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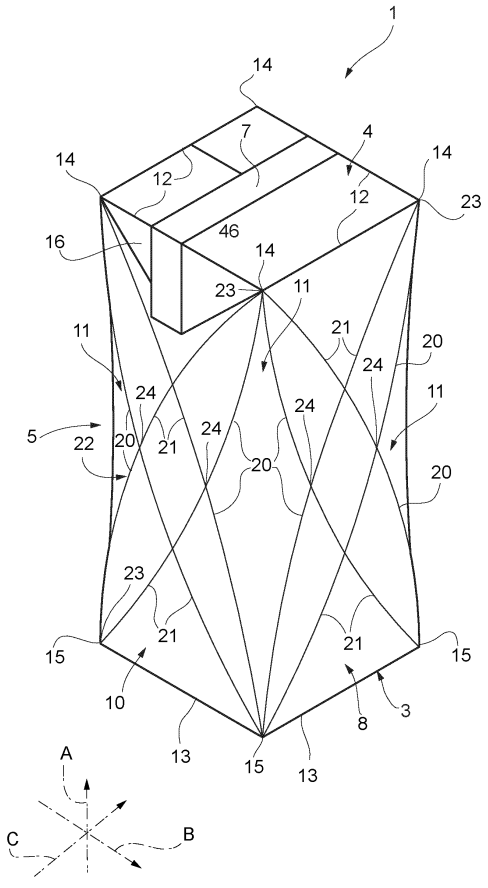
(54) PACKAGE FILLED WITH A POURABLE PRODUCT AND METHOD FOR FORMING A PACKAGE

(57) There is described a package (1, 1', 1", 1‴, 1⁗, 1⁗⁗) filled with a pourable product. The package (1, 1', 1", 1‴, 1⁗, 1⁗⁗) comprises a bottom wall (3) and a top wall (4) spaced apart from one another along a longitudinal axis (A) of the package (1, 1', 1", 1‴, 1⁗, 1⁗⁗) and a side wall (5) interposed between the top wall (3) and the bottom wall (4). The side wall (5) comprises a first group of first weakening lines (20) and a second group of second weakening lines (21). The side wall (5) is folded along the first weakening lines (20) and the side wall (5) is not folded along the second weakening lines (21) .

FIG. 1



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Description

TECHNICAL FIELD

[0001] The present invention relates to a package filled with a pourable product, in particular a pourable food product.

[0002] Additionally, the present invention also relates to a method for forming a package.

BACKGROUND ART

[0003] As is known, many liquid or pourable food products, such as fruit juice, UHT (ultra-high-temperature treated) milk, wine, tomato sauce, etc., are sold in packages made of sterilized packaging material.

[0004] A typical example is the parallelepiped-shaped package for liquid or pourable food products known as Tetra Brik Aseptic (registered trademark), which is made by sealing and folding a laminated packaging blank. The packaging blank has a multilayer structure comprising a fibrous base layer, e.g. of paper or cardboard, covered on both sides with layers of heat-seal plastic material, e.g. polyethylene. In the case of aseptic packages for long-storage products, such as UHT milk, the packaging blank also comprises a layer of oxygen-barrier material (an oxygen-barrier layer), e.g. an aluminum foil, which is superimposed on a layer of heat-seal plastic material, and is in turn covered with another layer of heat-seal plastic material forming the inner face of the package eventually contacting the food product.

[0005] Packages of this sort are normally produced on fully automatic packaging apparatuses, which form the packages from respective packaging blanks. These packaging blanks can be provided in the form of single packaging blanks or in the form of a web, which is formed from a plurality of successively arranged packaging blanks.

[0006] In the case of the packaging apparatus being designed to form the packages from a web, the packaging apparatus advances and sterilizes the web, which is then formed into a tube and filled with the pourable product before the tube is formed into individual sealed packages.

[0007] In order to facilitate the formation and for defining the shape of the packages, the packaging blanks are provided with a plurality of crease lines.

[0008] It is known to produce packages having a bottom wall and a top wall being spaced apart from one another along a longitudinal axis of the packages and a side wall interposed between the top wall and the bottom wall. One variant comes along with the top wall being inclined with respect to the bottom wall; such packages are known as packages provided with a slanted top wall. In another variant the top wall and the bottom wall are parallel to one another.

