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(54) Box, for instance for a BIB package, blank for such a box, and assembly of a box and an inner bag

(57) Box (1) comprising an inner space (I) for receiving a product, wherein the box is formed from several mutually folded parts and/or flaps glued to one another in a manner suitable for holder formation, and is provided with a bottom face, a top face provided opposite thereto, and wall parts provided around circumferential sides of the bottom face, wherein a first wall part (5) and a second wall part situated next thereto are fastened to each other with the aid of a fastening flap provided on the first wall part through a first folding line (10), which fastening flap (12) is fastened to the second wall part (6), wherein through a second folding line (20) an extension flap (14) is provided on the second wall part (6), wherein the first (10) and second folding (20) lines are situated substantially against each other and form a double folding line, which is configured to be substantially, that is, over at least 50% of the length thereof, single-layered. The invention further relates to a blank for such a box and an assembly of a box and an inner bag.

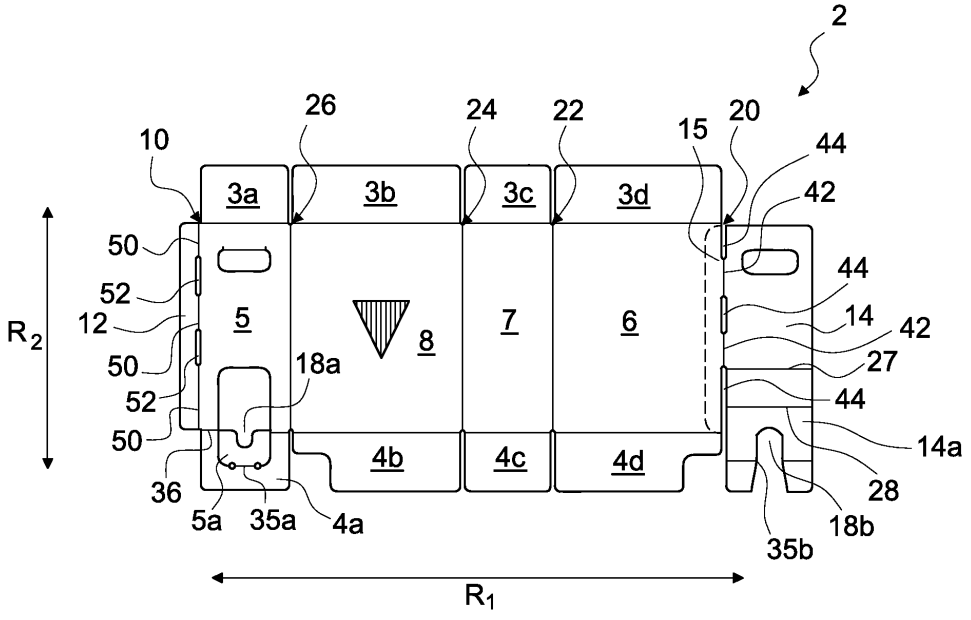

FIG. 3

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Description

[0001] The invention relates to a box set up from a blank, comprising an inner space for receiving a product, for example a bag fillable or filled with a product, wherein the box is formed from several mutually folded parts and/or flaps glued to one another in a manner suitable for holder formation, wherein the box is provided with a bottom face, a closable or closed top face provided opposite thereto, and wall parts provided at least around circumferential sides of the bottom face, wherein at least a first wall part and a second wall part situated next thereto are fastened to each other with the aid of a fastening flap.

[0002] Such a box is known from practice and comprises in particular a Bag-in-Box package. Such a box is set up from a blank and comprises an inner space in which a bag fillable or filled with a product can be received. Such a package can for example be used for packaging a liquid such as a detergent or a foodstuff such as wine. Typically, such a box comprises a recess through which a spout of the bag can be inserted so that a user of such a box can easily take the contents from the box. The known box comprises an extension flap with which a first wall part is connected to a second wall part provided next to it, in order to create the box shape. For this, the first wall part is fastened by a fastening surface to an outer surface of the extension flap, for example by means of a glue layer. Both the first wall part and the extension flap are provided with a spout holder opening. Further, the extension flap comprises a receiving provision against which the bag is placed in use. The first wall part comprises a recess which in set-up condition of the box is provided opposite a recess in the extension flap, at a distance therefrom. The receiving provision of the extension flap is placed at a distance from the first wall part by arranging for a part of the extension flap to be staggered in a direction extending from the first wall part in a direction substantially perpendicular thereto towards the inner space of the box. The holder opening comprised in the first wall part is provided in a flap which is pivotable relative to the wall part, which flap, in use, is so positioned that the spout is enclosed by the recess in the extension flap and the holder opening in the first wall. To allow the first wall part to be fastened firmly onto the extension flap, an adhesive edge extends along the second folding line. Due to this adhesive edge being necessary, the receiving provision for the bag in the box, which is formed by the extension flap, is partly provided with a recess.

[0003] Such a Bag-in-Box box has as a disadvantage that in the assembled condition of the box, due to the presence of the adhesive edge, viewed from the inner space, a recess has been formed in a receiving provision for the bag. This recess has as a disadvantage that the receiving provision is thereby rendered unstable and on the side of the recess may give way when the filled bag is received in the inner space of the box. A further disadvantage of such a box is that because the recess is provided both in a part of the receiving provision substantially parallel to the extension flap and in a part of the receiving provision substantially at an angle with respect to the extension flap, there is a relatively sharp point present in the inner space of the box, extending in the direction of the bag, so that the inner bag may sustain damage, for example during transport.

[0004] The object of the present invention is to eliminate, at least to obviate the above disadvantages.

[0005] To this end, the invention provides a box set up from a blank according to the above-mentioned type, **characterized in that** at least a first wall part and a second wall part situated next thereto are fastened to each other with the aid of a fastening flap provided on the first wall part through a first folding line, which fastening flap is fastened by a fastening flap surface to the second wall part, wherein through a second folding line an extension flap is provided on the second wall part, the first and second folding lines being situated substantially against each other and forming a double folding line, which double folding line is designed to be substantially, that is, over at least 50% of the length thereof, single-layered.

[0006] Owing to such a construction of the box, hence with two opposed folding lines forming a double folding line which is designed to be substantially, that is, over at least 50% of the length thereof, single-layered, an additional fastening flap can be used for forming, together with the extension flap, the connection between the first and the second sidewall part. For, by making the double folding line of substantially single-layered design, it is possible to provide a double folding line with a folding resistance that is substantially equal to the folding resistance of a single folding line. This allows a box glued together and being in a flat condition, that is, only the first and second sidewall parts are fastened together and no bottom and top face have been formed yet, to be easily unfolded. Owing to the provision of the extra fastening flap, the receiving provision can be provided substantially throughout the width of the extension flap and hence no recess is present in the box anymore since the extension flap does not need to provide an adhesive surface. In this way, sagging of a receiving portion of the receiving provision due to the weight of the inner bag is substantially prevented, especially during transport. For according to the invention the glue face is formed by the fastening flap and the extension flap. The first sidewall part in set-up condition of the box is situated substantially opposite the extension flap, and the fastening flap is fastened, for example using a glued joint, to a surface, more particularly a fastening area, of the second sidewall.

