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(71) Applicant: **Saica Pack, S.L.**
50015 Zaragoza (ES)

(72) Inventor: **Helmrich, Hans**
76344 Eggenstein-Leopoldshafen (DE)

(74) Representative: **Hernández Hernández, Carlos**
Olten Patentes y Marcas
Entença, 332-334 3^o-2^a
08029 Barcelona (ES)

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(54) **Glueless mountable box**

(57) Glueless mountable box that is formed from a sheet of cardboard comprising a bottom panel (1) from which two lateral edges or side panels (2) and two end panels (3) emerge, along with four flaps (4). The flaps are joined by fold lines at both the end panels and the side panels, and with cut lines which, together with the fold lines, enable the flaps on the end panels and side panels to be folded, overlapping with the end panels, to

shape the box. The ends panels have slots serving as hand holes, while the flaps have oblong slots (4.1) such that, when the flaps (4) are folded, said slots (4.1) are arranged in a position coincident with the flaps (3.1), thereby obtaining a box that is easily assembled, without the need for additional fastening means, providing greater structural and constructive stability.

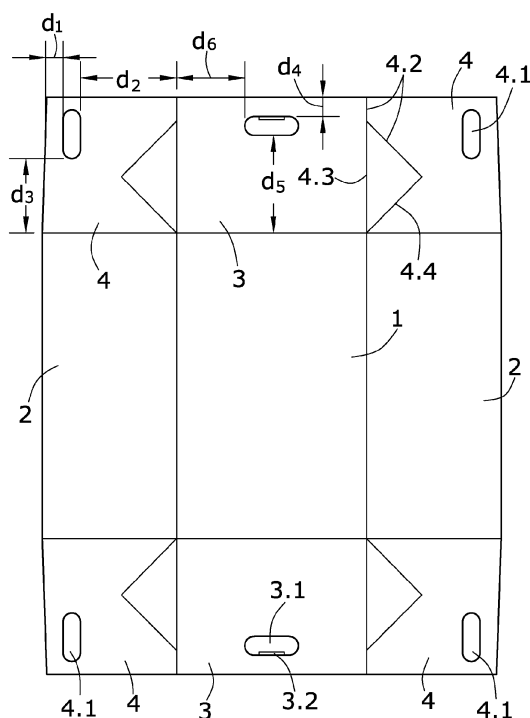


FIG.1

Description

OBJECT OF THE INVENTION

[0001] The object of the present invention, as established in the title of the invention, is a mountable box without the need to use any gluing means that can be directly assembled as a result of the folding of the flaps relative to the end panels and side panels, being overlapped on the end panels.

[0002] The invention herein is characterised by the fact that from a single die-cut sheet, on which a number of marks or indents have been made, a resistant box or tray carrying products inside can be formed without having to use additional means to form the box.

[0003] Therefore, the invention herein lies within the scope of cardboard boxes or trays that can be assembled by their own means.

BACKGROUND OF THE INVENTION

[0004] Boxes that open superiorly or also generally called trays almost always comprise a bottom panel from the edge of which side panels and end panels emerge. The box is arranged with a number of flaps in order to form the box, which either emerge from the end panels or the side panels, which in turn are folded and adhered to the adjoining end panel or side panel.

[0005] This design of the die-cut cardboard sheet which is used to form the boxes, requires a process of assembling the boxes either in the factory or on-site, but in both cases requiring specialised machinery as the flaps need to be glued on to the end panels and side walls.

[0006] In addition, 100% maximum use is not made of the cardboard sheets, as it is necessary to cut the flaps to the point of attachment with the end panels or side panels.

[0007] The resistance achieved is limited by the structure of the sheet itself and the gluing or adhesion points of the flaps on the side panels and end panels.

