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(54) BAG, IN PARTICULAR FOR BAG-IN-BOX PACKAGING

BEUTEL, INSBESONDERE FÜR EINE BAG-IN-BOX-VERPACKUNG

OUTRE, EN PARTICULIER POUR EMBALLAGE DE TYPE CAISSE-OUTRE

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EP 2 616 360 B1

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Description

[0001] The invention relates to a flexible, liquid tight bag, in particular for a bag-in-box package.

[0002] Bag-in-box packaging, and bags therefore are generally known, and are e.g. disclosed in GB 1 092 336. The box of such a package is made of a relatively rigid material, for example corrugated cardboard, and forms a cube-shaped shell for the flexible bag. The bag of such a package is commonly made of flexible sheet material, e.g. plastics, and forms a liquid tight liner for the shell.

[0003] GB 2,113,180 describes plastics containers of liquid for the purpose of storage of oxygen-sensitive materials in which the permeation of oxygen is minimized without resort to expensive surface treatments of the plastics container wall, and without resort to use of an excessive thickness of the plastics container wall. According to this prior art, in a sealed plastics container of liquid which is at essentially atmospheric pressure when at 20°C, the container has at least two unfoamed plastics walls, each of which is separated from the next wall by a layer containing a gas or vapour, and wherein the gas or vapour at the time of initial packaging of the liquid in the container contains less than ten volume per cent oxygen gas and is not reactive with oxygen under packaging conditions. Composite containers comprising a rigid or flexible inner plastics container having liquid therein can be located inside a rigid box or container of wood or paperboard, i.e. a bag-in-box structure.

[0004] US 4,172,152 describes a container structure for the purpose of providing a multiple walled container, capable of forming its own thermally protective barrier. According to this prior art, a compound wall device is formed of an inner container and an outer container. The inner container is formed with a wall material which retains the liquid beverage, but permits a gas such as carbon dioxide from a carbonated beverage to pass through the inner container wall and lodge between the inner and outer container. The outer container has a wall structure formed of a material which retains the gas to thus permit the formation of a gaseous chamber around the liquid in the inner container for thermal protection. The gaseous thermally insulative barrier is produced by gas escaping from the inner container and thus is conveniently self-produced.

[0005] Advantages of bag-in-box packaging are that it is relatively light weight, compact, self supporting and stackable. A disadvantage is, however, is that the wall thickness of the box needs to be relatively large to provide sufficient strength. In particular, the walls often need to be made of 2-ply corrugated material to provide a package that can retain a block shape, which material is relatively expensive. Further, it has proven difficult to provide a leak proof bag that has a block shape. Also, the bag is not sufficiently stable to stand free in a reliable way.

[0006] The invention aims to provide a flexible liquid tight bag, in particular for bag-in-box packaging, in which the above problems are alleviated. Thereto, the invention provides for a flexible, liquid tight bag according to claim 1, and a bag-in-box package according to claim 12. The invention is further embodied in a method for manufacturing a bag according to claim 13.

[0007] The flexible, liquid tight bag comprises a flexible, liquid tight, outer sleeve, and a flexible inner sleeve. The inner sleeve extends longitudinally within the outer sleeve. The inner sleeve is over at least a part of the length of the outer sleeve connected to the outer sleeve at a number of locations that are spaced apart along the circumference of the inner sleeve so as to form a bracing for the outer sleeve. When the bag is filled with liquid, the inner sleeve forms a tension loaded bracing that prevents the outer sleeve of the bag from bulging out, and that helps to keep the bag from sagging. This allows the bag to be free standing, and allows a bag-in-box package that is provided with such a bag to retain its block shape with a relatively thin wall thickness. The bracing may lie within a zone extending over a top half of the length of the outer sleeve. This way, a portion of the top half of the length of the outer sleeve may e.g. be provided with a block shape. Portions of the outer sleeve that are longitudinally adjacent to the bracing may be free of a bracing so as to allow formation of a bottom and/or top of the bag. A portion of the outer sleeve that extends longitudinally beyond an upper portion of the inner sleeve may form a top of the bag, and a portion of the outer sleeve that extends longitudinally beyond a lower portion of the inner sleeve may form a bottom of the bag.

[0008] A portion of the outer sleeve that extends beyond an upper portion of the bracing may be closed, e. g. by one or more welds, and may also be provided with an outflow opening for the bag, e.g. a neck that surrounds an opening and that is closable with a cap.

[0009] A portion of the outer sleeve that extends longitudinally beyond a lower portion of the bracing may further be provided with lines along which the outer sleeve is connected to itself to allow the formation of a substantially flat bottom. These lines may be used as fold lines, and may e.g. be provided as spotted or continuous seams, welds or glued areas. The bottom may be provided with a circumferential shape that corresponds with the shape of a bottom of a box, e.g. a square, rectangular or polygonal cross section.

[0010] Alternatively or in addition, a further longitudinal portion of the outer sleeve may be doubled back on itself to extend along the bracing. This allows the bag to be provided with a leak free bottom.

[0011] In such a configuration, the sleeve may be left open at the area that forms the bottom of the bag. The bag may then have a body portion comprising the bracing and a tail portion extending beyond the bottom, which portions extend along each other and are in liquid communication with each other. In such a U-shaped configuration, the bottom of the bag is formed by the bottom of the U. In case the bag is dropped or compressed by any other forces, the tail portion, being in liquid communication with the liquid filled area of the bag, may serve as

an expansion region, into which some of the liquid can escape. As a result, high peak loads on welds and seams on the bag may be prevented, such that possible leakages are less likely to occur.