[0009] The crease lines may define the desired specific shapes of the packages. A typical package has a side wall that comprises main panels, for example a front panel, a back panel opposite to the front panel and lateral panels interposed between the front panel and the back panel. The side wall may also comprise corner panels.

[0010] When a user grips the package, the user typically is in contact with one or more corner panels of the side wall and with one or more main panels of the side wall.

[0011] Even though the known packages provide for excellent results, a desire is felt in the sector to further improve the known packages.

DISCLOSURE OF INVENTION

[0012] It is an object of the present invention to provide an improved package.

[0013] It is a further object of the present invention to provide an improved method for forming a package.

[0014] According to the present invention, there is provided a package and a method for forming a package according to the respective independent claims.

[0015] Preferred non-limiting embodiments of the package are claimed in the respective dependent claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] Five non-limiting embodiments of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a perspective view of a package filled with a pourable product according to a first embodiment of the present invention;

Figure 2 is a plan view of a packaging blank used to form the package of Figure 1;

Figure 3 is a front view of the package of Figure 1;

Figure 4 is a back view of the package of Figure 1;

Figure 5 is a perspective view of a package filled with a pourable product according to a second embodiment of the present invention;

Figure 6 is a perspective view of a package filled with a pourable product according to a third embodiment of the present invention;

Figure 7 is a plan view of a packaging blank used to form the package of Figure 6;

Figure 8 is a perspective view of a package filled with a pourable product according to a fourth embodiment of the present invention;

Figure 9 is a perspective view of a package filled with a pourable product according to a fifth embodiment of the present invention;

Figure 10 is a perspective view of a package filled with a pourable product according to a sixth embodiment of the present invention; and

Figure 11 is a plan view of a packaging blank used to form the package of Figure 10.

BEST MODES FOR CARRYING OUT THE INVENTION

[0017] Number 1 in Figure 1 indicates a package filled with a pourable product, preferentially a pourable food product, such as pasteurized milk, milk, milk-products, drinking yoghurt, yoghurt-drinks, beverages, fruit juice, wine, tomato sauce, salt, sugar, etc.

[0018] Preferentially, package 1 may be formed from a packaging blank 2 as e.g. shown in Figure 2.

[0019] Preferentially, each package 1 is formed from one respective packaging blank 2 by means of an automatic packaging machine.

[0020] The automatic packaging machine may be configured to form packages 1 from the respective packaging blanks 2 and to fill packages 1 with the pourable product.

[0021] Preferentially, packaging blanks 2 may have a multilayer structure.

[0022] In more detail, each packaging blank 2 may comprise at least a layer of fibrous material, such as e.g. a paper or cardboard layer, and at least two layers of heat-seal plastic material, e.g. polyethylene, interposing the layer of fibrous material in between one another.

[0023] One of these two layers of heat-seal plastic material may define an inner face of the respective package 1 formed from the respective packaging blank 2 and eventually contacting the pourable product.

[0024] Preferably but not necessarily, each packaging blank 2 may also comprise a layer of gas- and light-barrier material, e.g. aluminum foil or ethylene vinyl alcohol (EVOH) film, in particular being arranged between one of the layers of the heat-seal plastic material and the layer of fibrous material. Preferentially but not necessarily, packaging blank 2 may also comprise a further layer of heat-seal plastic material being interposed between the layer of gas- and light-barrier material and the layer of fibrous material.

[0025] According to some preferred non-limiting embodiments, packaging blanks 2 may be provided in the form of a web.

[0026] In more detail, the web may be formed from a plurality of successively arranged packaging blanks 2.

[0027] In other words, the successively arranged packaging blanks 2 define a plurality of repeat units of the web. In particular, each repeat unit (i.e. the respective packaging blank 2) forms the precursor of one respective package 1.

[0028] Preferentially, the packaging machine may be configured to produce packages 1 from the web such that each package 1 results from one respective packaging blank 2.

[0029] In particular, each packaging blank 2 may comprise a desired pattern/decoration.

[0030] With particular reference to Figure 1, package 1 may extend along a longitudinal axis A, preferentially also along a first transversal axis B perpendicular to longitudinal axis A and a second transversal axis C perpendicular to longitudinal axis A and first transversal axis B.

[0031] Preferentially, an extension of package 1 along longitudinal axis A may be larger than a respective extensions of package 1 along first transversal axis B and second transversal axis C.

