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(54) **STACKABLE BOX**

(57) The object of the present invention relates to a stackable box of the type provided with an approximate regular-prismatic configuration, opened by its upper side, whose bottom and lateral walls are made up by nerves that define apertures; in the box, the corners are made up by support columns, which comprise in their upper part: orifices, a horizontal end wing and a second horizontal wing located underneath the horizontal end wing, and protruding further than the horizontal end wing; and the lower part of the columns has extremities which are fitted in the orifices, a horizontal support extension in the horizontal end wing, and the edge of the horizontal extension is elongated along a support flap in the second horizontal wing, when being stacked on a lower box.

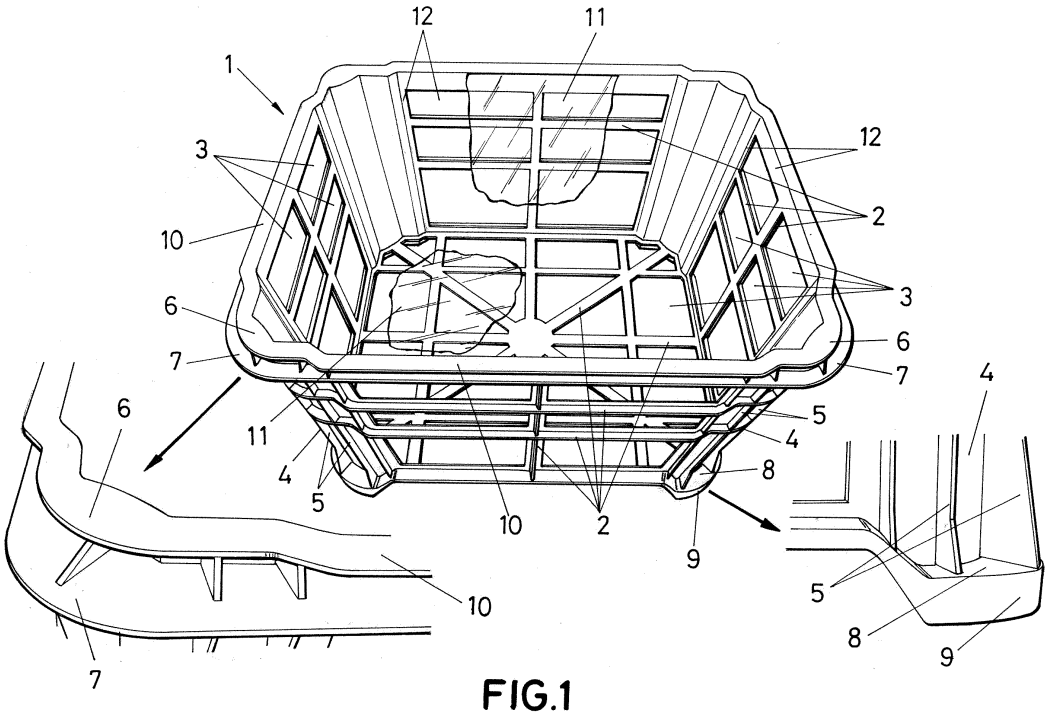

FIG.1

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Description

OBJECT OF THE INVENTION

[0001] The present invention, as expressed in the statement of this specification, relates to a stackable box of the type provided for storing and transporting products, whose object is to provide a box structure for stacking boxes with a double support in the corners, which determines a solid and resistant stacking.

[0002] Another object of the invention is to provide a stackable box whose bottom and lateral walls are made up by nerves that define apertures, which establish a light configuration in such a way that said lateral sides and bottom are susceptible of being covered by means of a sheet protecting the product contained inside the box.

[0003] The invention is applicable to any sector requiring the transport and stacking of products in boxes, and more specifically, the invention is applicable for the transport and stacking of fruits, vegetables and similar products.

BACKGROUND OF THE INVENTION

[0004] Boxes for the packaging and transport of products are known in the state of the art, among these boxes, those boxes molded with plastic materials with an approximate rectangular-prismatic configuration, opened by their upper side, should be highlighted.

[0005] In order to reduce their weight, the lateral walls and bottoms of this type of boxes are made up by nerves that define apertures, so that, in order to achieve boxes with lower weights, they must present broad apertures that make the boxes lighter and weakens their structure, which represents an inconvenience when stacking the same.