[0012] The bracing may extend along less than half of the length of the length of the outer sleeve, for example less than 45 or 40%, and/or more than 10 or 20% of the length of the outer sleeve. This is convenient to form of a bag with a braced body portion having a top and a bottom portion and a tail portion of which the tail portion can be folded upwards along the body portion.

[0013] Further objects, features, effects and details of the invention are defined in the claims and the specification below.

[0014] The invention will now be described, by way of a non-limiting example, with reference to the drawings that follow; in which:

Fig. 1a is a schematic front view of an example of an empty bag according to the invention in planar configuration;
Fig. 1b is a schematic back view of the bag of Fig. 1a;
Fig. 2 is a schematic perspective view of the bag of Fig.1 filled with liquid;
Fig. 3 is a schematic view of a cross-section of the bag of Fig. 1 along the line III-III; and
Fig. 4 is a schematic view of the bag of Fig. 2 in a box.

[0015] In the figures, similar or corresponding elements have been provided with the same reference numerals.

[0016] Figs. 1a and 1b show a liquid tight, flexible bag 1, in particular for a bag-in-box package. The bag 1 has a flexible, liquid tight outer sleeve 2 and a flexible inner sleeve 3 that extends longitudinally within the outer sleeve 2. In this example, the inner sleeve 3 is spaced apart from top and bottom edges 5a, 5b of the outer sleeve 2, and is provided as one continuous piece. However, the inner sleeve 3 may alternatively e.g. extend along the full length L of the outer sleeve 2. Further, the inner sleeve 3 may comprise of several parts that may or may not be interspaced along the length of the outer sleeve 2. The inner sleeve 3 need not be manufactured from a liquid tight material, and may comprise cut-outs or perforations.

[0017] The outer sleeve 2 is liquid tight, and may be thus used to hold liquids. The sleeves 2, 3 may be manufactured from a sheet material, e.g. a plastics material such as PE or a metal foil. The sleeves 2, 3 may comprise several layers of the same or different materials, and/or coatings. The sleeves 2, 3 may be formed as a tube, e. g. by extrusion, but may also be formed into a tube, e.g. by gluing or welding of a planar sheet into a hoop.

[0018] The inner sleeve 3 is over at least a part of the length of the outer sleeve 2 connected to the outer sleeve 2 at a number of locations 40 that are spaced apart along the circumference of the inner sleeve 3 so as to form a bracing 41. Such connection is advantageously made by spot or line welding, but may e.g. alternatively be made by gluing. In the embodiment shown, endless substantially rectangular welds 40 are used.

[0019] A portion 43 of the outer sleeve that longitudinally extends beyond an upper portion of the bracing 41 for forming a top 6 of the bag 1 is closed off with a transverse weld. In addition, the portion 43 of the outer sleeve 2 extending beyond the upper portion of the bracing 41 for forming a top 6 of the bag 1 is provided in this embodiment with an outflow opening 34. The outflow opening may for example be embodied as a neck that surrounds an opening and that is closable with a cap.

[0020] When the bag 1 is filled with liquid, the inner sleeve 3 forms a tension loaded bracing 4 that prevents the outer sleeve 2 of the bag from bulging out, as it is connected to the outer sleeve 2 at locations 40 along the circumference of the inner sleeve 3. Accordingly, the bag 1 allows a box 32 to retain its block shape when it is positioned therein and filled with liquid.

[0021] Figure 3 shows that the circumference of the inner sleeve 3 is substantially smaller than the circumference of the outer sleeve 2. In this example the circumference of the inner sleeve 3 is about 25% smaller than the circumference of the outer sleeve 2.

[0022] In the embodiment shown, the bracing 41 lies within a zone extending over a top half of the length of the outer sleeve 2, and extends along about 25% of the length L of the outer sleeve 2. The outer sleeve 2 is unbraced along a top portion 43 of about 15% of its length that is longitudinally adjacent to the bracing 41 so as to allow formation of a top 6 of the bag, and along a portion 42 of about 10% that is longitudinally adjacent to the bottom of bracing 41 so as to allow formation of a bottom 7 of the bag 1.

[0023] A further portion 44 of the outer sleeve 2 is to be doubled back on itself to extend along the bracing. In particular, in the embodiment shown, a further portion 44 of about 50 % of its length adjacent to the bottom forming portion 42 is intended to be looped back to the top 5A of the outer sleeve 2 to prevent liquid from flowing out at the bottom 7 of the bag 1.

[0024] The unbraced portion 42 of the outer sleeve 2 for forming the bottom 7 of the bag 1 comprises lines 9-12 along which the outer sleeve 2 is connected to itself. When the bag 1 is in use and filled with liquid, the bottom 7 is located at a position that divides the outer sleeve 2 longitudinally in a body portion 14 comprising the bracing 3 and a tail portion 15. The body portion 14 and the tail portion 15 may be in liquid communication with each other. In particular, the tail portion 15 is provided with a duct 16 of reduced width that is in liquid communication with the body portion 15.

[0025] In case the bag 1 with fluid is dropped or in any other way compressed, the liquid under pressure may partly enter into the duct 16, extending into the tail portion 15, such that duct 16 serves as an expansion region. In this way, possible damage and therefore leakage can be prevented.

[0026] The bag 1 shown in Figs. 1a, 1b may be manufactured by providing a flexible, liquid tight, outer sleeve 2, substantially square and a flexible inner sleeve 3.