[0032] In more detail and with reference to Figures 1, 3 and 4, package 1 may comprise a bottom wall 3 and a top wall 4 spaced apart from one another along longitudinal axis A. Additionally, package 1 comprises a side wall 5 interposed between (and connected to) bottom wall 3 and top wall 4.

[0033] More specifically, bottom wall 3 may be defined as the wall of package 1 that has a substantially planar shape and that is substantially perpendicular to longitudinal axis A. According to some possible non-limiting embodiments, bottom wall 3 may be configured to be placed on a support surface, such as a support surface of a shelf, a fridge, a table, a working plane or the like.

[0034] With package 1 being placed on the support surface (and in its nominal position, i.e. when being used by a user in an intended manner), bottom wall 3 is in contact with the support surface and top wall 4 is distanced from the support surface.

[0035] Additionally, side wall 5 may be the portion of package 1 that is gripped by a user during an outpouring action of the pourable product from package 1.

[0036] Moreover, top wall 4 may be configured to be manipulated such to allow for the outpouring of the pourable product. For example, top wall 4 may be manipulated so as to obtain a pouring opening.

[0037] According to some possible embodiments and as shown in Figure 1, top wall 4 may be parallel to bottom wall 3.

[0038] In further detail, package 1 may comprise a longitudinal seam portion 6, e.g. resulting from forming packages 1 from a tube filled with the pourable product, the tube presenting a longitudinal seal. Preferentially, longitudinal seam portion 6 may be substantially parallel to longitudinal axis A.

[0039] Additionally, each package 1 may comprise a first transversal seal portion and a second transversal seal portion 7, preferentially being transversal to longitudinal axis A. Preferentially, first transversal seal portion may be comprised by and/or associated to bottom wall 3 and second transversal seal portion 7 may be comprised by and/or associated to top wall 4.

[0040] In further detail, side wall 5 may comprise a plurality of main panels, more specifically a front panel 8, a back panel 9 opposite to front panel 8 and a plurality of, in the example shown two, lateral panels 10, each one interposed between back panel 9 and front panel 8.

[0041] Moreover, side wall 5 may also comprise a plurality of corner panels 11, each one being interposed between one respective main panel. For example, each corner panel 11 may be interposed between one respective lateral panel 10 and one of front panel 8 and back panel 9.

[0042] Additionally, each main panel of side wall 5 may be interposed between two respective corner panels 11.

[0043] During an outpouring action, a hand of a user (at least when considering the intended use of package 1) may contact at least partially back panel 9, lateral panels 10 and one or more corner panels 11.

[0044] Preferentially, back panel 9 may comprise longitudinal seam portion 6.

[0045] Moreover, top wall 4 may comprise a plurality of top edges 12 and bottom wall 3 may comprise a plurality of bottom edges 13.

[0046] In further detail, each one of front panel 8, back panel 9 and lateral panels 10 may extend from one respective top edge 12 to one respective bottom edge 13.

[0047] Additionally, top wall 4 and bottom wall 3 may comprise a plurality of, respectively, top intersection edges 14 and bottom intersection edge 15. At each top intersection edge 14 two respective top edges 12 intersect and/or contact one another and at each bottom intersection edge 15 two respective bottom edges 12 intersect and/or contact one another.

[0048] Moreover, each corner panel 11 may extend between one top intersection edge 14 and one bottom intersection edge 15.

[0049] Additionally, package 1 may comprise flaps 16 attached to and/or extending from top wall 4.

[0050] With particular reference to Figures 1, 3 and 4, side wall 5 comprises a plurality of weakening lines 20 and a plurality of weakening lines 21, weakening lines 20 defining a first group and weakening lines 21 defining a second group.

[0051] More specifically, while side wall 5 is folded along weakening lines 20 of the first group, side wall 5 is not folded along weakening lines 21 of the second group.

[0052] It should be noted that in the context of the present application, side wall 5 is not folded and has not undergone any step of folding along weakening lines 21 prior, during and after the formation of package 1.

[0053] While weakening lines 20 may have a function in defining the overall shape of package 1, weakening lines 21 may allow to improve the gripping of package 1.

[0054] Additionally, weakening lines 21 may allow to improve the tactile experience of a user when gripping package 1.

