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

(11) **EP 4 477 570 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
18.12.2024 Bulletin 2024/51

(21) Application number: **24181487.0**

(22) Date of filing: **11.06.2024**

(51) International Patent Classification (IPC):
B65D 5/06 *(2006.01)* ***B65D 5/42*** *(2006.01)*

(52) Cooperative Patent Classification (CPC):
B65D 5/4208; B65D 5/067

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

(30) Priority: **12.06.2023 IT 202300011940**

(71) Applicant: **GALDI S.R.L.**
31038 Fraz. Postioma Paese (TV) (IT)

(72) Inventors:
- **Zancan, Benedetta**
  31038 Paese (TV) (IT)
- **Guadagnin, Alberto**
  31038 Paese (TV) (IT)

(74) Representative: **Petraz, Gilberto Luigi et al**
GLP S.r.l.
Viale Europa Unita, 171
33100 Udine (IT)

(54) **P ACKAGING FOR A POURABLE PRODUCT AND CORRESPONDING MANUFACTURING METHOD**

(57) Packaging (10) for a pourable product which comprises a front wall (12), an opposite rear wall (13), a first (14) and a second (15) lateral wall interposed between them, a lower wall (16) and an opposite upper wall (17) in contact on its opposite sides with respective upper edges of the front (12) and rear (13) wall and inclined both with respect to the latter and also with respect to the lower wall (16).

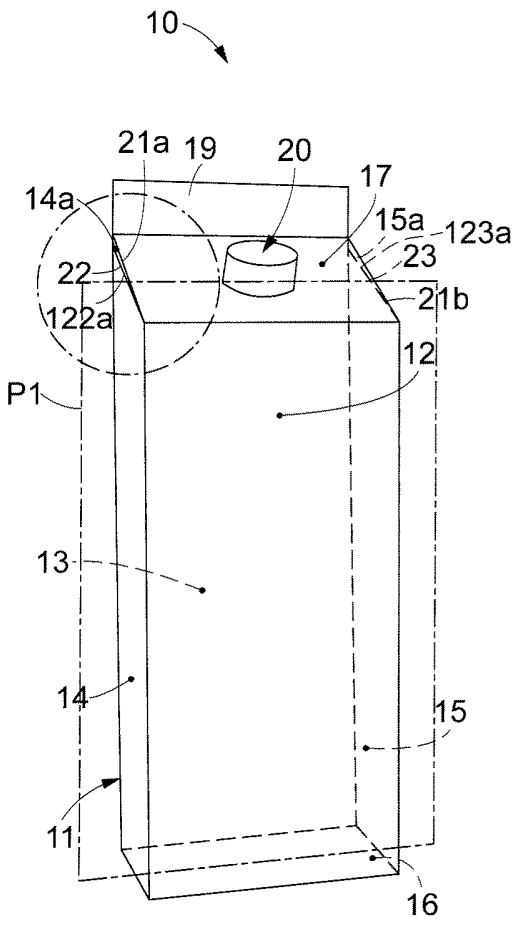


fig. 1

EP 4 477 570 A1

(Cont. next page)

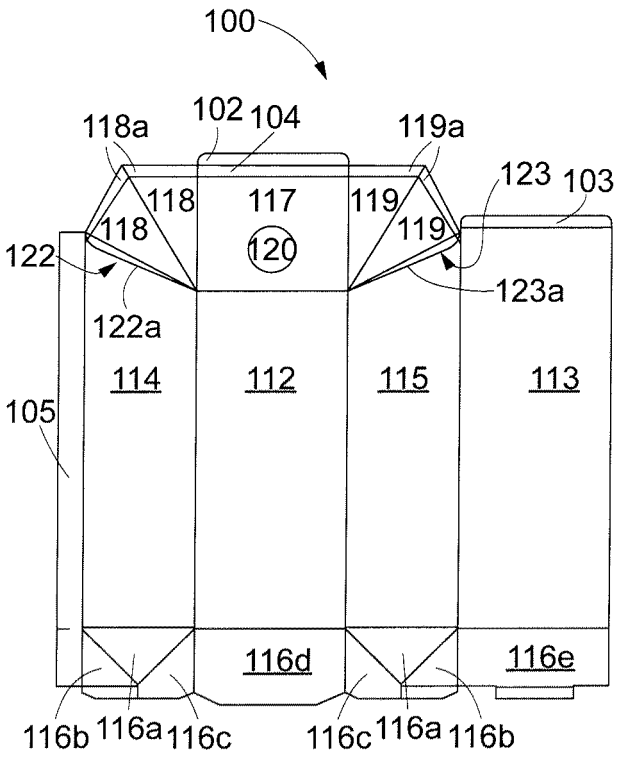

100
102
104
118a
119a
123
103
118
117
119
118
120
119
122
123a
122a
114
112
115
113
105
116d
116e
116b
116a
116c
116c
116a
116b

fig. 4

Description

FIELD OF THE INVENTION

[0001] The present invention concerns a packaging for a pourable product, in particular a pourable food product such as fruit juice, milk, wine, tomato puree, water, but also flour, starch, breadcrumbs, sugar, salt and so on, or a pourable product for the household such as detergent, for personal care or a cosmetic product such as shampoo or soap, or other pourable products. The present invention also concerns a method for manufacturing a packaging for a pourable product.

BACKGROUND OF THE INVENTION

[0002] Packagings for pourable products, for example liquid, granular or powdered, are known, which typically have a parallelepiped, truncated pyramid or similar shape, surmounted by an upper portion to which generally resealable opening means can be applied.

[0003] A packaging for pourable products is generally made starting from a flat sheet of multilayer material, for example a layer of cardboard covered on both sides with a heat-sealable plastic material such as polyethylene. The sheet of multilayer material is suitably shaped and subjected to creasing so as to obtain folding lines useful for folding and forming the packaging. The result of these operations is known as a blank.

[0004] The manufacturing of the packaging also involves suitable welds, which can be obtained by overlapping certain flaps or portions of the blank configured to be overlapped and joined and then welding together these overlapping flaps with heat or using ultrasound. Both types of welding, heat or ultrasonic, are effective and reliable for welding together up to four overlapping flaps, or five overlapping flaps if one of the five flaps occupies only a small portion of the weld, possibly already being involved in a previous weld, such as a longitudinal weld of the packaging.

[0005] The upper portion of the packaging can be shaped in various ways: flat upper portions are known, essentially consisting of a single wall coinciding with a transverse upper face of the parallelepiped or truncated pyramid or suchlike which delimits the packaging at the top. Also known are upper gable portions (also called "gable tops"), in which the upper walls of the packaging combine to form a gable or pointed "roof'.

[0006] Other shapes for the upper portion are also known, able to obtain functional and/or aesthetic improvements of the packaging. For example, US 6,182,887 discloses an asymmetrical top portion, with an upper wall having a larger surface than the walls of symmetrical alternatives, which may therefore provide more space for the opening means, making it easier to pour the pourable product.

[0007] However, the creation of particularly functional shapes of the upper portion may require complex folding of the blank, which can generate strong tensions in the blank itself, often causing it to break during forming.

[0008] There is therefore a need to perfect a packaging for a pourable product that can overcome at least one of the disadvantages of the state of the art.

[0009] To do this it is necessary to solve the technical problem of manufacturing a functional packaging without subjecting the packaging material to excessive internal tensions.

[0010] In particular, one purpose of the present invention is to manufacture a packaging for a pourable product and to perfect a corresponding manufacturing method which has a stable structure, without excessive internal tensions and therefore not subject to breakages or tears during forming.

[0011] Another purpose of the present invention is to manufacture a packaging for a pourable product that allows the pourable product contained therein to be easily poured.

[0012] Another purpose of the present invention is to perfect a method for manufacturing a packaging for a pourable product which does not require welding together an excessive number of overlapping flaps of multilayer material.

[0013] The Applicant has devised, tested and embodied the present invention to overcome the shortcomings of the state of the art and to obtain these and other purposes and advantages.

SUMMARY OF THE INVENTION

[0014] The present invention is set forth and characterized in the independent claims. The dependent claims describe other characteristics of the present invention or variants to the main inventive idea.

