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

(11) EP 3 498 621 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
19.06.2019 Bulletin 2019/25

(51) Int Cl.:
B65D 5/74 *(2006.01)* ***B65D 8/00*** *(2006.01)*
B65D 3/08 *(2006.01)*

(21) Application number: **18213531.9**

(22) Date of filing: **18.12.2018**

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **18.12.2017 EP 17208133**

(71) Applicant: **Tetra Laval Holdings & Finance S.A.**
1009 Pully (CH)

(72) Inventors:
- **JACOBSSON, Kristian**
  247 51 Dalby (SE)
- **KELLER, Oliver**
  22307 Hamburg (DE)
- **STAWENOW, Paul**
  20535 Hamburg (DE)
- **FRERICHS, Johanna**
  20257 Hamburg (DE)

(74) Representative: **Tetra Pak - Patent Attorneys SE**
AB Tetra Pak
Patent Department
Ruben Rausings gata
221 86 Lund (SE)

(54) A PACKAGE, AND A BLANK FOR FORMING A BASE PART OF A PACKAGE

(57) A package (1) for storing a liquid food product is provided. The package comprises a base part (2) manufactured from a blank (20) of packaging material, and a top part (3), wherein the base part (2) and the top part (3) are joined together to form the package (1). The package (1) comprises a rectangular shaped bottom (8) and a front wall (4), an essentially vertical back wall (6) opposite the front wall (4), a first side wall (5) and a second side wall (7), said walls (4-7) extending from said bottom (8). The front wall (4) is laterally delimited by a first edge (9) and a second edge (10) extending from a respective corner of the bottom (8), wherein one of the first edge (9) or the second edge (10) extends upwards towards the top part (3) and away from the back wall (6) of the package (1), such that the front wall (4) forms a slanted protrusion (4a).

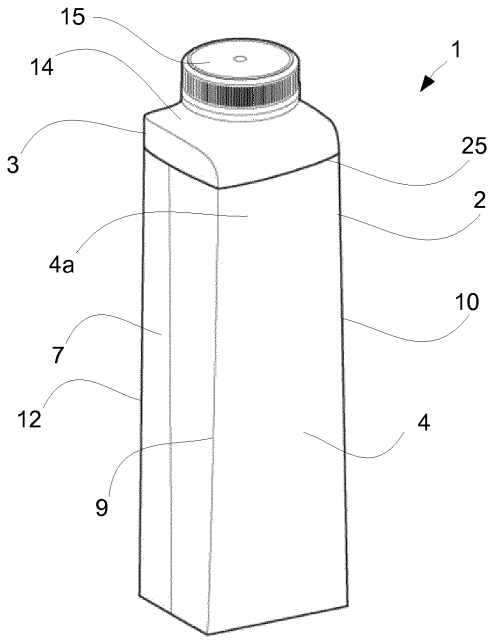

Fig. 1

EP 3 498 621 A1

Description

Technical Field

[0001] The present solution relates to packages, and to blanks for manufacturing packages or parts of packages. More specifically, the present solution relates to a package, preferably for containing pourable liquid food products and for improving its ergonomic properties and its maneuverability.

Background Art

[0002] Today there is a wide selection of packages for pourable products, such as liquid food products, available on the market. To increase the sustainability of the packaging industry, many companies move away from using all plastic packages to more environmentally friendly materials such as paper, or carton-based material, for at least parts of the packages. This is currently an increasing trend as packages which are made from carton-based blanks are used today for a wide range of liquid food products and also for products previously only found distributed in plastic bottles.

[0003] As the market for packages manufactured from carton-based blanks increases, so does the desire to improve the packages. An inherent problem when manufacturing packages from carton-based blanks is that it is more difficult to differentiate packages/products from each other. A further problem is that packaging products made from carton-based blanks often lack the ergonomic properties of their entirely plastic counterparts as they are more complex to form.

Summary

[0004] It is an object of the invention to at least partly overcome one or more of the above-identified limitations of the prior art. In particular, it is an object to provide a package which has improved ergonomic properties . These ergonomic properties may be optimized handling for right handed or left handed users. It is also an object of the invention to provide a blank for manufacturing such a package.

[0005] To solve these objects a package for storing a liquid food product is provided. The package comprises a base part manufactured from a blank of packaging material, and a top part being joined with the base part to form the package. The package comprises a rectangular shaped bottom and a front wall, an essentially vertical back wall opposite the front wall, a first side wall and a second side wall, all walls extending from the bottom. The front wall is laterally delimited by a first edge and a second edge extending from a respective corner of the bottom, one of the first edge or the second edge extending upwards towards the top part and away from the back wall of the package. The front wall thereby forms a slanted protrusion, i.e. the front wall of the package prtroudes outwards along one of the edges delimiting the front wall. The protrusion creates an asymmetrical shape of the front wall and of the entire package, and depending on which edge that is allowed to define the protrusion the package can be adapted to suit left handed users or right handed users. The side wall adjacent to the edge which protrudes provides more room for achieving a firm grip of the package, since the protrusion is widened,.