[0055] Weakening lines 20 and weakening lines 21 may be characterized by a material displacement, i.e. mechanical (permanent) deformation, of the multilayer packaging material, e.g. obtained during an embossing of the multilayer packaging material for defining weakening lines 20 and weakening lines 21.

[0056] According to some possible non-limiting embodiments, weakening lines 21 may protrude from side wall 5 towards the outside of package 1 or may protrude from side wall 5 towards the inside of package 1.

[0057] In some possible embodiments all weakening lines 21 may protrude from side wall 5 towards the outside of package 1 or all weakening lines 21 may protrude from side wall 5 towards the inside of package 1 or some weakening lines 21 may protrude from side wall 5 towards the outside of package 1 and other weakening lines 21 may protrude from side wall 5 towards the inside of package 1.

[0058] According to some possible embodiments, weakening lines 20 and/or weakening lines 21 may be obtained by embossing or the like of the multilayer packaging material.

[0059] According to some possible embodiments, weakening lines 20 and/or weakening lines 21 may be transversal to longitudinal axis A and/or top edge 12 and/or bottom edge 13.

[0060] In one embodiment, first weakening lines 20 and second weakening lines 21 may be non-parallel to longitudinal axis A.

[0061] In other embodiments, both weakening lines 20 and second weakening lines 21 may be inclined (in particular not perpendicular) with respect to top edge 12 and/or bottom edge 13.

[0062] With particular reference to Figure 4, back panel 9 may be void of any weakening lines 21.

[0063] According to the embodiment shown and with particular reference to Figures 1, 3 and 4, each corner panel 11 may be delimited by a plurality of weakening lines 20, i.e. each corner panel 11 is defined by weakening lines 20 along which side wall 5 has been folded.

[0064] Additionally and as shown in Figures 1, 3 and 4, each main panel (i.e. front panel 8, back panel 9 and lateral panels 10) of side wall 5 may be delimited by a plurality of weakening lines 20. More specifically, each main panel of side wall 5 may be interposed between and/or delimited by one or more weakening lines 20 of one corner panel 11 and one or more weakening lines 20 of another corner panel 11.

[0065] According to the example shown, each corner panel 11 may be delimited by four weakening lines 20.

[0066] Additionally, each main panel of side wall 5 may be delimited by two weakening lines 20 of one corner panel 11 and two weakening lines 20 of another corner panel 11.

[0067] Advantageously, no weakening lines 21 may be present on corner panels 11, i.e. corner panels 11 are free of any weakening line 21.

[0068] Additionally, no weakening line 21 extends onto corner panels 11.

[0069] Alternatively (not shown), one or more corner panels 11 may comprise weakening lines 21.

[0070] According to some possible embodiments, each weakening line 20 may extend from one or more respective top edges 14 or from one or more respective bottom intersection edges 15, for example towards a center portion 22 of side wall 5, more specifically of one respective main panel (for example front panel 8, back panel 9 or one of the lateral panels 10).

[0071] More specifically, center portion 22 of side wall 5 may be centered with respect to the extension of package 1 along longitudinal axis A.

[0072] More specifically, each weakening line 20 may extend from one respective top intersection edge 14 or

from one respective bottom intersection edge 15, for example towards center portion 22 of side wall 5, more specifically of one respective main panel (for example front panel 8, back panel 9 or one of the lateral panels 10).

[0073] In further detail, each weakening line 20 may comprise a first end 23 and a second end 24 opposite to first end 23.

[0074] In even further detail, each first end 23 may be interposed between two respective main panels and each second end 24 may be arranged on one respective center portion 22 of side wall 5, more specifically of one respective main panel.

[0075] According to some possible examples, a weakening line 20 extending from one respective top intersection edge 14 and another weakening line 20 extending from one respective bottom intersection edge 15 may extend up to the same second end 24, i.e. share the same second end 24.

[0076] More specifically, each first end 23 may be in contact with one respective top intersection edge 14 or one respective bottom intersection edge 15.

[0077] With reference to Figures 1, 3 and 4, each weakening line 21 may be arranged on and/or included within one respective main panel (for example on front panel 8 or one of lateral panels 10) and/or may be interposed between two respective corner panels 11.

[0078] According to some possible embodiments, each weakening line 21 may extend from one or more respective top edges 12 or one or more respective bottom edges 13.

