.F.J. Bockstael nv**
**Arenbergstraat 13**
**2000 Antwerpen (BE)**

## (54) Element for storing, handling and transporting objects

(57) Element for storing, handling and transporting objects (20), characterised in that it is mainly formed of a horizontal base (1) upon which is provided an upward directed support (2).

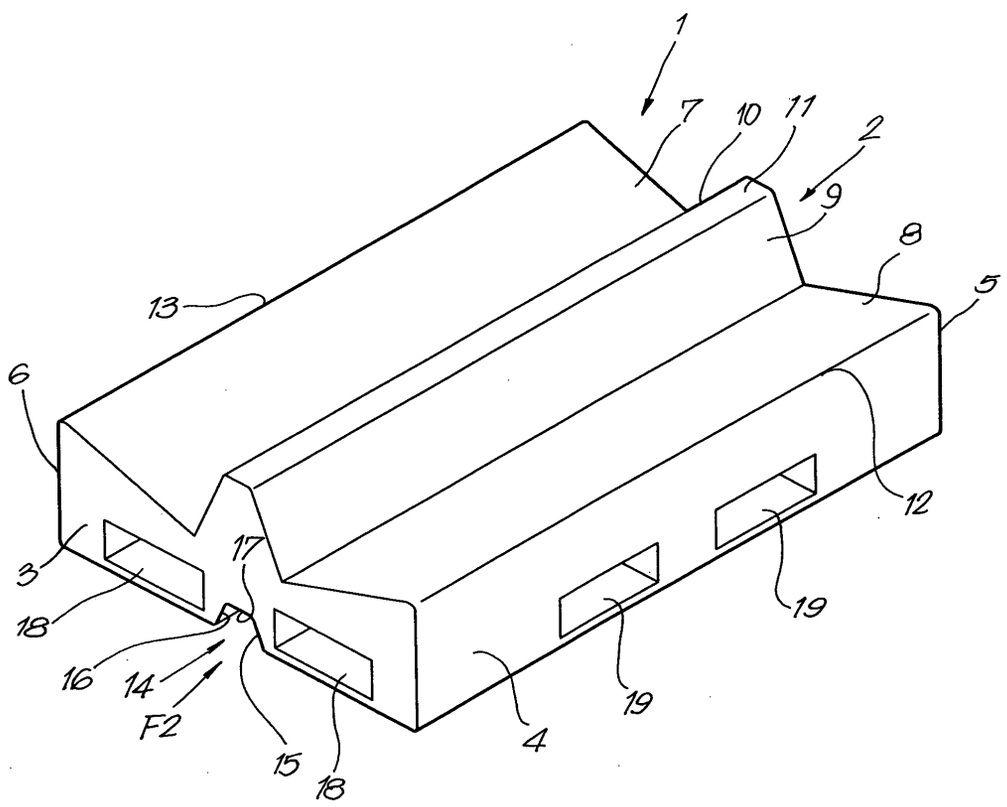


Fig. 1

EP 1 394 058 A1

## Description

**[0001]** The present invention concerns an element for storing, handling and transporting objects.

**[0002]** In particular, the invention concerns an element for storing, handling and transporting mainly small, flat objects that are fragile or easily damaged, such as plates, tablets, tiles and the like in any material whatsoever, such as natural stone, ceramic, etc.

**[0003]** It is known that such objects, in order to be stored, handled and transported, are stacked upon each other or loosely against one another in cases or boxes, on pallets or the like.

**[0004]** A disadvantage thereof is that the objects which are stacked in this manner are considerably vulnerable to shocks which may occur during the transport or handling, and that they are also vulnerable to scratches which may occur as the objects slide over one another.

**[0005]** The lower the objects are situated in the pile, the more vulnerable and/or breakable they are, since they have to carry the weight of the pile of objects lying on top.

**[0006]** Also when hard particles are present between the objects, such as for example sand grains or particles which have broken off from the objects themselves, the risk of damage is particularly great.

**[0007]** It is known that the risk of damage due to shocks or due to the objects sliding over each other can be restricted by carefully packing the objects with compressible material to largely absorb the shocks and by firmly fixing the objects.

**[0008]** However, this implies a considerable additional cost as far as packaging material and man-hours are concerned, which naturally increases the cost price of the objects.

**[0009]** Another major disadvantage is that, in order to get hold of an object situated somewhere in the middle or at the bottom of the pile, all the objects lying on top will have to be removed first, as a result of which not only a lot of time is lost, but which also creates a risk of damage for the objects which have to be removed.