[0015] Embodiments described here concern a packaging for a pourable product, for example liquid, granular or powder, be it a food product such as fruit juice, milk, wine, tomato puree, water, but also flour, starch, breadcrumbs, sugar, salt and so on, or for the household such as a detergent, or for personal care or a cosmetic product such as a shampoo or soap, or other type of pourable product.

[0016] In accordance with the above purposes and to solve the above technical problem in a new and original way, also obtaining considerable advantages compared to the state of the art, a packaging for a pourable product according to the present invention comprises a front wall, an opposite rear wall and a first and a second lateral wall interposed between them. The packaging also comprises a lower wall and an opposite upper wall. The upper wall is in contact, on its opposite sides, with respective upper edges of the front and rear walls and is inclined both with respect to the latter and also with respect to the lower wall. Furthermore, the packaging is asymmetrical with respect to a plane perpendicular to the lower wall and passing through the midpoints of the edges shared between the latter and each of the lateral walls.

[0017] In accordance with one aspect of the present invention, the first and second lateral walls comprise respectively, in proximity to corresponding opposite first and second lateral edges of the upper wall, a first and a second weakening line. The weakening lines develop mainly in an inclined direction essentially mating with the corresponding lateral edges of the upper wall, connecting the front and rear walls. The weakening lines are configured to selectively define first and second intentionally deformed portions of the respective first and second lateral walls.

[0018] By doing so, at least the advantage of reducing internal tensions in the material that constitutes the packaging is obtained. As a result, the structure of the packaging is stabilized and the risk of breakages and tears during its forming is significantly reduced.

[0019] In accordance with another aspect of the present invention, the first and second intentionally deformed portions are delimited at the top by the upper edge of the respective lateral walls and at the bottom delimited and defined, respectively, by a first and a second deformation fold. The first and second deformation folds join two vertexes shared between the upper wall and, respectively, the first lateral wall or the second lateral wall. Furthermore, the deformation folds are obtained by folding said weakening lines.

[0020] In accordance with another aspect of the present invention, the first and second deformation folds have a first rectilinear segment, in proximity to the front wall, moving away from the upper wall, and a second curvilinear segment, in proximity to the rear wall, approaching the upper wall.

[0021] In accordance with another aspect of the present invention, the first and second intentionally deformed portions are configured to protrude toward the outside of the packaging with respect to the planes defined by the respective lateral walls.

[0022] Advantageously, the first and second intentionally deformed portions shaped in this way increase visibility on the shelf.

[0023] The present invention also concerns a planar preformed element for forming a packaging for a pourable product.

[0024] In accordance with another aspect of the present invention, the preformed element comprises a front panel and a first and a second lateral panel, adjacent to the front panel on its opposite sides. The preformed element also comprises a rear panel, adjacent to the second lateral panel on one side thereof, opposite to the front panel. The rear panel is provided with a rear welding portion.

[0025] The preformed element also comprises an upper panel, adjacent to the front panel and provided with a first and a second front welding portion. Furthermore, the preformed element includes two first and two second lateral upper flaps, provided with respective first and second lateral welding portions. The first and second lateral upper flaps are interposed between the upper panel and, respectively, the first or second lateral panel.

[0026] Furthermore, the preformed element is provided with a rear longitudinal flap, adjacent to the first lateral panel on one of its sides opposite to the front panel.

[0027] The preformed element also comprises first and second selective weakening means, which develop mainly in an inclined direction essentially mating with a folding line which delimits the respective first or second lateral upper flap at the bottom adjacent to the corresponding lateral panel. The first and second selective weakening means connect the front panel with, respectively, the rear longitudinal flap or the rear panel.

[0028] In accordance with another aspect of the present invention, the first and second selective weakening means are a first and a second weakening line disposed in the first and second lateral panels respectively. The first and second weakening lines extend between two vertexes shared between the respective lateral panel and the adjacent first or second lateral upper flap.

[0029] In accordance with another aspect of the present invention, the first and second weakening lines have a first rectilinear segment, in proximity to the front panel, moving away respectively from the first and second lateral upper flaps, and an opposite second curvilinear segment, approaching respectively to the first and second lateral upper flaps.

[0030] In accordance with another aspect of the present invention, the first front welding portion and rear welding portion have the same shape and sizes as each other and are configured to define, respectively, a front part and a rear part of an upper flap, or suspension or gripping means, of the packaging.

[0031] The present invention also concerns a method for manufacturing a packaging for a pourable product starting from a preformed element according to the present invention.

[0032] In accordance with one aspect of the present invention, the method comprises an upper sealing step of the packaging which includes folding two first lateral upper flaps of the preformed element onto each other, simultaneously folding two second lateral upper flaps of the preformed element one on the other. At the same time, an upper panel of the preformed element is folded onto the lateral upper flaps, so that a second front welding portion of the upper panel overlaps and essentially matches first and second lateral welding portions of the lateral upper flaps.

[0033] In this way, an upper wall of the packaging is defined. At the same time, by controlled folding of the material of the preformed element along its first and second selective weakening means, a first and a second intentionally deformed portion of a first and second lateral wall of the packaging are formed.

[0034] In accordance with another aspect of the present invention, the method also provides, in the upper sealing step, to overlap and match a first front welding portion of the upper panel with a rear welding portion of

the rear panel, and then to weld them together. In this way, an upper flap, or suspension or gripping means, of the packaging is formed and defined.

DESCRIPTION OF THE DRAWINGS

[0035] These and other aspects, characteristics and advantages of the present invention will become apparent from the following description of some embodiments, given as a non-restrictive example with reference to the attached drawings wherein:

- fig. 1 is a first perspective view of a packaging for a pourable product according to the present invention;
- fig. 1a is an enlarged detail of fig. 1;
- figs. 2-3 are perspective views of alternative embodiments of the packaging for a pourable product according to the present invention;
- fig. 4 is a top view of a preformed element according to the present invention;
- figs. 5-6 are top views of alternative embodiments of the preformed element according to the present invention;
- figs. 7-8 are perspective views of further alternative embodiments of the packaging for a pourable product according to the present invention;
- fig. 9 is a lateral view of the packaging in fig. 1;
- figs. 10a-10c are a schematic representation of a step of a manufacturing sequence for the packaging for a pourable product in fig. 1.

[0036] We must clarify that the phraseology and terminology used in the present description, as well as the figures in the attached drawings as they are described, have the sole function of better illustrating and explaining the present invention, their purpose being to provide a non-limiting example of the invention itself, since the scope of protection is defined by the claims.

[0037] To facilitate comprehension, the same reference numbers have been used, where possible, to identify identical common elements in the drawings. It is understood that elements and characteristics of one embodiment can be conveniently combined or incorporated into other embodiments without further clarifications.

DESCRIPTION OF SOME EMBODIMENTS

[0038] With reference to fig. 1, a packaging 10 for a pourable product according to possible embodiments comprises a plurality of walls that delimit and define a containing body 11 able to contain a pourable product, for example a liquid food product such as fruit juice, milk, wine, tomato puree, water or suchlike, or a granular or powdered food product such as flour, starch, breadcrumbs, sugar, salt or suchlike, or a pourable household product such as a detergent, for personal care or a cosmetic product such as a shampoo or soap, or other pourable products.

[0039] In particular, the packaging 10 comprises a front wall 12, an opposite rear wall 13, a first lateral wall 14 and a second lateral wall 15. The lateral walls 14, 15 are interposed between the front 12 and rear 13 walls on respective opposite sides of the packaging 10. The front wall 12, rear wall 13, first lateral wall 14 and second lateral wall 15 laterally delimit the containing body 11.

[0040] The packaging 10 also comprises a lower wall 16, which delimits the containing body 11 at the bottom.

[0041] In some embodiments, the packaging 10 may comprise a lower portion essentially in the shape of a parallelepiped, in which case the lower wall 16 is perpendicular or essentially perpendicular to the front 12, rear 13 and lateral walls 14, 15.

[0042] According to possible alternative embodiments, not shown in the attached drawings, the lower portion of the packaging 10 can essentially be in the shape of a truncated pyramid, or a truncated cone, or suchlike.

