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(54) **BOX WITH REINFORCING BANDS**

(57) A box reinforced with bands arranged around the perimeter in order to reinforce the structural strength of the box. The box is formed from a sheet of die-cut corrugated cardboard, cut and with score lines, which has a zone that forms the body of the box that comprises a series of side walls arranged contiguously; the sheet has a series of reinforcing bands in the side walls that run from side to side of the set of side walls and separated from each other.

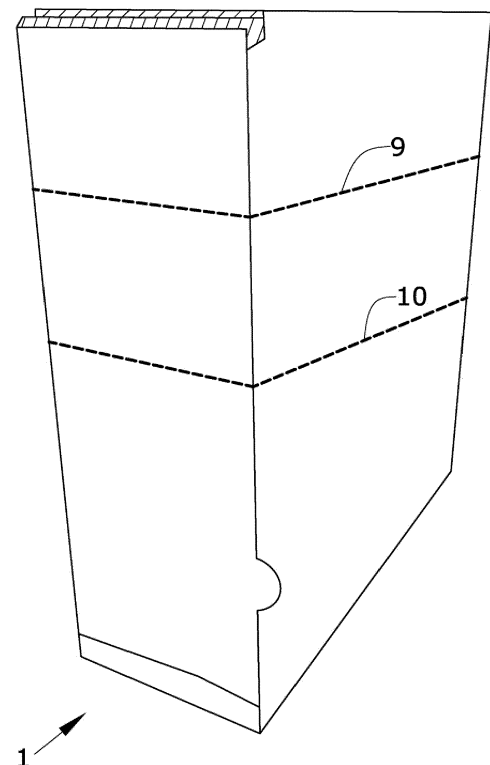


FIG. 2

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Description

OBJECT OF THE INVENTION

[0001] The object of the present invention, as the title of the invention states, is a box reinforced with bands arranged around its perimeter to reinforce the structural strength of the box.

[0002] The present invention is characterised in that reinforcing bands are arranged to improve compression and so prevent the belly of the box from being weakened, bulging and breaking.

[0003] Therefore, the present invention is circumscribed within the scope of cardboard boxes formed from a die-cut and separated sheet of cardboard, particularly in aspects related to improvements in the structural strength of the box.

BACKGROUND OF THE INVENTION

[0004] Cardboard boxes, in general, have no means reinforcing their structural strength; however, on occasions, due to the nature of the product contained inside them, particularly when these are bulk products or liquid contained in bags, the containing boxes are subject to forces that cause them to bulge with the risk of them breaking, as they are not capable of supporting the forces to which they are subjected.

[0005] Therefore, the subject matter of the present invention is to develop boxes that are structurally reinforced in such a way as to prevent their deformation when they contain bags of liquid or bulk materials which, due to their nature, tend to exert pressure on the side walls, by developing a reinforced box such as that described below and defined in claim 1.

DESCRIPTION OF THE INVENTION

[0006] The subject matter of the present invention is a box with reinforcing bands, with at least two reinforcing bands around the perimeter in a horizontal plane in order to prevent bulging or deformation of the side walls due to the pressure exerted by the products contained inside said box.

[0007] The box is formed from a sheet which has a zone that forms the body of the box, where said body comprises a series of side walls arranged contiguously that have at least two reinforcing bands running from side to side of the side walls and with separation between them.

[0008] The box formed from the sheet can have a rectangular prism shape with any base, that is to say rectangular, octagonal, etc.

[0009] The bands can be made of any plastic, plant, etc. material and can be embedded in the structure of the cardboard box itself or on it and fixed around the perimeter of the box.

The direction of the flutes in the corrugated cardboard of

the sheet of corrugated cardboard in the side walls is vertical with respect to its rest position, such that the reinforcing bands are transverse to the direction of the flutes in the corrugated cardboard.

[0010] The presence of the reinforcing bands in the box prevents deformation thereof when, for example, bags of liquid or materials which by their nature tend to exert pressure on the side walls, are housed inside it.

[0011] Moreover, due to the presence of the reinforcing bands and as a consequence of the increased structural strength achieved, it is possible to replace double wall cardboard with thinner single wall cardboard, with all the advantages that derive from this change, of reduced volume, easier handling and improvement in safety.

