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

(72) Inventor: **MATAMOROS BELTRAN, Francesc**
50015 Zaragoza (ES)

(74) Representative: **Hernández Hernández, Carlos**
InterAlia
Patentes & Marcas
Calle Fernando de la Peña 29, 3° Dcha
37005 Salamanca (ES)

(54) **EXPANDABLE TRAY**

(57) A tray comprising a base (1), wherein there emerges from each side of the base (1) a trapezoid-shaped side wall which is narrower at the junction with the base than at its free edge, such that when the side walls are folded with respect to the base, a truncated pyramid-shaped assembly is formed, in addition, on each side wall at the junction area with respect to the base at least twofold lines are arranged parallel to one another at the junction with the base, thereby achieving a tray whose inner volume can be modified based on the pressure exerted on the upper edge of the side walls, and on the other hand the trays can be arranged in a fitted manner one inside another, offering a smaller final stack volume.

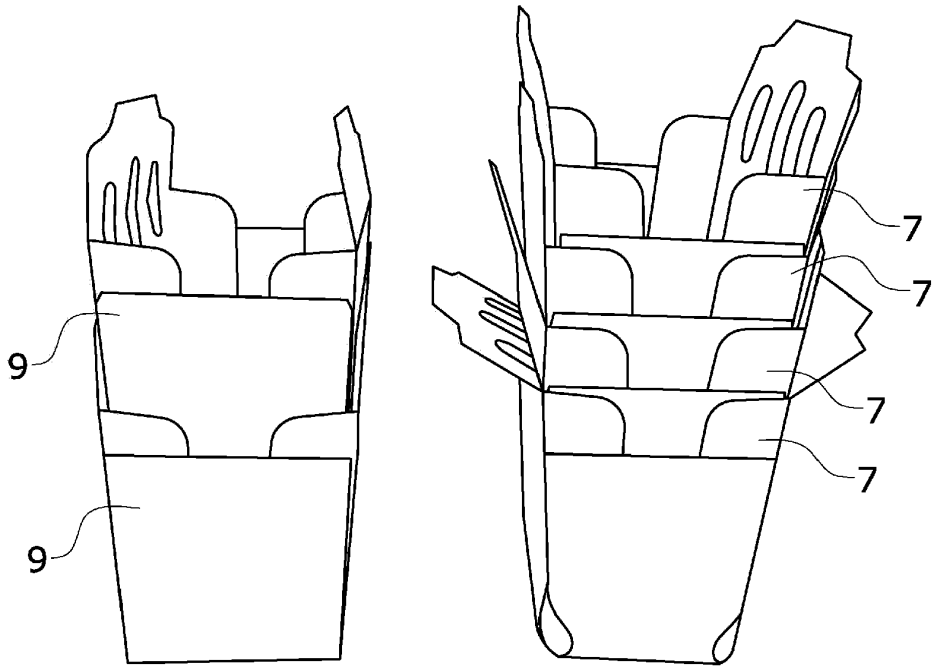

FIG.3

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Description

Technical field

[0001] An object of the present invention relates to an expandable tray, where tray is understood to mean a container in the form of a tray formed by a base and several side walls emerging from each side of the base, where the tray has the property of having an expandable inner volume as a result of the expansion of the base with the side walls.

[0002] The present invention is characterized by the special configuration and design of the die-cut and cut cardboard sheet which is used to form the tray, thereby achieving an expandable tray which can furthermore be stacked since they can fit one inside another.

[0003] Therefore, the present invention is comprised within the field of containers, preferably cardboard containers, having a configuration in the form of a tray.

Background art

[0004] Truncated pyramid-shaped product containers which can fit inside one another, such that they can be arranged in a fitted manner, in a smaller volume, are known in the state of the art. However, there is no known container which, while having the possibility of being able to fit one inside another, has the characteristic of increasing their inner volume.

[0005] Packages that can increase in volume as a result of a series of parallel fold lines in the folding area of the side walls with the base are also known in the state of the art. However, all known packages with means such as those described have a right prismatic shaped configuration, which enables them to be arranged fitted one inside another.