[0007] In a further elaboration of the invention, by making the double folding line preferably single-layered over a largest possible length of the folding line, that is, making the double folding line preferably single-layered over at least 75%, more particularly single-layered over more than 90%, it is accomplished still better that the folding resistance of the double folding line is substantially equal to the folding resistance of a single folding line. As a re-

sult, such a double folding line can be folded over with relatively little force. An advantage of this is that such a box can be pulled open on existing pull-open machines and so no special machines for such boxes need to be purchased. Further, the loadability of such a double folding line is substantially equal to that of a single folding line. Accordingly, such a double folding line does not appreciably compromise the stacking strength of the box.

[0008] At least the folding lines forming the double folding line may, according to a further elaboration of the invention, be provided with alternate openings and folding line parts viewed in a direction extending parallel to the respective folding line. When the openings in the respective first and second folding lines are so positioned that they are situated substantially opposite the folding line parts of the other one of the first and second folding lines situated opposite thereto, in the box a corner is obtained that on the one hand is strong enough to stack the box and on the other hand is of such design that the folding resistance is low enough to allow easy folding.

[0009] Easy folding may further be accomplished by making the length of an opening substantially equal to a length of the folding line part situated opposite thereto. As a result, the folding line parts in a folded condition of the double folding line can extend at least partly through the openings situated opposite thereto, so that the folding line parts of the respective folding lines extend substantially in a single folding line longitudinal direction. This also compensates a difference in circumferential length between the outer fold and the inner fold of the corner of the box.

[0010] According to a further elaboration of the invention, it is possible that the openings and/or folding line parts of the respective folding lines have different lengths. For example, the openings in one and the same folding line can have different lengths and the folding line parts can also have different lengths. Preferably, the lengths of the openings in the first folding line are tailored to the lengths of the folding line parts in the second folding line and vice versa. In such a manner, the folding lines can be so designed as to possess the most favorable properties for the desired box for the desired application. It should be noted that the first and second folding lines, for forming the double folding line in a desired manner, are preferably provided in a manner situated against each other substantially throughout the length without an appreciable intermediate space.

[0011] According to a further elaboration of the invention, an extension flap surface of the extension flap is situated substantially against an inner surface of the first wall part. In a further elaboration of the box according to the invention, an extension flap surface of the extension flap can at least partly be fastened to the surface of the first wall part situated against it. In this way, a firm box is obtained. In such an embodiment of the box according to the invention, the folding line of the inner fold of the double folding line which is situated opposite the inner space can comprise at least one opening, for example formed by at least partial tearing of a folding line-forming score line or perforation line or the like.

[0012] In a further elaboration of the box according to the invention, a wall part may be provided with an intermediate folding line substantially parallel to the first or second folding line, such that the box is provided with at least one truncated angle viewed in a direction extending substantially parallel to the further folding line.

[0013] In a further elaboration of the invention, the bottom face and/or the top face can have a triangular, quadrangular or polygonal shape, the box being provided with three wall parts, four wall parts or more wall parts, respectively. A box according to the invention can hence have different appearances, whereby in each design of the box according to the invention in each case two sidewalls are connected with each other with the aid of the fastening flap, the extension flap and the double folding line which is configured to be single-layered substantially over a large part of its length. It is to be noted that folding lines not further described in a box and/or blank according to the invention can be bending lines having a substantially closed character throughout the length thereof.

[0014] The bottom and the cover may be formed in different ways depending on the starting blank of the box. The bottom and/or the cover of the box may be formed from multiple top face- and/or bottom face-forming parts and/or flaps pivotably provided on the respective side parts, which are folded towards each other and possibly fastened to each other, for example using a glue layer.

[0015] The invention further relates to a blank apparently intended and suitable to form an above-described box. According to a further elaboration of the invention, the blank may be provided with several mutually foldable parts and/or flaps to form a box, for example for receiving a bag with bag projection, wherein the blank is provided with a first wall part, a second wall part and at least one further wall part, wherein a fastening flap is provided on the first wall part through a first folding line, wherein at least one of the second or further wall parts is provided with an extension flap, which is connected through a second folding line with the respective wall part, wherein the first and second folding lines are provided with alternate openings and folding line parts viewed in a folding line direction, wherein the openings of the first and second folding lines are so positioned that in set-up condition of the blank they are situated substantially opposite folding line parts of the other one of the first and second folding lines. Such a blank provides corresponding effects and advantages to those mentioned in respect of the above-described box set up from such a blank.

[0016] The invention also relates to an assembly comprising an above-described box, preferably set up from an above-described blank, and a product-fillable or product-filled inner bag with a bag projection. For this, the box can have an opening in at least the first side part and an opening in either the extension flap or in a flap forming a further side part. Owing to such an opening, the bag projection provided on the bag, which is for example ar-

ranged to let the product out of the bag, can extend at least partly through a wall part of the box.

[0017] In the further subclaims further advantageous embodiments are described of a box according to the invention and a blank suitable therefor.

[0018] Further elaborations of the invention are described in the subclaims and will be further clarified below with reference to the drawings. In the drawing:

Fig. 1 shows a schematic top plan view of a blank according to the prior art;
Fig. 2 shows schematically a perspective elevational view of a box according to the prior art set up from the blank of Fig. 1;
Fig. 3 shows a schematic top plan view of a blank according to a first embodiment of the invention;
Fig. 4 shows a schematic perspective elevational view of a box set up from the blank of Fig. 3;
Fig. 5 shows a schematic top plan view of a blank according to a second embodiment of the invention;
Fig. 6 shows a schematic perspective elevational view of a box set up from the blank of Fig. 5;
Fig. 7 shows a schematic top plan view of a blank according to a third embodiment of the invention;
Fig. 8 shows a schematic perspective elevational view of a box set up from the blank of Fig. 7;
Fig. 9 shows a schematic top plan view of a blank according to a fourth embodiment of the invention; and
Fig. 10 shows a schematic perspective elevational view of a box set up from the blank of Fig. 9.

[0019] It is noted that the same or corresponding parts in the different figures are designated with the same or corresponding reference numerals.

[0020] In Figs. 1 and 2 there are respectively shown a blank 102 and a box 101 for a BIB package according to the prior art. The box 101, as represented partly in perspective in Fig. 2, has been set up from the blank 102 as shown in Fig. 1. The blank 102 comprises multiple mutually foldable wall parts 105, 106, 107, 108 and flaps 103a-103d, 104a-104d, 114.

[0021] For setting up the box 101, in succession the extension flap 114 together with a second wall part 106 is folded over folding line 120, such that this extension flap 114 and the wall part 106 come to lie on top of the third and fourth wall parts 107, 108. Thereupon, the first wall part 105 is folded over about folding line 126, so that this wall part 105 comes to lie on the extension flap 114. The first wall part 105 is glued by an edge remote from the fourth wall part 108 onto a fastening area 115 which is situated near the folding line 120. The blank 102 at this time is in a collapsed position.