[0027] The outer sleeve 2 is formed by taking a sheet of the flexible, liquid tight material, laying two longitudinal opposite edges thereof on top of each other and welding the edges together with a weld 8. A first longitudinal weld 7' is applied for realizing the outer sleeve 2, and further welds 8 are applied for securing the inner sleeve 3. In this embodiment, the inner sleeve 2 has been manufactured as an integral sleeve by extrusion.

[0028] Next, the inner sleeve 3 may be positioned extend coaxially within the outer sleeve 2. The inner sleeve 3 is spaced apart from upper and lower edges 5a, 5b of the outer sleeve 2. Over at least a part of the length of the outer sleeve 2 the inner sleeve 3 may be connected to the outer sleeve 2 at a number of locations 40 that are spaced apart along the circumference of the inner sleeve 3. In this embodiment, the inner sleeve 3 is attached in longitudinal direction 4 to the inner wall of the outer sleeve 2 at locations divided equally over its circumference using rectangular endless welds 45.

[0029] In a further step, the bag may be flattened by folding two opposite sides inwards between the top and bottom sides so that four flaps 46, 47, 48, 49 are formed. The fold lines 9 - 12 may then be formed by welding the two plies of each of the top and bottom flaps 4 - 48 at both sides of the folded sleeve together along lines that extend at an angle of 45° with respect to the longitudinal direction of the outer sleeve 2, and that the fold lines 9 - 12 may be directed to a common point on the axis of the outer sleeve 2, but may stop before intersecting to leave an opening 46.

[0030] In a further step, a duct 16 may be provided by welds 26 that extend along the flaps over the tail portion 15 and that connect to the ends of the welds along folding lines 9 - 12. The top 6 of the bag 1 may be sealed by a weld 27 across the top of the outer sleeve 2, and may be provided with a carrying opening 33. Similarly, the end portion of the further portion 44 may be provided with a cross weld 28 and a carrying opening 36.

[0031] A bag 1 manufactured by the method according to the steps described above, is suitable for a bag-in-box packaging 18, as exemplarily shown in Fig. 4. Such a packaging 18 is manufactured by providing a bag 1 according to the method described above, providing a rectangular box 19 having a size adapted for accommodating the bag 1, and positioning the bag 1 in the box 19 with the body portion 14 and the tail portion 15 extending parallel to each other. The box 19 may be provided with a flap 37 for closing the bag-in-box packaging. The box 19 may e.g. be made from single ply corrugated cardboard.

[0032] As the bag provides a liner that is able to retain a block shape, the box can be made of single ply material without the risk if bulging due to deformation of the bag contained in the box. This allows for reducing the costs of bag-in-box packaging.

[0033] However, in another embodiment the welds 40 may also substantially extend along a longitudinal direction of the sleeves 2, 3, from a bottom forming portion 42 to a portion 43 forming a top 6 of the bag 1. Such a line weld may comprise selected or accidental portions where the inner and outer sleeve 2, 3 are not connected to each other.

[0034] The inner and outer sleeve 2, 3 may be in fluid connection, even after forming a top 6 and/or bottom 7 of the bag 1 by leaving at least one of the free ends of the inner sleeve 3, except a number of said welds 40, substantially free from being connected to the outer sleeve 2. Preferably, both peripheral edges of the inner sleeve are left substantially free from being connected to the outer sleeve 2, such that a liquid can easily pass along the peripheral edges of the inner sleeve 3, in between the inner and outer sleeve 2, 3. Alternatively to figure 4, the box 37 may be embodied as a flexible box, such as a carry bag (not shown) with handles for easy carrying. The bag 1 may fit tightly in the carry bag, or may fit loosely. In another embodiment the carry bag may comprise at least two liquid filled bags 1 according to the invention, for example six bags, two times a row of three bags side by side. The individual bags 1 may be divided by a partition, made of the same material as the bag or any other suitable different material, for example cardboard.

[0035] While the invention has been illustrated and described in detail in the drawing and foregoing description, such illustration and description are to be considered illustrative or exemplary and not restrictive; the invention is not limited to the disclosed embodiments. For example, the inner sleeve may have a circular shape or any other suited shape, that allows it to be connected to sides of an outer sleeve for acting as a tension loaded bracing for the outer sleeve. In addition, the bag may be used as a stand-alone bag, i.e. without a box.

[0036] In another embodiment, the duct could be provided with two or more cross seals divided in longitudinal direction along the duct, thereby creating a pocket between two adjacent cross seals, from where a sample can be taken of the liquid contained without opening the bag itself.

[0037] Other variations to the disclosed embodiments can be understood and effected by those skilled in the art in practicing the claimed invention, from a study of the drawings, the disclosure, and the appended claims.

Claims

1. A liquid tight, flexible bag (1) for a bag-in-box packaging (18), comprising,
   a flexible, liquid tight outer sleeve (2), and
   a flexible inner sleeve (3) extending longitudinally within the outer sleeve (2), wherein the longitudinal direction of the sleeves (2,3) form a longitudinal upright direction of the bag;

wherein the inner sleeve (3) is along at least a part of the length (L) of the outer sleeve (2) connected to the outer sleeve (2) at a number of locations (40) **characterized in that** the number of locations (40) connecting the inner and outer sleeves are spaced apart along the circumference of the inner sleeve (3) so as to form a tension loaded bracing (41) for the outer sleeve (2) when the bag is filled with liquid, for preventing the outer sleeve of the bag from bulging out, and helping to keep the bag from sagging.