[0008] Therefore, there are aspects that can be improved, which is the object of the invention, and accordingly a box is sought that can be assembled immediately by the user without requiring any gluing or without having to use machinery, which provides sufficient structural strength, in order to make maximum use of the cardboard, developing a mountable box such as that described hereinbelow and the essential nature of which is contained in the first claim.

DESCRIPTION OF THE INVENTION

[0009] The invention herein relates to a glueless mountable box characterised in that it may be assembled from a die-cut, scored sheet with a simple action of folding the flaps in respect of the side panels and end panels.

[0010] The cardboard sheet which is used to assemble the sheet comprises a bottom panel from the edges of

which two lateral or side walls and two end panels emerge, along with four flaps that are joined by fold lines at both the end panels and the side panels, and with a cut line which together with the fold lines enable the flaps on the end panels and side panels to be folded, overlapping with the end panels to shape the box.

[0011] The end panels have a number of die-cuts which define a number of folding flaps, leaving an oblong opening serving as a handle visible. The flaps have a number of slots in the form of a handle, such that on folding the flaps, said handle-shaped openings are arranged in an overlapping manner over the flap of the end panels, therefore, in this manner, as all the slots are overlapping, the flap of the end panels can be passed through the openings serving as a handle of the flaps, thereby interlocking the three parts in place and ensuring the stability and shape of the box.

[0012] The positioning of the oblong slots made in the flaps and in particular, the distance to the fold line with the side panels, will define the final configuration of the box and can have a larger or smaller taper.

[0013] The cut line of the flaps at the seam with the end panels is a straight cut line that runs along the seam of both parts, to then adopt an inclined arrangement to the point of convergence with a fold line coming from the vertex of the bottom panel with an 45° incline.

[0014] Thanks to the configuration of the die-cut, scored sheet which the box is formed from, an easy-to-assemble box is achieved, without the need for additional fastening means, providing greater structural and constructive stability, that can bear up to 15kg of weight in the bottom of the box, using 85g/m² cardboard paper in the manufacture thereof, wherein maximum use of the surface of the material for making the box is close to 100%.

DESCRIPTION OF THE DRAWINGS

[0015] As a complement of the description being made and for a better understanding of the characteristics of the invention, according to an example of a practical preferred embodiment thereof, attached as an integral part of the aforementioned description is a set of drawings where, for purposes of illustration and in a non-limiting manner, the following is shown:

Figure 1 is a view of the die-cut cardboard sheet used to form the box.

Figure 2 shows the process of folding the flaps to form the box.

Figure 3 shows the box in an assembled state.

Figure 4 shows how the flaps and the end panels are retained by means of the handle flap defined in the end panels.

PREFERRED EMBODIMENT OF THE INVENTION

[0016] In view of the figures, a preferred embodiment of the proposed invention is described below.

[0017] The box object of the invention is formed from a sheet of die-cut cardboard on which a number of scored lines have been made, in particular having:

- A bottom panel (1)
- Two side or lateral panels (2)
- Two end panels (3)
- Four flaps (4) attached to both the side panels (2) and the end panels (3) having a cut line at the seam with the end panels and fold lines at the seam with the end panels and side walls such that the folding and the overlapping arrangement of the flaps on the end panels shapes the box.

[0018] The two end panels (3) have an oblong-shaped cut in order to define a number of flaps (3.1) that are hinged by a fold line (3.2) at the seam with the end panels such that when folded, a slot serving as a handle is visible.

[0019] The four flaps have oblong slots (4.1) arranged such that once folded and overlapped on the end panels, said slots (4.1) are coincident with the flap (3.1) of the end panels.

[0020] The positioning of the oblong slots (4.1) made in the flaps (4) serving as a handle is such that distance (d1), a distance from the oblong slot (4.1) to the edge of the flap, is equal to distance (d4) of the flap (3.1) made in the end panels. Also, distance (d2) which runs from the oblong slot (4.1) to the fold line (4.3) with the end panel is equal to distance (d5), which is the distance from the lower edge of the flap (3.1) to the fold line with the bottom panel. In this manner, the height at which the oblong slots (4.1) meet with the flaps (3.1) of the end panels is the same.