[0022] In this collapsed position, the first wall part 105 is situated substantially opposite the extension flap 114. In this condition, folded double and glued, such a box 101 can be easily transported, for example to a location where a product-filled or product-fillable bag 140 is provided in the box for forming the BIB package. Both the first wall part 105 and the extension flap 114 are provided with a positioning flap part 105a, 114a, which, when the blank has been brought into the position forming the set-up box, together form a holder opening 118, through which a bag projection 141, such as a little tap provided on the bag 140, can extend, so that the product can be easily taken from the bag 140 by a user. To form the box 101 from the collapsed blank 102, for example at a desired location, the wall parts 105, 106, 107, 108 are moved away from each other, so that an inner space I is formed. Thereupon the flaps 103a-103d provided on the wall parts 105, 106, 107, 108 on a first side thereof are folded in the direction of the inner space I and connected with each other so that a top face 103 is formed. In this situation the flap part 104a is situated substantially against the positioning flap part 114a. Thereupon the flap part 104a is folded outwards, hence placed outwards at an angle with respect to the positioning flap part 114a, so that the bag 140 can be placed in the inner space I of the box 101 and the bag projection 141 can be slipped into the opening 118, which is provided in positioning flap part 114a. The positioning flap part 105a and at least an edge of the flap 104a pointing away from the first wall part 105 is fastened to an outer side of the positioning flap part 114a of extension flap 114. Thereupon the flap parts 104a, 114a fastened onto each other are simultaneously folded in the direction of the inner space I of the box 101. Because the transverse folding lines 127, 128, 136 are positioned at different locations viewed in a direction R2, upon folding inwards of the flaps 104a, 114a a space 12 is created, through which the bag projection 141 extends from holder opening part 132. After this, in succession the flap 104c and the flaps 104b, 104d, which flaps 104a-104c are provided on a side opposite the first side of the wall parts 106, 107, 108, are folded inwards for closing the box 1 and forming a bottom face 104.

[0023] As can be properly seen in Fig. 2, where the first wall part 105 is omitted for clarity, extension flap 114 comprises a fastening area 115. Because the fastening area 115 extends throughout the length of folding line 120 to enable the first wall part 105 to be firmly fastened, a recess 130 is present in the positioning flap part 114a of the extension flap 114. This recess 130 extends over the receiving portion 131 provided substantially at an angle to the extension flap 114 and the holder opening part 132 of the positioning flap part 114a, which is provided substantially at an angle with respect to the receiving portion 131 and substantially parallel to the extension flap 114. Owing to the presence of the recess 130, there is an exposed pointed projection 133 in the inner space I of the box 101. When the BIB package is placed on the bottom face 104, the bag 140 rests at least partly on the receiving portion 131, the bag 140 further lies on an inner surface of the bottom face 104, and the bag 140 touches the holder opening part 132 of the positioning flap part 114a on a side facing the inner space I of the box 101. The bag 140 hence lies against the projection 133, which

entails a risk of damage to the bag wall 140a, for example during transport, and hence a risk of leakage of the product from the bag 140. A further disadvantage is that the receiving portion 131 provided with the recess 130, due to the weight of the bag 140 when it is at least partly filled with the product may bend, for example during transport. Also, the bag 140 can bulge outwardly through the recess 130, that is, extend from the inner space I of the box through the recess 130 beyond the receiving portion 131 and the holder opening part 132. This is not wanted because of the above-mentioned risk of damage to the bag 140 since it can be touched from an outer side of the box 101, but neither is it wanted from an aesthetic point of view. Also, a bag 140 bulging out may be in the way when operating the bag projection 141 to let the product, such as detergent, out of the BIB package.

[0024] In Figs. 3 and 4, respectively, there are shown a blank 2 and a box 1 according to a first embodiment of the invention. The box 1 as represented partly in perspective in Fig. 4 has been set up from the blank 2 as shown in Fig. 3. The blank 2 may be of a cardboard or other sheet material suitable for such an application, such as metal foil, plastic, and/or the like. Preferably, the blank 2 is made wholly of solid cardboard, and so is a box 1 set up form the blank 2. The blank 2 in this exemplary embodiment comprises four wall parts 5, 8, 7, 6 which extend next to each other in a first direction R1 and are pivotably connected with each other through folding lines 26, 24, 22 provided between the wall parts 5, 8, 7, 6. On a longitudinal side of the first wall part 5 remote from the other wall parts 8, 7, 6, a fastening flap 12 is provided, which is pivotably connected with the first wall part 5 through a first folding line 10. On a longitudinal side of the second wall part 6 remote from the other wall parts 5, 8, 7, an extension flap 14 is provided, which is pivotably provided on the second wall part 6 through a second folding line 20. Further, the blank 2 comprises flaps 3a-3d, 4a-4d pivotably provided on transverse end sides of the respective four wall parts 5, 8, 7, 6 and forming top 3 and bottom face 4, respectively. The first folding line 10 and the second folding line 20 are each provided with alternate openings 52, 44 and folding line parts 50, 42, which folding line parts 50, 42 have a substantially closed character, viewed in a direction R2 parallel to the respective folding lines 10, 20.

[0025] The first wall part 5 is provided with a positioning flap part 5a, which is pivotably provided on the bottom face-forming flap 4a, through folding line 35a. Also the extension flap 14 is provided with a positioning flap part 14a which is pivotably provided on the extension flap 14. As can be clearly seen in Fig. 3, the positioning flap part 14a is not connected with the second sidewall 6. As a result, this flap part 14a, when the box is being set up and the mutually fastened flaps 4a, 14a are being folded inwards, can be moved through a first transverse folding line 27, provided transversely to the second folding line 20, towards an inner space I of the box 1. In this inwardly folded position of the flap parts 4a, 14a, a receiving portion 31 of the positioning flap part 14a is situated at an angle with respect to the extension flap 14 (see Fig. 4). The holder opening part 32 of the positioning flap part 14a has been folded back through a second transverse folding line 28, which extends substantially parallel to the first transverse folding line 27, so that an angle, in this example approximately a 90 degree angle, has been obtained between the receiving portion 31 and the holder opening part 32. The holder opening part 32 and the positioning flap part 5a are each provided with an opening 18b, 18a jointly forming a holder opening 18 through which, in use, a bag projection 41 can extend. Such a bag projection 41 can be, for example, a small tap to allow a liquid product to flow out of the bag 40.

[0026] For setting up the box 1, the extension flap 14 is folded simultaneously with the second wall part 6 over the folding line 22 until this flap 14 and the wall part 6 are situated on top of the two wall parts 7, 8 provided on the other side next to the folding line 22. Thereupon the first wall part 5 together with the fastening flap 12 is folded over the fifth folding line 26, such that the first wall part 5 is positioned on top of the extension flap 14. Thereupon the fastening flap 12 is fastened onto the fastening area 15 which is situated on a side of the folding line 20 remote from the extension flap 14, on the longitudinal edge of the second wall part 6.

[0027] In this way, a collapsed blank 2 has been obtained which can be easily transported to a location where the product-filled or product-fillable bag 40 can be placed in a box 1 set up from the collapsed blank 2. Setting up the box 1 requires comparable operations to those described for setting up the box 101 according to the prior art. Corresponding operations will not be described in more detail here. For an explanation of such operations, reference is made to the description with regard to Figs. 1 and 2.

[0028] The first folding line 10 and the second folding line 20 are provided with alternate openings 52, 44 and folding line parts 50, 42, the openings 52, 44 in the respective first 10 and second 20 folding lines being so positioned as to be situated substantially opposite the folding line parts 50, 42 of the other one of first 10 and second 20 folding lines situated opposite thereto. Owing to thus configured folding lines 10, 20, in the corner 1a of the box 1 near the fastening flap 12 a double folding line 10, 20 is obtained, which is configured to be single-layered over a large part of its length. Such a double folding line 10, 20 provides the advantage that its bending resistance is comparable to the bending resistance of a single folding line. When folding the double folding line 10, 20, the folding line parts 42 of the second folding line 20 can extend at least partly through the openings 52 of the first folding line 10. Therefore, a collapsed blank 2 where the double folding line 10, 20 has already been formed can be easily unfolded. After the flap part 4a has been folded outwards and the bag 40 has been placed in the inner space I of the box 1, the bag projection 41 is placed in the opening 18 of the positioning flap part 14a.