DESCRIPTION OF THE INVENTION

[0006] In order to obtain the objectives and solve the inconveniences described above, the invention provides a new stackable box with an approximate rectangular-prismatic configuration, opened by its upper side, whose bottom and lateral walls are made up by nerves that define apertures. The main novelty of these boxes is that the corners of the box are made up by support columns, which comprise, in the upper part, a horizontal end wing and a second horizontal wing located under the horizontal end wing, the second horizontal wing is provided with a projection bigger than the projection of the horizontal end wing, so that the lower part of the columns is provided with a horizontal extension that leans on the horizontal end wing of a box stacked below. In addition, the edge of the horizontal extension is elongated according to a flap, said flap being designed to lean on the second horizontal wing of a box stacked underneath, so that the configuration described provides double support at the corners when the boxes are stacked, obtaining a solid and resistant stacking.

[0007] In the preferred embodiment of the invention, the external surface of the flap is leveled with the edge of the second horizontal wing of a box stacked below. In addition, the internal surface of said flap is abutted on the edge of the horizontal end wing of the box stacked below, thus centering the boxes appropriately during stacking and preventing them from being displaced in respect of the other boxes.

[0008] In a complementary embodiment of the invention, the upper part of the columns incorporates circular orifices, whose upper side is at the same level than the horizontal end wing.

[0009] In the complementary embodiment of the invention, the columns incorporate lower cylindrical extremities in their lower part so that, when stacking one box on top of another, the aforementioned lower extremities are fitted in the orifices.

[0010] According to a preferred embodiment, the box comprises a protective sheet in its mouthpiece affixed to a flat perimeter surface defined by a perimeter flange presented as the continuation of the horizontal end wing of the upper part of the columns, so that the sheet is presented as a protective sheet of the open upper part of the box. This way, the product contained inside the box is covered by the protective sheet.

[0011] The box of the invention also provides that the long sides, the short sides and/or the bottom, according to additional embodiments, are provided with a sheet affixed to a surface in the form of a perimeter frame covering these sides, said sheet determining the protection of the product contained in the box.

[0012] In an additional preferred embodiment of the invention, the sheet is determined by a film that is stuck to the perimeter flange of the mouthpiece of the box and/or to the frames of the lateral sides and bottom by means of thermal welding, adhesive or other appropriate means.

[0013] The nerves of the lateral sides and bottom are arranged defining broad apertures in order to obtain a light box, what is possible thanks to the columns making up the corners of the box and the double support provided during stacking, which has already been already described.

[0014] In a preferred embodiment of the invention, the box is made from plastic, but it can obviously be made from any other material that allows obtaining the aforementioned characteristics.

[0015] The present invention also relates to the set of the box and protective sheet. According to a preferred embodiment, in this set, the sheet is placed in the mouthpiece of the box, affixed to a flat perimeter surface defined by a perimeter flange that is presented as the continuation of the horizontal end wing of the upper part of the columns of the box, so that the sheet is provided to protect the open upper side of the box. This way, the product contained inside the box is covered by the protective sheet.

[0016] According to additional embodiments, said sheet is placed in one of the long sides, the short sides and/or the bottom, so that said sheet is affixed to a surface in the form of a perimeter frame that covers these sides, said sheet determining a protection for the product contained inside the box.

[0017] Next, in order to facilitate a better comprehension of this specification and forming an integral part thereof, a set of figures representing the object of the invention in an illustrative rather than limitative manner accompany this specification.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018]

Figure 1. Shows a perspective view of a possible example of an embodiment of the box of the invention.

Figure 2. Shows a detail of a corner of two boxes in a position prior to stacking.

Figure 3. Shows a view equivalent to the previous figure in a stacking position.

Figure 4. Shows a section of the stacking of the previous figure.

Figure 5. Shows a perspective view of the complementary embodiment of the invention.

Figure 6. Shows another perspective view of the complementary embodiment of the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

[0019] A description of the invention based on the aforementioned figures is disclosed hereinafter.