[0043] Furthermore, the lower portion of the packaging 10 can comprise lateral edges, interposed between and connecting the front 12, rear 13 and lateral walls 14, 15, or not comprise lateral edges, comprising a lateral surface without edges such as a cylindrical, conical lateral surface or suchlike.

[0044] In general, the packaging 10 can have any geometric shape suitable to delimit and define the containing body 11.

[0045] The lower wall 16 preferably has a rectangular shape.

[0046] According to possible embodiments, the front 12 and rear 13 walls can have an essentially rectangular shape, and the front wall 12 is shorter than the rear wall 13, in the sense that a longitudinal size of the front wall 12 is smaller than a longitudinal size of the rear wall 13.

[0047] In possible embodiments, the lateral walls 14, 15 can have the shape of rectangular trapezoids having a smaller base coinciding with a respective side of the front wall 12, a larger base coinciding with a respective side of the rear wall 13 and an oblique side at the top, opposite to the lower wall 16.

[0048] According to possible embodiments, the packaging 10 also comprises an upper wall 17, on which opening means 20 can be installed in a known manner, which can comprise for example a threaded cap or a pressure cap, or other opening means preferably, but not necessarily resealable. The upper wall 17 delimits the containing body 11 at the top.

[0049] According to possible embodiments, the upper wall 17 can have an essentially rectangular or square shape and can be in contact on one side with a corner, or upper edge of the front wall 12 and on an opposite side with a corner, or upper edge of the rear wall 13. Consequently, the upper wall 17 is oblique, in the sense that it is inclined both with respect to the lower wall 16 and with respect to the front 12 and rear 13 walls.

[0050] It follows that the packaging 10 is asymmetric, in the sense that it is not symmetrical with respect to a plane P1 perpendicular to the lower wall 16 and passing

through the midpoints of the edges shared between the latter and each lateral wall 14, 15. (fig. 9).

[0051] This conformation allows to create an upper wall 17 having a considerable surface area, thus advantageously offering ample space for placing the opening means 20. This allows both to choose the relatively large opening means 20 and also to be able to place them in an optimal position for pouring the pourable product.

[0052] In some embodiments, the packaging 10 can also comprise, in correspondence with the upper ends of the upper 17 and rear 13 walls, an upper flap 19, obtained by suitably welding together portions of shaped panels to define the upper 17 and rear 13 walls, as explained in more detail below.

[0053] According to possible embodiments described using figs. 1, 7-8, the upper flap 19 has an essentially rectangular shape.

[0054] According to possible alternative embodiments described using figs. 2-3, the packaging 10 comprises, in correspondence with or in replacement of the upper flap 19, suspension means or gripping means 19', 19" configured to suspend the packaging 10 from a support, for example the hook of a display stand, and/or to be gripped like a handle to facilitate carrying by hand the packaging 10.

[0055] For example, in a variant, the suspension or gripping means 19' can have an essentially rectangular shape and comprise a rectangular hole, or rectangular with rounded corners, large enough to allow suspension from a support and/or gripping (fig. 2). Alternatively, the hole can be shaped to facilitate gripping with, for example, three or four fingers.

[0056] For example, in another variant, the suspension or gripping means 19" can have an essentially rectangular shape and comprise a plurality of holes, for example three holes, suitable for inserting fingers to facilitate gripping (fig. 3).

[0057] In possible embodiments, the suspension or gripping means 19', 19" are glued or welded in a known manner in correspondence with the upper flap 19.

[0058] According to possible embodiments described using figs. 2-3, the suspension or gripping means 19', 19" can be supplied in a single piece with the packaging 10, substantially in place of the upper flap 19.

[0059] Furthermore, a first corner, or first lateral edge 21a of the upper wall 17 is provided in correspondence with a corner, or upper edge of the first lateral wall 14 and an opposite second corner, or second lateral edge 21b of the upper wall 17 is provided in correspondence with a corner, or upper edge of the second lateral wall 15. The first and second lateral edges 21a, 21b and the corresponding upper edges of the lateral walls 14, 15 preferably have shapes mating with each other and preferably extend between two common vertexes.

[0060] The first lateral wall 14 comprises, in proximity to the first lateral edge 21a, a first weakening line 122a.

[0061] The first weakening line 122a develops mainly in an inclined direction essentially mating with the first lateral edge 21a. Furthermore, the first weakening line 122a connects the front wall 12 and the rear wall 13.

[0062] The second weakening line 123a develops mainly in an inclined direction essentially mating with the second lateral edge 21b. Furthermore, the second weakening line 123a connects the front wall 12 and the rear wall 13.

[0063] The first and second weakening lines 122a, 123a are configured to selectively define a first 14a and a second 15a intentionally deformed portion on the respective first and second lateral walls 14, 15 to which they belong.

[0064] The intentionally deformed portions 14a, 15a are configured to give the packaging 10 a shape suitable to reduce or minimize the tensions generated in the material that constitutes the packaging 10 by the folds necessary to create an upper seal of the packaging 10, that is to say, to define and form the upper wall 17 and the upper flap 19.

[0065] According to possible embodiments, the first and second intentionally deformed portions 14a, 15a are delimited at the top by the upper edge of the respective lateral walls 14, 15.

[0066] According to possible embodiments, the first and second intentionally deformed portions 14a, 15a are delimited and defined at the bottom, respectively, by a first 22 and a second 23 deformation fold, obtained by folding the respective first and second weakening lines 122a, 123a.

[0067] The first and second deformation folds 22, 23 join the two vertexes shared between the upper wall 17 and, respectively, the first lateral wall 14 or the second lateral wall 15.

[0068] According to possible embodiments, the first and second deformation folds 22, 23 can include at least one curvilinear segment.

[0069] According to possible embodiments described using figs. 1, 1a, 2, 3, 7-8, 10c the first and second deformation folds 22, 23 can have a first rectilinear segment, in proximity to the front wall 12, moving away from the upper wall 17, and a second curvilinear segment, in proximity to the rear wall 13, approaching the upper wall 17.

[0070] The first and second intentionally deformed portions 14a, 15a can be configured to protrude toward the outside of the packaging 10 with respect to the planes defined by the respective lateral walls 14, 15, so as to be inclined both with respect to the upper wall 17 and also with respect to the corresponding lateral walls 14, 15 to which they belong.

[0071] The Applicant has found that the first and second intentionally deformed portions 14a, 15a shaped in this way are particularly effective in reducing internal tensions in the material that constitutes the packaging 10. Consequently, the structure of the packaging 10 is stabilized and the risk of breakages and tears during its shaping is considerably reduced.

[0072] Furthermore, advantageously, the first and second intentionally deformed portions 14a, 15a thus

shaped increase visibility on the shelf.

[0073] The packaging 10 can be made starting from a respective single planar preformed element 100 (also called "blank"), that is, from a flat sheet of relatively rigid and preferably rectangular and waterproof material, suitably pre-cut and creased to form folding lines in it (fig. 4) along which the preformed element 100 is folded to form the packaging 10.

[0074] In preferred embodiments, the preformed element 100 is made with a layer of cardboard coated on both sides with a heat-sealable plastic material, for example polyethylene.

[0075] According to possible embodiments, the material that constitutes the preformed element 100 can also comprise at least one coupled layer of aluminum.

[0076] Advantageously, the plastic material makes the packaging 10, obtained from the preformed element 100, waterproof and therefore suitable to contain a liquid pourable product.

[0077] Furthermore, advantageously, the coating made of heat-sealable plastic material makes it possible to weld together several overlapping portions or flaps of the preformed element 100, preferably from two to four or five, by means of heat or ultrasonic welding. The welds are able to keep the packaging 10 in the correct shape and seal it.

[0078] The preformed element 100 is divided by the folding lines into a plurality of panels configured to define, in the formed packaging 10, the walls of the packaging 10 itself as described above.

[0079] In particular, the preformed element 100 comprises a front panel 112, essentially rectangular, configured to define, in the formed packaging 10, the front wall 12.