2. A bag (1) according to claim 1, wherein the bracing lies within a zone extending over a top half of the length (L) of the outer sleeve (2).

3. A bag (1) according to claim 1 or 2, wherein the outer sleeve (2) is unbraced along a portion of its length (L) that is longitudinally adjacent to the bracing so as to allow formation of a bottom (7) and/or top (6) of the bag (1).

4. A bag (1) according to any of claims 1-3, wherein a lower portion (42) of the outer sleeve (2) is doubled back on itself to extend along the bracing (41).

5. A bag according to any of claims 1-4, wherein an unbraced portion (44) of the outer sleeve that extends longitudinally beyond an upper portion of the bracing is provided with an outflow opening (34).

6. A bag according to any of 1-5, wherein an unbraced portion (44) of the outer sleeve that longitudinally extends beyond a lower portion of the bracing forms a bottom (13) of the bag (1).

7. A bag (1) according to claim 6, wherein the bottom (13) is located at a position that divides the outer sleeve (2) in longitudinal direction (4) in a body portion (14) comprising the bracing (3) and a tail portion (15).

8. A bag (1) according to claim 7, wherein the body portion (14) and the tail portion (15) extend along each other and are in liquid communication with each other.

9. A bag (1) according to any of the claims 1-8, wherein an unbraced portion (44) of the outer sleeve (2) that extends beyond a lower portion of the bracing for forming a bottom (13) of the bag comprises lines (9-12) along which the outer sleeve (2) is connected to itself.

10. A bag (1) according to any of the claims 7-9, wherein the tail portion (15) is provided with a duct (16) that is in liquid communication with the body portion (15).

11. A bag (1) according to any of the preceding claims, wherein the bracing (41) extends along 20-45% of the length of the outer sleeve (2)

12. A bag-in-box packaging, comprising:

a bag (1) according to any of the claims 1-11;
a box (19) having a size adapted for accommodating the bag (1); and
wherein the bag (1) is positioned in the box (19) with the body portion (14) and tail portion (15) extending along each other.

13. A method for manufacturing a bag for a bag-in-box packaging, comprising:

providing a flexible, liquid tight, outer sleeve (2);
providing a flexible inner sleeve (3);
positioning the inner sleeve (3) to extend longitudinally within the outer sleeve (2), wherein the longitudinal direction of the sleeves (2,3) form a longitudinal upright direction of the bag;
attaching the inner sleeve (3) over at least a part of the length (L) of the outer sleeve (2) to the outer sleeve (2) at a number of locations (40) **characterized in that** the number of locations (40) connecting the inner and outer sleeves are spaced apart along the circumference of the inner sleeve (3) so as to form a tension loaded bracing (41) for the outer sleeve (2) when the bag is filled with liquid, for preventing the outer sleeve of the bag from bulging out, and helping to keep the bag from sagging.

Patentansprüche

1. Flüssigkeitsdichter, flexibler Beutel (1) für eine Bag-in-Box-Verpackung (18), umfassend:

eine flexible, flüssigkeitsdichte Außenhülle (2) und
eine flexible Innenhülle (3), die längs innerhalb der Außenhülle (2) verläuft, wobei die Längsrichtung der Hüllen (2, 3) eine längslaufende Aufrechtrichtung des Beutels bildet;
wobei die Innenhülle (3) entlang mindestens eines Teils der Länge (L) der Außenhülle (2) an einer Anzahl von Stellen (40) mit der Außenhülle (2) verbunden ist, **dadurch gekennzeichnet, dass** die Anzahl der Stellen (40), die die Innen- und Außenhüllen verbinden, in einem Abstand entlang des Umfangs der Innenhülle (3) angeordnet sind, um eine mit Spannung belastete Abstützung (41) für die Außenhülle (2) zu bilden, wenn der Beutel mit Flüssigkeit gefüllt ist, um zu verhindern, dass sich der Beutel vorwölbt, und dafür zu sorgen, dass der Beutel nicht durchhängt.

2. Beutel (1) nach Anspruch 1, wobei die Verstärkung innerhalb einer Zone liegt, die über eine obere Hälfte der Länge (L) der Außenhülle (2) verläuft.

3. Beutel (1) nach Anspruch 1 oder 2, wobei die Außenhülle (2) entlang eines Abschnitts ihrer Länge (L), der längs neben der Verstärkung ist, nicht verstärkt ist, um die Bildung eines Bodens (7) und/oder einer Oberseite (6) des Beutels (1) zu ermöglichen.

4. Beutel (1) nach einem der Ansprüche 1-3, wobei ein unterer Abschnitt (42) der Außenhülle (2) um sich selbst umgeschlagen ist, um entlang der Verstärkung (41) zu verlaufen.

5. Beutel nach einem der Ansprüche 1-4, wobei ein nicht verstärkter Abschnitt (44) der Außenhülle, der längs über einen oberen Abschnitt der Verstärkung hinaus verläuft, mit einer Ausflussöffnung (34) versehen ist.

6. Beutel nach einem der Ansprüche 1-5, wobei ein nicht verstärkter Abschnitt (44) der Außenhülle, der längs über einen unteren Abschnitt der Verstärkung hinaus verläuft, einen Boden (13) des Beutels (1) bildet.

7. Beutel (1) nach Anspruch 6, wobei der Boden (13) an einer Position angeordnet ist, die die Außenhülle (2) in Längsrichtung (4) in einen Körperabschnitt (14), umfassend die Verstärkung (3), und einen Endabschnitt (15) teilt.