[0006] The protrusion may be achieved by the first edge or the second edge defining the protrusion, such that it extends upwards from the bottom at an angle between a plane parallel with the bottom and the respective edge being larger than 90° for at least a portion of the first edge or the second edge.

[0007] The angle is essentially constant along the extent of the first edge or the second edge and larger than 90° such that the extent of the protrusion increases linearly from the bottom towards the top part.

[0008] The first edge or the second edge not defining the protrusion may extend upwards from the bottom at a progressively decreasing angle between a plane parallel with the bottom and the respective edge such the first edge or second edge not defining the protrusion forms a curved edge approaching the back wall. I.e. the edge not protruding outwards extends upwards in a curved manner toward the back wall. The slanted shape of the front wall is thus further amplified, and the center of mass is moved slightly more towards the center of the bottom of the package.

[0009] Furthermore, the shape of the front wall between the first edge and the second edge may transition from the bottom towards the top part from an essentially planar shape to a curved shape.

[0010] The back wall opposite the front wall is laterally delimited by a third edge and a fourth edge extending upwards from a corresponding corner on the bottom, the third and fourth edges may transition from an essentially right angled edge shape close to the bottom to a rounded edge shape towards the top part. The rounded shape of the edges delimiting the back wall provides a soft feel for instance against the palm of the user, which combined with the widened side wall due to the protrusion of the front wall improves the ergonomics of the package.

[0011] The front wall may form a rounded transition to an upper wall on the top part, the upper wall being separated from the first side wall, the second side wall and the back wall by a top part edge extending along the upper periphery of at least three sides of the package. The top part edge connects essentially tangentially to the first edge and the second edge and the upper wall may further comprise an opening.

[0012] The base part may be formed by a carton-based packaging material, providing an inexpensive, safe and environmentally friendly package.

[0013] The top part may be formed by a plastic material, preferably by injection moulding of a thermoplastic material simultaneously while joining the top part to the base part.

[0014] The bottom may have a shape of an oblong rectangle such that the front wall and the back wall are wider that the first and second side walls.

[0015] A blank for manufacturing a base part of a package is also provided, the blank comprises a bottom crease line separating the bottom from panels of the blank. The panels are configured to form respective walls of the base part. The blank further comprises a first crease line and a second crease line laterally delimiting the front panel. The first crease line extends from the bottom crease line to a point on a top edge of the blank laterally offset from the point where the first crease line intersects with the bottom crease line and the second crease line extends from the bottom crease line to a point on a top edge of the blank laterally offset from the point where the second crease line intersects with the bottom crease line and offset in a direction away from the first crease line.

[0016] The blank may comprise a third crease line and a fourth crease line delimiting a back panel. The third and fourth crease lines extends essentially perpendicularly from the bottom crease line and terminates before reaching the top edge.

[0017] The first crease line on the blank may correspond to the first edge, the second crease line corresponds to the second edge, the third crease line corresponds to the third edge and the fourth crease line corresponds to the fourth edge. The front panel of the blank corresponds to the base part portion of the front wall, the back panel corresponds to the base part portion of the back wall, a first side panel corresponds to the base part portion of the first side wall and a second side panel corresponds to the base part portion of the second side wall.

[0018] The first crease line and the second crease line may both intersect with the top edge to the right or to left of their respective intersection with the bottom crease line.

[0019] A fifth crease line arranged at the center between the fourth crease line and the first crease line may be provided, extending perpendicularly from the bottom crease line to the top edge. A sixth crease line arranged at the center between the second crease line and the third crease line may be provided, extending perpendicularly from the bottom crease line to the top edge.

[0020] Still other objectives, features, aspects and advantages of the invention will appear from the following detailed description as well as from the drawings.

Brief Description of the Drawings

[0021] Embodiments of the invention will now be described, by way of example, with reference to the accompanying schematic drawings, in which

Fig. 1 is an isometric view of a package according to one embodiment,

Fig. 2 is a side view of a package according to one embodiment,

Fig. 3 is a top view of a package according to one embodiment,

Fig. 4 is a bottom view of a package according to one embodiment

Fig. 5 is a front view of a blank according to one embodiment, and

Fig. 6 is a front view of a blank according to one embodiment.

Detailed description

[0022] The disclosed embodiments will now be described more fully hereinafter with reference to the accompanying drawings, in which certain embodiments of the invention are shown. Like numbers refer to like elements throughout.

[0023] In the following, simultaneous reference to Figs. 1 to 4, all showing a package 1, will be given. The package 1 comprises a top part 3 and a base part 2, configured to be joined together to form the package 1. An closure 15 in the top part 3 is shown, here in the shape of a cap which can screwed on and off onto the neck of the top part 3 (not shown). However, other closures 15 are also feasible such as for instance peel-back lids, or tear-off membranes. The base part 2 is made from a packaging material in the form of a blank 20, preferably a packaging laminate comprising several layers one of which being carton-based.

[0024] The base part 2 is preferably made from a carton-based packaging material in the form of a blank 20. The carton-based packaging material may be a laminate material comprising several polymeric layers on both sides of a carton-based core layer. The carton-based material could be paper, paper board, carton or other similar fiber-based materials.