[0080] The planar preformed element 100 also provides a first 114 and a second 115 lateral panel, essentially in the shape of a rectangular trapezoid, adjacent to the front panel 112 on its opposite sides and configured to define, in the formed packaging 10, the respective first and second lateral walls 14 and 15. In particular, the lateral panels 114 and 115 have their respective smaller bases coinciding with the two opposite larger sides of the front panel 112.

[0081] The preformed element 100 also comprises a rear panel 113, essentially rectangular, adjacent to the second lateral panel 115 on one of its sides opposite to the front panel 112, in particular having a larger side shared with the larger base of the second lateral panel 115.

[0082] The rear panel 113 is configured to define, in the formed packaging 10, the rear wall 13.

[0083] The planar preformed element 100 also provides, in a known manner, a plurality of lower flaps 116a-e configured to define the lower wall 16, when they are folded and suitably overlapped, or partly overlapped, one with the other.

[0084] In some embodiments, triangular lower flaps 116a are provided adjacent to the first and second lateral panels 114, 115, on the sides of the latter opposite to their oblique sides.

[0085] Furthermore, a first 116b and a second 116c lateral lower flap can be provided on opposite sides of each triangular lower flap 116a.

[0086] A lower front flap 116d, essentially rectangular, can be provided adjacent to the front panel 112 and interposed between the two second lower lateral flaps 116c.

[0087] Furthermore, a rear lower flap 116e, essentially rectangular, can be provided adjacent to the rear panel 113 and to the first lateral lower flap 116b closest to the latter.

[0088] The planar preformed element 100 also comprises, in correspondence with one of its ends opposite to the rear panel 113, a rear longitudinal flap 105, essentially rectangular, adjacent, on a side opposite to the front panel 112, to the first lateral panel 114 and to the first lower lateral flap 116b closest to the latter.

[0089] The rear panel 113 is configured to be partly overlapped with the entire rear longitudinal flap 105, in order to be able to perform a longitudinal weld as described in detail below.

[0090] The preformed element 100 also comprises an upper panel 117, essentially rectangular or square in shape, configured to define, in the formed packaging 10, the upper wall 17.

[0091] The upper panel 117 is adjacent to the front panel 112 in correspondence with one of its sides opposite to the lower front flap 116d.

[0092] According to possible embodiments, an opening portion 120 suitable for installing the opening means 20 can be provided in the upper panel 117.

[0093] For example, the opening portion 120 can be a hole with a shape mating with the shape of the opening means 20, or a perforable or removable portion, for example made of aluminized material. Furthermore, the perimeter of the opening portion 120 could be pre-cut, that is, weakened by means of folds, holes or partial cuts to facilitate a subsequent actual cut.

[0094] The preformed element 100 also provides two first 118 and two second 119 lateral upper flaps on opposite sides of the upper panel 117.

[0095] In particular, the two first lateral upper flaps 118 have an essentially triangular shape and are interposed between the upper panel 117 and the first lateral panel 114.

[0096] The two first lateral upper flaps 118 are contiguous to each other, in particular they have a shared side.

[0097] The two first lateral upper flaps 118 are shaped to be folded over each other to allow the formation of the upper wall 17 and the upper flap 19, as explained in detail below.

[0098] Furthermore, the two second lateral upper flaps 119 have an essentially triangular shape and are interposed between the upper panel 117 and the second lateral panel 115.

[0099] The two second lateral upper flaps 119 are con-

tiguous to each other, in particular they have a shared side.

[0100] The two second lateral upper flaps 119 are shaped to be folded over each other to allow the formation of the upper wall 17 and the upper flap 19, as explained in detail below.

[0101] The upper panel 117 comprises, in correspondence with one of its ends opposite to the front panel 112, a first 102 and a second 104 front welding portion, essentially rectangular, able to define, respectively, a front part of the upper flap 19 and an upper part of the upper wall 17.

[0102] Furthermore, the rear panel 113 comprises, in correspondence with one of its ends opposite to the lower rear flap 116e, a rear welding portion 103, essentially rectangular, able to define a rear part of the upper flap 19.

[0103] Preferably, the first front welding portion 102 and the rear welding portion 103 have the same shape and the same sizes.

[0104] Possible alternative embodiments, an example of which is described using fig. 5, provide a preformed element 100' which comprises a first front welding portion 102' and a rear welding portion 103' configured to define and form the suspension or gripping means 19'. In this case, the first front welding portion 102' and the rear welding portion 103' each comprise a rectangular hole, or rectangular with rounded corners, or shaped to allow for example a grip with three or four fingers (fig. 5).

[0105] Possible alternative embodiments, an example of which is described using fig. 6, provide a preformed element 100" which comprises a first front welding portion 102" and a rear welding portion 103" configured to define and form the suspension or gripping means 19". In this case, the first front welding portion 102" and the rear welding portion 103" each comprise a plurality of holes suitable for inserting the fingers to facilitate gripping, for example three (fig. 6) or four holes.

[0106] As described using figs. 4-6, the first lateral upper flaps 118 comprise respective first lateral welding portions 118a, configured to overlap and allow the formation of the upper wall 17, as described in detail below.

[0107] The second lateral upper flaps 119 comprise respective second lateral welding portions 119a, configured to overlap and allow the formation of the upper wall 17, as described in detail below.

[0108] In the preformed elements 100, 100' and 100", first 122 and second 123 selective weakening means are also provided, configured to ensure that the material of each lateral panel 114, 115, due to the tensions caused by the creation of the upper sealing of the packaging 10, deforms in a controlled manner.

[0109] The first selective weakening means 122 develop mainly in an inclined direction essentially mating with a folding line which delimits at the bottom the first lateral upper flap 118 adjacent to the first lateral panel 114 and connects the front panel 112 and the rear longitudinal flap 105.

[0110] The second selective weakening means 123 develop mainly in an inclined direction essentially mating with a folding line which delimits at the bottom the second lateral upper flap 119 adjacent to the second lateral panel 115 and connect the front panel 112 and the rear panel 113.

[0111] According to possible embodiments, the first and second selective weakening means 122, 123 can be a first 122a and a second 123a weakening line, each disposed in the first and second lateral panels 114 and 115 respectively, near to the respective oblique side.

[0112] In some embodiments, the first and second weakening lines 122a, 123a can extend between the two vertexes shared between the respective lateral panels 114, 115 to which they belong and the adjacent first or second lateral upper flap 118, 119.

[0113] Furthermore, the first and second weakening lines 122a, 123a can have at least one curvilinear segment.

[0114] According to possible embodiments described using figs. 4-6, 10a-b, the first and second weakening lines 122a, 123a can have a first rectilinear segment, in proximity to the front panel 112, moving away respectively from the first and second lateral upper flaps 118, 119, and an opposite second curvilinear segment, respectively in proximity to the rear longitudinal flap 105 and the rear panel 113, approaching the first and second lateral upper flaps 118, 119 respectively.

[0115] Embodiments of the method for manufacturing a packaging 10 comprise the following steps.

[0116] Initially, a preparation step provides to make available a flat sheet of relatively rigid and preferably waterproof material.

[0117] According to some embodiments, the flat sheet made available is a multilayer material formed by a layer of cardboard coated on both sides by a heat-sealable plastic material.

[0118] In possible embodiments, the multilayer material also comprises at least one coupled aluminum layer.

[0119] A subsequent shaping and creasing step provides to shape and crease the flat sheet to obtain the preformed element 100, 100' or 100" described above using figs. 4-6.

[0120] Subsequently, a longitudinal welding step provides to overlap onto the rear longitudinal flap 105 an edge portion of the preformed element 100, 100' or 100" adjacent to the larger free side of the rear panel 113 and to the smaller free side of the lower rear flap 116e and then to weld the rear longitudinal flap 105 to the edge portion, with heat or ultrasound, thus obtaining a tubular preformed element, in which the rear panel 113 and the first lateral panel 114 have a shared side.

[0121] Subsequently, a step of forming the lower wall 16 provides to fold, overlap and weld the lower flaps 116a-e in a known manner to form the lower wall 16.

[0122] For example, the forming step of the lower wall 16 can provide to fold the first lower lateral flaps 116b and the lower rear flap 116e onto the lower triangular flap 116a, and then the second lower lateral flaps 116c and

the lower front flap 116d onto the lower rear flap 116e, to define respective overlapping portions configured to be welded together by heat or ultrasound.