8. Beutel (1) nach Anspruch 7, wobei der Körperabschnitt (14) und der Endabschnitt (15) aneinander entlang verlaufen und in Flüssigkeitskommunikation miteinander stehen.

9. Beutel (1) nach einem der Ansprüche 1-8, wobei ein nichtverstärkter Abschnitt (44) der Außenhülle (2), der über einen unteren Abschnitt der Verstärkung hinaus verläuft, um einen Boden (13) des Beutels zu bilden, Linien (9-12) umfasst, an denen entlang die Außenhülle (2) mit sich selbst verbunden ist.

10. Beutel (1) nach einem der Ansprüche 7-9, wobei der Endabschnitt (15) mit einer Leitung (16) versehen ist, die in Flüssigkeitskommunikation mit dem Körperabschnitt (15) ist.

11. Beutel (1) nach einem der vorhergehenden Abschnitte, wobei die Verstärkung (41) entlang 20-45 % der Länge der Außenhülle (2) verläuft.

12. Bag-in-Box-Verpackung, umfassend:

einen Beutel (1) nach einem der Ansprüche 1-11;
eine Box (19) in einer geeigneten Größe zum Aufnehmen des Beutels (1); und
wobei der Beutel (1) in der Box (19) positioniert ist, mit dem Körperabschnitt (14) und dem Endabschnitt (15) aneinander entlang verlaufend.

13. Verfahren zur Herstellung eines Beutels für eine Bag-in-Box-Verpackung, umfassend:

die Bereitstellung einer flexiblen, flüssigkeitsdichten Außenhülle (2);
die Bereitstellung einer flexiblen Innenhülle (3);
das Positionieren der Innenhülle (3), um längs innerhalb der Außenhülle (2) zu verlaufen, wobei die Längsrichtung der Hüllen (2, 3) eine längslaufende Aufrechtrichtung des Beutels bildet.
das Befestigen der Innenhülle (3) über mindestens einen Teil der Länge (L) der Außenhülle (2) an der Außenhülle (2) an einer Anzahl von Stellen (40), **dadurch gekennzeichnet, dass** die Anzahl der Stellen (40), die die Innen- und Außenhülle verbinden, entlang des Umfangs der Innenhülle (3) in einem Abstand voneinander sind, um eine mit Spannung belastete Verstärkung (41) für die Außenhülle (2) zu bilden, wenn der Beutel mit Flüssigkeit gefüllt ist, um zu verhindern, dass sich der Beutel vorwölbt, und dafür zu sorgen, dass der Beutel nicht durchhängt.

Revendications

1. Outre souple étanche au liquide (1) pour un emballage de type caisse-outre (18), comprenant :

un manchon externe étanche au liquide, souple (2), et
un manchon interne souple (3) s'étendant de manière longitudinale à l'intérieur du manchon externe (2), dans laquelle la direction longitudinale des manchons (2, 3) forme une direction verticale longitudinale de l'outre ;
dans laquelle le manchon interne (3) est le long d'au moins une partie de la longueur (L) du manchon externe (2) raccordé au manchon externe (2) à un certain nombre d'emplacements (40), **caractérisée en ce que** le nombre d'emplacements (40) raccordant les manchons interne et externe sont espacés le long de la circonférence du manchon interne (3) afin de former un renfort mis sous tension (41) pour le manchon externe (2) lorsque l'outre est remplie avec du liquide, pour empêcher le manchon externe de l'outre de faire saillie, et aider à empêcher l'affaissement de l'outre.

2. Outre (1) selon la revendication 1, dans laquelle le

renfort se trouve dans une zone s'étendant sur une moitié supérieure de la longueur (L) du manchon externe (2).

3. Outre (1) selon la revendication 1 ou 2, dans laquelle le manchon externe (2) n'est pas renforcé le long d'une partie de sa longueur (L) qui est longitudinalement adjacente au renfort afin de permettre la formation d'un fond (7) et/ou d'un sommet (6) de l'outre (1).

4. Outre (1) selon l'une quelconque des revendications 1 à 3, dans laquelle une partie inférieure (42) du manchon externe (2) est repliée sur elle-même afin de s'étendre le long du renfort (41).

5. Outre selon l'une quelconque des revendications 1 à 4, dans laquelle une partie non renforcée (44) du manchon externe qui s'étend longitudinalement au-delà d'une partie supérieure du renfort, est prévue avec une ouverture d'écoulement sortant (34).

6. Outre selon l'une quelconque des revendications 1 à 5, dans laquelle une partie non renforcée (44) du manchon externe qui s'étend longitudinalement au-delà d'une partie inférieure du renfort forme un fond (13) de l'outre (1).

7. Outre (1) selon la revendication 6, dans laquelle le fond (13) est positionné dans une position qui divise le manchon externe (2) dans la direction longitudinale (4) en une partie de corps (14) comprenant le renfort (3) et en une partie de queue (15).

8. Outre (1) selon la revendication 7, dans laquelle la partie de corps (14) et la partie de queue (15) s'étendent l'une le long de l'autre et sont en communication de liquide entre elles.

9. Outre (1) selon l'une quelconque des revendications 1 à 8, dans laquelle une partie non renforcée (44) du manchon externe (2) qui s'étend au-delà d'une partie inférieure du renfort pour former un fond (13) de l'outre comprend des lignes (9-12) le long desquelles le manchon externe (2) est raccordé à lui-même.