[0025] The carton-based material is preferably the core material of the packaging laminate material and having a surface coating of thermoplastics on at least one of its two surfaces. Such a surface coating could be polyethylene film (PE film), but other materials could also be used in combination, such as for instance aluminum foil. The packaging material may be refined to form sheets comprising individual blanks 20 which are then folded and joined together along a longitudinal seal to form the base part 2.

[0026] The top part 3 is preferably of HDPE, high density polyethylene, however other thermoplastic polymer materials are of course also conceivable.

[0027] As can be seen in Fig. 1, the base part 2 contains the major amount of food inside the package 1; the top part 3 provides the closure 15 and also stability and structural rigidity to the base part 2. The top part 3 may for example be manufactured by injection moulding, whereby the material for the top part 3 is injected into a mold, comprising an inner mould and an outer mould. The outer mould may have a conical shape over which the base part is pulled, while the inner mould may surround the outer mould and correspond in shape to the top part 3.

At least the upper most part of the base part 2 is partially located on the cone forming the outer mould, such that the material in the top part 3 forms a bond in the joint 25 with material of the base part 2.

[0028] The joint 25 between the top part 3 and the base part 2 could be designed with a weakening, such as a perforation, to facilitate separation of the top part 3 from the base part 2 for instance for recycling purposes or for allowing a user to reach food products which otherwise are hard to extract through the opening 15.

[0029] The package 1 comprises a bottom 8 as can be seen in Fig. 4, which is achieved by means of folding along a plurality of crease lines in a conventional manner which is to be considered known by a skilled person and will thus not be explained in further detail.

[0030] A front wall 4, two side walls 5, 7 and a back wall 6 extend from the bottom 8. The bottom 8 may in a preferred embodiment have the shape of an oblong rectangle, where the front wall 4 and the back wall 6 are wider than the first and second side walls 5, 7. The back wall 6 and the side walls extend essentially vertically, i. e. perpendicularly upwards from the bottom 8. The front wall 4 is laterally delimited by a first edge 9 and a second edge 10, also separating the front wall 4 from the first side wall 5 and the second side wall 7. The first and second edges 9, 10 extend from a respective corner of the bottom 8. One of the first edge 9 or the second edge 10 extends upwards towards the top part 3 and simultaneously away from the back wall 6 of the package 1. That is one of the edges 9, 10 delimiting the front wall 4 projects outwards and upwards which provides for an outward protrusion 4a defined by the edge 9, 10 which protrudes away from the back wall 6. The front wall thus forms a slanted protrusion.

[0031] As can be seen in Fig. 2 the edge 9, 10 which defines the extent of the protrusion 4a, is the first edge 9, extending upwards from the bottom 8 at an angle α. The angle α is defined as the angle between the first edge 9 or the second edge 10 and a plane parallel with the bottom 8. The angle α is more than 90º at least for a part of the first edge 9 or the second edge 10, i.e. the edge 9, 10 which defines the protrusion extends outwards away from the back wall 6 during at least a part of the length, or longitudinal extension, of the edge 9, 10. The protrusion 4a may further increase essentially linearly from the bottom 8 towards the top part 3 of the package 1, which implies (as is shown in the embodiment of Fig. 2) that the edge 9, 10 defining the protrusion is an essentially straight edge from the bottom 8 to the top part 3. In other words, the angle α may be approximately constant and more than 90º along the protruding edge 9, 10 until it reaches the top part edge 13.

[0032] As can also be seen in Fig. 2, the first edge 9 or second edge 10 not defining the extent of the protrusion 4a may deflect inwards opposite the direction of the protrusion 4a. In the embodiment of Fig. 2 this is the second edge 10, which deflects towards the back wall 6 of the package 1. The angle β is defined as the angle between the first edge 9 or the second edge 10 which does not define the protrusion 4a and a plane parallel with the bottom 8. The angle β is thus less than 90º at least a portion of the length of the edge 9, 10 which does not protrude.

[0033] As can be seen in Fig. 2, the angle β may decrease progressively from the bottom 8 towards the top part 3 forming a curved edge 9, 10. If the first edge 9 or the second edge 10 which does deflect away from the back wall 6 instead deflects toward the back wall 6, the slanted shape of the front wall 4 will be further amplified. Furthermore, this will also compensate somewhat for the outward shift of the center of mass of the package 1 due to the protrusion 4a.

[0034] Additionally, the front wall 4 may transition from the bottom 8 to the top part 3 from an essentially straight shape to a curved shape between the first edge 9 and the second edge 10. Furthermore, each of the walls 4, 5, 6, 7 of the package 1 may have a slight rounded shape, i.e. bulging slightly in an outward direction.

[0035] As is also seen in the embodiments of Figs. 1 and 2, the front wall 4 extends on to the top part 3 where it forms a rounded transition to an upper wall 14 which faces essentially in an upward direction. The upper wall 14 further includes a neck which forms an opening 15 in the package 1. As can be seen in Figs. 1 to 3, the upper wall 14 is delimited from the back wall 6, the first side wall 5 and the second side wall 7 of the package 1 by a top part edge 13. The top part edge 13 connects or merges with the first edge 9 and the second edge 10 such that the first edge 9, the top part edge 13 and the second edge 10 forms one continuous edge extending from the bottom 8 to the top part 3, around the periphery of the upper surface 14 along the first side wall 5, the back wall 6 and the second side wall 7 and then back to the bottom 8 again.