[0006] Therefore, an object of the present invention relates to developing a container that simultaneously has both characteristics, that is, on one hand, they can be fitted one inside another, thereby taking up a smaller volume when stacked, and they also have the particularity of being able to modify their inner volume as needed.

Summary of the invention

[0007] The essential parts of the object of the present invention are described in the independent claim, and different embodiments are described in the dependent claims.

[0008] The object of the present invention is an expandable tray the inner volume of which can expand when exerting a force on the upper edge of the side walls once the tray is formed; the tray therefore has a base, which is preferably rectangular, and it can have as many sides as desired, from each side of the base emerging a series of sections that will form the side walls of the tray, and where at least twofold lines parallel to one another are arranged at the junction end of at least one of the side walls of the tray with the base.

[0009] The number of side walls in the tray, as well as the number of parallel fold lines arranged on the side walls at their junction with the base are in no case limiting.

[0010] The double fold line arranged at the junction of each side wall provided with the possibility of widening or being displaced in relation to the base allows having a double inner volume, one corresponding to folding the side wall with respect to the base by means of a first fold line and a second volume corresponding to folding the side wall with respect to the base by means of a second fold line.

[0011] When exerting pressure on the upper edge of the side walls once the tray is formed, the side walls will be displaced outwards, where the displacement takes place at the junction end of the side walls with the base, modifying its inner volume since the side walls are provided with several fold lines parallel to one another.

[0012] In order to fit one formed tray in another and be stacked, taking up a smaller volume, the side walls of the tray have a trapezoid-shaped configuration, which results in a final truncated pyramid-shaped configuration of the tray.

[0013] As a result of the described characteristics, a container in the form of a tray which offers two very useful operating characteristics simultaneously is achieved, that is, on one hand, it is able to modify its inner volume based on the pressure exerted on the upper edge of the side walls once the tray is formed, and on the other hand, the trays can be arranged in a fitted manner one inside another almost in their entirety, which allows a stack with a smaller final stack volume, as a result of the trapezoid-shaped configuration of the side walls.

[0014] Unless otherwise indicated, all the technical and scientific elements used in the present specification have the meaning that a person skilled in the art to which this invention belongs will normally understand. Methods and materials that are similar or equivalent to those described in the specification can be used in the practice of the present invention.

[0015] Throughout the description and claims, the word "comprises" and its variants do not intend to exclude other technical features, additives, components or steps. For the persons skilled in the art, other objects, advantages and features of the invention will be inferred in part from the description and in part from the practice of the invention.

Brief description of drawings

[0016] To complement the description that is being made and for the purpose of helping to better understand the features of the invention, according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description in which the following is depicted in an illustrative and nonlimiting manner.

Figure 1 shows the die-cut and cut cardboard sheet used to form the tray.

Figure 2 shows a perspective view of the now formed tray.

Figure 3 depicts two different designs of stacked trays: on the right, the trays object of the invention, and on the left, trays with walls that are also trapezoid-shaped, but with angles of inclination for fitting that are less pronounced.

Description of embodiments

[0017] In Figure 1, the die-cut and cut cardboard sheet which is used to form the tray can be seen, and as observed, it comprises a base (1). The base (1) can have as many sides as desired, preferably four, like in the embodiment shown.

[0018] There emerges from each side of the base (1) a trapezoid-shaped side wall which is narrower at the junction with the base than at its free edge, such that when the side walls are folded with respect to the base, a truncated pyramid-shaped assembly is formed which allows the fitted arrangement of one tray with respect to another.

[0019] In the embodiment shown, the base (1) is rectangular and, therefore, there are four side walls, with there being two end walls (2) and two lateral walls (3)

[0020] In the embodiment shown, the lateral walls (3) have extensions by way of flaps (3.1) which allow the junction with the end walls (2). Closing flaps (3.2) are also arranged on the free edge of the lateral walls (3).