**[0010]** The present invention aims to remedy the above-mentioned and other disadvantages.

**[0011]** To this end, the invention concerns an element which mainly consists of a predominantly horizontal base upon which is provided an upward directed support.

**[0012]** Such an element according to the invention makes it possible to place objects having a mainly flat shape upright on their edges against one another on the base, and to let the objects rest in this position against the aforesaid support, possibly while putting a protective material in between.

**[0013]** This offers the advantage that the objects which are stacked in this manner are less sensitive to shocks, among others thanks to the fact that every stacked object mainly only has to carry its own weight and that they will also slide over each other less easily, so that no or less packaging material is required to protect the objects.

**[0014]** Another advantage is that the objects can be picked out individually more easily, without having to remove other objects from the whole first.

**[0015]** Preferably, the dimensions of the base will correspond to the traditional dimensions of pallets, such that optimal use can be made of standardised stacking racks and handling and transport means.

**[0016]** According to a preferred embodiment, the elements are configured such that they can be stacked upon each other and thereby fit into one another in a space-saving manner.

**[0017]** In order to better explain the characteristics of the invention, the following preferred embodiments of an element according to the invention are described as an example only without being limitative in any way, with reference to the accompanying drawings, in which:

figure 1 represents an element according to the invention in perspective;
figure 2 represents a view according to arrow F2 in figure 1, but when loaded;
figure 3 represents a view of stacked empty elements according to the invention;
figure 4 represents a variant of figure 1;
figures 5, 6 and 7 represent views according to arrows F5, F6 and F7 respectively in figure 4.

**[0018]** The element, as represented in figures 1 to 3, is mainly formed of a plate-shaped flat base 1 upon which has been provided a central, upward directed support 2.

**[0019]** The base 1 has a rectangular ground plane; vertical side walls 3-4-5-6; and two surfaces 7-8 on the top side which slant down towards the middle of the base as of the two opposite walls 4-6, such that the height of the base decreases towards the middle.

**[0020]** The dimensions of the ground plane preferably correspond to the dimensions of a standard pallet, namely a width of 80 cm and a length of 120 cm.

**[0021]** The support 2 is situated centrally between the above-mentioned sloping surfaces 7-8 and it is limited by two slanting side walls 9-10 which are connected to each other at the top by a flat part 11.

**[0022]** The central support 2 is parallel to the top edges 12-13 of the surfaces 7-8.

**[0023]** In the ground plane of the base is provided a recess 14, centrally under the support 2, limited by two sloping surfaces 15-16 and a third surface 17 which connects these surfaces 15-16 with each other.

**[0024]** Preferably, two parallel passages 18 have been provided in the longitudinal direction of the base 1, as well as two parallel passages 19 in the direction of the width.

**[0025]** The use of an element according to the invention is very simple and as follows.

**[0026]** Flat objects 20 which need to be stored, handled or transported, as represented in figure 2, are placed upright next to one another, on an edge of the surfaces 7-8 and against the support 2 of the base 1, such that every object 20 is situated either against the support 2 or against an adjacent object 20, either or not with a protective layer between the different objects.

**[0027]** An object 20 which has been stored between other objects 20 on an element according to the invention, can be picked out in a simple manner by tilting the objects 20 on the outside of the object 20 concerned away from the support 2, so that the desired object 20 is set free and consequently can be easily removed.

**[0028]** An element loaded with objects 20 can be easily moved and transported, if required after the objects have been lashed, for example by means of a fork-lift truck.

**[0029]** To this end, the forks 21 of the fork-lift truck, as is schematically represented by means of a dashed line in figure 2, are provided either via the passages 18 or via the passages 19, such that the element can be lifted and moved.

**[0030]** Since the objects 20 are not stacked in a flat manner, as usual, but standing upright, there is less danger for the objects 20 to be damaged due to shocks during transport.

**[0031]** Figures 3 shows how a number of elements can be stacked on each other.

**[0032]** The central recess 14 in the ground plane of the base 1 is preferably configured such that this recess 14 fits exactly over the top of the support 2 of an underlying element.

**[0033]** In this way, empty elements can be stacked onto one another in a stable and space-saving manner.

**[0034]** Figures 4 to 7 represent a variant of an element according to figure 1.

**[0035]** The element is in this case formed of a number of vertical panels that are similar in shape, namely at least two side panels 22 and if required a number of intermediate panels 23, which are mutually connected by means of connecting elements 24, such as laths or the like, in order to obtain a general structure whose shape and the outer dimensions are mainly identical to those of the embodiment described above.

**[0036]** The panels 22-23 are situated at intermediate distances which are larger than the width of forks 21 of a fork-lift truck.