The positioning flap part 5a and at least an edge of the flap 4a pointing away from the first wall part 5 are fastened onto an outer side of the positioning flap part 14a of extension flap 14. Then the flap parts 4a, 14a fastened onto each other are folded simultaneously towards an inner space I of the box 1. Because the transverse folding lines 27, 28, 36 are positioned at different locations viewed in a direction R2, upon inward folding of the flaps 4a, 14a a space I2 is created, through which the bag projection 141 extends from the holder opening part 132. Because the fastening flap 12 is attached to an outer surface of the second wall part 6, more particularly to the earlier-mentioned fastening area 15, there is no recess present in the positioning flap part 14a of the extension flap 14. Accordingly, both the receiving portion 31 and the holder opening part 32 in the set-up condition of the box 1 extend throughout the internal width B of the box 1. This prevents the bag 40 extending outside the box. Further, the bag 40 rests against substantially plane surfaces, which considerably reduces the risk of damage of the bag 40 and subsequent leakage of product from the package.

[0029] In Figs. 5 and 6 a second embodiment of the blank 2 and the box 1 according to the invention is shown. Because this second embodiment of the blank 2 and the box 1 is similar to the first above-described embodiment of the blank 2 and the box 1, it suffices here to describe the differences with respect to the first embodiment. For corresponding elements, reference is made to the earlier description of the first embodiment.

[0030] The blank 2 as shown in Fig. 5 comprises four sidewalls 5, 8, 7, 6 extending in the first direction R1 and, in line therewith, an extension flap 14. These wall parts 5, 8, 7, 6 and the extension flap 14 are pivotably connected with each other through folding lines 20, 22, 24, 26, which folding lines are provided substantially parallel to each other. On a side of the first wall part 5 remote from the other sidewalls 8, 7, 6, a fastening flap 12 is pivotably provided through the first folding line 10. On first end sides of the respective wall parts 5, 8, 7, 6, flaps 3a-3d are provided, forming top face 3. The top face-forming flap 3a which is provided on the first sidewall part 5 comprises a positioning flap part 5a. A further positioning flap part 14a is provided on the extension flap 14. This positioning flap part 14a comprises the receiving portion 31 and the holder opening part 32. In this embodiment of the invention, the opening 18 for the bag projection 41 extends over both the holder opening part 32 and also at least partly over the receiving portion 31.

[0031] The box 1 set up from this blank 2 can be seen in Fig. 6. Because the opening 18 for the bag projection 41 extends substantially over the receiving portion 31 as well, the bag projection 41 in use extends from the inner space I through the receiving portion 31 to outside of the box 1. To keep the bag projection 41 in the correct position, the positioning flap part 5a of the first wall part 5 is fastened on an outer side onto the holder opening part 32 and onto an outer side of the receiving portion 31. For closing the top face 3 of the box 1, the flaps 3a, 5a, 14a at least partly fastened to each other are folded towards an inner side I of the box 1. Because the transverse folding lines 27, 28, 36 are situated at different positions viewed in direction R2, upon folding inwards a space I2 is formed. Also, as a result, at the same time the positioning flap part 5a is partly folded over about transverse folding line 29. This transverse folding line 29 comprises alternately openings 29a and a folding line part 29b. In the set-up condition of the box 1, this transverse folding line 29 lies against the second transverse folding line 28 which is provided between the receiving portion 31 and the holder opening part 32. The two transverse folding lines 28, 29 together form a double folding line 28, 29 according to the invention, this double folding line 28, 29 being single-layered over at least 50% of the length thereof. In this example the double folding line 28, 29 is configured to be single-layered over at least 75%, more particularly single-layered over at least 90%. This is because the folding line part 29b is situated opposite the opening 28a for the bag projection 41 in the folding line 28. Further, in the box 1 in Fig. 6, it can be clearly seen that the fastening flap 12 is fastened onto the fastening area 15 provided on the second wall part 6 of the box, for example by means of a glue layer. The folding line parts 42 of the second folding line 20 extend at least partly through the openings 52 of the first folding line 10. As a result, the double folding line 10, 20 is substantially single-layered over a large part of the length thereof, preferably over more than 90% of the length of the double folding line 10, 20. In this exemplary embodiment of the box, in the flaps 3b-3d forming top face 3, openings 55 are provided for at least partly receiving a handle 56 to enable easy displacement of the box 1 provided with an inner bag 40.

[0032] In Figs. 7 and 8 a third embodiment of the blank 2 and the box 1 according to the invention is shown. The blank 2 in this embodiment comprises only three wall parts 5, 7, 6 to form a substantially triple-walled box 1, as can be seen in Fig. 8. For this, the blank 2 comprises in a first direction R1 in succession an extension flap 14, the second sidewall 6, a third sidewall 7, the first sidewall 5 and fastening flap 12. Provided between these respective flaps 14, 12 and wall parts 6, 7, 5 are folding lines 10, 20, 22, 24, so that the respective flaps and walls can pivot relative to each other. Further, the three sidewalls comprise additional intermediate folding lines 60, 62, 64. These intermediate folding lines 60, 62, 64 are provided at a small distance from the respective folding lines 20, 22, 24 and run substantially parallel to the folding lines 20, 22, 24. By virtue of these intermediate folding lines 60, 62, 64, the box 1 in set-up condition is provided with truncated angles viewed in a direction R3 which extends substantially parallel to the intermediate folding lines 60, 62, 64. The first folding line 10 and the second folding line 20 in set-up condition of the box are situated against each other and form the above-discussed substantially single-layered double folding line 10, 20. The folding line parts 42 of the second folding line 20 extend through the openings 52 of the first folding line 10. Further, the blank

2 according to this third exemplary embodiment of the invention comprises similar positioning flap parts 5a, 14a, respectively provided on the first wall part 5 and the extension flap 14. In set-up condition the folding lines 29, 28 of the respective positioning flap parts 5a, 14a form a double folding line 28, 29 which is of single-layered design substantially throughout its length. The folding line part 29b in set-up condition is situated opposite the opening 28a of the positioning flap part 14a of the extension flap 14.

[0033] To set up the box 1 from the blank 2 according to this exemplary embodiment of the invention, the extension flap 14 is folded over the second folding line 20, so that the extension flap 14 ends up on the second wall part 6. Then a part of the third wall part 7, the first wall part 5 and the fastening flap 12 are folded over an additional folding line 66, so that the first wall part 5 ends up on the extension flap 14. After this, the fastening flap 12 is fastened onto the fastening area 15. Then the collapsed blank 2 can be pulled out to form a box 1, with the bottom face-forming flaps 4a-4c being glued onto one another and forming the bottom face 4. Then the top face 3 forming flaps 3a-3c are positioned relative to each other and glued together in a same manner as described with regard to the second exemplary embodiment.