[0036] Due to the protrusion 4a the package 1 is asymmetrical, and the first or second side walls 5, 7 which is adjacent to the protruding edge 9, 10 is also wider towards the top of the package than the side wall 9, 10 on the opposite side. By choosing if the first edge 9 or the second edge 10 is to form the protrusion 4a the package 1 can be formed into two mirrored packages.

[0037] The package 1 may thereby be optimized for both left handed and right handed users, such that a user can find a package 1 that is adapted to his or hers preference. This may be further improved by that a third edge 11 and a fourth edge 12 which laterally delimits the back wall 6 extends upwards from a corresponding corner on the bottom and transitions from an essentially right angle shape close to the bottom to a rounded shape towards the top part. The third edge 11 and the fourth edge 12 are thus relatively well defined edges or folds near the bottom 8, which then transition a part of the distance between the bottom 8 and the top part 3 to a curved edge which blends the back wall 6 with the first side wall 5 and the second side wall 7. This provides a more comfortable grip, especially when holding the package with the back

wall 8 against the palm of the hand. This may also provide benefits for instance for differentiating the package 1 from prior art packages, and can also be beneficial in the transportation and storage of the packages 1.

[0038] Turning to Fig. 5, an embodiment of a blank 20 for manufacturing a base part 2 is shown. The blank 20 comprises a bottom crease line 21 separating the bottom 8 from the panels 4', 5', 6', 7' of the blank 20. As already mentioned, the crease lines forming the folds for the bottom 8 are considered to be known by a skilled person and will not be explained in further detail. The blank 20 comprises a first crease line 16 and a second crease line 17 laterally delimiting the front panel 4'. The first and second crease lines 16, 17 extend from the bottom crease line 21 to a top edge 22 of the blank 20.

[0039] The blank 20 may further comprise a third crease line 18 and a fourth crease line 19, the third and fourth crease lines 18, 19 extend essentially perpendicularly from the bottom crease line 21 and end before reaching the top edge 22. The first crease line 16 corresponds to the first edge 9, the second crease line 17 corresponds to the second edge 10, the third crease line 18 corresponds to the third edge 10 and the fourth crease line 19 corresponds to the fourth edge 11 of the finished package 1.

[0040] Also, the front panel 4' corresponds to the front wall 4, the back panel 6' corresponds to the back wall 6, a first side panel 5' of the blank 20 corresponds to the first side wall 5 and a second side panel 6' corresponds to the second side wall 6. When the blank 20 is folded into its final shape, which is the shape of the base part 2, the respective panels 4', 5', 6', 7' will form the portions of the walls 4, 5, 6, 7 constituted by the base part 2. In other words the portions of the walls 4, 5, 6, 7 below the joint 25 corresponds to the respective panels 4', 5', 6', 7' of the blank 20. When the top part 3 is added or joined to the base part 2, the portions of the walls 4, 5, 6, 7 on the top part 3 are formed.

[0041] The first crease line 16 extends from the bottom crease line 21 to a point on a top edge 22 of the blank 20 laterally offset from where the first crease line 16 intersects with the bottom crease line 21 and as can be seen in Fig. 6, the second crease line 17 may extend from the bottom crease line 21 to a point on a top edge 22 of the blank 20 laterally offset from the point where the second crease line 17 intersects with the bottom crease line 21 away from the first crease line 16. Depending on which of the first crease line 16 and second crease line 17 is to define the protrusion 4a the offset may be in the opposite direction.

[0042] The first crease line 16 and the second crease line 17 may also be configured to both intersect with the top edge 22 to the right or to the left of their respective intersection with the bottom crease line 21, thus forming crease lines corresponding to both the protruding edge of the package and the other edge delimiting the front wall/panel 4, 4' which approaches the back wall 6 as it extends upwards.

[0043] The blank 20 may further comprise a fifth crease line 23 at the center between the fourth crease line 19 and the first crease line 16, said fifth crease line 23 extending perpendicularly from the bottom crease line 21 to the top edge 22; and a sixth crease line 24 at the center between the second crease line 17 and the third crease line 18, said sixth crease line 24 extending perpendicularly from the bottom crease line 21 to the top edge 22 forming a corresponding edge at the center of the side walls 5, 7.

[0044] As can also be seen in Figs 5 and 6, the back panel 6' may be divided into a first part 6a' and a second part 6b' which are configured to be joined together to form the back wall 6. It is to be realized that the division may be located on either of the panels 4', 5', 6', 7'.

[0045] From the description above follows that, although various embodiments of the invention have been described and shown, the invention is not restricted thereto, but may also be embodied in other ways within the scope of the subject-matter defined in the following claims.