[0021] On the other hand, distance (d3) from the end of oblong slot (4.1) to the fold line between the flap (4) and the side panel (2) need not be equal to distance (d6), which is the distance from the end of the flap (3.1) to the fold line (4.3) between the end panel (3) and the flap (4). Thus, if distance (d3) is greater than distance (d6), a box can be formed which has a slight taper, namely, having an access surface which is larger than the bottom panel of the box, by making the oblong slots (4.1) coincide with the flap (3.1) of the end panels. This characteristic facilitates manoeuvrability and storage capacity.

[0022] The flaps (4) have a cut line (4.2) at the seam with the end panels, the cut line having a first vertical section coincident with the seam line joining both parts and then tilts towards the inside of the flap to the point of convergence with a fold line (4.4) that comes from the bottom corner (1). On the other hand, the flaps (4) have a fold line (4.3) at the seam with the end panels.

[0023] This configuration of the cut lines (4.2) and the fold lines (4.3) and (4.4) means the flaps (4) can be folded and overlapped over the end panels (3), as seen in Figure

2.

[0024] Figure 3 shows the assembled box, which shows the overlapping arrangement of the end panels (3) and the two adjacent flaps (4), the oblong slots (4.1) being coincident and serving as a handle. Figure 4 shows how the flap (3.1) of the end panels has been passed through said oblong slots (4.1) to serve as a handle, thereby retaining and interlocking the box in place.

Claims

1. Glueless mountable box that is formed from a sheet of cardboard comprising a bottom panel (1) from which two lateral edges or side panels (2) and two ends panels (3) emerge, along with four flaps (4) wherein the flaps are joined by fold lines at the end panels and the side panels, and having a cut line which together with the fold lines enable the flaps on the end panels and side panels to be folded, overlapping with the end panels to shape the box, **characterised in that:**

- the flaps (4) have a cut line (4.2) at the seam with the end panels, the cut line having a first vertical section coincident with the line joining both parts and then tilts towards the inside of the flap to the point of convergence with a fold line (4.4) coming from the bottom corner (1), and on the other hand the flaps (4) have a fold line (4.3) at the seam with the end panels.

- the two end panels (3) have an oblong-shaped slot in order to define a number of flaps (3.1) that are hinged by a fold line (3.2) at the seam with the end panels, such that when folded, a slot serving as a handle is visible, while the four flaps have oblong slots (4.1) arranged such that when folded and overlapped on the end panels (4.1) said slots are coincident with the flap (3.1) of the end panels.

2. Glueless mountable box according to claim 1 **characterised in that** distance (d1) or (d2) where the oblong slots (4.1) are positioned to serve as a handle relative to the edges of the flaps, is equal to distance (d4) or (d5) corresponding to the positioning of the flap (3.1) on its upper and lower edges, while distance (d3) from the end of the oblong slot (4.1) to the fold line between the flap (4) and the side panel (2) is greater than distance (d6), which is the distance from the end of the flap (3.1) to the fold line (4.3) between the end panel (3) and the flap (4), thereby shaping a box with a slight taper.