[0034] In Figs. 9 and 10, finally, a fourth embodiment of the blank 2 and the box 1 according to the invention is shown. The blank 2 comprises in succession a glue face 9, a bottom face-forming part 4, a fourth sidewall part 8, a top face-forming part 3 and a second sidewall part 6, which parts extend in the first direction R1. Further, the blank 2 comprises a first wall part 5, with laterally situated further wall part 5 forming flaps 5b-5c, third wall part 7 forming flaps 7a-7d, and an extension flap 14. The first wall part 5 and the further wall part 5 forming flaps 5b-5c extend from an end side of the bottom face-forming part 3, the fourth sidewall 8 and the top face-forming part 4 in a second direction R2, which direction is substantially perpendicular to the first direction R1. The first sidewall 5 is provided on a side remote from the fourth sidewall 8 with a fastening flap 12 which is provided on the first sidewall 5 through a first folding line 10. On a same end side as the wall part 5, the extension flap 14 is pivotably provided on the second sidewall 6 through a second folding line 20. Both the first 10 and the second folding line 20 are provided with alternate openings 52, 44 and folding line parts 50, 42 which cooperate in forming the double folding line 10, 20 in the set-up condition of the box 1.

[0035] The box 1 as shown in Fig. 10 is set up in a different manner than the boxes according to the earlier-described embodiments of the invention. First of all, the folding lines 22, 24, 26, 28 are folded and the glue face 9 can be fastened to the second sidewall 6, preferably on an inner side thereof since that is esthetically more favorable. Then the third sidewall-forming faces 7a-7d are fastened to each other to form the third wall part 7. Then the box 1 is positioned on the wall part 7 formed, after which a product-filled bag 41 can be placed in the inner space I of the box 1. Thereupon one of the further parts 5c forming first sidewall 5 is folded inwards, such that the bag projection 41 is provided in a holder opening 18a provided in that further part 5c. Also the other first sidewall-forming part 5b is folded inwards. Both parts 5b, 5c are situated above the bag 41 provided in the box 1. Thereupon the fastening flap 12 with the first wall part 5 is folded inwards, such that a holder opening 18b provided in the first wall part 5 fixes the bag projection 41. In this situation, the extension flap 14 is folded outwards, that is, about the second folding line 20 in a direction away from the inner space I. The fastening flap 12 is then fastened on the fastening area 15 on an inner side of the extension flap 14. Thereupon the extension flap 14 and the fastening flap 12 are folded back over the second folding line 20 in the direction of the first sidewall 5. The first folding line 10 and the second folding line 20 are situated against each other and form the double folding line 10, 20. Since both lines 10, 20 are provided with the openings 44, 52 and the folding line parts 42, 50, and the openings 44 of the second folding line 20 of the extension flap 14 are situated above the folding line parts 50 of the first folding line 10 of the first sidewall 5, and vice versa, the double folding line 10, 20 is substantially single-layered and therefore has similar properties to a single folding line and can hence be easily folded back. The extension flap 14 comprises a first folding line 67 substantially parallel to the second folding line 20 and arranged to fold the extension flap 14 such that the extension flap 14 in set-up condition forms a protecting part 65 for the bag projection 41, for example during transport. The extension flap 14 is fastened to an outer side of the fourth sidewall 8 with the aid of a glue face 14b. For the product to be taken from the package, a part of the extension flap 14 of the protecting part 65 needs to be torn off, for example along a tearing line 68, to render the bag projection 41 accessible, as shown in Fig. 10. In this exemplary embodiment of the invention, the extension flap 14 is further provided with two openings 69, which form a handle by which the package can be lifted.

[0036] The invention is not in any way limited to the exemplary embodiments shown in the description and the drawing. All combinations of (parts of) embodiments described and/or shown are understood to be within the concept of the invention. Moreover, many variations thereon are possible within the framework of the invention outlined by the claims.

[0037] For instance, the substantially rectangular boxes may also be provided with intermediate folding lines for forming truncated angles of such rectangular boxes. Also, it is possible that other folding lines of the blank are provided with alternate openings and folding line parts to cooperate with folding line parts and openings of other folding lines together forming a double folding line. Accordingly, such a double folding line may also be provided between at least a further side part and a flap of the bottom or a flap of the cover or other parts and flaps of the box.

[0038] In this application the term 'a' should be interpreted broadly and can comprise, for example, 'just one', 'a number of, 'a plurality of and the like.

Claims

1. A box set up from a blank, comprising an inner space for receiving a product, for example a bag fillable or filled with a product, wherein the box is formed from several mutually folded parts and/or flaps glued to one another in a manner suitable for holder formation, wherein the box is provided with a bottom face, a closable or closed top face provided opposite thereto, and wall parts provided at least around circumferential sides of the bottom face, wherein at least a first wall part and a second wall part situated next thereto are fastened to each other with the aid of a fastening flap provided on the first wall part through a first folding line, which fastening flap is fastened by a fastening flap surface to the second wall part, wherein through a second folding line an extension flap is provided on the second wall part, wherein the first and second folding lines are situated substantially against each other and form a double folding line, which double folding line is configured to be substantially, that is, over at least 50% of the length thereof, single-layered.

2. A box according to claim 1, wherein the double folding line is configured to be single-layered over at least 75%, more particularly single-layered over more than 90%.

3. A box according to any one of claims 1-2, wherein at least the folding lines forming the double folding line are provided with alternate openings and folding line parts viewed in a direction extending parallel to the respective folding line.

4. A box according to claim 3, wherein the openings in the respective first and second folding lines are so positioned that they are situated substantially opposite the folding line parts of the other one of the first and second folding lines situated opposite thereto.

5. A box according to any one of claims 3-4, wherein the length of an opening is substantially equal to a length of the folding line part situated against such opening.

6. A box according to any one of claims 3-5, wherein the openings and/or folding line parts of the respective folding lines have different lengths.

7. A box according to any one of the preceding claims, wherein an extension flap surface of the extension flap is situated substantially against an inner surface of the first wall part.

8. A box according to claim 7, wherein the extension flap surface is at least partly fastened to the surface of the first wall part situated against it.

9. A box according to claim 7 or 8 as far as depending from claims 1-2, wherein the folding line which is situated on a side of the inner space comprises at least one opening, for example formed by at least partial tearing of a score line or perforation line or the like forming the inner folding line.

10. A box according to any one of the preceding claims, wherein a wall part is formed from flaps fastened to each other respectively provided on end sides of respective other wall parts and/or bottom face and/or top face forming parts.

11. A box according to any one of the preceding claims, wherein a wall part is provided with an intermediate folding line substantially parallel to the first or second folding line, such that the box is provided with at least one truncated angle viewed in a direction extending substantially parallel to the further folding line.

12. A box according to any one of the preceding claims, wherein the extension flap is provided on a side remote from the second wall part with a second fastening flap which is fastened through a further folding line to the fastening flap, which further folding line is provided substantially parallel to the second folding line.

13. A blank, apparently intended and suitable to form a box according to any one of claims 1-12.

14. A blank, for instance a blank according to claim 13, wherein the blank is provided with several mutually foldable parts and/or flaps to form a box, for instance for receiving a bag with bag projection, wherein the blank is provided with a first wall part, a second wall part and at least one further wall part, wherein a fastening flap is provided on the first wall part through a first folding line, wherein at least one of the second or further wall parts is provided with an extension flap, which is connected through a second folding line with the respective wall part, wherein the first and second folding lines are provided with alternate openings and folding line parts viewed in a folding line direction, wherein the openings of the first and second folding lines are so positioned that in the set-up condition of the blank they are situated substantially opposite folding line parts of the other one of the first and second folding lines.

15. A blank according to claim 14, wherein the fastening flap, the wall parts and the extension flap extend next

to each other in a first direction and wherein at least the first and the second folding lines are situated substantially parallel to each other substantially perpendicular to the first direction.