[0020] The box (1) of the invention is opened by its upper side whose bottom and lateral walls are made up by nerves (2) that define apertures (3), and whose corners are made up by support columns (4), which are provided with reinforcement nerves (5), both longitudinal and transverse, so that said transverse nerves are presented as a continuation of the nerves (2) constituting the lateral walls of the box (1).

[0021] The upper part of the columns (4) comprises a horizontal end wing (6) and a second horizontal wing (7) located underneath, said second horizontal wing (7) protruding further than the horizontal end wing (6).

[0022] The lower part of the columns (4) is provided with a horizontal extension (8), whose edge is elongated along a flap (9).

[0023] Based on the configuration described, it can be easily understood that when stacking two boxes (1) of the invention, the horizontal extension (8) of the lower part of the columns (4) is supported by the horizontal end wing (6) of the lower box (1), and simultaneously, the edge of the flap (6) is supported by the second horizontal wing (7) of each column (4), thus providing double support between the columns (4) when stacking the boxes (1).

[0024] According to the configuration described and as shown in figure 4, when stacking two boxes (1), the flap (9) is leveled with the edge of the second horizontal wing (7), giving continuity to the stacking. In addition, the internal surface of said flap (9) abuts with the edge of the horizontal end wing (6) of the lower box (1) when stacking, which determines that the boxes are perfectly centered during stacking and prevents the lateral displacement of some boxes in respect of the others by means of the butt described, thus obtaining a stable, solid and resistant stacking.

[0025] In a complementary embodiment of the invention, the columns (4) that make up the corners of the box, incorporate circular orifices (14) in the upper part (shown in figure 5), whose upper side is at the same level than the horizontal end wing (6), so that the horizontal end wing (6) is incorporated to the connection system between boxes.

[0026] In the complementary embodiment of the invention, the columns (4) incorporate lower cylindrical extremities (13) (shown in figure 6) so that, when a box (1) is stacked on top of another, the aforementioned lower extremities (13) are fitted in the orifices (14).

[0027] In this supplementary embodiment, the stacked boxes (1) have a double fixation between them, since the boxes (1) are affixed, in the first place, due to the flap (9) that is leveled with the edge of the second horizontal wing (7) and the internal surface of said flap (9) abuts the edge of the horizontal end wing (6) of the lower box (1), and secondly, due to the connection system between the lower extremities (13) located in the lower part of the columns (4) that are fitted in the orifices (14) located in the upper part of the aforementioned columns (4).

[0028] According to a preferred embodiment, the box (1) comprises a sheet (11) that is affixed to the mouthpiece of the box (1) through a flat surface defined by a perimeter flange (10) which is presented as the continuation of the horizontal end wing (6).

[0029] According to additional embodiments, the invention also discloses that said protective sheet (11) can be included in both the lateral walls and the bottom of the box (1), for which the box (1) provides that said lateral walls and bottom comprise a surface by way of a perimeter frame to which the sheet (11) that covers said lateral sides and bottom is affixed.

[0030] The configuration described presents the great advantage of providing a light box with a solid and resistant configuration allowing to stack boxes safely.

Claims

1. Stackable box, of the type provided with an approximate regular-prismatic configuration, opened by its upper side, whose bottom and lateral walls are made up by nerves (2) that define apertures (3); **characterized in that** the corners are made up by support columns (4) which comprise in their upper part a hor-

izontal end wing (6) and a second horizontal wing (7) located underneath, the second horizontal wing (7) protruding further than the horizontal end wing (6); the lower part of the columns (4) comprises a horizontal extension (8) leaning on the horizontal end wing (6) of a box stacked below, and the edge of the horizontal extension (8) is elongated along a flap (9) leaning on the second horizontal wing (7) of a box stacked below in order to provide double support in the corners when stacking the boxes (1).

2. Stackable box according to claim 1, **characterized in that** the external surface of the flap (9) is leveled with the edge of the second horizontal wing (7) of a box stacked below, and the internal surface of said flap (9) abuts the edge of the horizontal end wing (6) of the box stacked below.

3. Stackable box according to claim 1, **characterized in that** the box (1) comprises a sheet (11) affixed to a flat surface defined by a perimeter flange (10) presented as the continuation of the horizontal end wing (6).

4. Stackable box according to claim 1, **characterized in that** the box (1) comprises a sheet (11) affixed to a surface in the form of a perimeter frame located in a side selected among a long side, a short side, the bottom and a combination thereof.