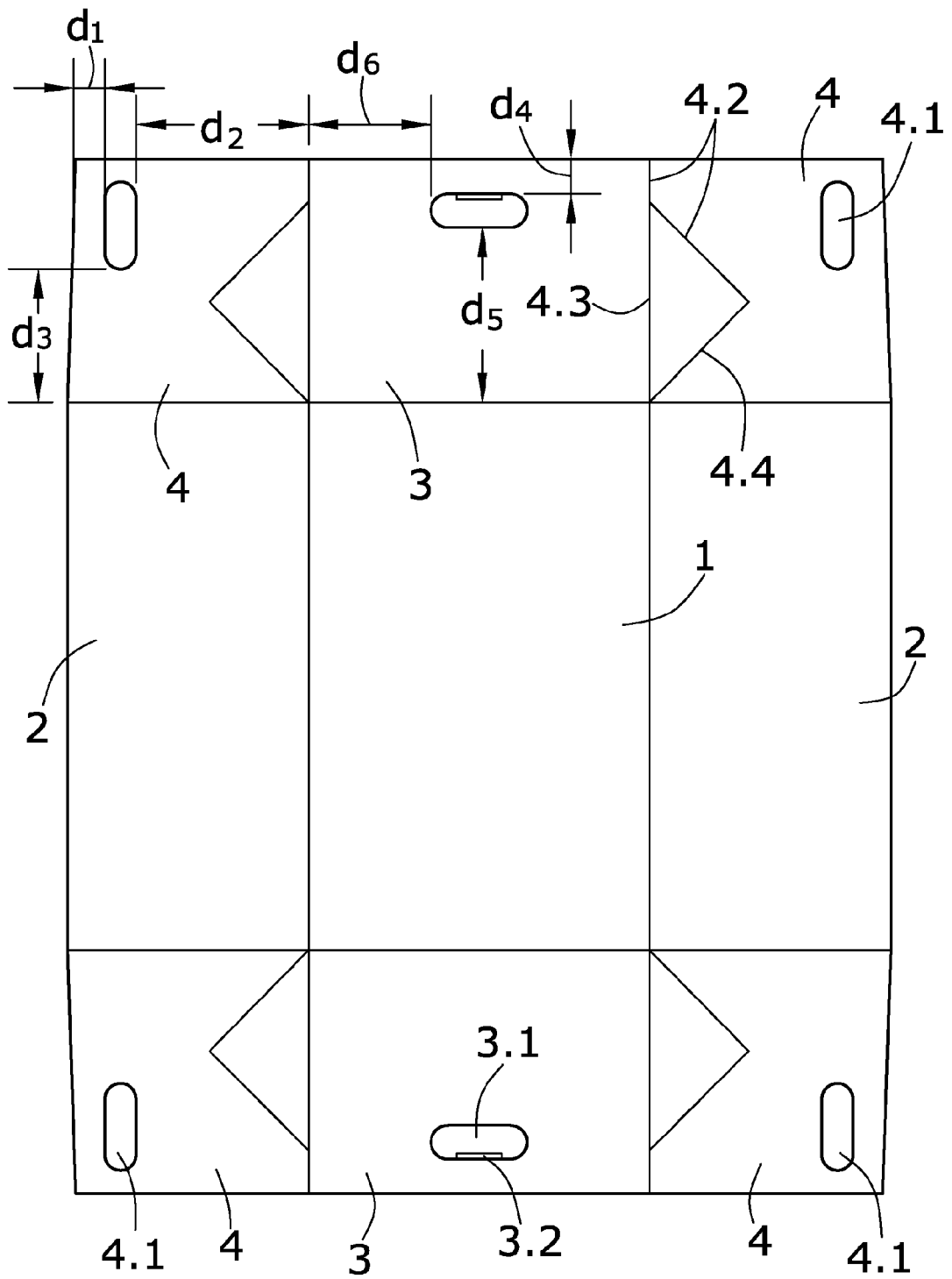


FIG.1

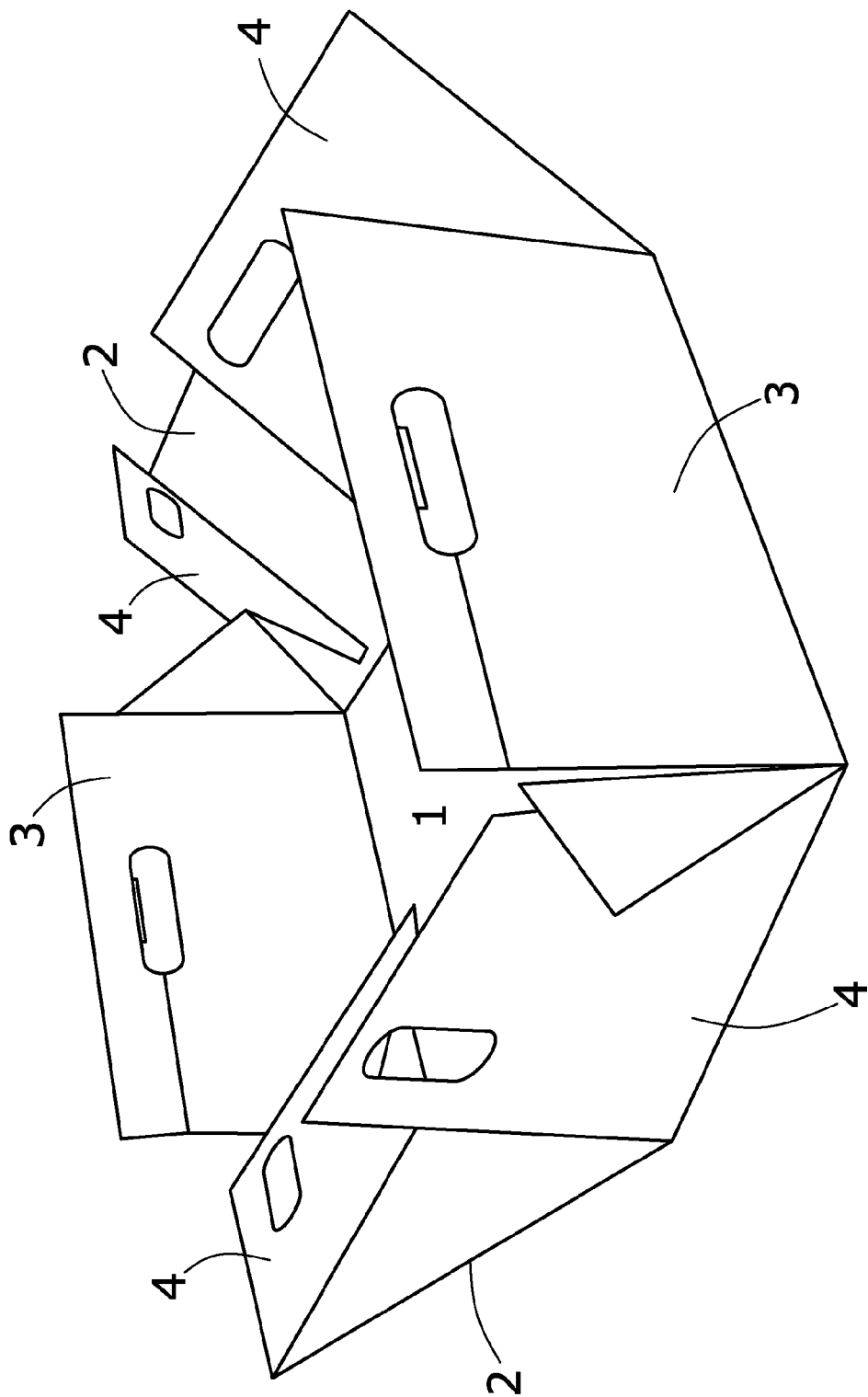


FIG. 2

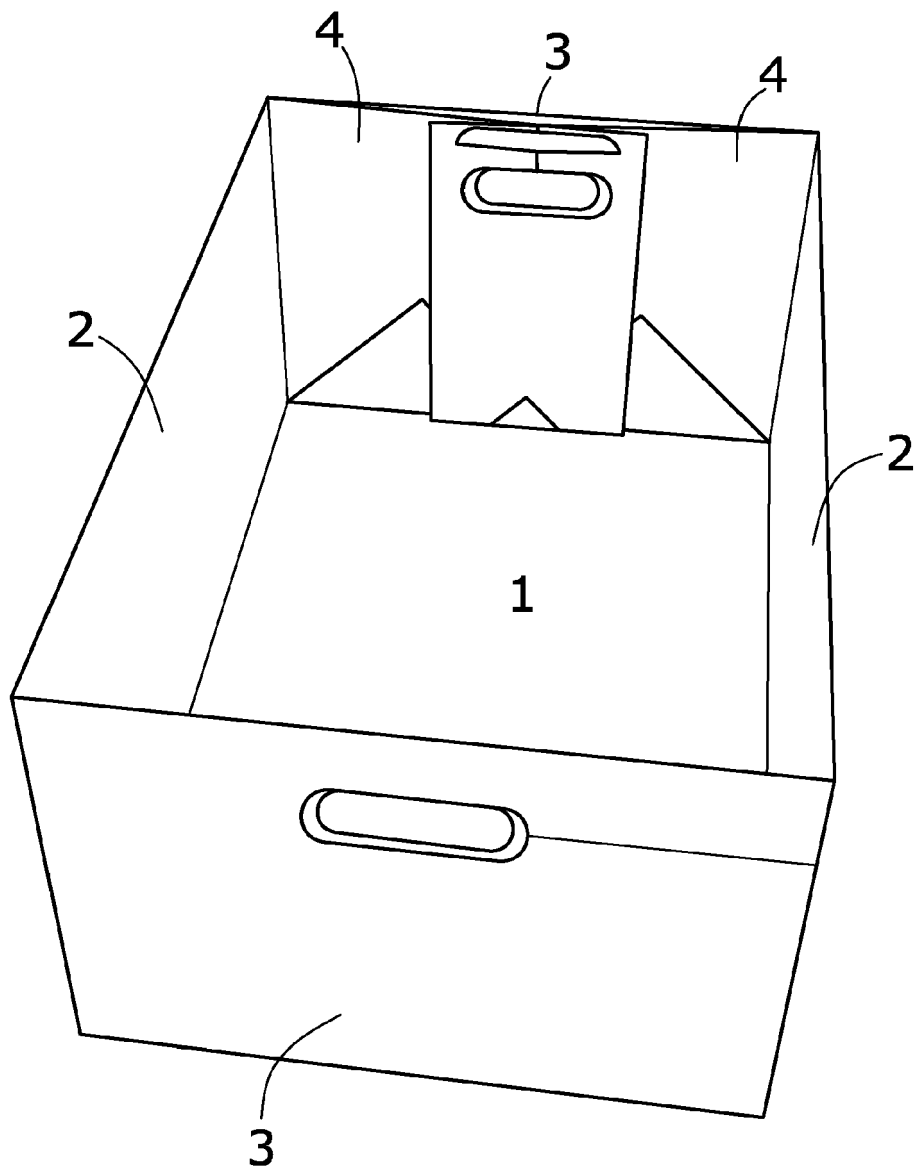


FIG.3

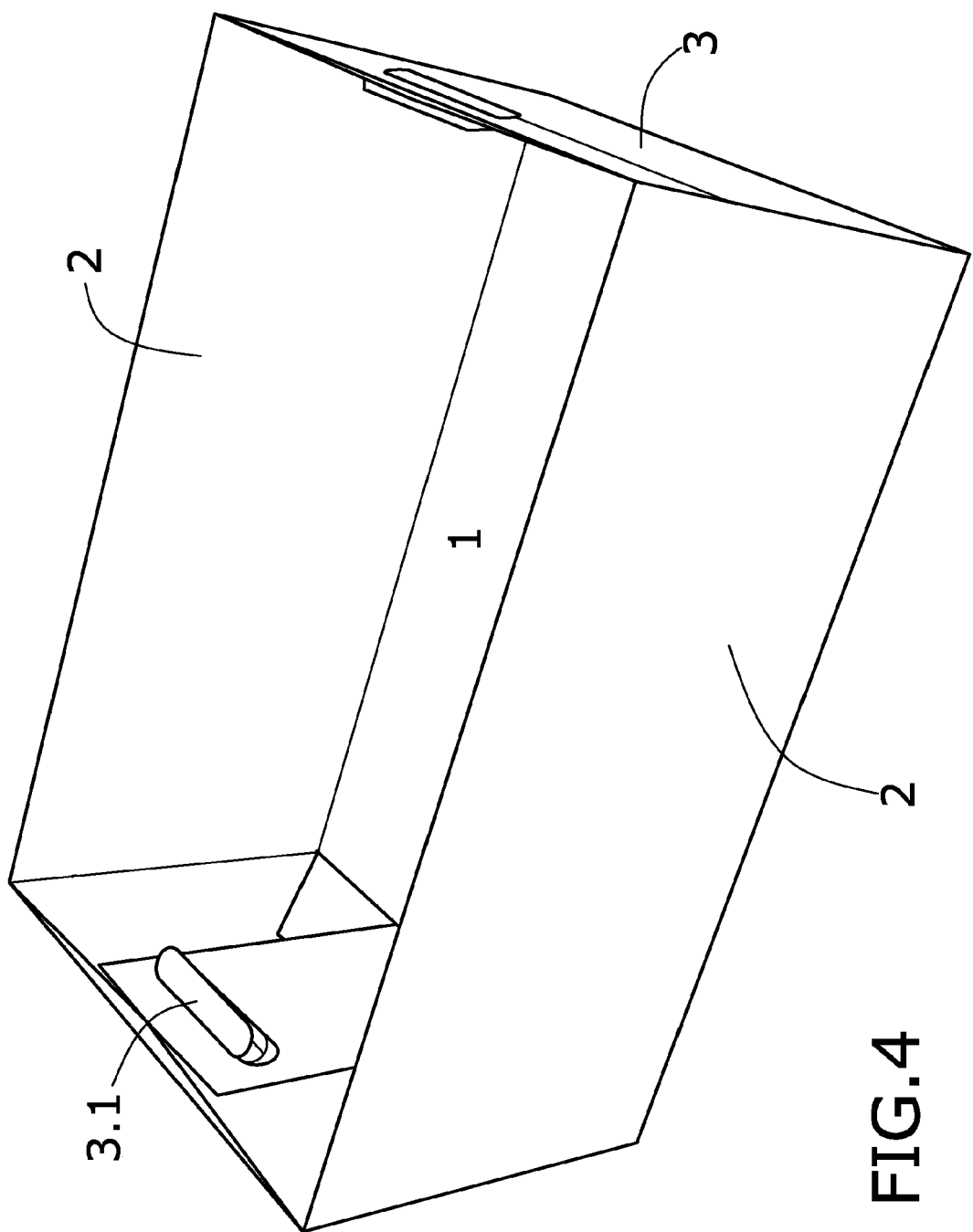


FIG.4



EUROPEAN SEARCH REPORT

Application Number
EP 13 38 2375

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	GB 2 443 313 A (DS SMITH PACKAGING) 30 April 2008 (2008-04-30) * paragraph [0048] - paragraph [0052]; figures 11,2 *	1,2	INV. B65D5/24 B65D5/468
A	US 2 352 994 A (MORGAN) 4 July 1944 (1944-07-04) * page 1, line 28 - page 2, line 45; figures 1,3,4 *	1,2	
A	US 2 151 472 A (HUBBARD WARD J) 21 March 1939 (1939-03-21) * page 1, line 51 - page 2, line 28; figures *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 26 February 2014	Examiner Newell, Philip
CATEGORY OF CITED DOCUMENTS		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	
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			

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

EP 13 38 2375

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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
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US 2352994	A	04-07-1944	NONE	

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EPO FORM P0459

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