[0079] More specifically, each weakening line 21 may contact and/or extend from one respective top intersection edge 14 or one respective bottom intersection edge 15. Advantageously, each weakening line 21 may extend to an intersection point of two respective weakening lines 20 (i.e. second end 24 shared by two respective weakening lines 20).

[0080] Additionally or alternatively, each weakening line 21 may extend from a first weakening line 20 partially delimiting a first corner panel 11 to one or more second weakening lines 20 partially delimiting a second corner panel 11 different from the first corner panel 11.

[0081] According to some possible embodiments, each weakening line 21 may be a continuation of a respective weakening line 20.

[0082] According to some possible embodiments, each weakening line 21 may intersect with and/or may contact at least one weakening line 20.

[0083] In the specific case, each weakening line 21 may contact four weakening lines 20. Two of these weakening lines 20 partially delimit one respective corner panel 11 and the other two weaking line 20 partially delimits another corner panel 11.

[0084] Additionally or alternatively, each weakening line 21 may intersect with and/or contact at least one other weakening line 21.

[0085] According to the non-limiting embodiments shown, each weakening lines 21 and each weakening line 20, when being projected onto a plane, have a curved shape.

[0086] Packaging blank 2 of Figure 2 is designed to allow formation of package 1.

[0087] In more detail, each packaging blank 2 may comprise:

- two longitudinal boundary edges, preferentially a first longitudinal boundary edge 26 and a second longitudinal boundary edge 27, spaced apart from one another along a first direction D1 transversal, preferentially perpendicular, to a longitudinal axis E of packaging blank 2; and
- two transversal boundary edges, preferentially a first transversal boundary edge 28 and a second transversal boundary edge 29, spaced apart from one another along a second direction D2 parallel to longitudinal axis E and/or transversal, preferentially perpendicular, to first direction D1 and/or transversal, preferentially perpendicular, to a transversal axis F of the respective packaging blank 2.

[0088] Preferentially, transversal axis F may be perpendicular to longitudinal axis E.

[0089] Preferentially, each longitudinal axis E may intersect the respective transversal axis F at a centre point of packaging blank 2.

[0090] In further detail, each packaging blank 2 may extend within a plane spanned by longitudinal axis E and transversal axis F.

[0091] Moreover, each packaging blank 2 may have a (substantially) bi-dimensional shape, i.e. respective extensions of each packaging blank 2 along longitudinal axis E and transversal axis F may be (significantly) larger than a thickness of packaging blank 2. In other words, the thickness of packaging blank 2 may be negligible in comparison to the respective extensions of packaging blank 2 along longitudinal axis E and transversal axis F.

[0092] Preferentially, each packaging blank 2 may have a rectangular or square shape.

[0093] Additionally, first direction D1 may be parallel to transversal axis F.

[0094] Additionally, second direction D2 may be parallel to longitudinal axis E.

[0095] Moreover, each first longitudinal boundary edge 26 and each second longitudinal boundary edge 27 may be connected to and interposed between the respective first transversal boundary edge 28 and the respective second transversal boundary edge 29.

[0096] Preferentially, each first longitudinal boundary edge 26 and each second longitudinal boundary edge 27 may be arranged at an angle of about 90° with respect to the respective first transversal boundary edge 28 and the respective second transversal boundary edge 29.

[0097] It should be noted that in the case of each packaging blank 2 being arranged singularly, i.e. separated from the other packaging blanks 2, the respective first longitudinal boundary edge 26, the respective sec-

ond longitudinal boundary edge 27, the respective first transversal boundary edge 28 and the respective second transversal boundary edge 29 may be real edges.

[0098] In the case of packaging blanks 2 being arranged in the form of a web, the respective first longitudinal boundary edge 26 and the respective second longitudinal boundary edge 27 may be real edges and the respective first transversal boundary edge 28 and the respective second transversal boundary edge 29 may be imaginary edges. In particular, each first transversal boundary edge 28 of one packaging blank 2 may be adjacent to, or coincide with, the respective second transversal boundary edge 29 of another packaging blank 2.

[0099] Alternatively, the respective first transversal boundary edge 28 and the respective second transversal boundary edge 29 may be real edges and the respective first longitudinal boundary edge 26 and the respective second longitudinal boundary edge 27 may be imaginary edges. In particular, each first longitudinal boundary edge 26 of one packaging blank 2 may be adjacent to, or coincide with, the respective second longitudinal boundary edge 27 of another packaging blank 2.