10. Outre (1) selon l'une quelconque des revendications 7 à 9, dans laquelle la partie de queue (15) est prévue avec un conduit (16) qui est en communication de liquide avec la partie de corps (15).

11. Outre (1) selon l'une quelconque des revendications précédentes, dans laquelle le renfort (41) s'étend le long de 20-45 % de la longueur du manchon externe (2).

12. Emballage de type caisse-outre comprenant :

une outre (1) selon l'une quelconque des revendications 1 à 11 ;
une caisse (19) ayant une taille adaptée pour loger l'outre (1) ; et
dans lequel l'outre (1) est positionnée dans la caisse (19) avec la partie de corps (14) et la partie de queue (15) qui s'étendent l'une le long de l'autre.

13. Procédé pour fabriquer une outre pour un emballage de type caisse-outre comprenant les étapes consistant à :

prévoir un manchon externe étanche au liquide, souple (2) ;
prévoir un manchon interne souple (3) ;
positionner le manchon interne (3) pour s'étendre longitudinalement à l'intérieur du manchon externe (2), dans lequel la direction longitudinale des manchons (2, 3) forme une direction verticale longitudinale de l'outre ;
fixer le manchon interne (3) sur au moins une partie de la longueur (L) du manchon externe (2), au manchon externe (2) à un certains nombre d'emplacements (40), **caractérisé en ce que** le nombre d'emplacements (40) raccordant les manchons interne et externe sont espacés le long de la circonférence du manchon interne (3) afin de former un renfort mis sous tension (41) pour le manchon externe (2) lorsque l'outre est remplie avec un liquide, pour empêcher le manchon externe de l'outre de faire saillie et aider à empêcher l'affaissement de l'outre.

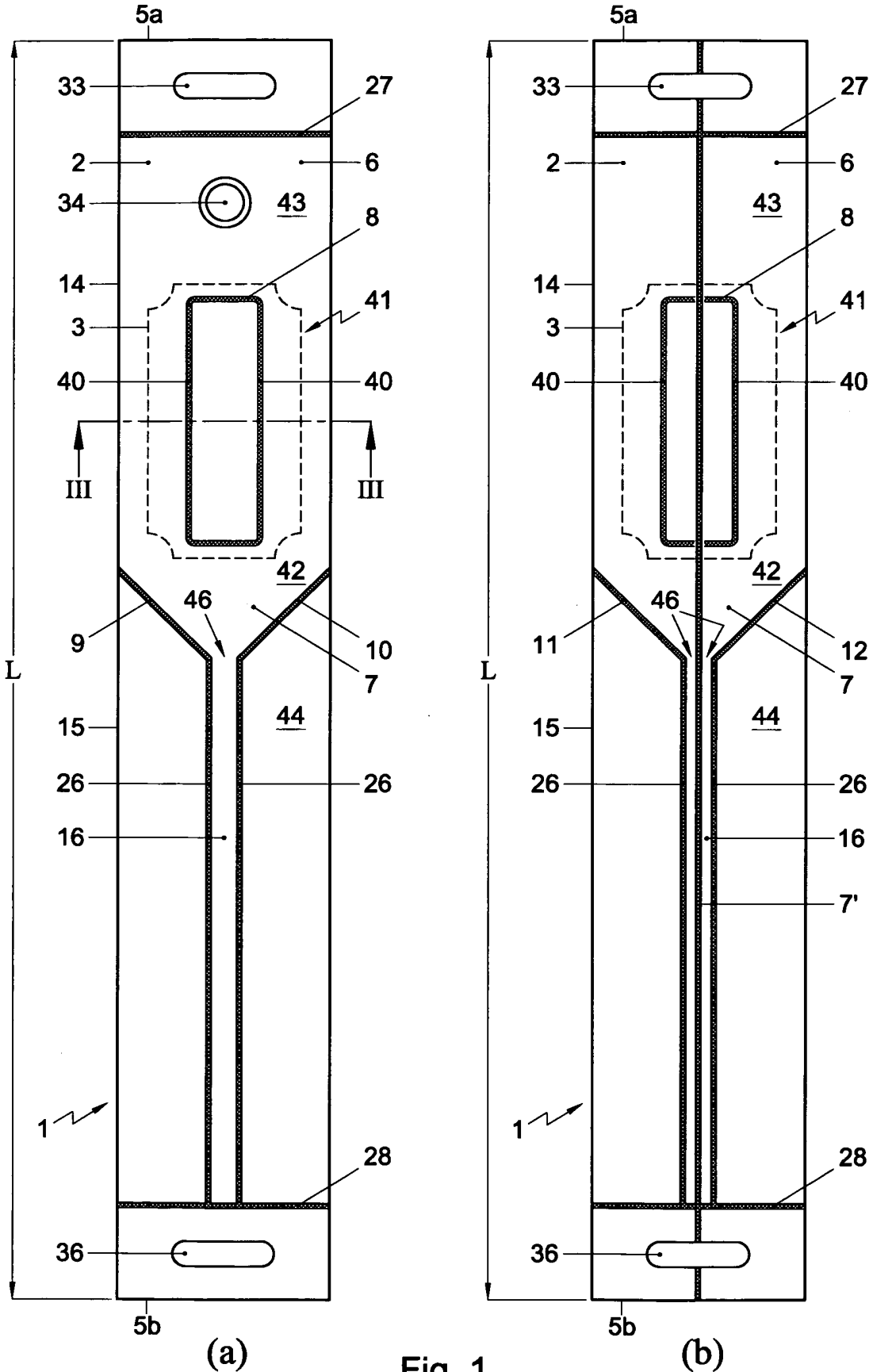
5a
33
27
2
6
34
43
8
14
41
3
40
40
III
III
42
46
9
10
7
L
15
44
26
26
16
1
28
36
5b
(a)
5a
33
27
2
6
43
8
14
41
3
40
40
42
46
11
12
7
L
15
44
26
26
16
7'
1
28
36
5b
(b)

