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(54) **Stand-up bag of a weldable foil for holding pourable contents**

(57) A bag (13) capable of moving between a flattened generally planar condition to an open generally parallelepipedal shape has in the flattened condition closely juxtaposed flat rectangular front and back face panels (1). A rectangular top panel (5) has front and back edges (25) joined to the top edges (2, 4) of the respective front and back face panels (1) and side edges (9) bridging ends of the respective front and back edges (29). The top panel (5) has a crease (24) between the respective front and back edges (25) and is folded inward therefrom to lie between the face panels (1). A similar rectangular floor panel (3) is secured to the lower edges of the face panels (1). A pair of rectangular side gusset panels (6) each have vertical front and back edges respectively joined to the side edges of the front and back panels (1) and upper and lower edges joined to the side edges of the top and floor panels (5, 3).

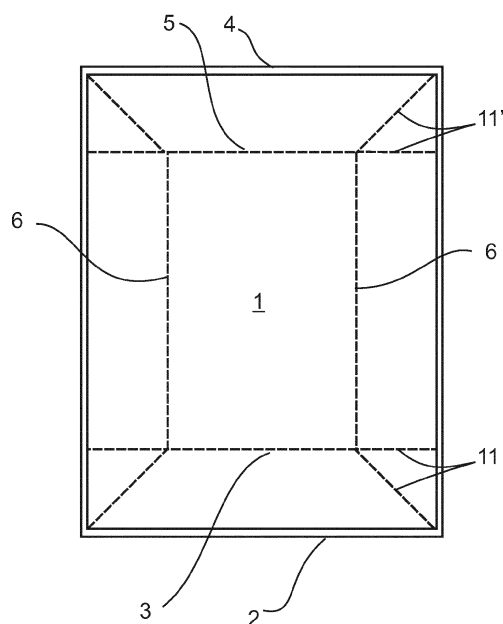


Fig. 1

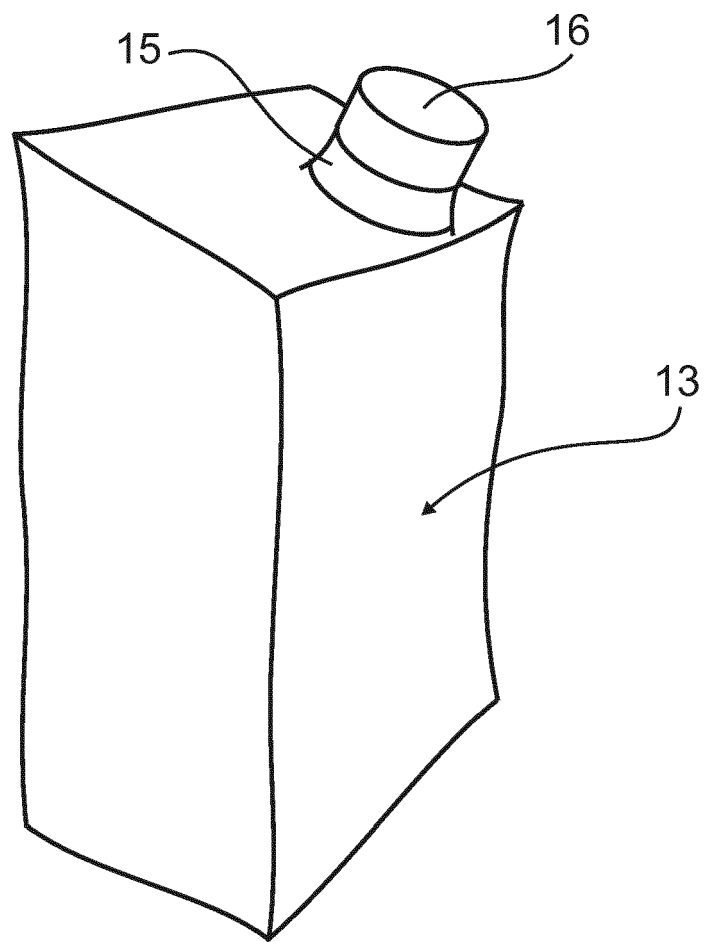


Fig. 6

Description

FIELD OF THE INVENTION

- 5 **[0001]** The present invention relates to a stand-up bag. More particularly this invention concerns such a bag intended to hold pourable contents such as a liquid, a viscous material, or particles.

BACKGROUND OF THE INVENTION

- 10 **[0002]** The invention relates to a stand-up bag composed of weldable film for packaging a liquid, paste-like, or pourable packaging product. The stand-up bag is prefabricated as a flat-lying film bag. After it is filled, the bag is closed by a weld to seal the filler opening so as to create a package. The weldable film can be a multilayer coextruded film or a composite film that has a heat-weldable polymer layer on the inside of the bag. Possible areas of application for the stand-up bag range from the packaging of beverages, liquid concentrates, liquid cleaning agents, liquid fertilizers, viscous body-care products, and even dry feed for animals.

- 15 **[0003]** US 7,497,624 discloses a stand-up bag that has front and back face panels, a bottom panel that is folded inward and attached to the bottom edge of the face panels, and side gusset panels between the face panels. The side gusset panels each have a central crease and are attached by welds to side edges of the face panels. Triangular gores are provided at the corners of the side gusset panels, together form an inlaid fold between the halves of the respective side gusset panels at its upper and lower ends, and are attached to the bottom panel. The side gusset panels terminate below an upper edge of the stand-up bag and are sealed shut at their top ends at the triangular gores and welds. Above the side gusset panels, the face panels are attached directly to each other at their longitudinal edges by welds and create a two-ply header region for the stand-up bag in which a reclosable means can be provided in the form of a pressure closure. After the bag has been filled with the packaging product, the side gusset panels and the folded down bottom panel expand and define a filling product space that is formed by flat film areas. The header region above the side gusset panels cannot be used as filling product space and creates a lobe-shaped section of the bag, with the result that the shape of the filled stand-up bag deviates from a parallelepipedal shape.

- 25 **[0004]** US 2011/0229060 discloses a stand-up bag of weldable film that has two face panels, a folded in bottom panel attached to the bottom edges of the face panels, and a folded-in top panel attached to the top edges of the face panels. The face panels are directly attached to each other by side-edge welds in a center section of the bag between the bottom panel and the top panel. The face panels, bottom panel, and the top panel define a filling product space that can be used extending from the floor surface up to the top panel surface. After being filled, the package has a footprint that tapers toward the longitudinal edges of the bag. The shape of the package is not parallelepipedal.

- 30 **[0005]** US 6,796,712 also relates to a stand-up bag with two face panels that are attached to each other by their longitudinal wherein a foldable floor panel located between the side walls and functioning as a standing floor is at the bottom of the stand-up bag, while a foldable top panel is between the face panels at the top end of the stand-up bag. In addition, a dispensing opening is provided between the top transverse edge of a face panel and the associated edge of the top panel component in which a sealing element or closure is provided. The filling product space extends from the floor surface up to the top panel component, and has a floor surface of hexagonal shape when in the filled state. The hexagonal base surface impedes storing the filled packages in a space-saving manner in a stack that comprises multiple adjacent and stacked packages.