**[0037]** The panels 22 and 23 are in this case made of one piece and mainly consist of a horizontal part 25 whose height decreases as of the far ends towards the middle on the one hand, and of a trapezoidal central part 26 which narrows towards the top on the other hand.

**[0038]** In the lower edge 27 of the panels 22-23 is provided a trapezoidal recess 28, centrally under the trapezoidal part 26, whose dimension of the top edge 29 is equal to the dimension of the top edge 30 of the part 26 and whose angle of inclination of the side edges 31 and 32 of the recess 28 is equal to the angle of inclination of the side edges 33, 34 respectively, of the part 26.

**[0039]** In the lower edge 27 of the panels 22-23 are provided two rectangular recesses 35 whose dimensions are larger than the dimensions of the forks 21 of a fork-lift truck.

**[0040]** The element is preferably made of a light material such as wood, plastic or the like.

**[0041]** On each side panel 22 can be fixed an additional reinforcement plate 36 in this case, made of metal or the like, for example by means of screws 39, whereby this reinforcement plate 36 is provided with two rectangular passages 37 for the forks 21 of a fork-lift truck and with a recess 38 which is similar to a recess 28, whereby these passages 37, the recess 28 respectively, are situated opposite to the recesses 35, 28 respectively, of the side panel 22 concerned.

**[0042]** An element according to the invention with an open structure can be used in the same manner and with the same advantages as the element with the closed structure described above.

**[0043]** The objects 20 in this case rest on the top edges 40 of the side panels 22 and intermediate panels 23.

**[0044]** It is clear that such an element with an open structure, apart from the advantages mentioned above, offers the additional advantage that it is very light and thus easy to handle.

**[0045]** Moreover, objects that underwent a wet treatment or that have been heated during a production process, for example, are loaded directly on an element according to the invention in order to drip dry or to cool, so that a special device is no longer required to that end.

**[0046]** The invention is by no means limited to the above-described embodiments given as an example and represented in the accompanying drawings; on the contrary, such an element according to the invention can be made in all sorts of shapes and dimensions while still remaining within the scope of the invention.

## Claims

1. Element for storing, handling and transporting objects (20), **characterised in that** it is mainly formed of a horizontal base (1) upon which is provided an upward directed support (2).

2. Element according to claim 1, **characterised in that** the base (1) has a rectangular ground plane whose dimensions correspond to those of a standard pallet, in other words **in that** the dimensions of this ground plane are practically equal to 80 and 120 centimetres respectively.

3. Element according to claim 2, **characterised in that** the base (1) is limited by two surfaces (7-8) on its top side which slope down towards the middle of the base as of two opposite side walls (4-6) of the base (1) .

4. Element according to claim 2 or 3, **characterised in that** at least two parallel and mainly horizontal passages (18-19) for the forks (21) of a fork-lift truck are provided in the longitudinal direction and/or widthwise of the base (1).

5. Element according to any of the preceding claims, **characterised in that** the above-mentioned support (2) is provided centrally between the two above-mentioned sloping surfaces (7-8), and **in that** this support (2) extends parallel to the top edge (12-13) of said surfaces (7-8) .

6. Element according to claim 5, **characterised in that** the support (2) comprises two sloping side walls (9-10).

7. Element according to any of the preceding claims, **characterised in that** a recess (14) is provided in the above-mentioned ground plane, centrally under the support (2), whose dimensions are larger than or equal to the dimensions of the top of the support (2).

8. Element according to any of the preceding claims, **characterised in that** it has an open structure.

9. Element according to claim 8, **characterised in that** it consists of at least two parallel vertical side panels (22) which are connected to one another by means of connecting elements (24), in particular laths.

10. Element according to claim 9, **characterised in that** the side panels (22) are made of one piece and **in that** they mainly consist of a horizontal part (25) on the one hand whose height decreases towards the middle as of the far ends, and of an upward protruding trapezoidal central part (26) which narrows towards the top on the other hand.

11. Element according to claim 10, **characterised in that** at least two rectangular recesses (35) are provided in the lower edge (27) of each side panel (22), whose dimensions are somewhat larger than the cross dimensions of the forks (21) of a fork-lift truck.

12. Element according to claim 10 or 11, **characterised in that** a trapezoidal recess (28) is provided centrally in the lower edge (27) of the side panels (22) whose dimension of the top surface (29) and the angle of inclination of the side surfaces (31-32) are equal to or somewhat larger than the dimension of the top surface (30) and the angle of inclination of the side edges (33-34) of the aforesaid trapezoidal part (26) of the side panel (21) concerned.