[0100] With particular reference to Figure 2, each packaging blank 2 may comprise a top section having a top crease pattern 30 configured to define the shape of at least top wall 4.

[0101] In further detail, top crease pattern 30 may be configured to define top wall 4 and flaps 16.

[0102] Preferentially, packaging blank 2 may also comprise a bottom section having a bottom crease pattern 31 configured to define the shape of at least bottom wall 3.

[0103] In further detail, bottom crease pattern 31 may be configured to define bottom wall 3 and flaps (not shown) attached to bottom wall 3.

[0104] Additionally, packaging blank 2 also comprises an intermediate section having an intermediate weakening line pattern 32 interposed between top crease pattern 30 and bottom crease pattern 31 and being configured to define side wall 5.

[0105] More specifically, intermediate weakening line pattern 32 may define front panel 8, back panel 9, lateral panels 10 and corner panels 11.

[0106] It should be noted that top crease pattern 30, bottom crease pattern 31 and intermediate weakening line pattern 32 may define respective sections of top wall 4, bottom wall 3 and side wall 5. Thus, in the following, where considered appropriate, we use the same terms and the same numerals for features of packaging blank 2 and package 1.

[0107] As described in more detail further below, intermediate weakening line pattern 32 may comprise weakening lines 20 and weakening lines 21. Thereby, side wall 5 is configured to be folded along weakening lines 20 during the formation of package 1 and side wall 5 is configured not to be folded along weakening lines 21 during the formation of package 1.

[0108] With particular reference to Figure 2, each top crease pattern 30 comprises at least a first transversal crease line 33 extending transversally to longitudinal axis E.

[0109] Additionally, bottom crease pattern 31 may comprises at least a second transversal crease line 34 extending transversally to longitudinal axis E.

[0110] Moreover, first transversal crease line 33 and second transversal crease line 34 are displaced from one another along second direction D2.

[0111] More specifically, first transversal crease line 33 and second transversal crease line 34 delimit together the intermediate section.

[0112] In further detail, top crease pattern 30 may comprise a third transversal crease line 35 displaced from first transversal crease line 33 along second direction D2 and interposed between first transversal boundary edge 28 and first transversal crease line 33 along second direction D2.

[0113] Additionally, bottom crease pattern 31 may comprise a fourth transversal crease line 36 displaced from second transversal crease line 34 along second direction D2 and interposed between second transversal boundary edge 29 and second transversal crease line 34 along second direction D2.

[0114] According to the example shown in Figure 2, first transversal crease line 33 and second transversal crease line 34 may have rectilinear shapes.

[0115] Additionally, also third transversal crease line 35 and/or fourth transversal crease line 36 may have rectilinear shapes.

[0116] According to the example shown, each weakening line 20 and each weakening line 21 may contact at least one of first transversal crease line 33 and second transversal crease line 34.

[0117] In further detail, top crease pattern 30 and bottom crease pattern 31 may comprise further crease lines 37 intended to define the shape of top wall 4 or bottom wall 3 and/or flaps 16 of top wall 4 and the flaps of bottom wall 3.

[0118] The method for forming package 1 comprises the steps of:

- providing packaging blank 2;
- folding packaging blank 2 at top crease pattern 30, bottom crease pattern 31 and weakening lines 20.

[0119] During the step of folding packaging blank 2 is not folded at weakening lines 21, indeed, weakening lines 21 remain not folded.

[0120] With reference to Figure 5, number 1' indicates an alternative embodiment of a package according to the present invention; as package 1' is similar to package 1, the following description is limited to the differences between them, and using the same references, where possible, for identical or corresponding parts.

[0121] Package 1' differs from package 1 in comprising an opening 45, preferentially covered with a separation membrane. More specifically, the separation membrane

may be defined by a portion of the multilayer packaging material.

[0122] In further detail, opening 45 may be configured to receive a straw and/or to allow for the introduction of a straw into package 1. Additionally, the separation membrane may be rupturable upon the application of a force onto the separation membrane by means of a straw.

[0123] More specifically, each opening 45 may be arranged on top wall 4.

[0124] Moreover, each opening 45 may be delimited by a rim 46. Rim 46 may have a circular shape.