OBJECTS OF THE INVENTION

- 45 **[0006]** It is therefore an object of the present invention to provide an improved stand-up film bag.
[0007] Another object is the provision of such an improved stand-up film bag that overcomes the above-given disadvantages, in particular that can move from a flattened condition to a parallelepipedal shape with four side surfaces extending at right angles to one another after it is filled.
[0008] A further object is for the package to have good shape stability both in the filled state as well as in the partially emptied state. It should furthermore be easy to manipulate and preferably include a reclosable opening that enables the product to be dispensed.

SUMMARY OF THE INVENTION

- 55 **[0009]** A bag capable of moving between a flattened generally planar condition to an open generally parallelepipedal shape has according to the invention in the flattened condition closely juxtaposed flat rectangular front and back face panels each having a horizontal top edge, a horizontal bottom edge therebelow, and a pair of horizontally spaced vertical side edges bridging ends of the top and bottom edges. A rectangular top panel has front and back edges joined to the

top edges of the respective front and back face panels and side edges bridging ends of the respective front and back edges. The top panel has a crease between the respective front and back edges and is folded inward therefrom to lie between the face panels, and a rectangular floor panel has front and back edges respectively joined to the bottom edges of the front and back panels and side edges bridging ends of the respective front and back edges. The floor panel also has a crease between the respective front and back edges and is folded inward therefrom to lie between the face panels. A pair of rectangular side gusset panels each have vertical front and back edges respectively joined to the side edges of the front and back panels and upper and lower edges joined to the side edges of the top and bottom panels. Each side panel is subdivided by a central vertical crease into a pair of subpanels each formed at a respective corner of the side panel with a respective corner crease extending diagonally inward from the respective corner to the center crease and each defining at the respective corner a triangular gore. The side panel is folded inward at the respective center creases between the face panels and the gores are folded inward at the diagonal creases between the subpanels. The top, bottom, and side panels are wholly between the face panels in the flattened condition and extending generally perpendicular to the face panels in a filled condition of the bag.

[0010] The stand-up bag according to the invention is manufactured as a flat-lying film bag and creates a parallelepipedal package after it has been filled. A filler opening provided for filling the stand-up bag between the top panel and the top edge of one of the face panels is closed by a longitudinal weld after the stand-up bag is filled, which seam attaches the face panel to the top panel.

[0011] The bottom panel and the top panel are preferably attached along their periphery by longitudinal welds to the face panels and the triangular gores of the side gusset panels. Filling the stand-up bag causes the side gusset panels between the face panels, as well as the folded-in bottom panel and the folded-in the top panel, to expand. As a result, a completely flat floor surface is created, which imparts good stability to the package, and a flat top panel surface is also created. The filled package is distinguished by a parallelepipedal shape and has a product space that can be utilized from the floor surface up to the top panel surface. As a result, the package can be stacked both vertically and horizontally in a space-saving manner.

[0012] In a preferred embodiment of the invention, the face panels are attached to the adjacent film area of the side gusset panels by welds. The welds impart a high degree of shape stability to the package by stiffening the panels at the edges.

[0013] The stand-up bag can include a handle to provide improved manipulation of the package. A film handle is preferably provided on one area of the bag, or a grip composed of a textile strip or film strip reinforced by a textile strip is provided.

[0014] The stand-up bag according to the invention can furthermore have a reclosable opening for dispensing the product. The configuration and design of the reclosable opening depend on the filling product.

[0015] In a preferred embodiment of the invention, a closure is provided between the top panel and a face panel and is tightly attached to bordering areas of the top panel and the face panel. The closure is, for example, a spout that has a cap to enable reclosing, or is composed of mutually attachable closing strips in the form of a zipper, slide fastener, or a hook-and-loop fastener.

[0016] The reclosable opening for dispensing product can also be provided in a section of the bag that is composed of a portion of the top panel and a portion of the face panel attached thereto forming a spout. The bag is preferably closed at its top end by a connecting seam, and a recloseable closure is provided inside the bag section, which closure is accessible after tearing off a strip comprising the connecting seam. The reclosable closure can be provided, in particular, in the form of a zipper or slide fastener. The invention also comprises an approach whereby the reclosable opening is provided in a face panel or in a side gusset panel, and has a reclosable closure that is fastened to the inside of the bag.

[0017] The stand-up bag is advantageously also equipped with a handle to provide improved manipulation of the package. This can be composed of a film handle that is provided on one area of the bag. Another handle that can be considered is a grip produced from a textile strip or from a film strip that is reinforced by a textile strip.

BRIEF DESCRIPTION OF THE DRAWING

[0018] The above and other objects, features, and advantages will become more readily apparent from the following description, reference being made to the accompanying drawing in which:

FIG. 1 is a front elevational view of an assembled stand-up bag in flattened condition before it is filled;

FIG. 2 is an exploded view of the flattened stand-up bag of FIG. 1;

FIG. 3 is a perspective view a side gusset panel of the stand-up bag of FIGS. 1 and 2;

FIG. 4 is a view of the foldable blank for making the side gusset panel of FIG. 3;

- FIG. 5 is a perspective view of the bag of FIG. 1 after filling with pourable contents;
- FIG. 6 shows the bag of FIG. 5, but with a reclosable pour spout for liquid products;
- FIG. 7 shows the bag of FIG. 5 but with a slide fastener for use with particulate contents;
- FIG. 8 shows the bag of FIG. 5 with a reclosable top flap;
- FIG. 9 shows the bag of FIG. 6 with a handle on the back face panel;
- FIGS. 10, 11, and 12 are perspective views of spout bags according to the invention with different handle configurations.

DETAILED DESCRIPTION

[0019] A stand-up bag 13 made of a thermoplastic weldable film is fabricated to lie flat when empty as shown in FIG. 1. When filled with a liquid, a pasty material, or particles it assumes a generally parallelepipedal shape as shown in FIG. 5. This bag 13 has as shown also in FIG. 2 rectangular front and back face panels 1 each with two long vertical side edges 9 and two shorter horizontal bottom and top edges 2 and 4. A rectangular top panel 5 has parallel long front and back edges 25 that are joined by welds to the top edges 4 and a rectangular floor panel 3 has parallel long front and back edges 29 welded to the bottom edges 2. The panels 5 and 3 have respective central creases 24 and 28 parallel to the respective edges 25 and 29 that divide them each into two identical rectangular flaps.