[0012] The presence of the reinforcing bands inserted in the corrugated cardboard structure is similar to the metal rings arranged around the perimeter of a barrel, and the effect achieved in the cardboard boxes can be called the "barrel effect".

[0013] Except when stated otherwise, all the technical and scientific elements used in this specification have the meaning usually understood by a person skilled in the art of this invention. In practice, the present invention can use processes and materials that are similar or equivalent to those described in the specification.

[0014] Throughout the description and claims the term "comprises" and the various forms thereof are not meant to exclude other techniques, additives, components or steps. A person skilled in the art will recognise that other objects, advantages and features of the invention follow in part from the description and in part from the practicing of the invention.

DESCRIPTION OF THE DRAWINGS

[0015] In order to complement the description being made and to aid towards a better comprehension of the features of the invention, according to our preferred practical embodiment, we incorporate as an integral part of said description a set of drawings that are illustrative and not limiting in nature and represent the following.

Figure 1 shows a sheet of cardboard from which a box is made, with the sheet having two reinforcing bands.

Figure 2 shows a formed box.

PREFERRED EMBODIMENT OF THE INVENTION

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

[0017] Figure 1 shows a die-cut sheet of corrugated cardboard, cut and with score lines, which is used in forming a box and which has a zone that forms the body of the box, which comprises a front wall (2), a back wall (3), and two side walls (4) and (5) in an alternating arrangement with the front (2) and back (3) walls, in addition to

a closing tab (6) at the free edge of the second side wall (5).

[0018] First flaps (8), for closing the top of the box, emerge from the top of the walls (2), (3), (4) and (5), while second flaps (7), for closing the bottom of the box, emerge from the bottom of said walls (2), (3), (4) and (5). 5

[0019] On the walls (2), (3), (4) and (5) which form the body of the box (1), there are reinforcing bands (9) and (10) running in the transverse direction from side to side and separated from each other. 10

[0020] It can be seen in figure 1 that the direction of the flutes (11) in the corrugated cardboard in the side walls is vertical with respect to its rest position, such that the reinforcing bands are transverse to the direction of the flutes in the corrugated cardboard. 15

[0021] Figure 2 shows a possible representation of a formed box with the reinforcing (9) and (10) lines represented by dotted lines as they are embedded in the structure of the box itself. 20

[0022] Although the box represented is a rectangular prismatic box, it could apply to a prismatic box with a base with a different number of sides to that shown. 25

[0023] Having sufficiently described the nature of the present invention and the embodiment thereof, it is noted that without departing from the essence thereof, other embodiments are possible differing in details from that given by way of example, which will also be included in the scope of protection sought, provided the main principle of the invention is not altered, changed or modified. 30

Claims

1. A box with reinforcing bands that is formed from a sheet of die-cut corrugated cardboard, cut and with score lines, which has a zone that forms the body of the box that comprises a series of side walls arranged contiguously, **characterised in that** the sheet has a series of reinforcing bands (9) and (10) in the side walls that run from side to side of the set of side walls and separated from each other. 35 40
2. A box with reinforcing bands, according to claim 1, **characterised in that** the body of the box comprises a front wall (2), a back wall (3) and two side walls (4) and (5) in an alternating arrangement with the front (2) and back (3) walls, in addition to a closing tab (6) at the free edge of the second side panel (5). 45
3. A box with reinforcing bands, according to claim 2, **characterised in that** first flaps (8), for closing the top of the box, emerge from the top of the walls (2), (3), (4) and (5), while second flaps (7), for closing the bottom of the box, emerge from the bottom of said walls (2), (3), (4) and (5). 50 55
4. A box with reinforcing bands, according to any of the previous claims, **characterised in that** the direction

of the flutes (11) in the corrugated cardboard in the side walls is vertical with respect to the rest position thereof and transverse to the reinforcing bands (9) and (10).