13. Element according to any of claims 9 to 12, **characterised in that** intermediate panels (23) are provided between the aforesaid side panels (22), whereby the side panels (22) and the intermediate panels (23) have the same shape and dimensions and are mutually connected by connecting elements (24).

14. Element according to any of claims 11 to 13, **characterised in that** a reinforcement plate (36) is provided against the side panels (22) which is at least provided with two passages (37) situated opposite to the recesses (35) of the side panel (21) concerned.

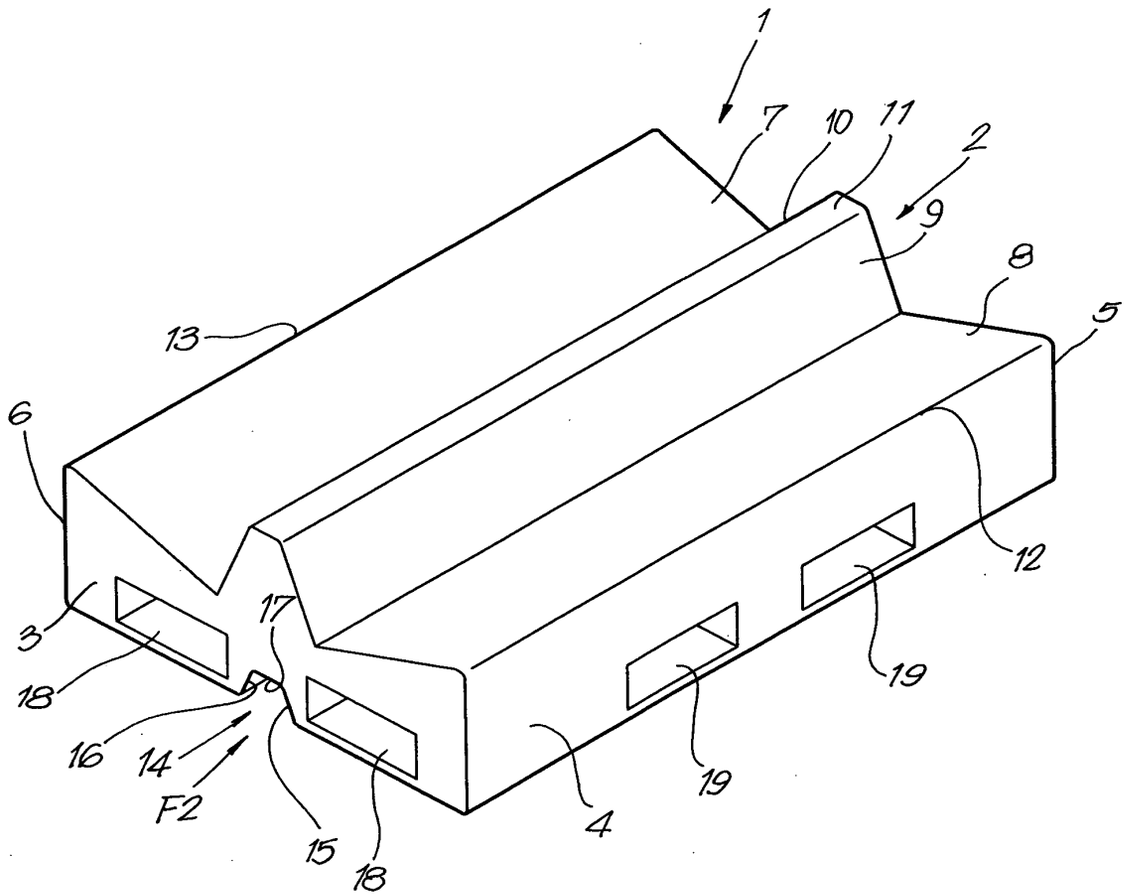


*Fig. 1*

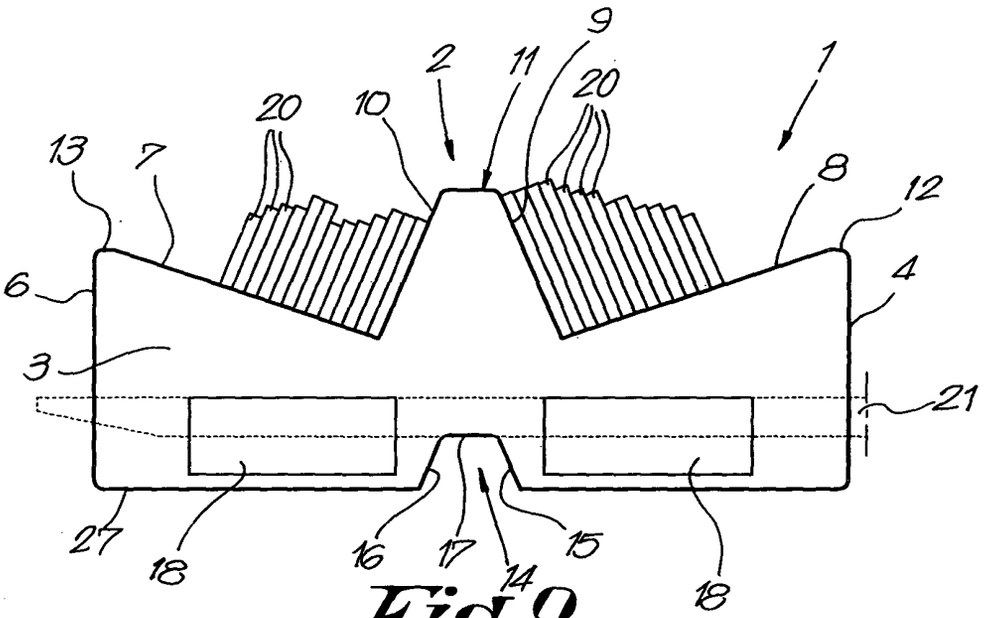
9
2
11
20
20
10
1
13
7
8
12
6
4
3
21
27
18
16
17
14
15
18

Fig.2

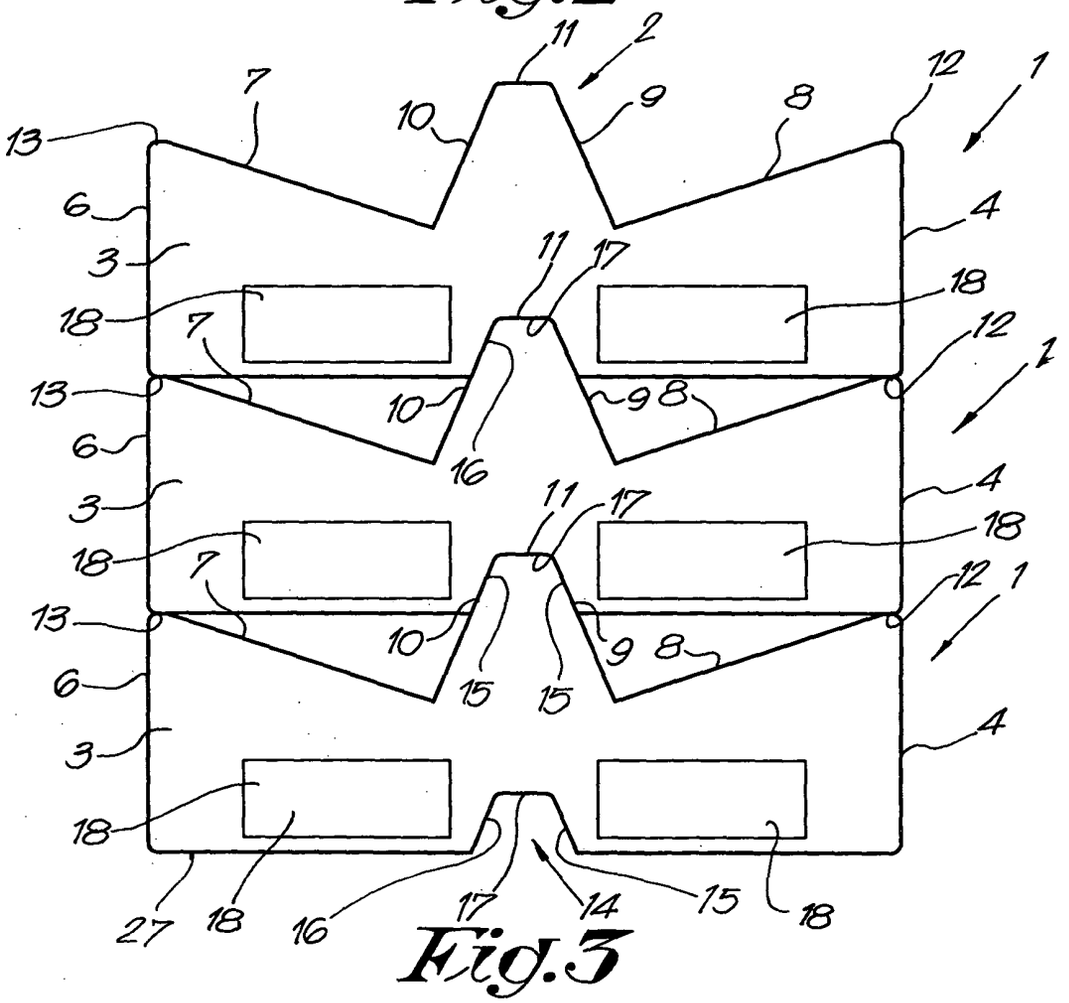
11
2
7
12
1
10
9
8
13
6
4
3
11
17
18
18
7
12
1
13
10
9
8
6
16
4
3
11
17
18
18
7
12
1
13
10
9
8
6
15
15
4
3
18
27
18
16
17
14
15
18