Claims

1. A package (1) for storing a liquid food product, the package (1) comprising
   a base part (2) manufactured from a blank (20) of packaging material, and
   a top part (3), wherein the base part (2) and the top part (3) are joined together to form the package (1), wherein the package (1) comprises a rectangular shaped bottom (8) and a front wall (4), an essentially vertical back wall (6) opposite the front wall (4), a first side wall (5) and a second side wall (7), said walls (4-7) extending from said bottom (8), and
   wherein the front wall (4) is laterally delimited by a first edge (9) and a second edge (10) extending from a respective corner of the bottom (8), wherein one of the first edge (9) or the second edge (10) extends upwards towards the top part (3) and away from the back wall (6) of the package (1), such that the front wall (4) forms a slanted protrusion (4a).

2. The package (1) according to claim 1, wherein the first edge (9) or the second edge (10) defining the slanted protrusion (4a) of the front wall (4) extends upwards from the bottom (8) at an angle (α) between a plane parallel with the bottom (8) and the respective edge (9, 10) being larger than 90° for at least a portion of the first edge (9) or the second edge (10).

3. The package (1) according to claim 2, wherein the angle (α) is essentially constant along the extent of the first edge (9) or the second edge (10) and larger than 90° such that the extent of the protrusion increases linearly from the bottom (8) towards the top part (3).

4. The package (1) according to any one of the preceding claims, wherein the first edge (9) or the second edge (10) not defining the protrusion (4a) extends upwards from the bottom (8) at a progressively decreasing angle (β) between a plane parallel with the bottom (8) and the respective edge (9, 10) such the first edge (9) or second edge (10) not defining the protrusion (4a) forms a curved edge approaching the back wall (6).

5. The package (1) according to any one of the preceding claims, wherein the shape of the front wall (4) between the first edge (9) and the second edge (10) transitions from the bottom (8) towards the top part (3) from an essentially planar shape to a curved shape.

6. The package (1) according to any one of the preceding claims, wherein the back wall (6) is laterally delimited by a third edge (11) and a fourth edge (12) extending upwards from a corresponding corner of the bottom (8), and wherein the third and fourth edges (11, 12) transition from an essentially right angle shape close to the bottom (8) to a rounded shape towards the top part (3).

7. The package (1) according to any one of the preceding claims, wherein the front wall (4a) forms a rounded transition to an upper wall (14) on the top part (3), said upper wall (14) being separated from the first side wall (5), the second side wall (7) and the back wall (6) by a top part edge (13) extending along the upper periphery of at least three sides of the package (1), said top part edge (13) connecting essentially tangentially to the first edge (9) and the second edge (10), said upper wall (14) further comprising an opening (15).

8. The package (1) according to any one of the preceding claims, wherein the base part (2) is formed by a carton-based packaging material.

9. The package (1) according to any one of the preceding claims, wherein the top part (3) is formed by a plastic material, preferably by injection moulding of a thermoplastic material over the base part 2.

10. The package (1) according to any one of the preceding claims, wherein the bottom (8) has a shape of an oblong rectangle such that the front wall (4) and the back wall (6) are wider than the first and second side walls (5, 7).

11. A blank (20) for manufacturing a base part (2) of a package (1) according to any one of the preceding claims, wherein the blank (20) comprises a bottom crease line (21) separating the bottom (7) from panels (4', 5', 6', 7') of the blank (20), said panels (4', 5', 6', 7') being configured to form respective side walls (4-7) of the package (1), said blank (20) further comprises a first crease line (16) and a second crease line (17) laterally delimiting a front panel (4'), wherein the first crease line (16) extends from the bottom crease line (21) to a point on a top edge (22) of the blank (20) laterally offset from the point where the first crease line (16) intersects with the bottom crease line (21) and where the second crease line (17) extends from the bottom crease line (21) to a point on a top edge (22) of the blank (20) laterally offset from the point where the second crease line (17) intersects with the bottom crease line (21) and offset in a direction away from the first crease line (16),
characterized in that the blank (20) further comprises a third crease line (18) and a fourth crease line (19) delimiting a back panel (6'), said third and fourth crease lines (18, 19) extending essentially perpendicularly from the bottom crease line (21) and terminate before reaching the top edge (22).

12. The blank (20) according to claim 11, wherein the first crease line (16) corresponds to a first edge (9), the second crease line (17) corresponds to a second edge (10), the third crease line (18) corresponds to a third edge (10) and the fourth crease line (19) corresponds to a fourth edge (11), and wherein the front panel (4') corresponds to the base part portion of the front wall (4), the back panel (6') corresponds to the base part portion of the back wall (6), a first side panel (5') corresponds to the base part portion of the first side wall (5') and a second side panel (6') corresponds to the base part portion of the second side wall (5).

13. The blank (20) according to any one of claims 11 or 12, wherein the first crease line (16) and the second crease line (17) both intersect with the top edge (22) laterally offset from their respective intersection with the bottom crease line (21).

14. The blank (20) according to any one of claims 11 to 13, further comprising a fifth crease line (23) at the center between the fourth crease line (19) and the first crease line (16), said fifth crease line (23) extending perpendicularly from the bottom crease line (21) to the top edge (22), and a sixth crease line (24) at the center between the second crease line (17) and the third crease line (18), said sixth crease line (24) extending perpendicularly from the bottom crease line (21) to the top edge (22).