[0020] As also shown in FIGS. 3 and 4, rectangular side gusset panels 6 having short straight upper and lower edges 31 and long straight vertical side edges 32 are subdivided by a central crease 7 into two subpanels 8. Diagonal corner creases 11 define at the upper and lower outer corners of each subpanel 8 right-triangular gores 10 joined to the respective subpanel by the 45° diagonal crease 11 and to each other by an end portion of the central crease 8. In the assembled bag 13, the end edges 26 of the top panel 5 are welded to the upper edges 31 of the side panels and the end edges 30 of the bottom panel 3 are welded to the bottom edges 31.

[0021] According to the invention in the flattened condition the side panels 6 are folded in with the two subpanels 8 between the face panels 1, the top and bottom panels 5 and 31 are similarly folded in with the gores 11 between their two halves.

[0022] The stand-up bag that is prefabricated as a flat-lying film bag is filled through a filler opening in the top with a pourable packaging product. Such filler opening is formed by leaving open part of the seam or weld between one of the edges 25 and the respective edge 4. After filling, this opening is sealed shut by a longitudinal weld. Once it is filled as shown in FIG. 5, the stand-up bag forms a parallelepipedal package 13 that has a flat, rectangular standing surface, a flat and rectangular top panel surface, as well as four side panels extending at right angles to each other.

[0023] The stand-up bag described based on FIGS. 1 through 5 can include a reclosable opening for dispensing the product. In the embodiment of FIG. 6, a closure 14 is provided at the seam between the top panel 5 and the face panel 1, tightly attached to bordering areas of the top panel 5 and face panel 1. The closure 14 is provided in the form of a spout 15 that has a cap 16 for reclosing. The package 13 shown in FIG. 6 is well suited, in particular, for liquid or viscous products.

[0024] The package 13 shown in FIG. 7 is intended for solid or granular pourable products and has a zipper formed mutually attachable closing strips as the closure 14. One closing strip of the zipper 17 is on the top edge 4 of the face panel 1. The other closing strip is attached to the front edge 25 of the inwardly folded top panel 5.

[0025] As indicated in FIG. 8, the reclosable opening can also be in a bag section 18 that is created by a section of the top panel 5 and a section attachable thereto of the face panel 1 so as to form a spout. The spout-forming sections can be folded over and laid against face panel 1, and can also be secured to the face panel 1 as required. The section 18 is closed at its top end by a seam 19. A reclosable closure 20 is provided within the bag section defined by the connecting seam. This closure 20 is left after tearing off a strip 21 comprising the connecting seam 19. This reclosable closure 20 can be provided, in particular, in the form of a zipper or slide fastener.

[0026] In the embodiment of FIG. 9, a handle 22 is provided on one of the face panels of the stand-up bag on the side opposite the spout 16. In FIG. 10 a more complex handle 23 is formed by a horizontal top strip with two strips extending down from each end for connection to a respective upper corner of the bag, above the spout 16. In FIG. 11 a single U-shaped handle 24 a handle flap is provided at the upper edge of the rear face panel, and in FIG. 12 a handle flap is provided at the lower edge of the rear face panel. The handles 22, 23, 24, and 25 can be formed by a film strip, a textile strip, or a film strip reinforced by a textile layer. The material of the handles 22-25 can be, in particular, a polyolefin film, a multiple-layer coextruded film including a weldable layer, or a composite material composed of a foldable film and a non-weldable reinforcement layer.

Claims

1. A bag capable of moving between a flattened generally planar condition to an open generally parallelepipedal shape, the bag comprising in the flattened condition:

5 closely juxtaposed flat rectangular front and back face panels each having a horizontal top edge, a horizontal bottom edge therebelow, and a pair of horizontally spaced vertical side edges bridging ends of the top and bottom edges;

10 a rectangular top panel having front and back edges joined to the top edges of the respective front and back face panels and side edges bridging ends of the respective front and back edges, the top panel having a crease between the respective front and back edges and being folded inward therefrom to lie between the face panels;

15 a rectangular floor panel having front and back edges respectively joined to the bottom edges of the front and back panels and side edges bridging ends of the respective front and back edges, the floor panel having a crease between the respective front and back edges and being folded inward therefrom to lie between the face panels;

20 a pair of rectangular side gusset panels each having vertical front and back edges respectively joined to the side edges of the front and back panels and upper and lower edges joined to the side edges of the top and bottom panels, each side panel being subdivided by a central vertical crease into a pair of subpanels each formed at a respective corner of the side panel with a respective corner crease extending diagonally inward from the respective corner to the center crease and each defining at the respective corner a triangular gore, the side panel being folded inward at the respective center creases between the face panels and the gores being folded inward at the diagonal creases between the subpanels, the top, bottom, and side panels being wholly between the face panels in the flattened condition and extending generally perpendicular to the face panels in a filled condition of the bag.

- 25 2. The bag defined in claim 1, wherein all the subpanels are of weldable sheet material and are secured together at the edges by weld seams.

- 30 3. The bag defined in claim 2, wherein the end edges of the top and bottom panels are joined to the gores of the side panels.

4. The bag defined in claim 2, further comprising a handle on one of the panels.

- 35 5. The bag defined in claim 2, wherein at least one of the panels forms an opening, the bag further comprising a reclosable closure on the opening.

6. The bag defined in claim 5, wherein the opening and the closure are at a seam between the one of the face panels and the top panel.

- 40 7. The bag defined in claim 5, wherein the opening is formed by a spout and the closure is a cap fittable on the spout.

8. The bag defined in claim 5, wherein the closure is a slide fastener.

- 45 9. The bag defined in claim 5, wherein the one panel has a flap that can cover the opening and the closure can hold the flap in a position covering the opening.

10. The bag defined in claim 5, wherein the bag is formed outside the closure with a removable seam, whereby when the removal seam is removed the closure can close the opening.

- 50 11. The bag defined in claim 5, further comprising a handle on a panel opposite the opening.