[0123] The forming step of the lower wall 16 can take place, for example, by folding and forming the panels of the tubular preformed element around a forming mandrel.

[0124] During the forming step of the lower wall 16, simultaneously with the production of the lower wall 16, the front 12, rear 13 and lateral walls 14, 15 are also defined or partly defined (figs. 10a-b). Consequently, a containing body 11 is formed that is open at the top.

[0125] According to possible embodiments, following the forming step of the lower wall 16, a step of filling the containing body 11 with a pourable product can be provided, or a step of installing the opening means 20 in correspondence with the opening portion 120, or both steps in the desired order.

[0126] According to possible alternative embodiments, the filling step and/or the installation step of the opening means 20 can instead take place following an upper sealing step of the packaging 10.

[0127] The upper sealing step of the packaging 10 comprises a sub-step of forming the upper wall 17 which provides to fold the two first lateral upper flaps 118 onto each other, simultaneously folding the two second lateral upper flaps 119 onto each other. At the same time, the upper panel 117 is folded onto the lateral upper flaps 118, 119, so that the second front welding portion 104 overlaps and essentially matches with the first and second lateral welding portions 118a, 119a, thus defining the upper wall 17 (figs. 10a-b).

[0128] At the same time, the first front welding portion 102 overlaps with and matches the rear welding portion 103, thus defining the upper flap 19 (fig. 10c).

[0129] The upper sealing step therefore provides, in a sealing sub-step, to weld the overlapping portions, for example by heat or ultrasound, in correspondence with the front welding portions 102, 104.

[0130] According to possible alternative embodiments, the packaging 10 can be made starting from the preformed element 100' or 100" (figs. 5-6), comprising a first front welding portion 102', 102" and a rear welding portion 103', 103" which overlap, match and are welded together to define and form the suspension or gripping means 19', 19" (figs. 2-3).

[0131] Advantageously, the first lateral welding portions 118a are configured so as not to overlap with the second lateral welding portions 119a. In this way, we avoid having to weld together an excessive number of overlapping layers of material.

[0132] Advantageously, the welding in correspondence with the first front welding portion 102, overlapping with the rear welding portion 103, guarantees a complete and reliable seal of the packaging 10, even when there is no overlap between the first and second lateral welding portions 118a, 119a. This advantage is also present, equivalently, in the variants in which the first front welding portion 102', 102" and the rear welding portion 103', 103" define and form the suspension or gripping means 19', 19" (figs. 2-3, 5-6).

[0133] Furthermore, during the upper sealing step, tensions are generated in the material of the tubular preformed element, due to the folding operations described above. Thanks to the presence of the first and second selective weakening means 122, 123, these tensions do not cause random deformations of the material, which could lead to low functioning and/or un-esthetic shapes of the packaging 10 or even to tears or breakages of the material itself.

[0134] On the contrary, the tensions cause the controlled folding of the material along the first and second selective weakening means 122, 123, in particular along the first and second weakening lines 122a, 123a, thus forming the first and second deformation folds 22, 23 respectively. At the same time, the first and second lateral walls 14, 15 are slightly inclined outward from opposite sides of the respective first and second deformation folds 22, 23, in particular forming the first and second intentionally deformed portions 14a, 15a (figs. 10a-10c).

[0135] Applicant has found that the selective weakening means 122, 123 facilitate the execution of the upper sealing step, reduce the tensions generated in this step in the material of the packaging 10 and therefore reduce the risk of breakages and tears.

[0136] In some embodiments, the upper sealing step can possibly be followed by further production steps of the packaging 10. For example, if not yet performed, a step of installing the opening means 20 in correspondence with the opening portion 120 can be provided.

[0137] It is clear that modifications and/or additions of parts can be made to the packaging 10, to the planar preformed element 100 and to the method described heretofore, without thereby departing from the scope of the present invention as defined by the claims.

[0138] For example, the packaging 10 could comprise one or more curved corners or edges 25, as described using fig. 7 by way of a non-restrictive example.

[0139] For example, the packaging 10 could comprise one or more smaller edge walls 24, as described using fig. 8 by way of a non- restrictive example. A smaller edge wall 24 can be interposed between two adjacent walls among those described above, for example, but not limited to, between the front wall 12 and one of either the first or second lateral walls 14, 15.

[0140] The smaller edge wall 24 can be configured as a sort of beveled edge, in the sense that it is located in place of a "sharp" edge, that is, no more than 90°, between two adjacent walls, and the two connection edges between the smaller edge wall 24 and each of the two adjacent walls are less pronounced or obtuse, that is, they form angles greater than 90°.

[0141] It is also clear that, although the present invention has been described with reference to some specific examples, a person of skill in the art will be able to achieve other equivalent forms of packaging for a pourable product, having the characteristics as set forth in the claims

and hence all coming within the field of protection defined thereby.

[0142] In the following claims, the sole purpose of the references in brackets is to facilitate their reading and they must not be considered as restrictive factors with regard to the field of protection defined by the claims.

Claims

1. Packaging (10) for a pourable product, comprising a front wall (12), an opposite rear wall (13), a first (14) and a second (15) lateral wall interposed between them, a lower wall (16) and an opposite upper wall (17) in contact on its opposite sides with respective upper edges of said front (12) and rear (13) wall and inclined both with respect to the latter and also with respect to said lower wall (16), the packaging (10) being asymmetrical with respect to a plane (P1) perpendicular to said lower wall (16) and passing through the midpoints of the edges shared by the latter and each of said lateral walls (14, 15), **characterized in that** said first and second lateral wall (14, 15) respectively comprise, in proximity to corresponding opposite first (21a) and second (21b) lateral edge of said upper wall (17), a first (122a) and a second (123a) weakening line which develop mainly in an inclined direction essentially mating with said lateral edges (21a, 21b) connecting said front (12) and rear (13) wall and which are configured to selectively define a first (14a) and a second (15a) intentionally deformed portion.

2. Packaging (10) as in claim 1, **characterized in that** said first and second intentionally deformed portion (14a, 15a) are delimited at the top by the upper edge of the respective lateral walls (14, 15) and are delimited and defined at the bottom, respectively, by a first (22) and a second (23) deformation fold, respectively joining two vertexes shared by said upper wall (17) and said first lateral wall (14) or said second lateral wall (15) and obtained by folding said weakening lines (122a, 123a).

3. Packaging (10) as in claim 2, **characterized in that** said first and second deformation fold (22, 23) have a first rectilinear segment, in proximity to said front wall (12), moving away from said upper wall (17) and a second curvilinear segment, in proximity to said rear wall (13), approaching said upper wall (17).

4. Packaging (10) as in any claim hereinbefore, **characterized in that** said first and second intentionally deformed portion (14a, 15a) are configured to protrude outward from said packaging (10) with respect to the planes defined by the respective lateral walls (14, 15).

5. Packaging (10) as in any claim hereinbefore, **characterized in that** it also comprises, in correspondence with the upper ends of said upper (17) and rear (13) wall, an upper flap (19) with an essentially rectangular shape or, alternatively or additionally, suspension or gripping means (19', 19") configured to suspend the packaging (10) from a support and/or to be gripped as a handle.

6. Packaging (10) as in any claim hereinbefore, **characterized in that** it comprises one or more curved borders or edges (25).

7. Packaging (10) as in any claim hereinbefore, **characterized in that** it comprises one or more smaller edge walls (24), interposed between two adjacent walls of said packaging (10) and forming with each of said adjacent walls angles larger than 90°.