Fig.3

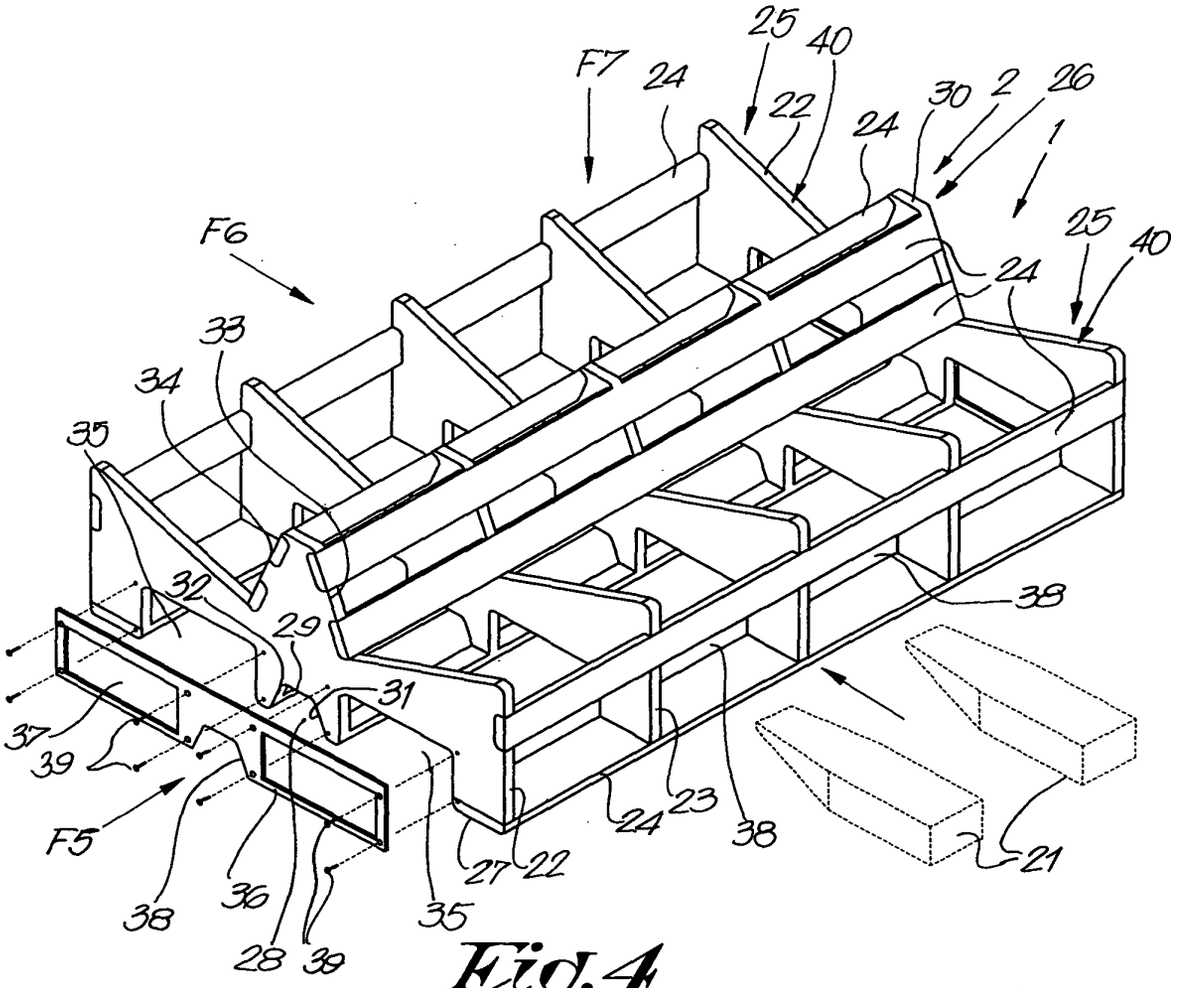
F7
F6
F5
25
40
24
22
30
2
26
1
33
34
35
32
29
31
37
39
38
36
28
27
23
21