16. A blank according to claim 14, wherein in succession a bottom face forming part, a wall part, a top face forming part and the second wall part extend next to each other in a first direction, wherein the first and second folding lines extend substantially parallel to the first direction.

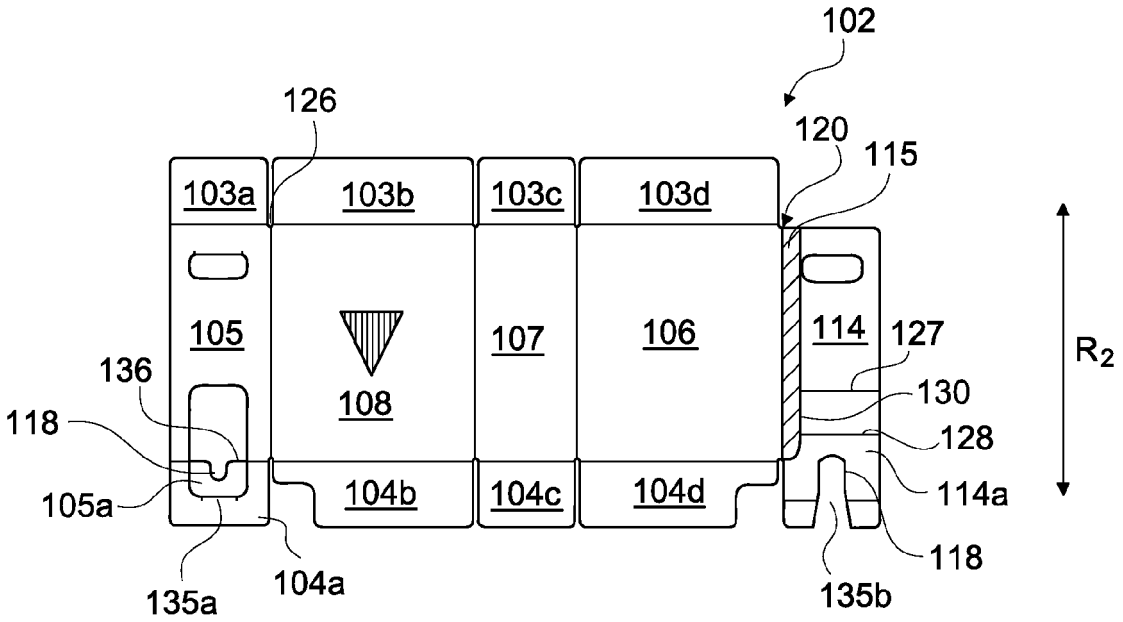
17. A blank according to claim 16, wherein in succession the fastening flap, the first wall part, a further wall part and a wall part forming part extend next to each other in a second direction substantially perpendicular to the first direction.

18. A blank according to any one of claims 14-15, wherein at least one of the wall parts is provided with an intermediate folding line which extends substantially parallel to the first and/or second folding line.

19. A blank according to any one of claims 14-18, wherein other folding lines provided in the blank are provided alternately with openings and folding line parts for together forming a double folding line which is substantially single-layered in a set-up condition of the blank.

20. An assembly comprising a box according to any one of claims 1-12, preferably set up from a blank according to any one of claims 13-19, and a product-fillable or product-filled inner bag with a bag projection.

21. An assembly according to claim 20, wherein the bag projection extends at least partly through the box to outside, wherein the bag projection is at least partly protected by a protecting part formed by the extension flap.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135b
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FIG. 1

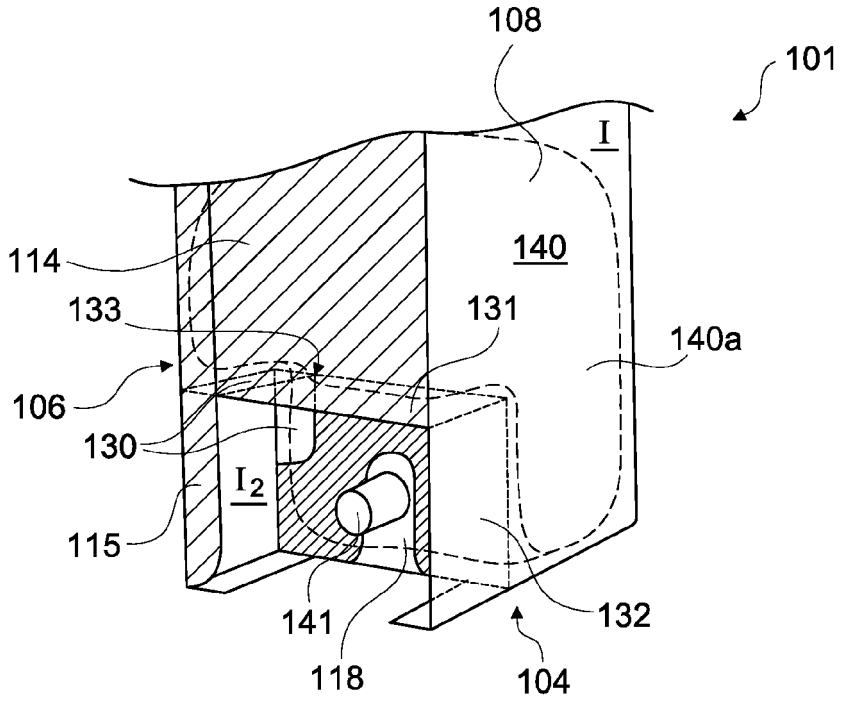
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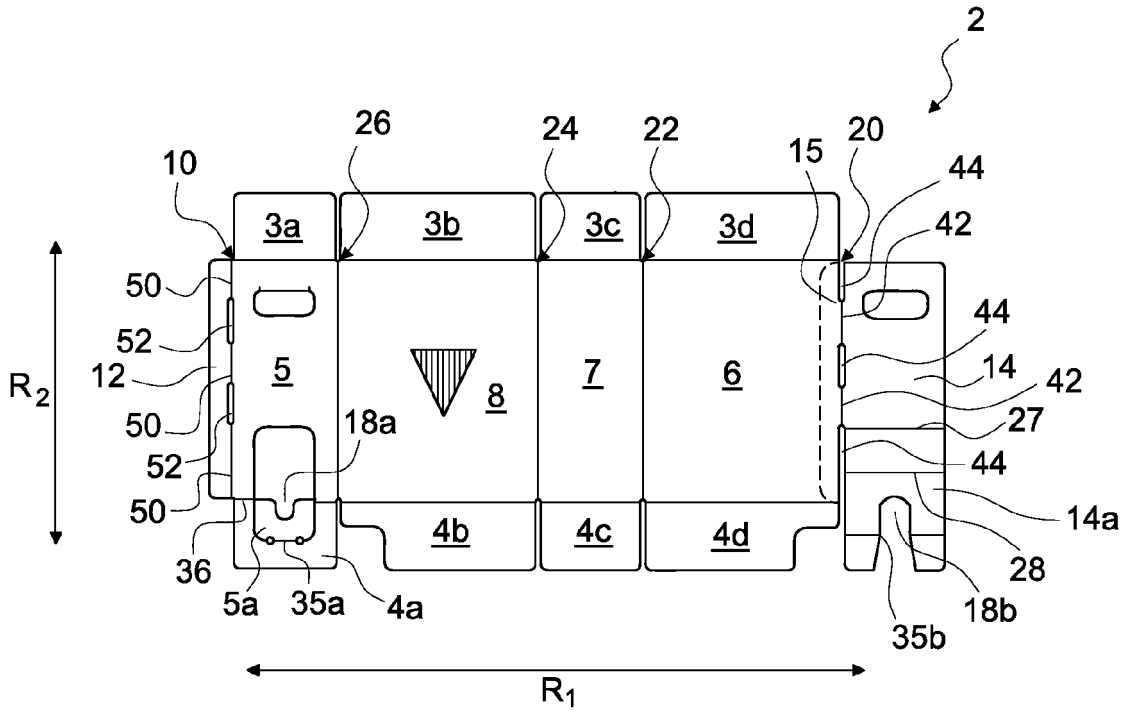
FIG. 2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R1