12. The bag defined in claim 11 wherein the handle is reinforced.

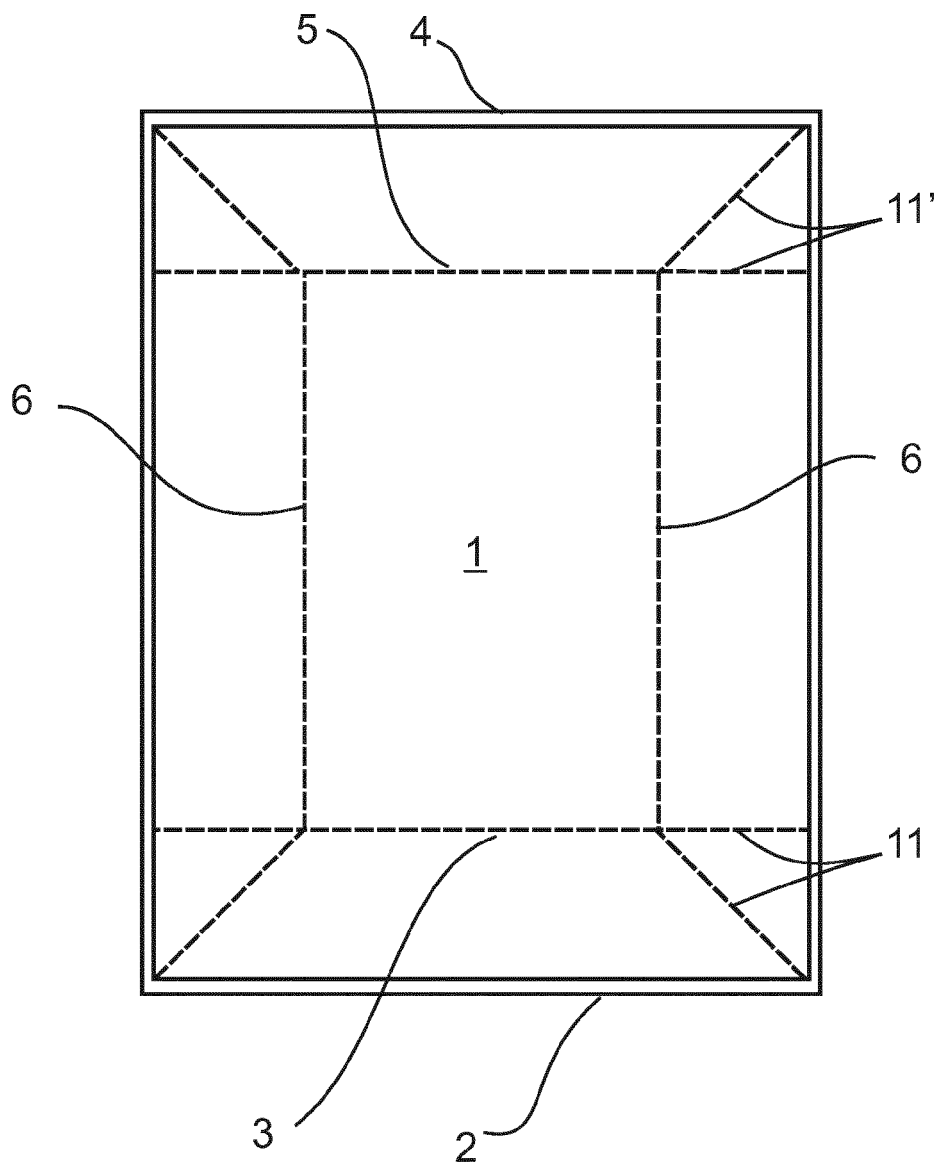


Fig. 1

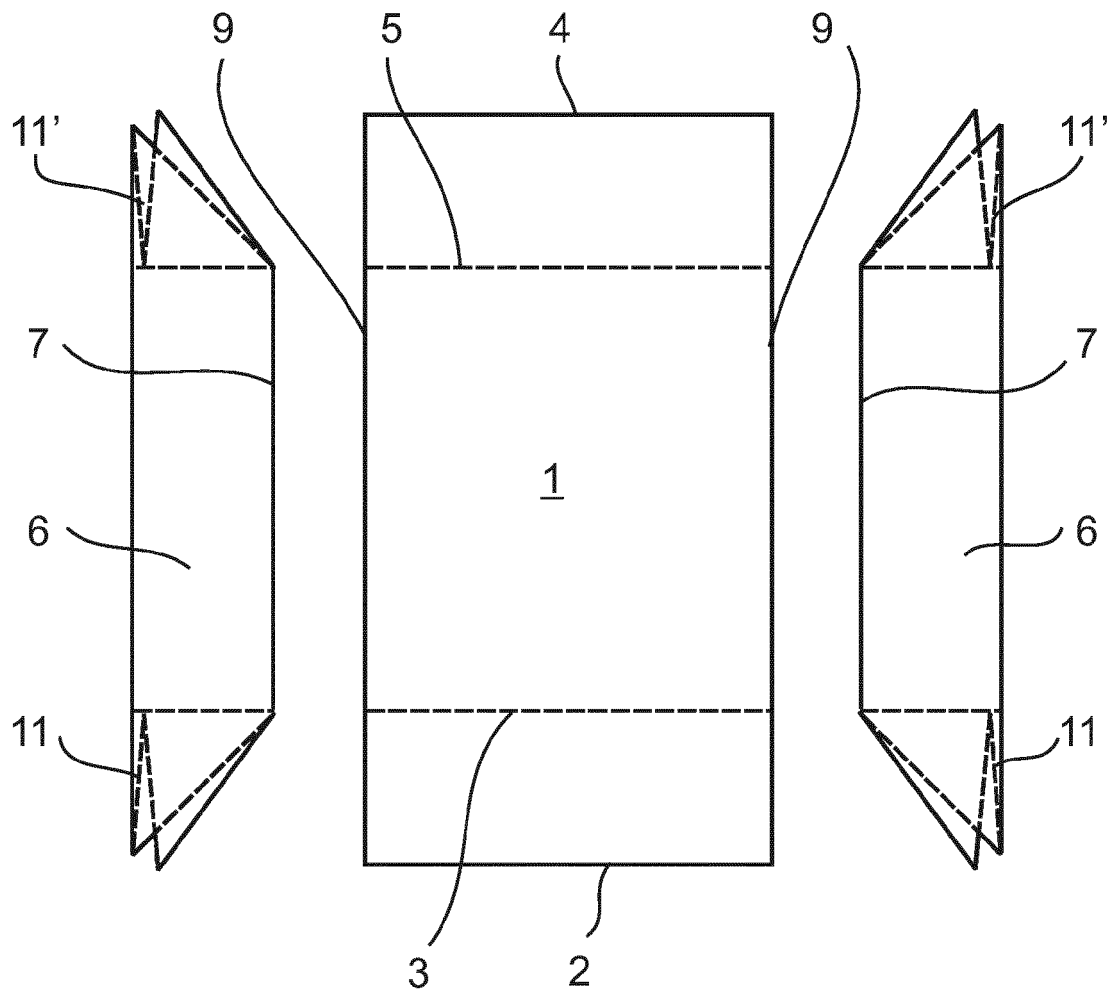