Fig.4

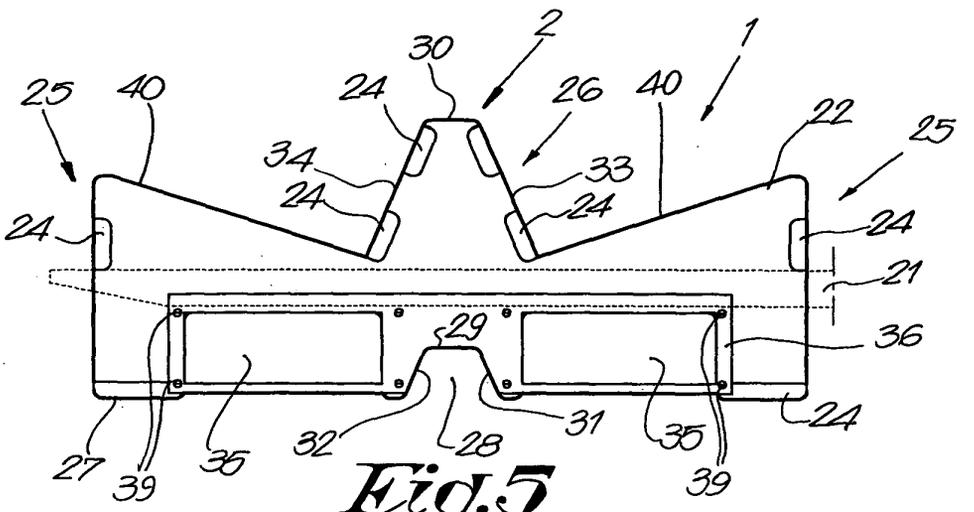
2
1
30
25
40
24
26
22
34
33
21
29
36
27
39
35
32
28
31