FIG. 3

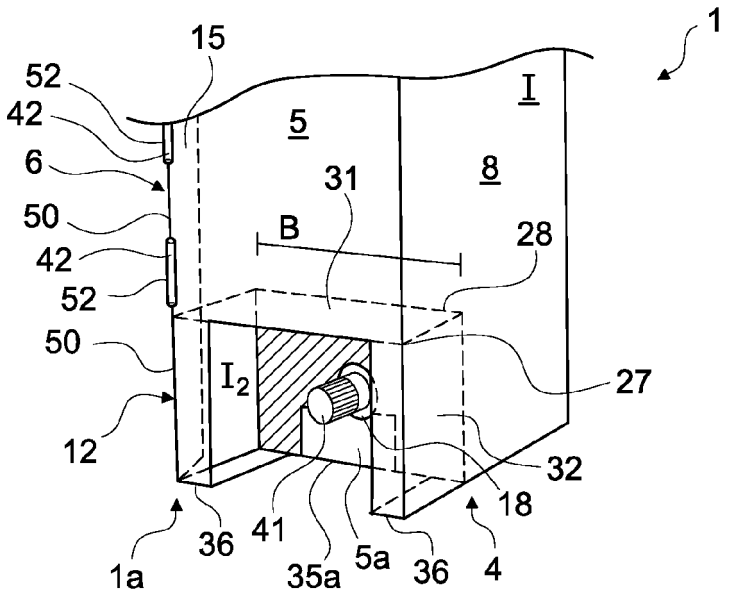
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FIG. 4

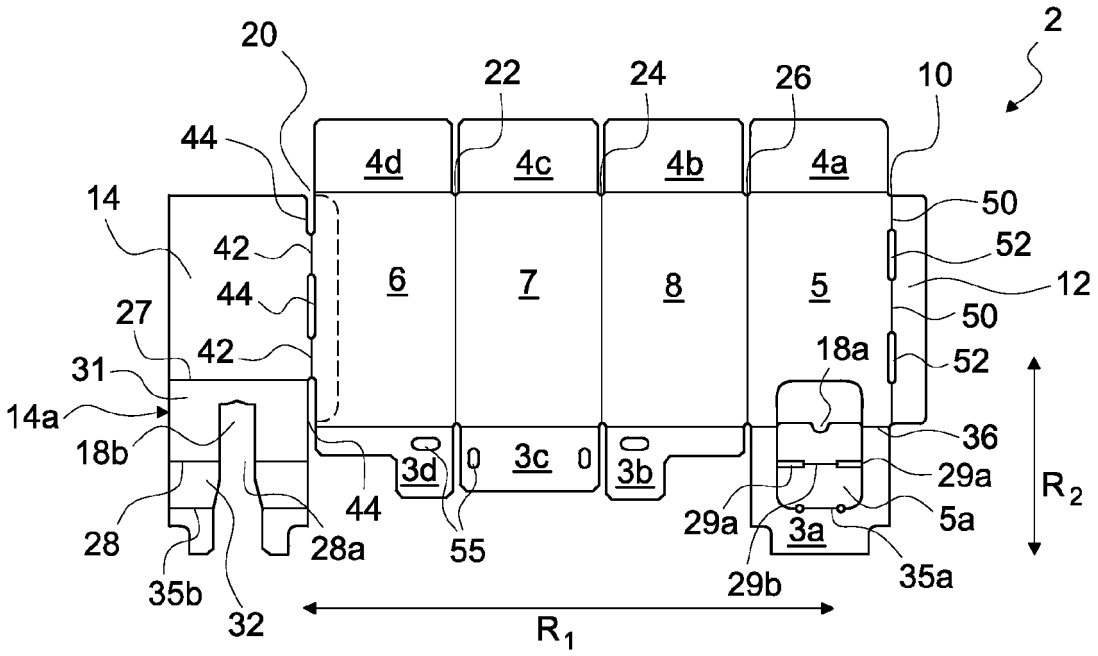
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FIG. 5

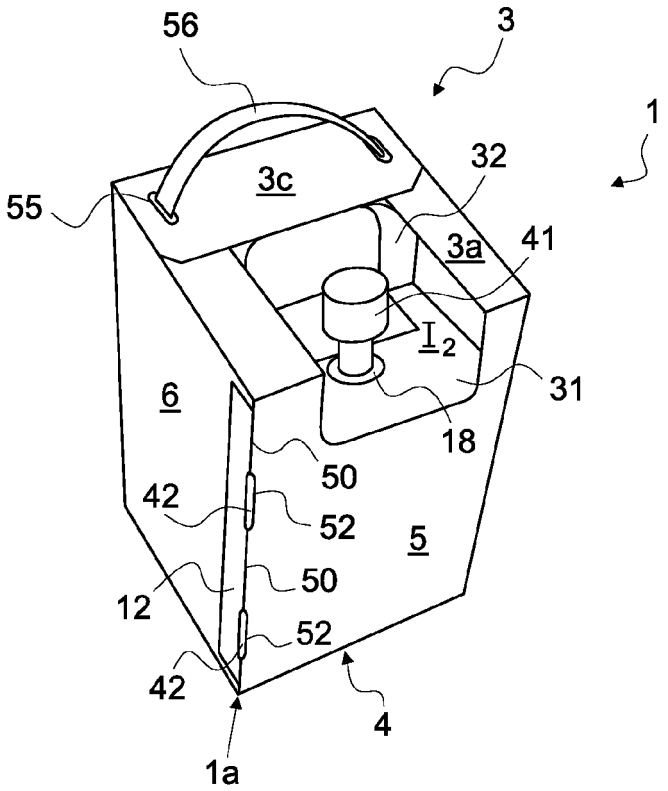
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FIG. 6