Fig. 1

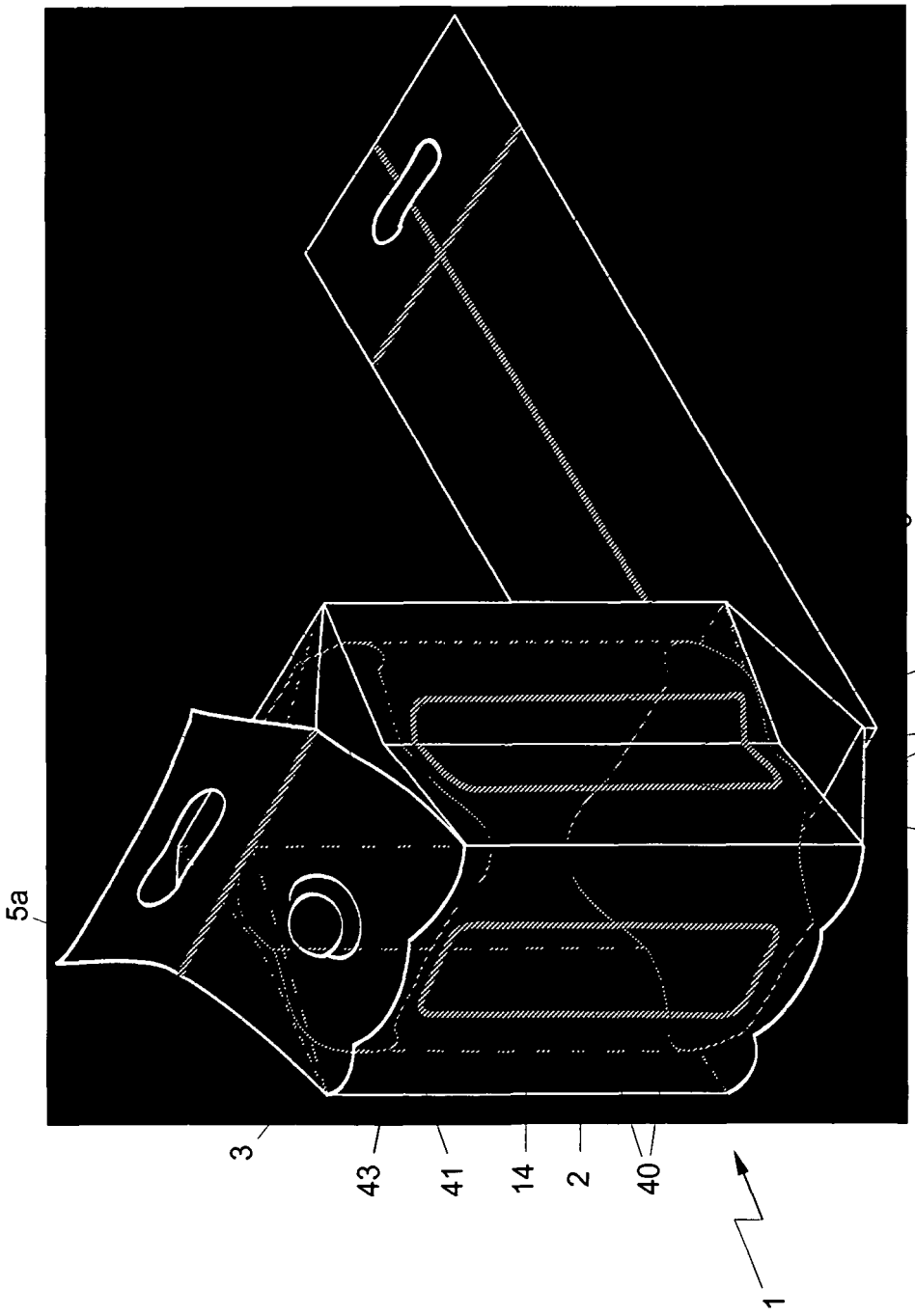

Fig. 2

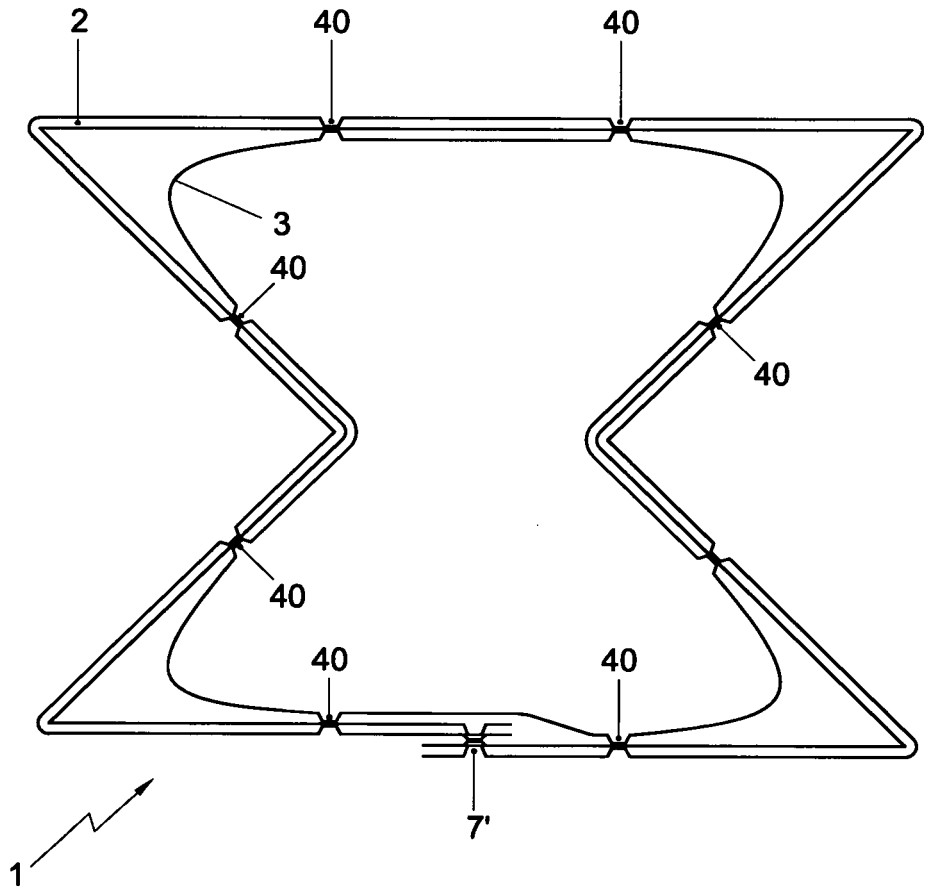

Fig. 3