5. Stackable box according to claim 3 or 4, **characterized in that** the sheet (11) is a film.

6. Stackable box according to claim 1, **characterized in that** the nerves (2) of the lateral walls and bottom are arranged by defining apertures (3).

7. Stackable box according to claim 1, **characterized in that** the columns (4) comprise vertical and transverse reinforcement nerves (5).

8. Stackable box according to claim 1, **characterized in that** the box (1) is made from plastic.

9. Stackable box according to any one of the previous claims, **characterized in that** the upper part of the columns (4) comprises circular orifices (12).

10. Stackable box according to any one of the previous claims, **characterized in that** the lower part of the columns (4) comprises a cylindrical elongation (13), which is fitted in the circular orifice (12) of the upper part of the columns (4) when the boxes are stacked.

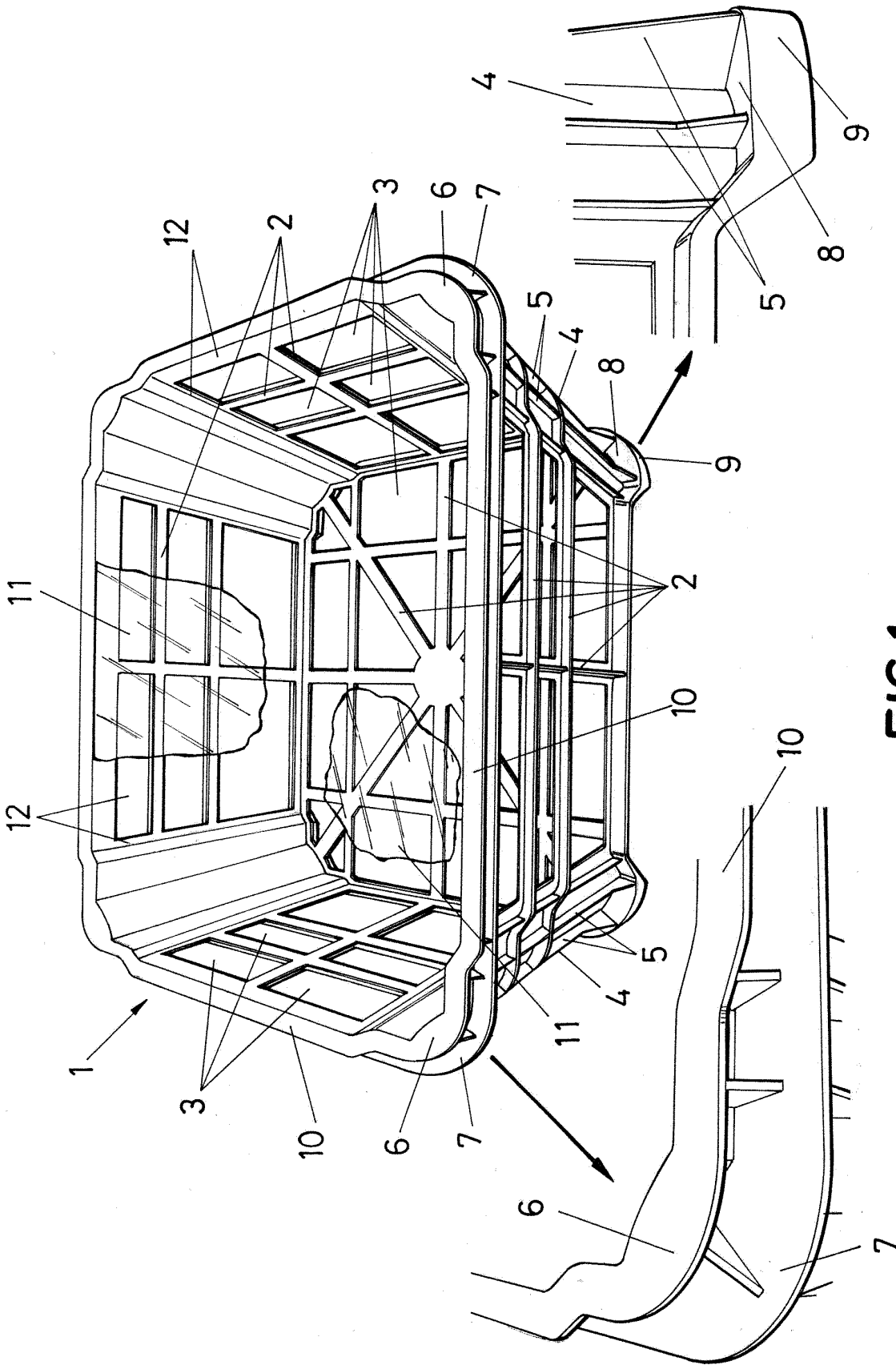

FIG.1

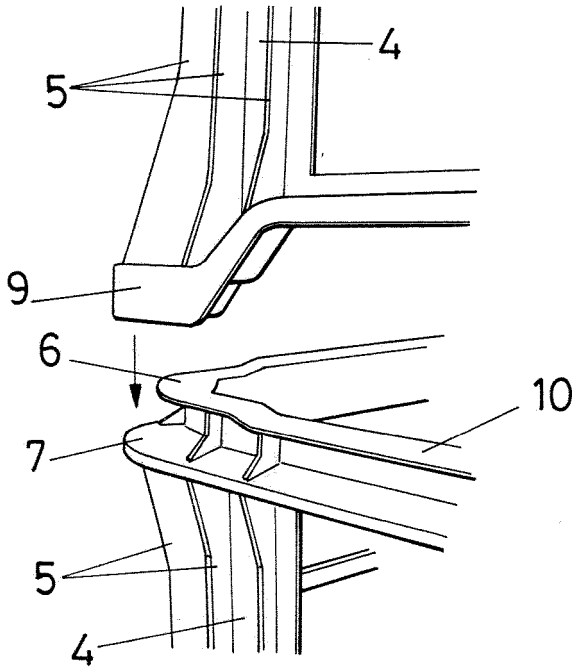

FIG.2

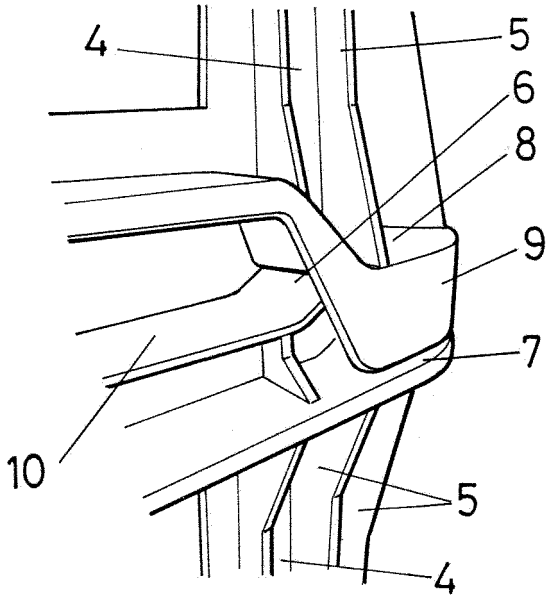

FIG.3

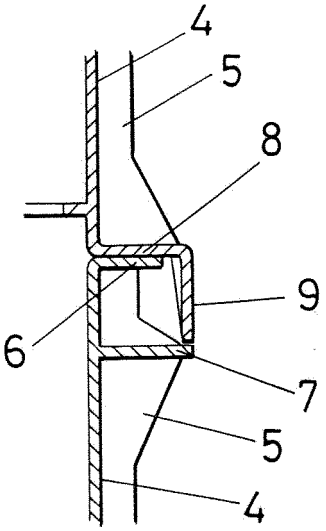

FIG.4

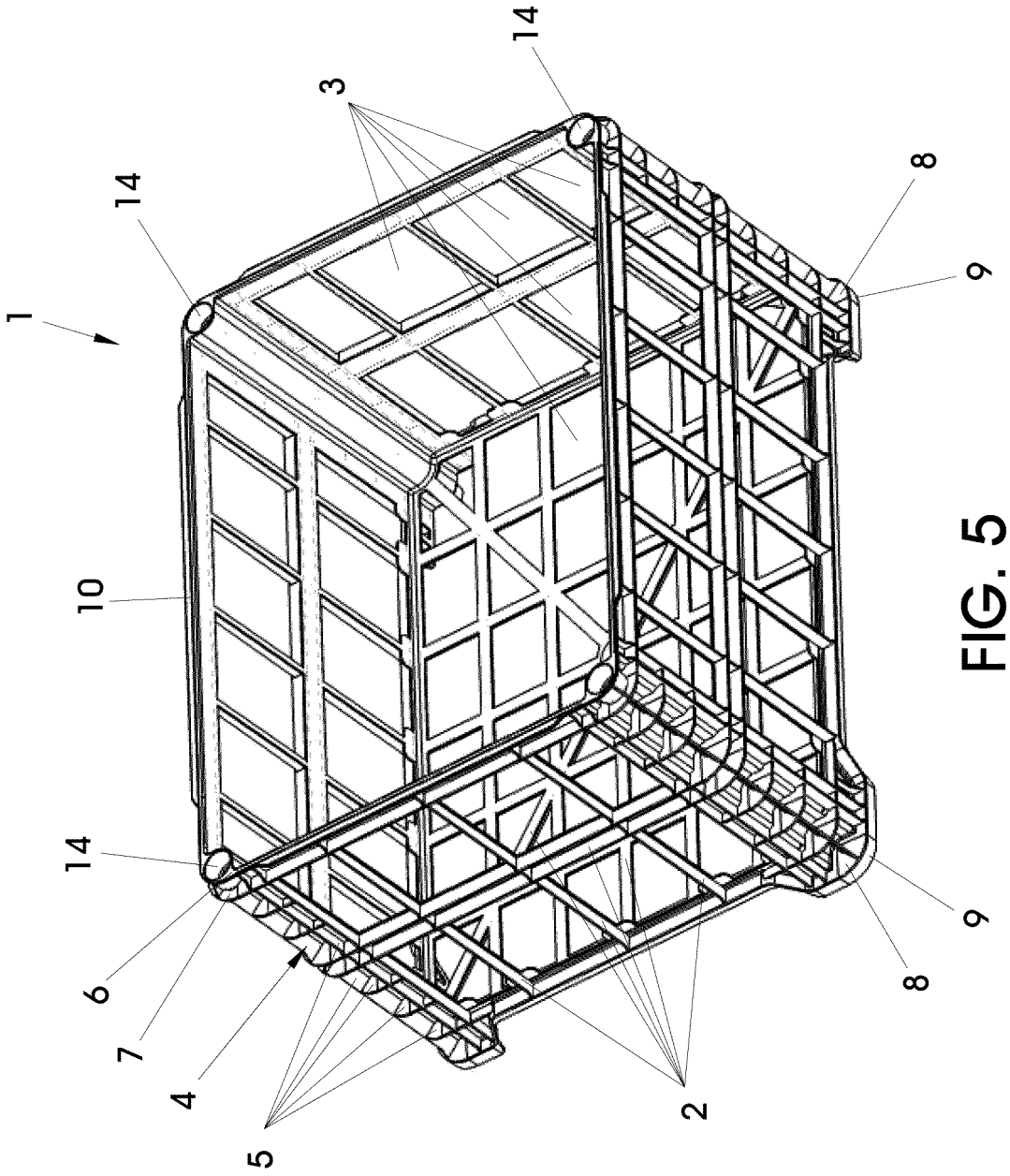

FIG. 5

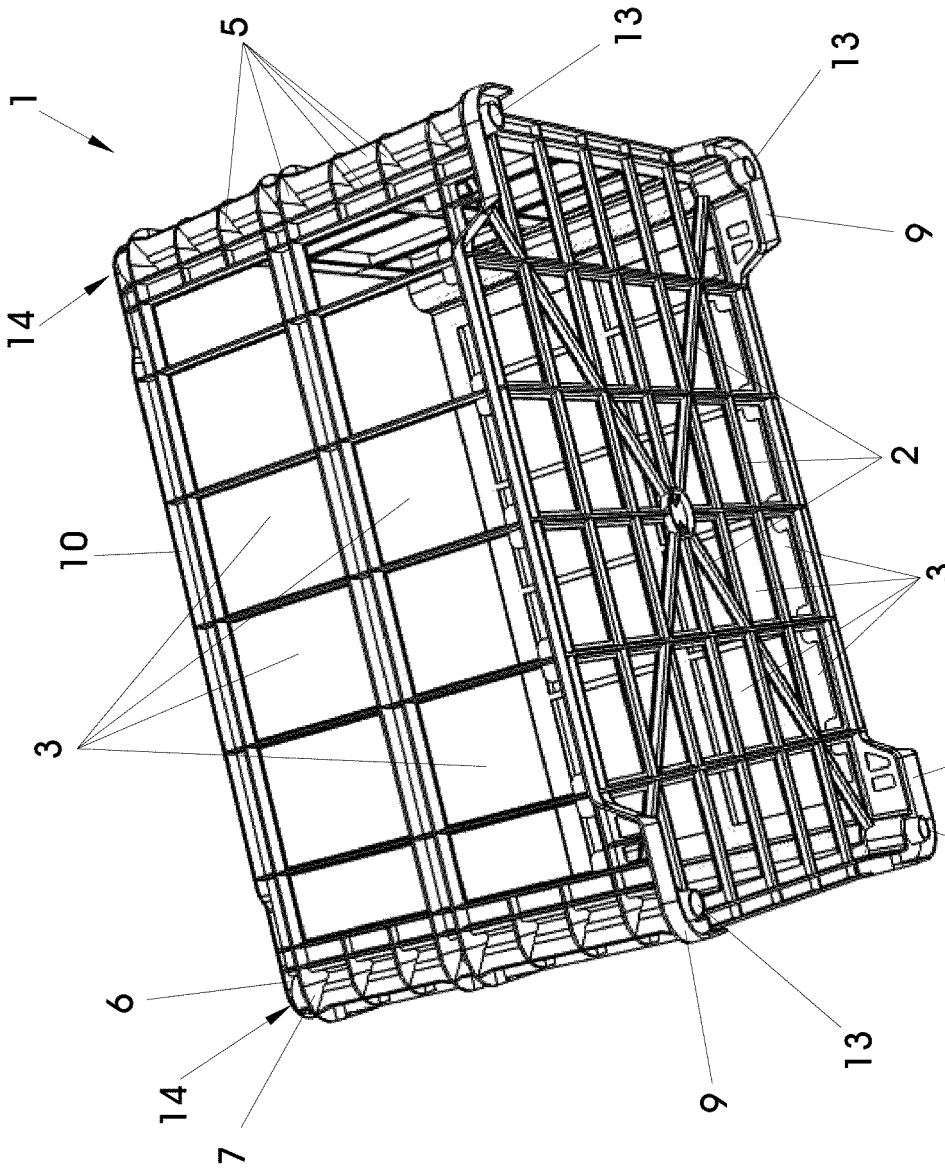

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2012/070007

A. CLASSIFICATION OF SUBJECT MATTER

B65D21/032 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, INVENES, WPI