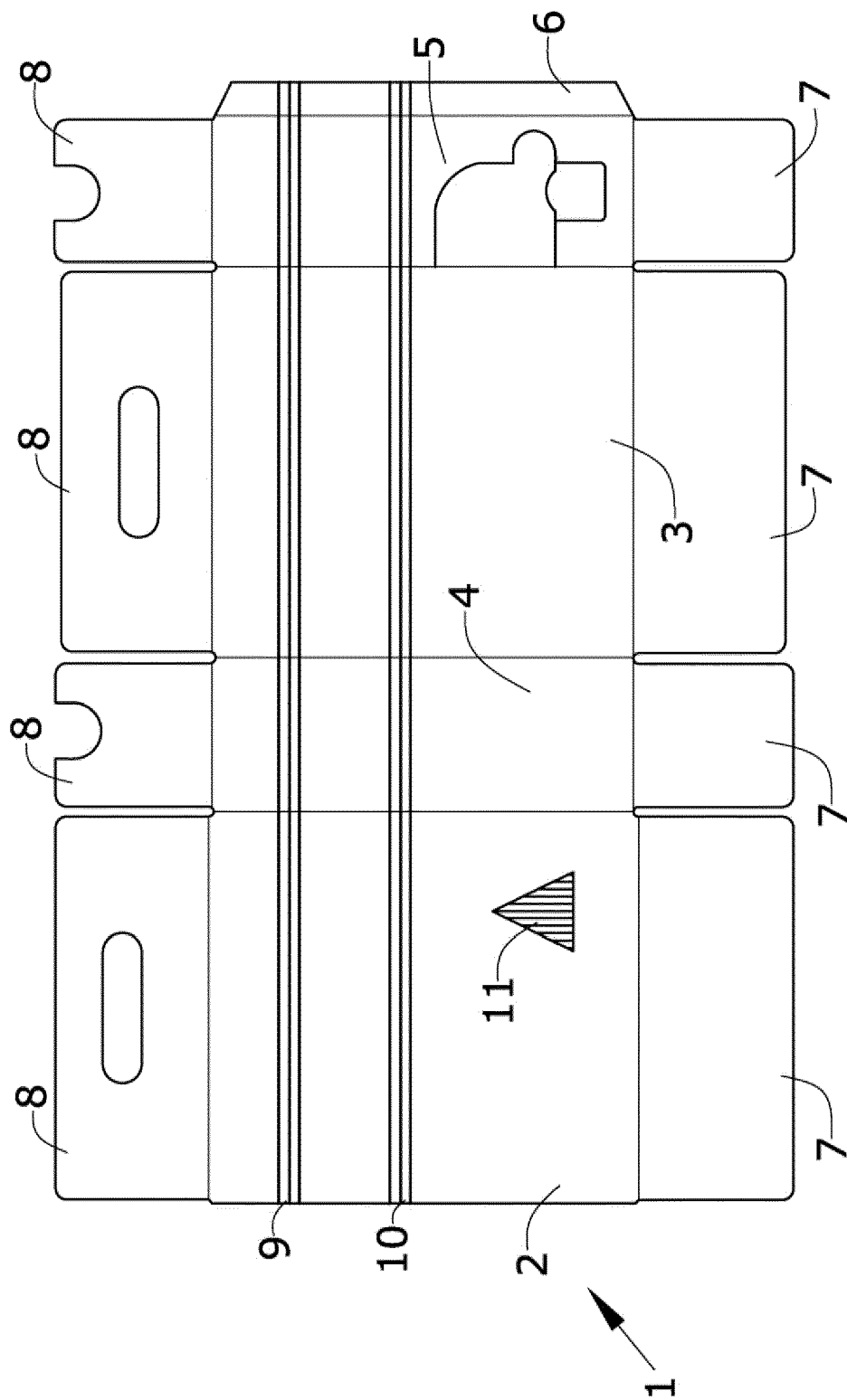


FIG.1

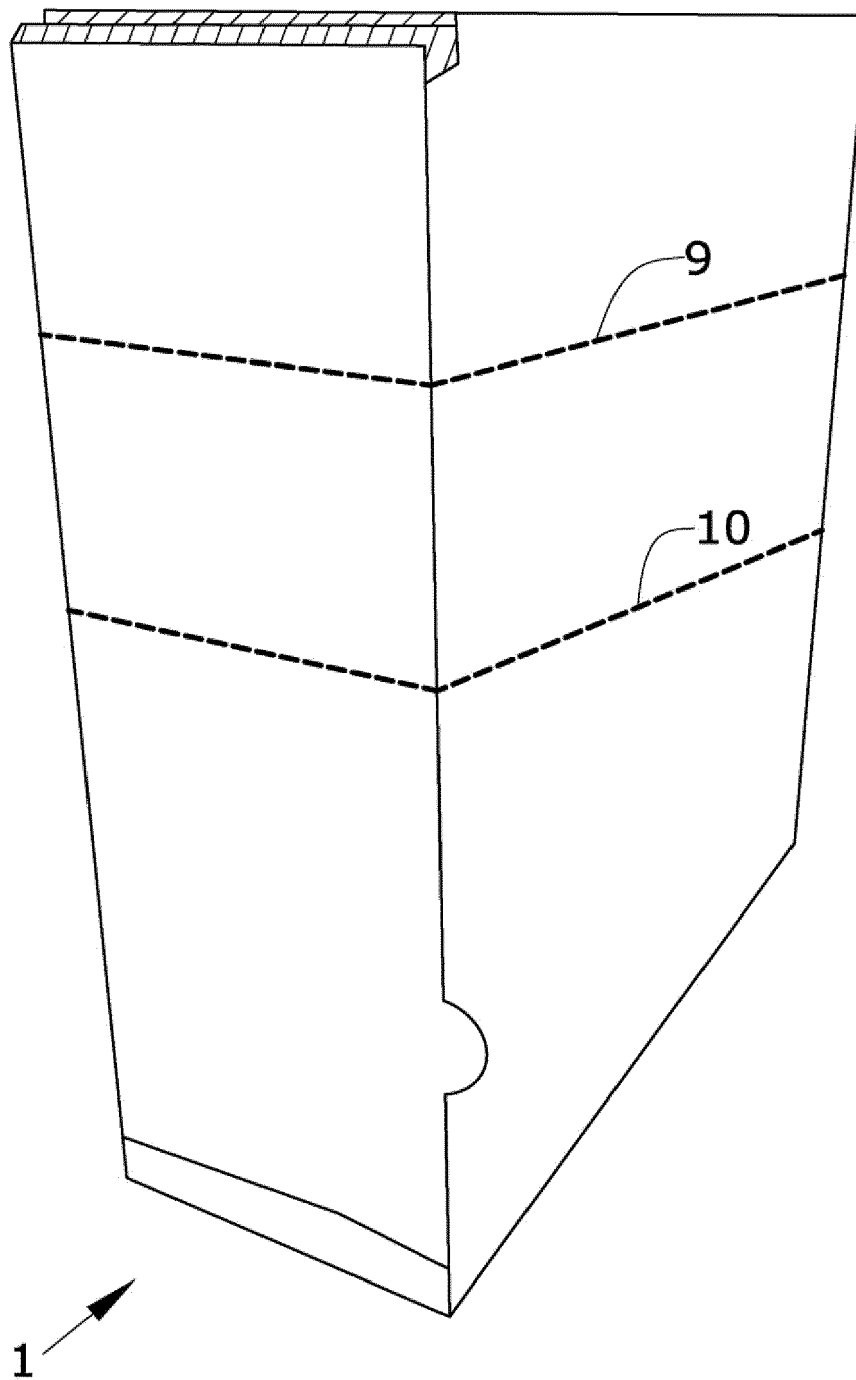


FIG.2



EUROPEAN SEARCH REPORT

Application Number
EP 17 38 2034

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2011/248080 A1 (TIMBROOK RONALD D [US] ET AL) 13 October 2011 (2011-10-13) * paragraph [0034]; figure 2 *	1-4	INV. B65D5/44
X	JP S55 98716 U (*) 9 July 1980 (1980-07-09) * figures 1-3 *	1-4	
X	US 1 527 021 A (KURT WANDEL) 17 February 1925 (1925-02-17) * page 1, line 58 - page 2, line 19; figures 1-5 *	1-3	
X	US 2 933 228 A (REYNOLDS GUYER) 19 April 1960 (1960-04-19) * column 2, line 16 - column 3, line 6; figures 1-5 *	1,3,4	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 28 April 2017	Examiner Grondin, David
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
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5 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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