Fig.5

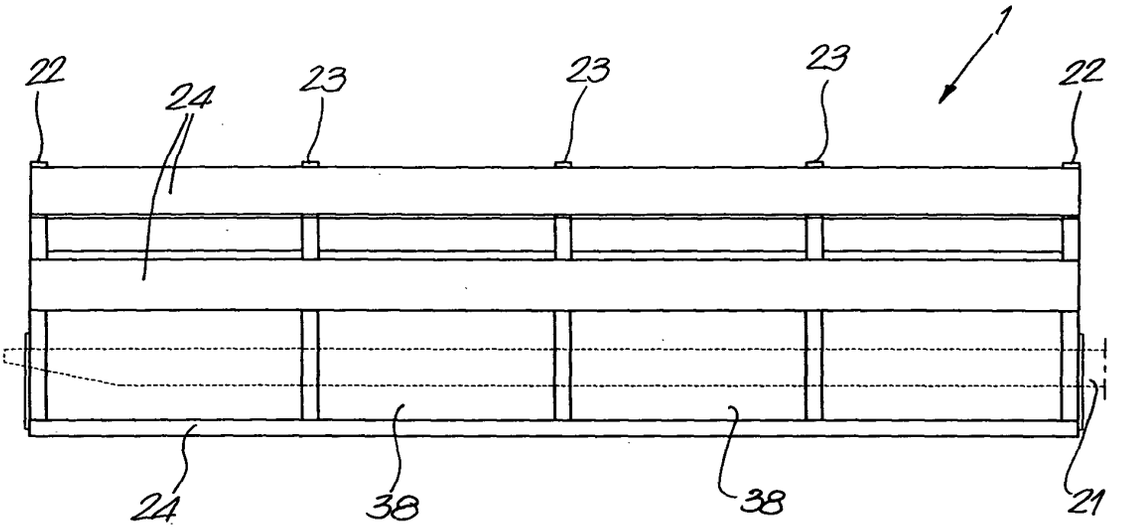


Fig.6

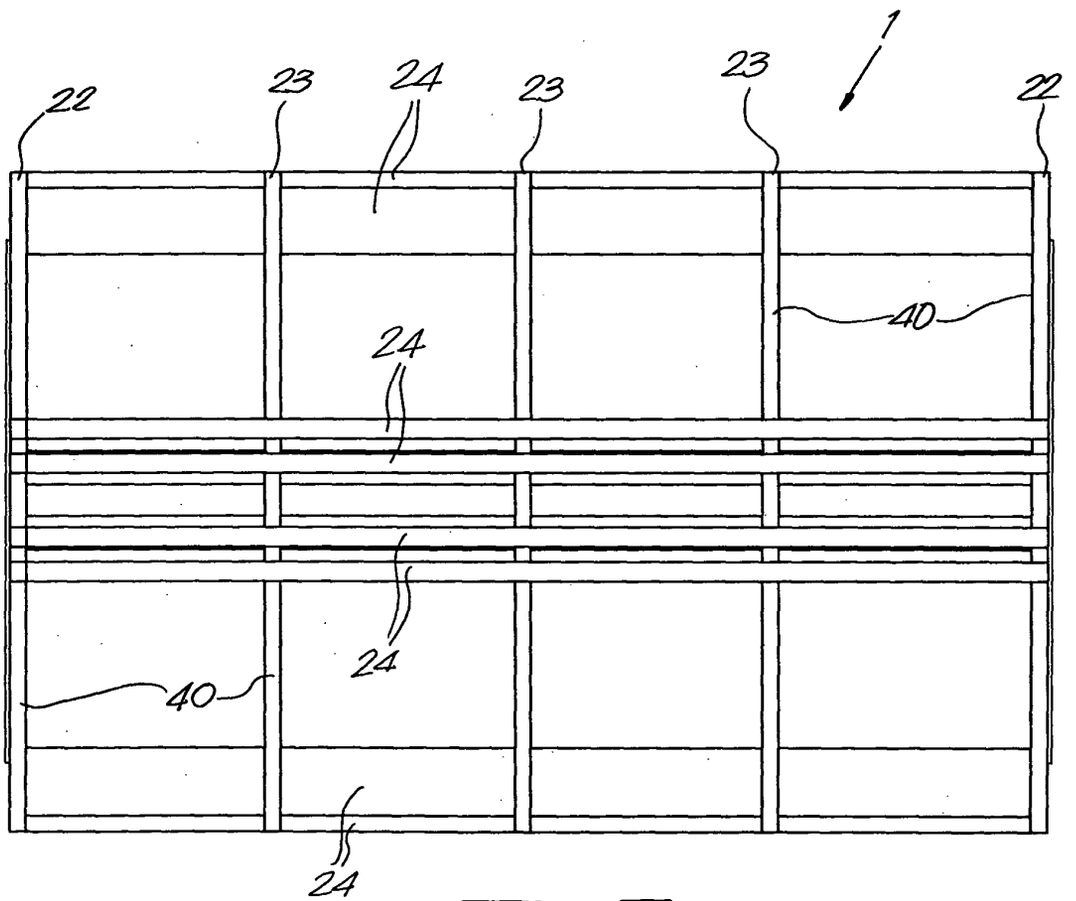


Fig.7

European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 03 07 7648

## 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 | US 5 246 121 A (MITAKE HITOSHI ET AL) 21 September 1993 (1993-09-21) * figures * | 1,2 | B65D19/24 B65D19/31 B65D19/32 B65D19/44 |
| X | US 4 382 733 A (RODGERS KENNETH G) 10 May 1983 (1983-05-10) | 1 | B65D85/46 |
| A | * abstract; figures * | 8,9 | |
| A | GB 1 268 752 A (EGGLISHAW) 29 March 1972 (1972-03-29) * the whole document * | 1,8-10 | |
| A | US 4 847 974 A (PELFREY STEVEN D) 18 July 1989 (1989-07-18) * claims; figures * | 1,4,7 | |
| A | GB 2 335 176 A (ATLAS STONE PRODUCTS LIMITED) 15 September 1999 (1999-09-15) | | |

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

B65D

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 19 November 2003 | SERRANO GALARRAGA, J |

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 03 07 7648

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.

19-11-2003

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| US 5246121 A | 21-09-1993 | DE 3935080 A1 | 26-04-1990 |
| | | JP 2873463 B2 | 24-03-1999 |
| | | JP 3073946 A | 28-03-1991 |
| US 4382733 A | 10-05-1983 | AT 368745 B | 10-11-1982 |
| | | AT 450479 A | 15-03-1982 |
| | | CA 1167004 A1 | 08-05-1984 |
| | | DE 2926120 A1 | 03-01-1980 |
| | | ES 244136 Y | 16-01-1981 |
| | | ES 249371 Y | 01-12-1980 |
| | | FR 2436081 A1 | 11-04-1980 |
| | | GB 2038280 A ,B | 23-07-1980 |
| | | IT 1125413 B | 14-05-1986 |
| | | ES 249370 Y | 01-12-1980 |
| | | PT 69850 A | 01-07-1979 |
| GB 1268752 A | 29-03-1972 | NONE | |
| US 4847974 A | 18-07-1989 | US 4796540 A | 10-01-1989 |
| GB 2335176 A | 15-09-1999 | NONE | |

EPO FORM P0459

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