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2003024845 A1 (SMYERS JUSTIN M ET AL.) 06/02/2003, Paragraphs 16-28; figures	1-10
A	DE 29608417 U1 (BEKUPLAST GMBH) 25/07/1996, the whole document; figures	1-10
A	DE 7716776 U1 (STUCKI KUNSTSTOFFWERK) 01/12/1977, figures	1-10
A	FR 2674219 A1 (ALLIBERT SA) 25/09/1992, page 2, line 6 - page 4, line 4; figures	3-5
A	NL 1021596 C (HOLLARTS KUNSTSTOFFTECHNIEK B.V.) 13/04/2004, figures	9,10
A	BE 503476 A (INDEN) 15/06/1951, the whole document.	1-10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:
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"P" document published prior to the international filing date but later than the priority date claimed
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other documents , such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
13/03/2012	**(10/04/2012)**
Name and mailing address of the ISA/ OFICINA ESPAÑOLA DE PATENTES Y MARCAS Paseo de la Castellana, 75 - 28071 Madrid (España) Facsimile No.: 91 349 53 04	Authorized officer Belda Soriano, Leopoldo Telephone No. 91 3495585

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.
PCT/ES2012/070007

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
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BE503476 A	15.06.1951	NONE	

Form PCT/ISA/210 (patent family annex) (July 2009)