Fig. 2

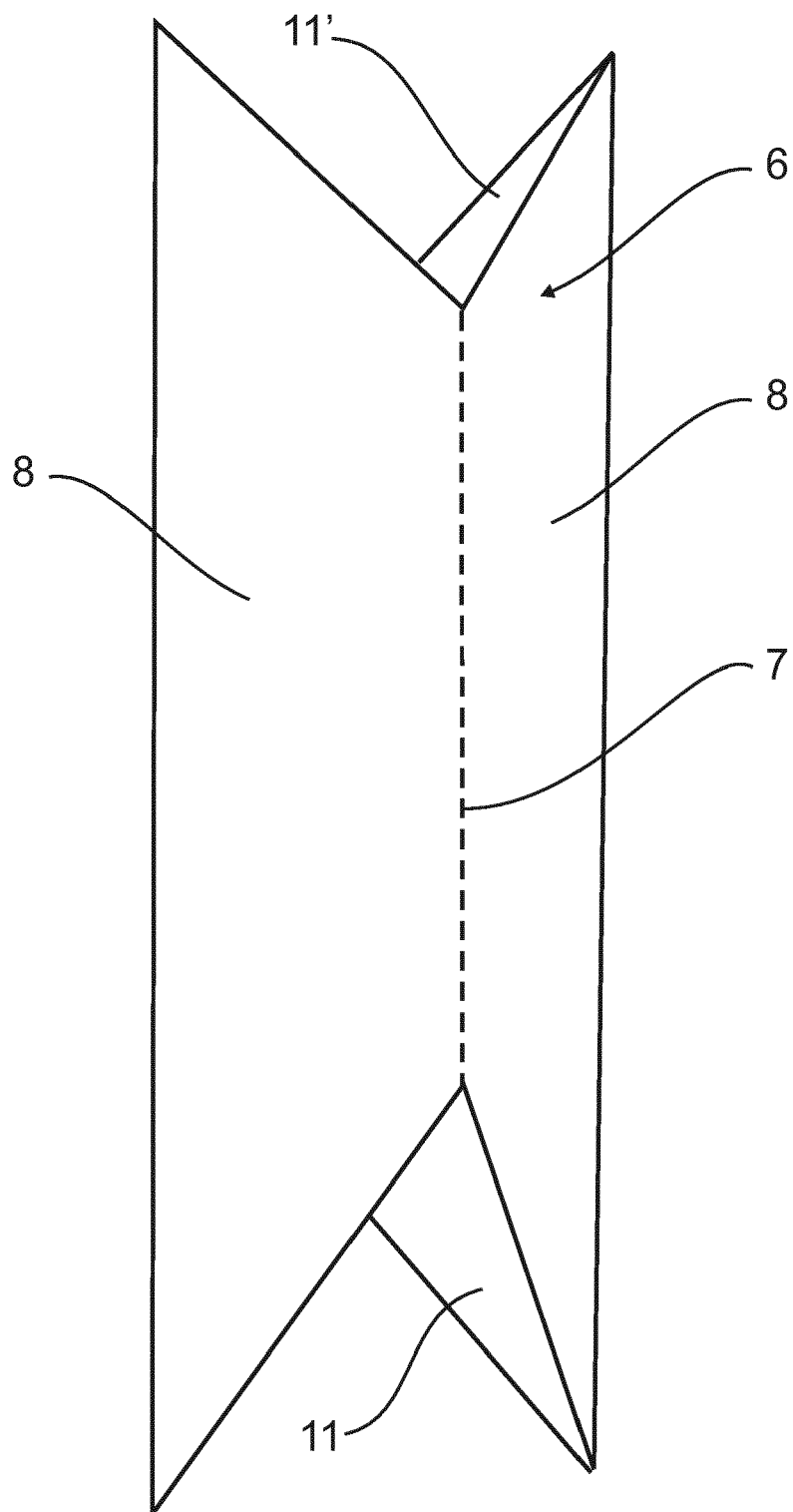


Fig. 3

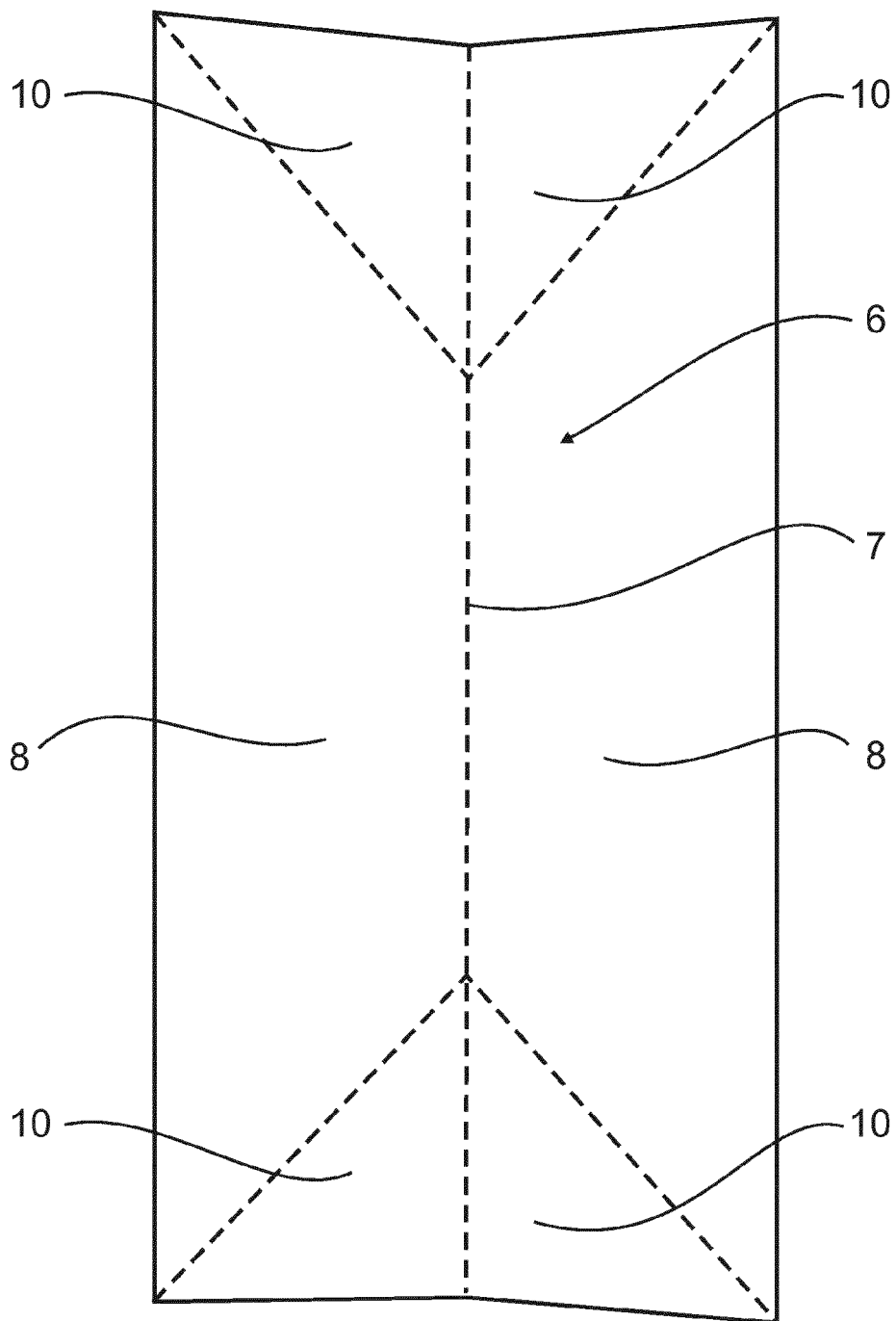


Fig. 4

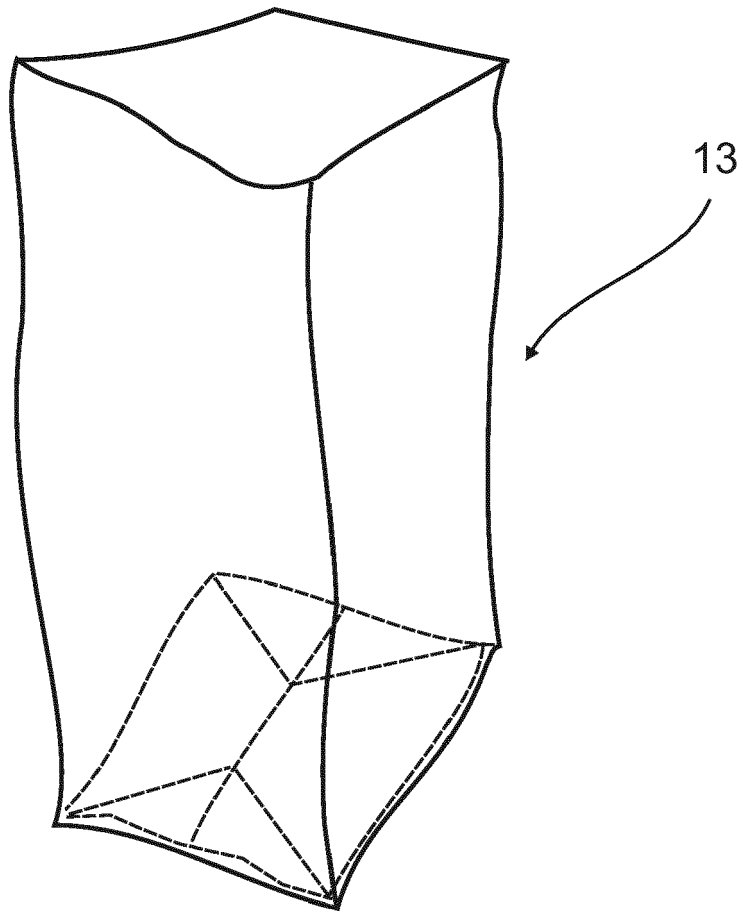