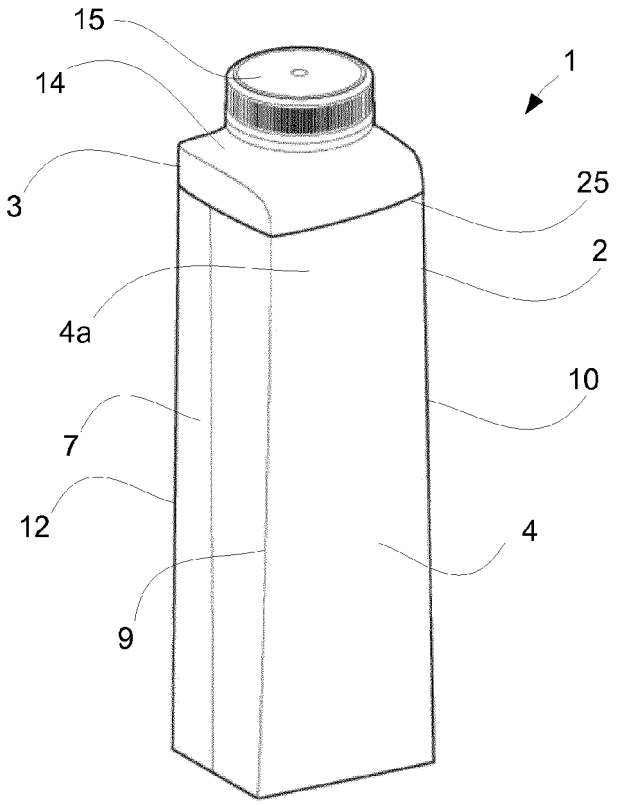

Fig. 1

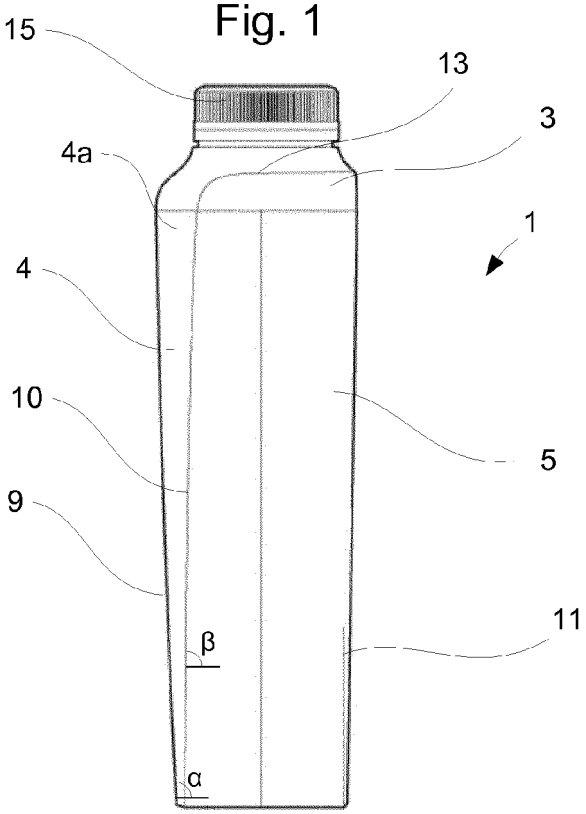

Fig. 2

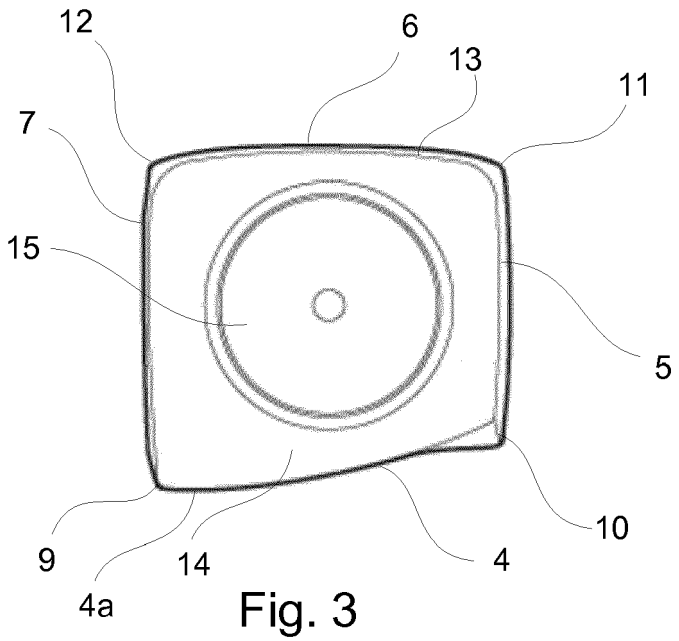

Fig. 3

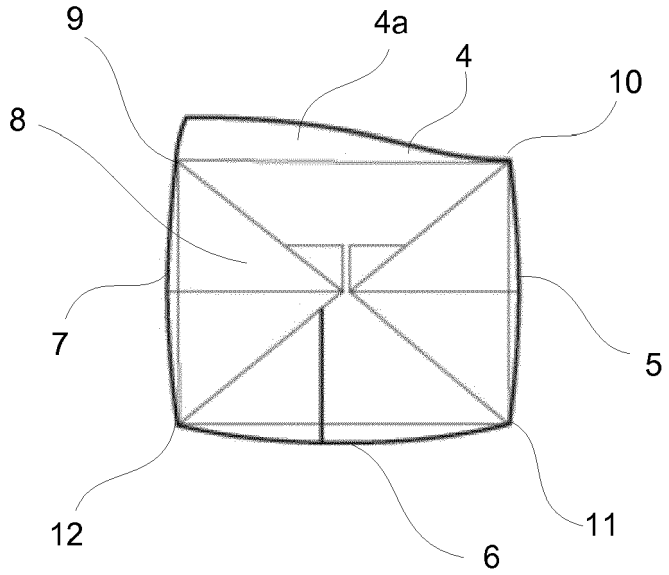

Fig. 4

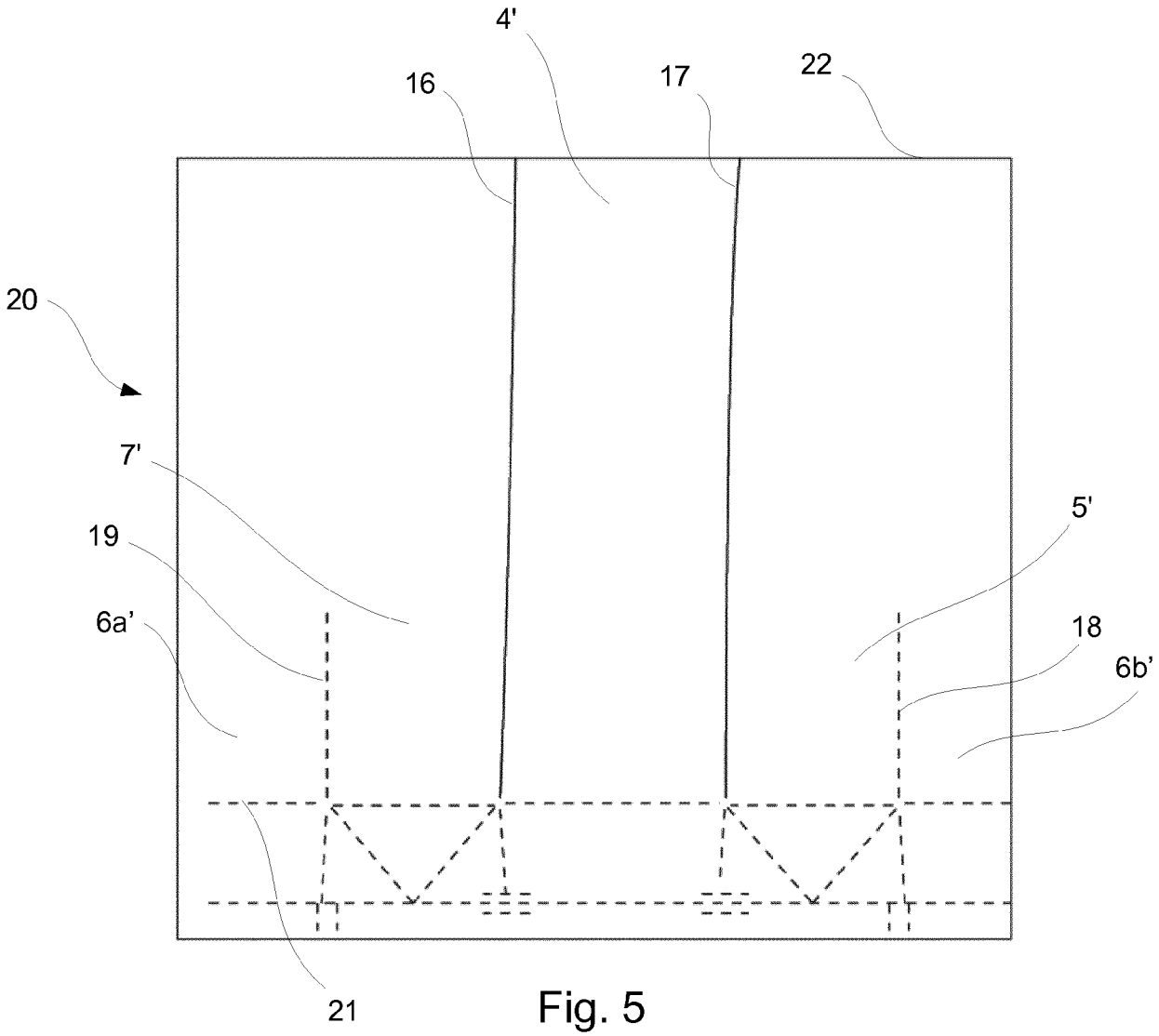

Fig. 5

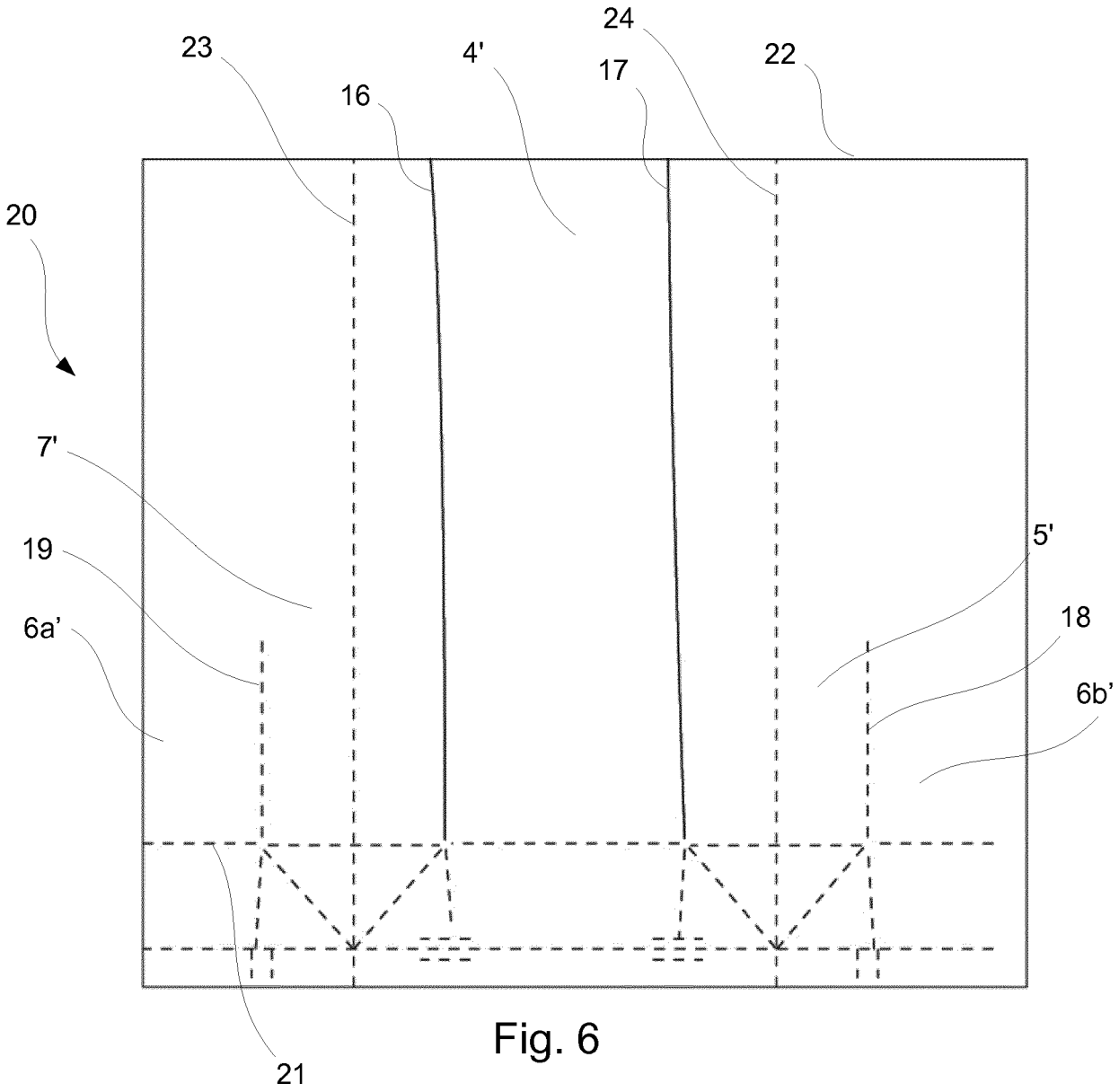

Fig. 6

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 18 21 3531

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	WO 2016/202684 A1 (TETRA LAVAL HOLDINGS & FINANCE [CH]) 22 December 2016 (2016-12-22)	11-14	INV. B65D5/74 B65D8/00
A	* page 4, line 19 - page 6, line 28; figures 1-5 *	1-10	B65D3/08
A	CN 2 853 632 Y (ZHAO YONG [CN]) 3 January 2007 (2007-01-03) * figure 1d *	1,11	
A	US 3 434 644 A (COLLIE STAFFORD D) 25 March 1969 (1969-03-25) * column 2, lines 1-14; figures 1-4 *	1,11	
A	JP 2009 166867 A (TOPPAN PRINTING CO LTD) 30 July 2009 (2009-07-30) * abstract; figure 12 *	1,11	

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
Munich	9 May 2019	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 ON EUROPEAN PATENT APPLICATION NO. EP 18 21 3531

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.

09-05-2019

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2016202684 A1	22-12-2016	CN 107787293 A	09-03-2018
		EP 3310674 A1	25-04-2018
		JP 2018517631 A	05-07-2018
		US 2018178943 A1	28-06-2018
		WO 2016202684 A1	22-12-2016
CN 2853632 Y	03-01-2007	NONE	
US 3434644 A	25-03-1969	NONE	
JP 2009166867 A	30-07-2009	JP 5303937 B2	02-10-2013
		JP 2009166867 A	30-07-2009

EPO FORM P0459

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