[0021] At least twofold lines are provided at the junction with the base on each side wall to be provided with the possibility of outward displacement of the side walls at their junction area with respect to the base. In the embodiment shown, there is a first fold line (4) made on each side of the base (1) and a second fold line (5) arranged parallel to the first fold line (4) and on the junction end of each side wall with the base (1).

[0022] In the embodiment shown, it can be seen how a concavity (6) is formed in each of the corners formed between contiguous sides of the base, where said concavity is an optional and by no means limiting embodiment.

[0023] In the embodiment shown, it can be seen how there are additional fold lines on the end walls (2), namely pre-cutting lines (8) arranged parallel to the second fold lines (5) and used for an outward expansion of the end walls (2) at the junction end of the end walls (2) with the base (1).

[0024] Figure 2 shows a tray that is formed and filled with a series of objects in which due to the action of an outer pressure or force outer exerted on the upper edge of the side walls once the tray is formed, an outward displacement of the side walls with respect to the base (1) has occurred at the junction end of the side walls with the base (1), subsequently increasing the volume.

[0025] Figure 3 shows the advantageous stacking ability of the expandable tray (7) compared to another trapezoid-shaped tray design (9) in which the angle of inclination of its walls is less pronounced to increase its capacity. The expandable tray (7) allows configuring its walls with an angle of inclination for stacking that optimizes logistics compared to other trays with the same capacity and height.

Claims

1. An expandable tray, **characterized in that** it comprises a base (1), wherein there emerges from each side of the base (1) a trapezoid-shaped side wall which is narrower at the junction with the base than at its free edge, such that when the side walls are folded with respect to the base, a truncated pyramid-shaped assembly is formed, in addition, at least twofold lines are arranged parallel to one another at the junction with the base on each side wall which, after exerting a force or pressure on the upper edge, is to be provided with the possibility of outward displacement of the side walls at their junction area with respect to the base.

2. The expandable tray according to claim 1, **characterized in that** the base (1) is rectangular and there are four side walls, two end walls (2) and two lateral walls (3) and all the side walls have means for the outward displacement of the side walls at their junction area with respect to the base.

3. The expandable tray according to claim 1 or 2, **characterized in that** there are twofold lines on the side faces, a first fold line (4) arranged on the junction edge of each side wall with respect to the base (1) and a second fold line (5) arranged parallel to the first fold line (4).

4. The expandable tray according to claim 1 or 2, **characterized in that** on the end walls, there are pre-cutting lines (8) arranged parallel to the second fold lines (5).

5. The expandable tray according to any of the preceding claims, **characterized in that** the lateral walls (3) have extensions by way of flaps (3.1) which allow the junction with the end walls (2), with closing flaps (3.2) also being arranged on the free edge of the lateral walls (3).

6. The expandable tray according to any of the preceding claims, **characterized in that** a concavity (6) is formed in each of the corners formed between contiguous sides of the base.