Fig. 5

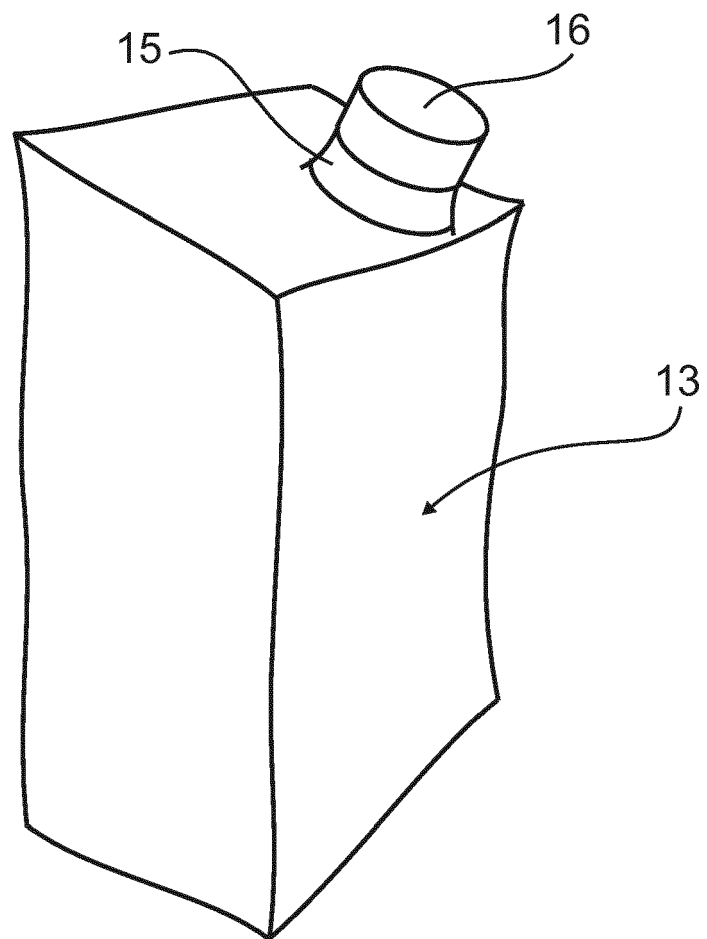


Fig. 6

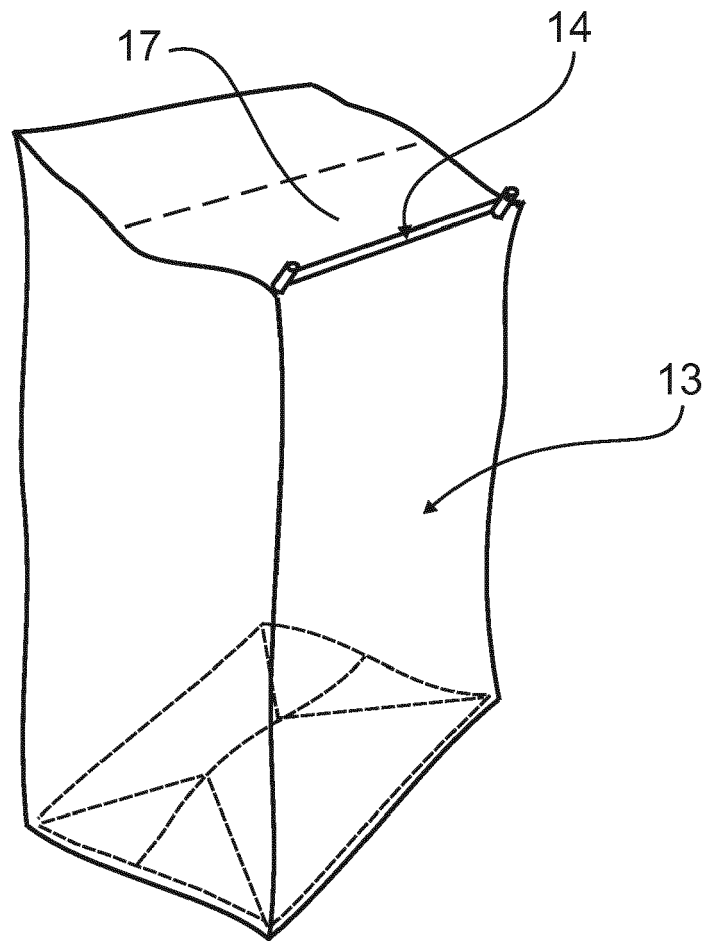


Fig. 7

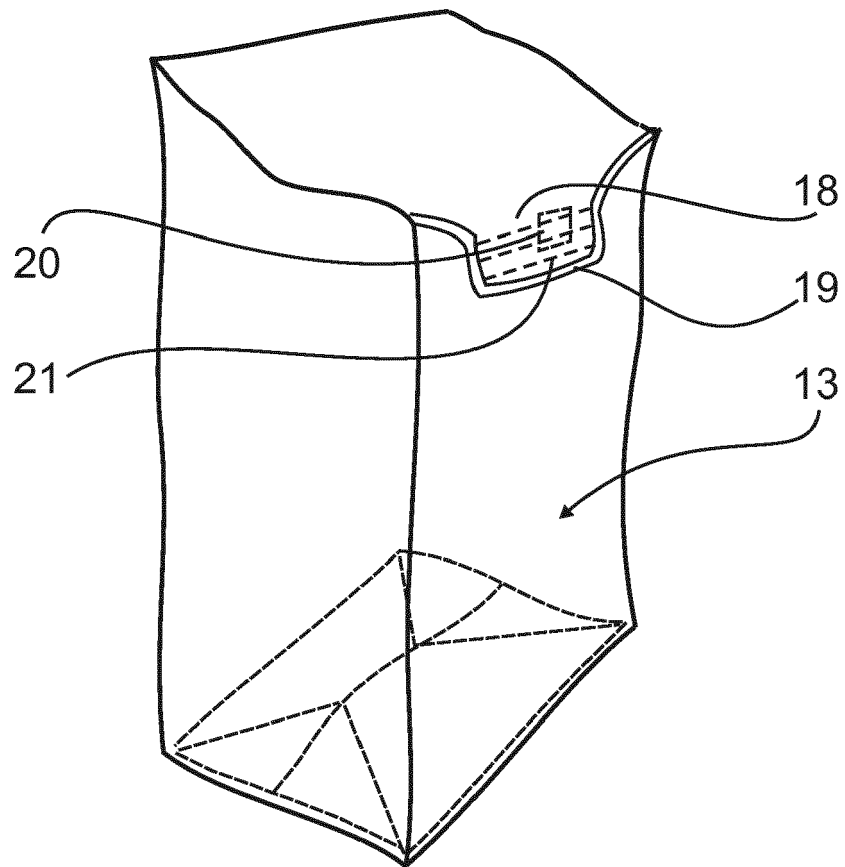