8. Planar preformed element (100, 100', 100") for forming a packaging (10) for a pourable product, **characterized in that** it comprises a front panel (112); a first (114) and a second (115) lateral panel, adjacent to said front panel (112) on opposite sides thereof; a rear panel (113), adjacent to said second lateral panel (115) on a side thereof opposite to said front panel (112) and provided with a rear welding portion (103, 103', 103"); an upper panel (117), adjacent to said front panel (112) and provided with a first (102, 102', 102") and a second (104) front welding portion; two first (118) and two second (119) lateral upper flaps, provided with respective first (118a) and second (119a) lateral welding portions and interposed between said upper panel (117) and, respectively, said first lateral panel (114) or said second lateral panel (115); a rear longitudinal flap (105), adjacent to said first lateral panel (114) on a side thereof opposite to said front panel (112); and first (122) and second (123) selective weakening means, which develop mainly in an inclined direction essentially mating with a folding line which delimits at the bottom the respective first (118) or second (119) lateral upper flap adjacent to the corresponding lateral panel (114, 115), connecting said front panel (112) with, respectively, said rear longitudinal flap (105) or said rear panel (113).

9. Preformed element (100, 100', 100") as in claim 8, **characterized in that** said first and second selective weakening means (122, 123) are a first (122a) and a second (123a) weakening line disposed respectively in said first and second lateral panel (114, 115) and extending between two vertexes shared by the respective lateral panel (114, 115) and the adjacent first or second lateral upper flap (118, 119).

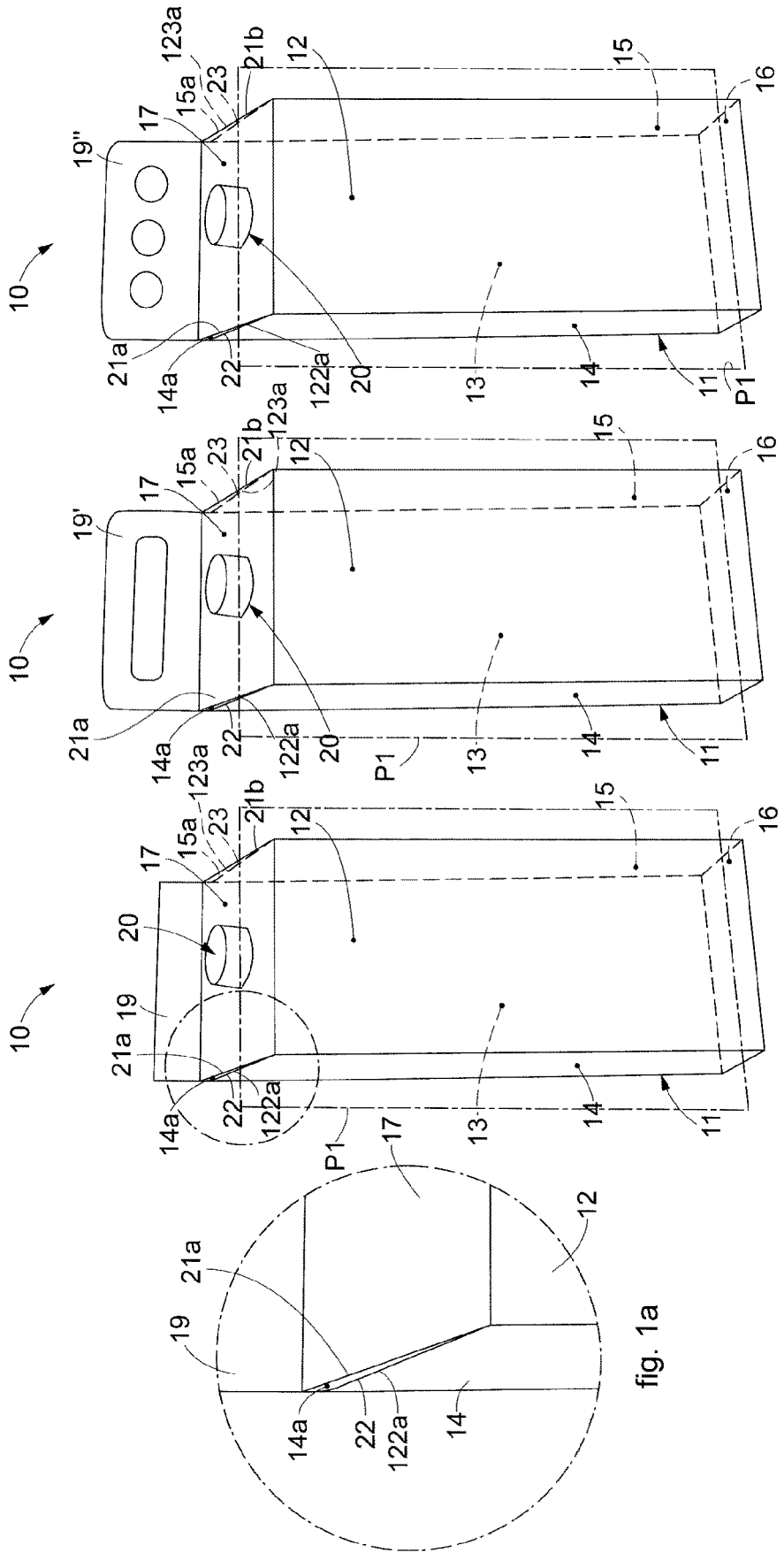
10. Preformed element (100, 100', 100") as in claim 9, **characterized in that** said first and second weak-

ening line (122a, 123a) have a first rectilinear segment, in proximity to said front panel (112), moving away from the first and second lateral upper flaps (118, 119), respectively, and an opposite second curvilinear segment, approaching the first and second lateral upper flaps (118, 119), respectively.

11. Preformed element (100, 100', 100") as in any claim from 8 to 10, **characterized in that** said first front welding portion (102, 102', 102") and rear welding portion (103, 103', 103") have the same shape and the same sizes as each other and are configured to respectively define a front and a rear part of an upper flap (19) of said packaging (10), or of means (19', 19") for suspending or gripping said packaging (10).

12. Method for manufacturing a packaging (10) for a pourable product, **characterized in that** said packaging (10) is obtained from a preformed element (100) as in any claim from 8 to 11, said method comprising a step of upper sealing of said packaging (10) which includes folding two first lateral upper flaps (118) of said preformed element (100) on each other, simultaneously folding two second lateral upper flaps (119) of said preformed element (100) on each other, simultaneously folding an upper panel (117) of said preformed element (100) on said lateral upper flaps (118, 119), so that a second front welding portion (104) of said upper panel (117) overlaps with and essentially matches first and second lateral welding portions (118a, 119a) of said lateral upper flaps (118, 119), thus defining an upper wall (17) of said packaging (10), at the same time there being formed, through the controlled folding of the material of said preformed element (100) along its first (122) and second (123) selective weakening means, a first (14a) and a second (15a) intentionally deformed portion of a first (14) and second (15) lateral wall of said packaging (10).

13. Method as in claim 12, **characterized in that** said method also comprises, in said upper sealing step, overlapping and matching a first front welding portion (102, 102', 102") of said upper panel (117) with a rear welding portion (103, 103', 103") of said rear panel (113); and welding them together, thus forming and defining an upper flap (19) of said packaging (10) or means (19', 19") for suspending or gripping said packaging (10).


10
19''
123a
21b
12
15
16
15a
23
17
21a
14a
22
122a
20
13
14
11
P1
fig. 3
10
19'
123a
21b
12
15
16
15a
23
17
21a
14a
22
122a
20
P1
13
14
11
fig. 2
10
19
20
123a
21b
12
15
16
15a
23
17
21a
14a
22
122a
P1
13
14
11
fig. 1
21a
19
12
14a
22
122a
14
fig. 1a