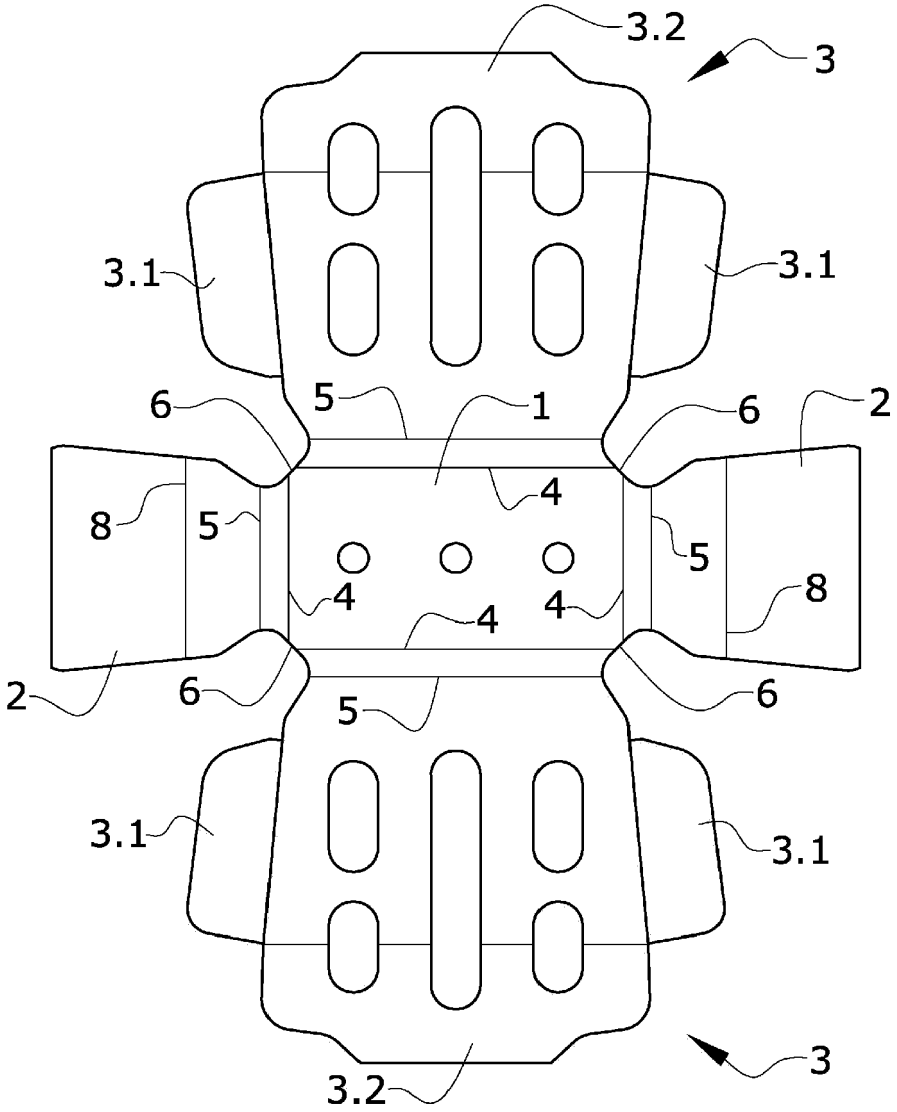

FIG.1

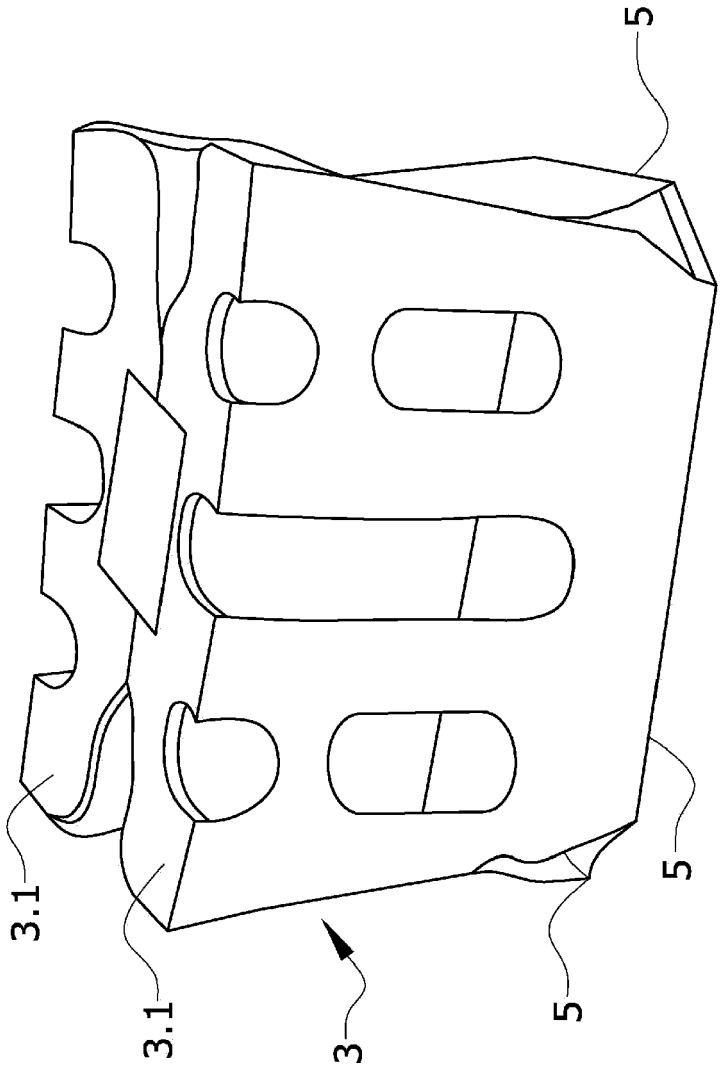

FIG.2

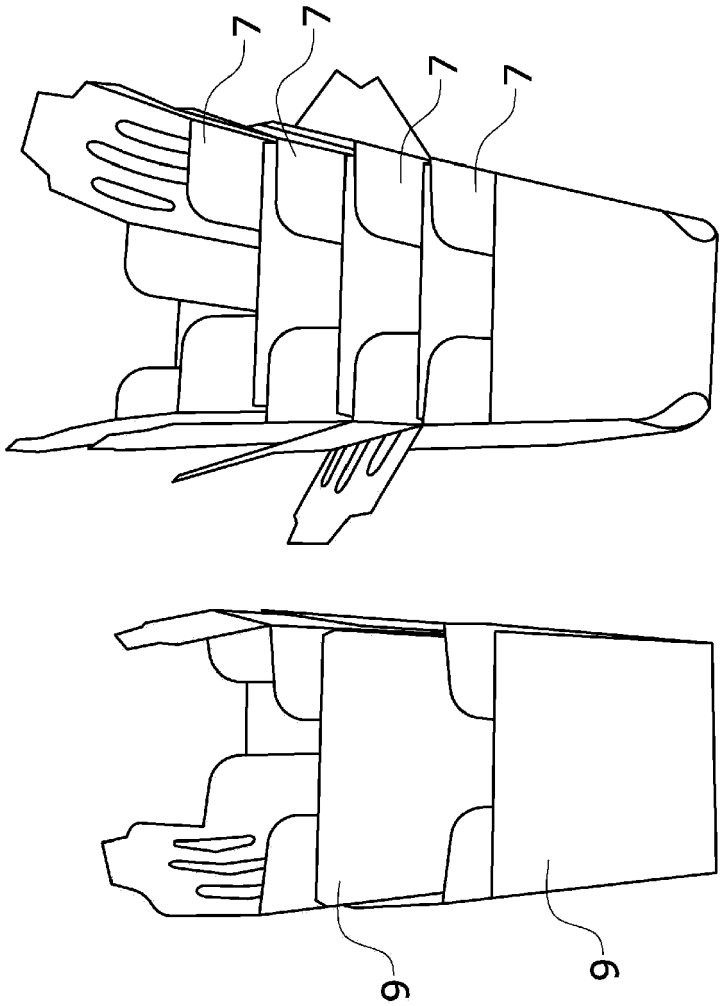

FIG.3

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EUROPEAN SEARCH REPORT

Application Number
EP 23 19 4754

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 Y A	EP 0 240 628 A1 (VAZICS LTD [US]) 14 October 1987 (1987-10-14) * figures 6-10 *	1-5 5 6	INV. B65D5/355 B65D5/20
Y	KR 2021 0004014 A (PARK JI HYUN [KR]) 13 January 2021 (2021-01-13) * figures 9-10 *	5	
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Y	FR 2 723 069 A1 (SAPSO SA [FR]) 2 February 1996 (1996-02-02) * figures 5, 6, 11 *	5	
A	US 2 279 670 A (FORD GEORGE F ET AL) 14 April 1942 (1942-04-14) * element 19; figure 1 *	6	
			TECHNICAL FIELDS SEARCHED (IPC)
			B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	10 January 2024	Dominois, Hugo

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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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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10-01-2024

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