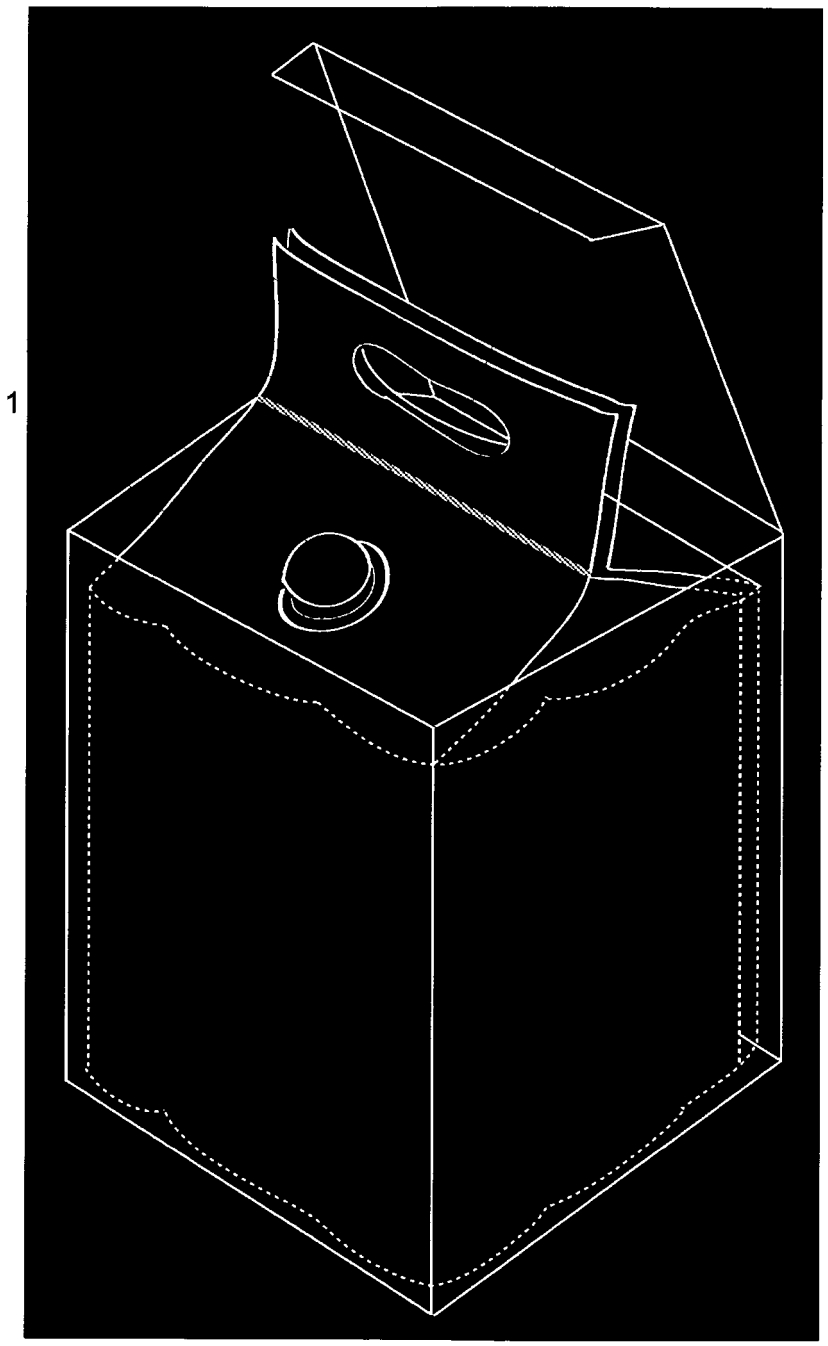

Fig. 4

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- US 4172152 A **[0004]**