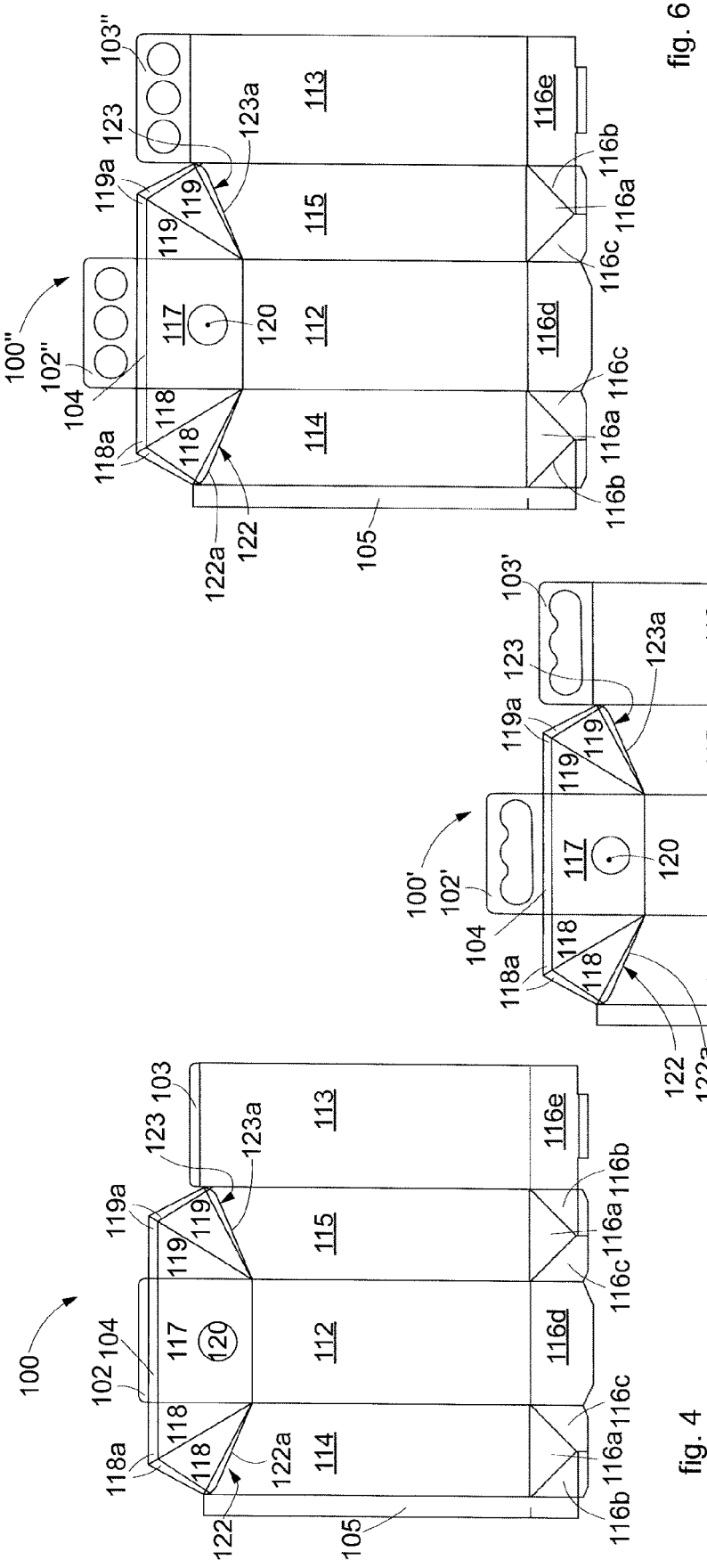


fig. 4

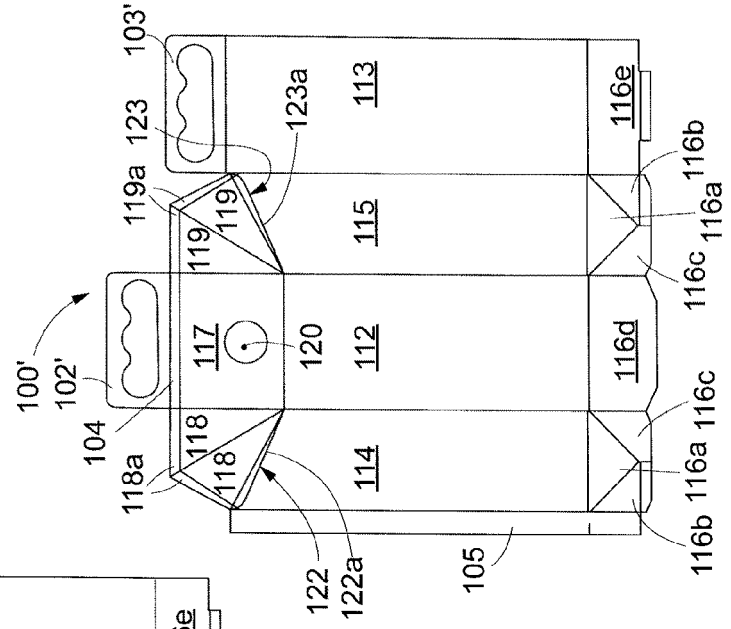


fig. 5

fig. 6

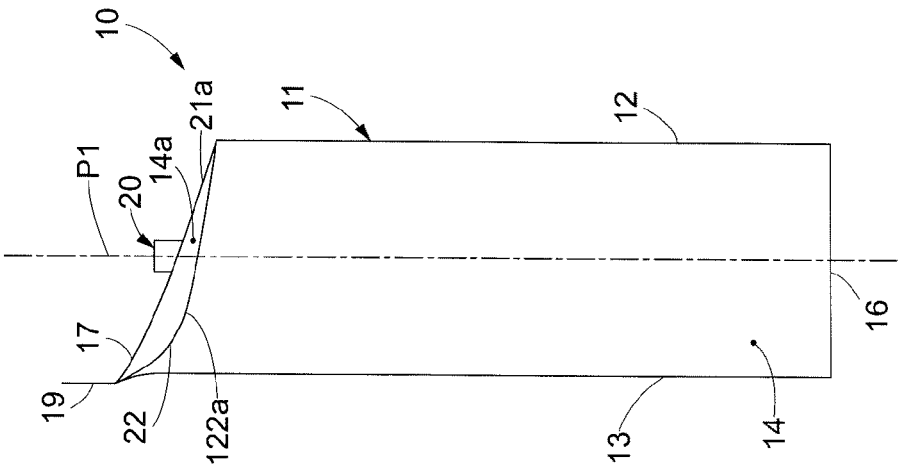


fig. 9

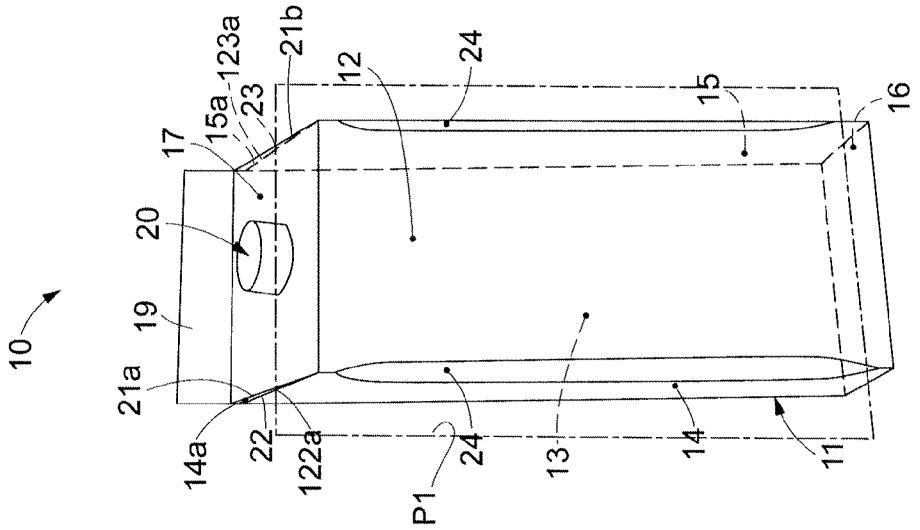


fig. 8

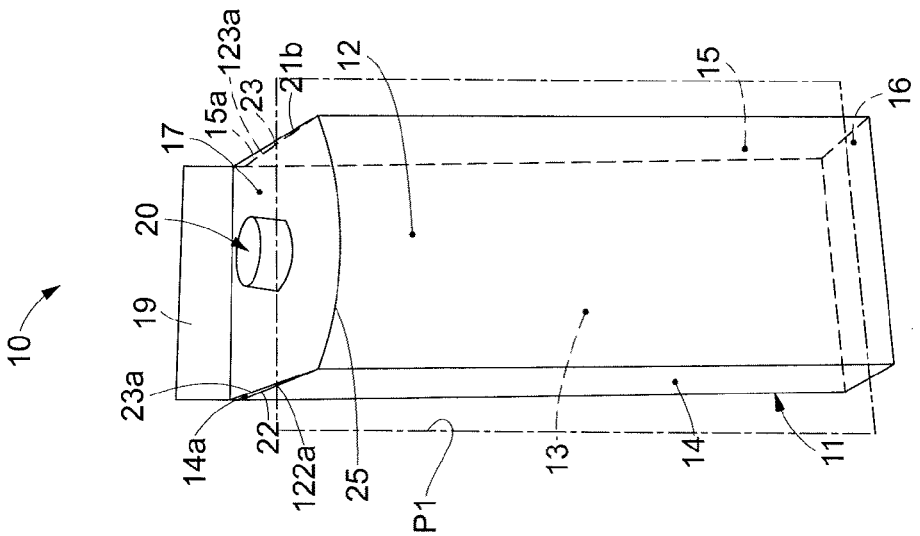


fig. 7

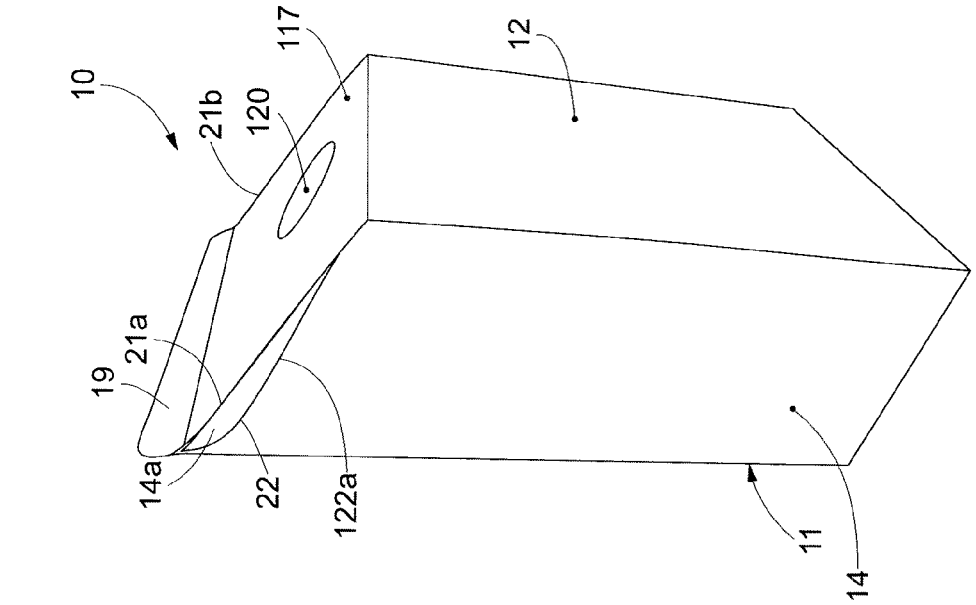


fig. 10c

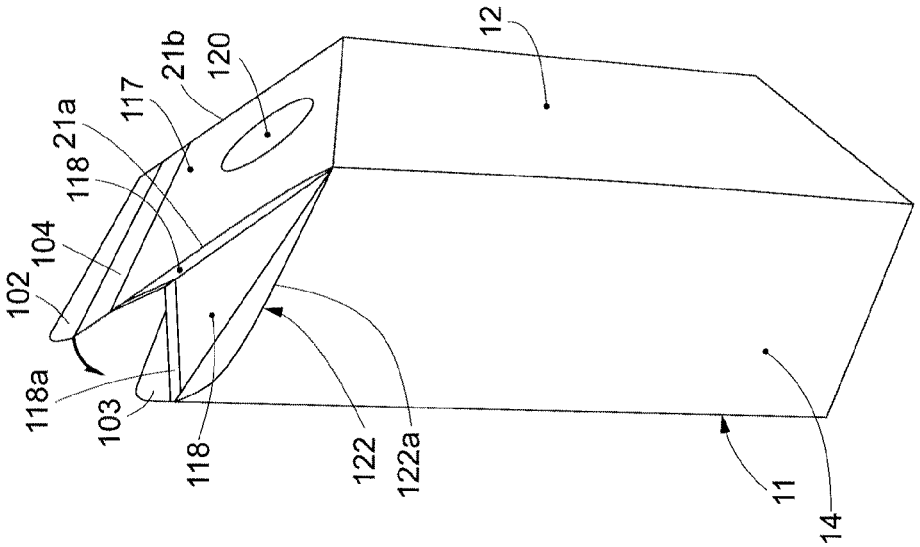


fig. 10b

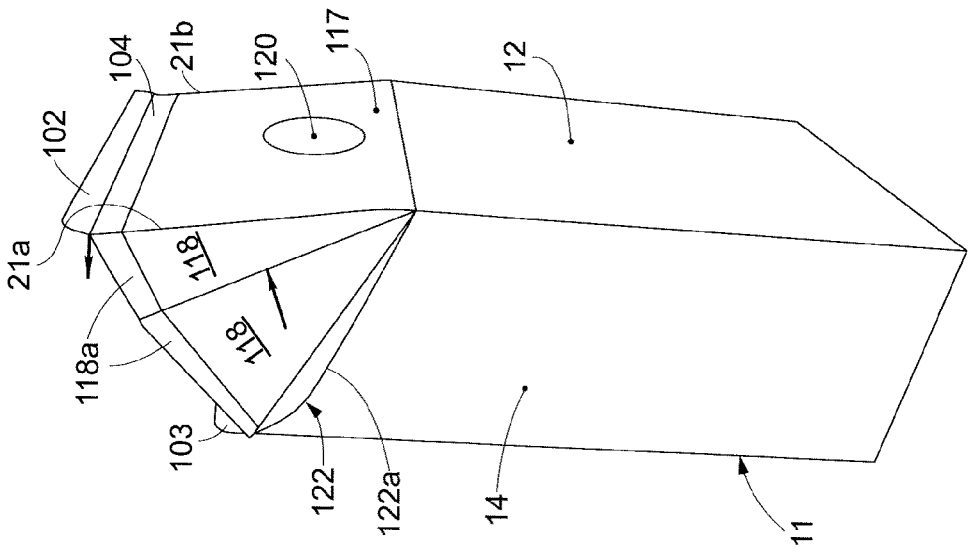


fig. 10a

Europäisches Patentamt
European Patent Office
Office européen des brevets

EUROPEAN SEARCH REPORT

Application Number
EP 24 18 1487

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	US 6 182 887 B1 (LJUNSTROEM TOMMY [SE] ET AL) 6 February 2001 (2001-02-06) * the whole document *	1-13	INV. B65D5/06 B65D5/42
A	US 2023/015058 A1 (KVAM GERD UNNI [NO] ET AL) 19 January 2023 (2023-01-19) * the whole document *	1-13	
A	DE 42 10 875 A1 (KORTE HEINRICH [DE]) 7 October 1993 (1993-10-07) * the whole document *	1-13	
A	FR 802 759 A (LIGHTWAY PATENTS LTD) 15 September 1936 (1936-09-15) * the whole document *	1-13	
A	US 2 138 718 A (WILLIAM WHEELER JOHN) 29 November 1938 (1938-11-29) * the whole document *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC) B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	28 October 2024	Pernice, Ciro

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
D : document cited in the application
L : document cited for other reasons

& : member of the same patent family, corresponding document

EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 24 18 1487

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

28-10-2024

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 6182887 B1	06-02-2001	AU 4456900 A	02-11-2000
		US 6182887 B1	06-02-2001
		WO 0063081 A2	26-10-2000
US 2023015058 A1	19-01-2023	BR 112022013630 A2	20-09-2022
		CN 115298097 A	04-11-2022
		EP 4087786 A1	16-11-2022
		JP 2023509791 A	09-03-2023
		KR 20230031184 A	07-03-2023
		US 2023015058 A1	19-01-2023
		WO 2021140192 A1	15-07-2021
DE 4210875 A1	07-10-1993	NONE	
FR 802759 A	15-09-1936	NONE	
US 2138718 A	29-11-1938	NONE	

EPO FORM P0459

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

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- US 6182887 B **[0006]**