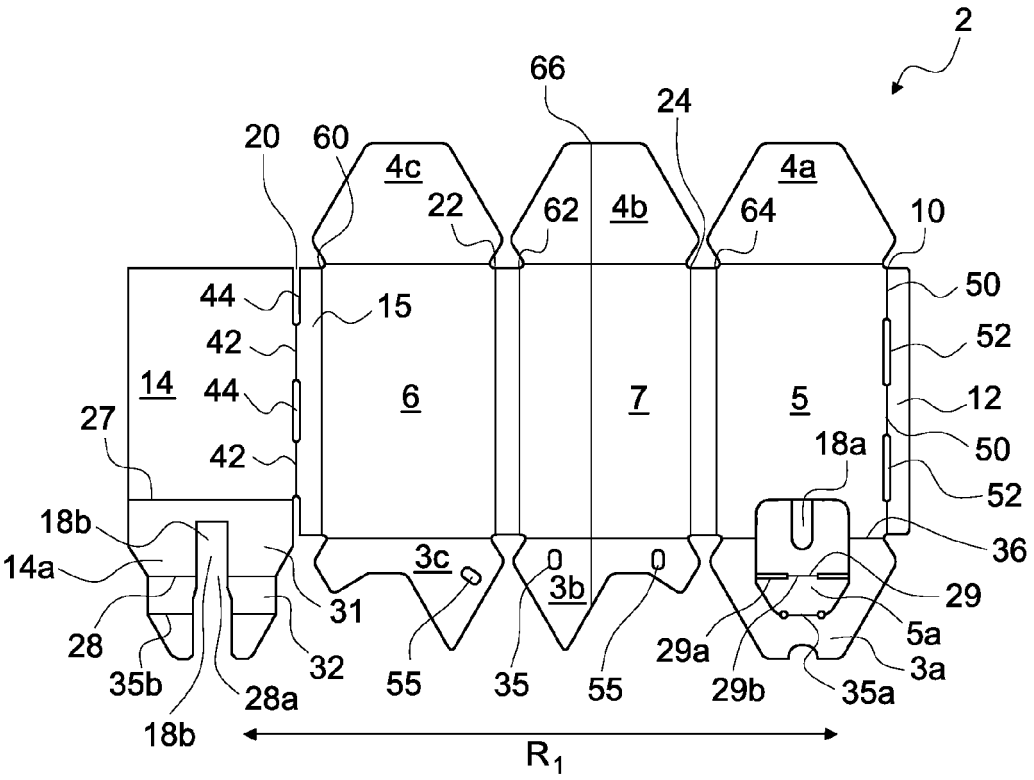
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FIG. 7

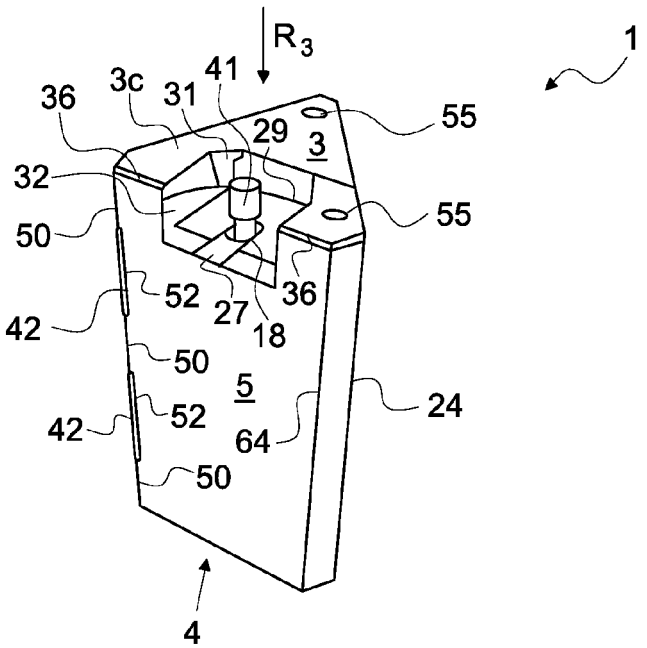
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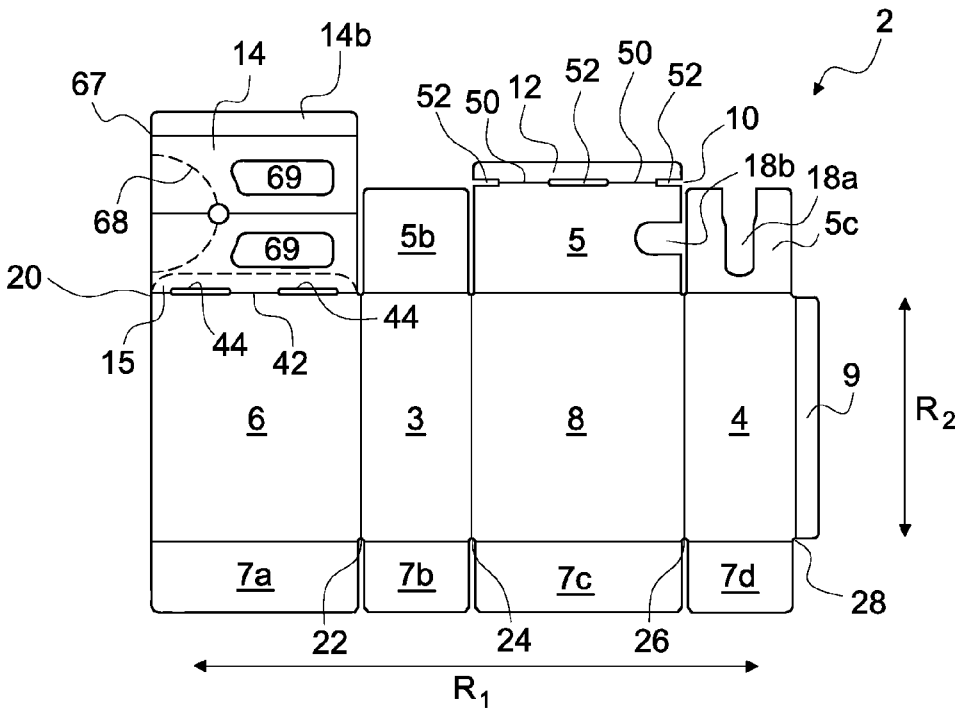
FIG. 8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R_2
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7d
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22
24
26
R_1

FIG. 9

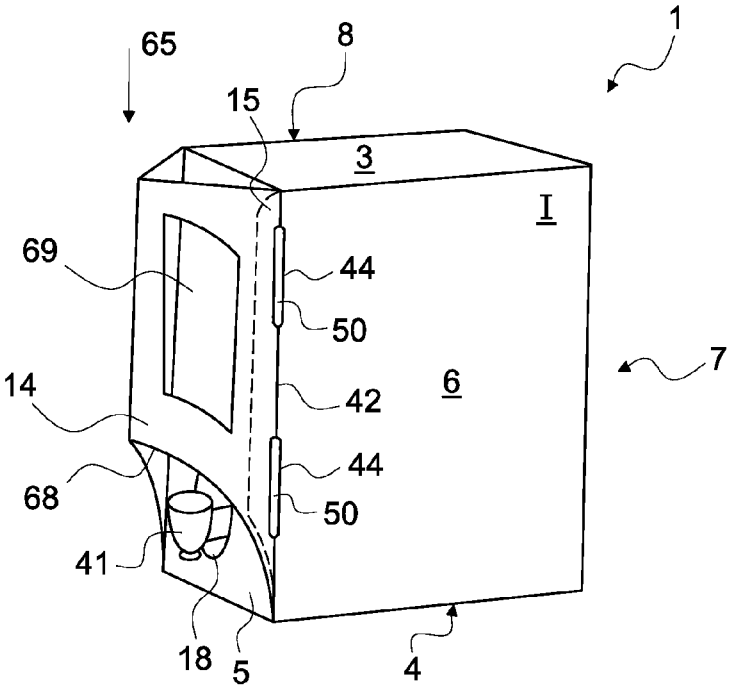
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FIG. 10

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EUROPEAN SEARCH REPORT

Application Number
EP 09 17 6700

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			TECHNICAL FIELDS SEARCHED (IPC) B65D B31B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20 January 2010	Leijten, René

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		NL 1029147 C2	28-11-2006

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