Fig. 8

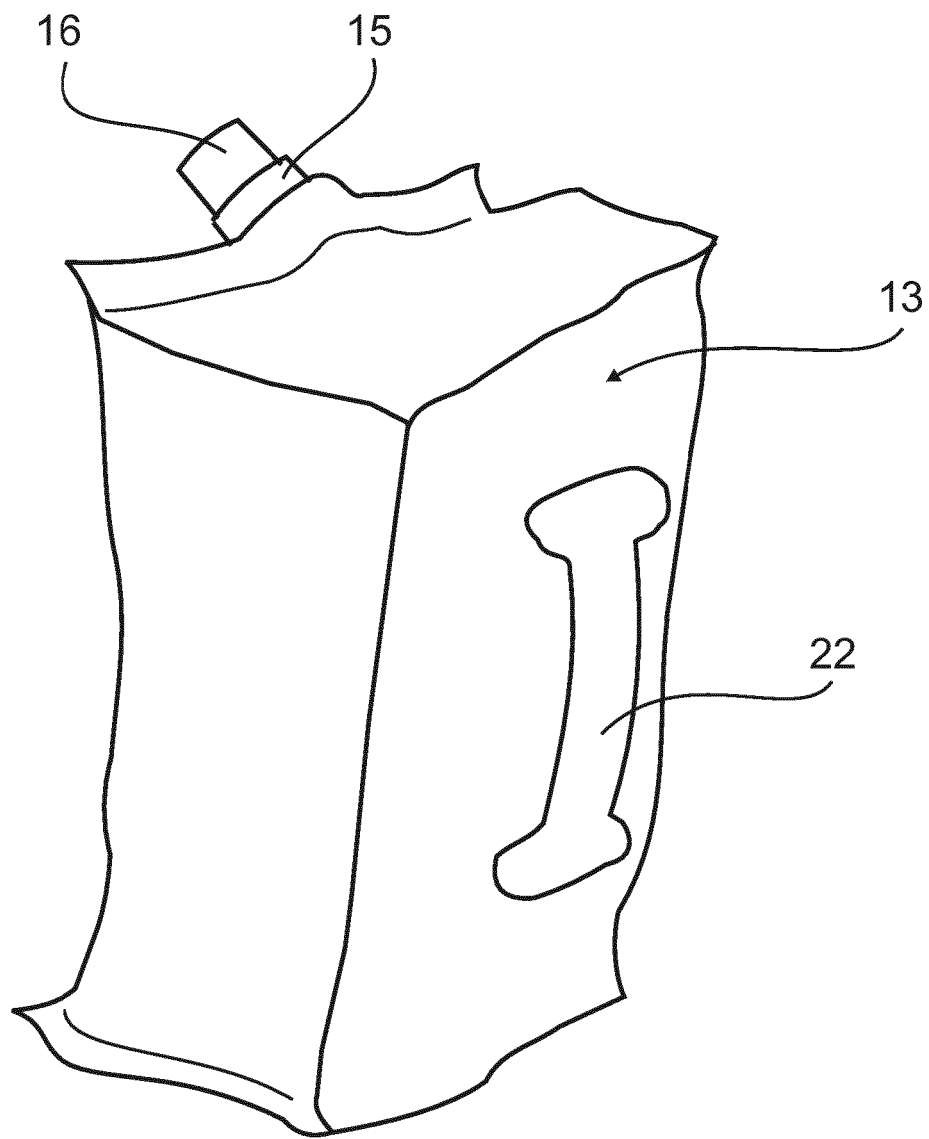


Fig. 9

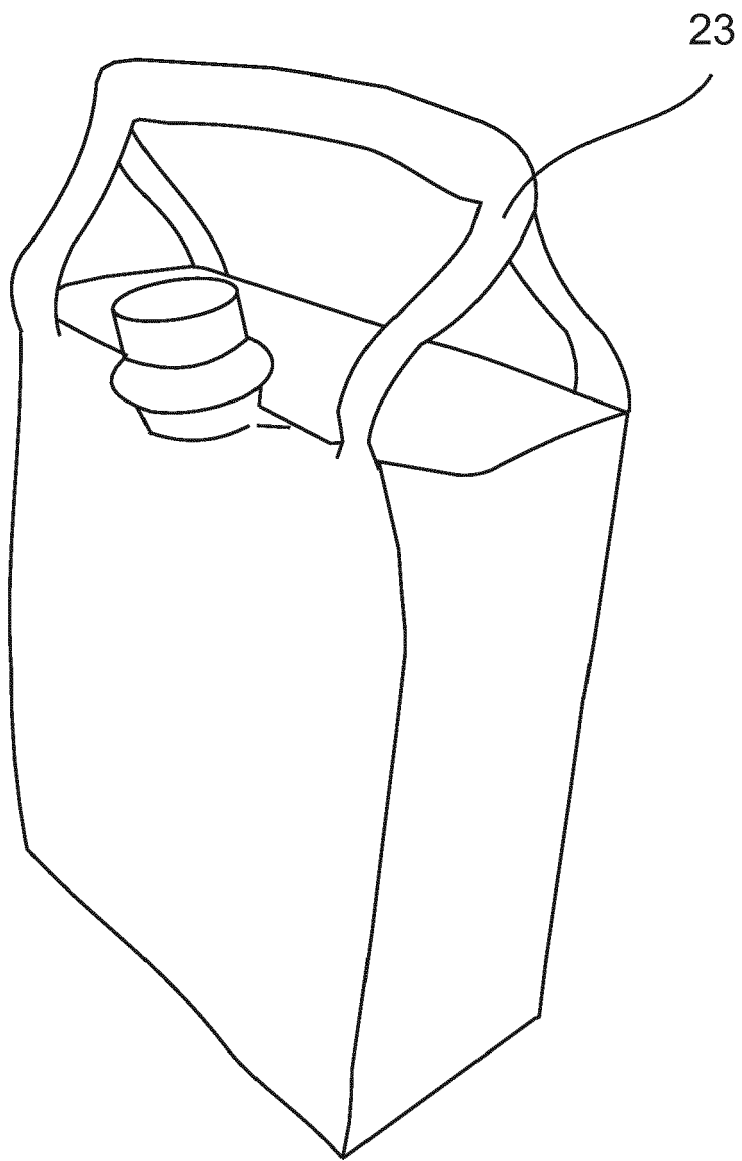


Fig. 10

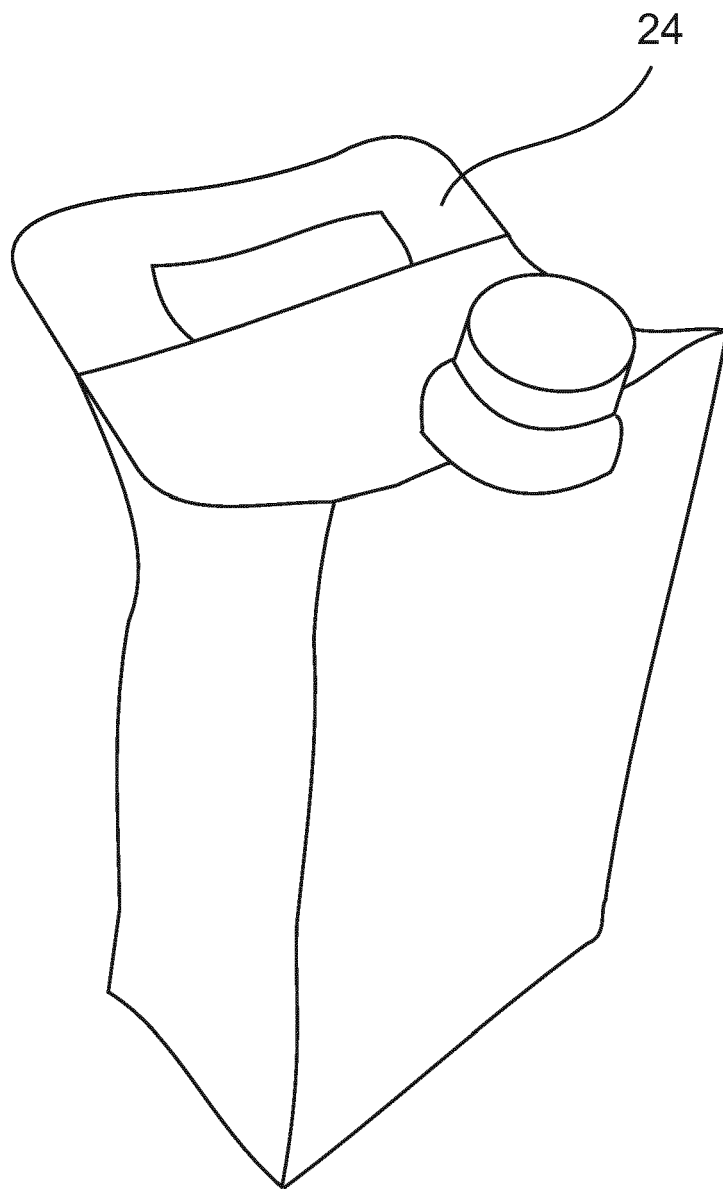


Fig. 11

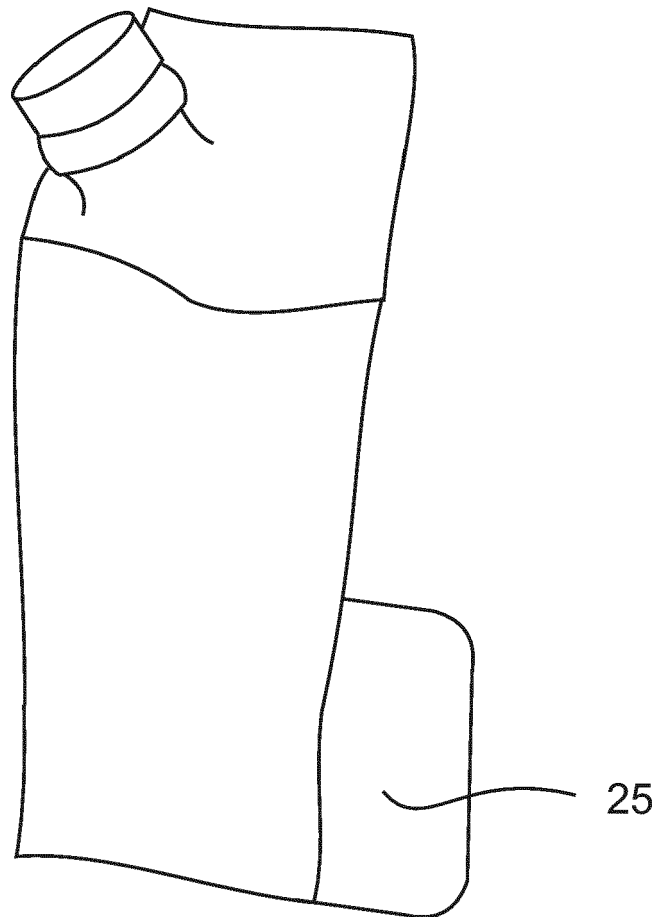


Fig. 12

REFERENCES CITED IN THE DESCRIPTION

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