[0125] Additionally, the respective packaging blank used to form package 1' may be based on packaging blank 2 and may additionally have an opening (e.g. covered with the separation membrane), in particular arranged on the top section of packaging blank 2.

[0126] The method for forming package 1' is similar to the method for forming package 1 and we refer to the description provided with regard to the formation of package 1.

[0127] With reference to Figure 6, number 1" indicates an alternative embodiment of a package according to the present invention; as package 1" is similar to package 1, the following description is limited to the differences between them, and using the same references, where possible, for identical or corresponding parts.

[0128] In particular, package 1'' comes along with a slanted top wall 4.

[0129] Package 1" differs from package 1 in that the respective top wall 4 of package 1'' is inclined with respect to bottom wall 3 and/or longitudinal axis A.

[0130] Packaging blank 2" shown in Figure 7 allows to form package 1''.

[0131] Packaging blank 2" is similar to packaging blank 2, the following description is limited to the differences between them, and using the same references, where possible, for identical or corresponding parts.

[0132] Packaging blank 2" differs from packaging blank 2 in that first transversal crease line 33 is not rectilinear, but comprises a plurality of first rectilinear sections 47 being parallel to one another and to first longitudinal boundary edge 26 and second longitudinal boundary edge 27, and second rectilinear sections 48 being inclined with respect to first rectilinear sections 47.

[0133] In addition, each second rectilinear section 48 may be interposed between two first rectilinear sections 47.

[0134] The method for forming package 1" is similar to the method for forming package 1 and we refer to the description provided with regard to the formation of package 1.

[0135] With reference to Figures 8 and 9, numbers 1‴ and 1‴ indicate two alternative embodiments of a package according to the present invention; as packages 1‴ and 1‴ are similar to package 1'', the following description is limited to the differences between them, and using the same references, where possible, for identical or corresponding parts.

[0136] In particular, packages 1‴ and 1⁗ may be provided with an opening device. Therefore, packages 1‴ and 1⁗ may comprise respective openings 49 and the respective opening devices may be arranged on packages 1‴ and 1⁗ about the respective openings 49.

[0137] More specifically, opening 49 may be covered with a separation membrane configured to be ruptured upon a first time opening and/or manipulation of the opening device.

[0138] The difference between package 2‴ and package 1⁗ lies in that opening 49 of package 1‴ is arranged on top wall 4 only, while opening 49 of packages 2⁗ is partially arranged on top wall 4 and partially arranged on front wall 8.

[0139] Additionally, the respective packaging blanks used to form packages 1''' and 1‴ may be based on packaging blank 2" and may additionally have a respective opening, which gives rise to the respective openings 49.

[0140] The method for forming packages 1‴ and 1⁗ is similar to the method for forming package 1 and we refer to the description provided with regard to the formation of package 1.

[0141] With reference to Figure 10, number 1⁗ indicates an alternative embodiment of a package according to the present invention; as package 1⁗ ' is similar to package 1, the following description is limited to the differences between them, and using the same references, where possible, for identical or corresponding parts.

[0142] In particular, package 1⁗ ' differs from package 1 in the shape of weakening lines 20 and of weakening lines 21.

[0143] More specifically, weakening lines 20 and weakening lines 21 when being projected onto a projection plane have a linear shape.

[0144] Additionally, package 1⁗ differs from package 1 in that weakening lines 21 do not intersect with and/or contact any top edge 12 or any bottom edge 13.

[0145] Moreover, weakening lines 21 may be arranged such to form respective rhombi.

[0146] Moreover, weakening lines 20 may be arranged such to form respective rhombi.

[0147] Packaging blank 2⁗ as shown in Figure 11 allows to form package 1⁗. Packaging blank 2⁗ is similar to packaging blank 2 and differs from packaging blank 2 in the specific form and arrangement of weakening lines 20 and weakening lines 21.

[0148] The method for forming package 1⁗ ' is similar to the method for forming package 1 and we refer to the description provided with regard to the formation of package 1.

[0149] The advantages of packages 1, 1', 1", 1‴, 1⁗ and 1⁗ and/or packaging blanks 2, 2" and 2⁗ according to the present invention will be clear from the foregoing description.

[0150] In particular, while weakening lines 20 allow to define corner panels 11, weakening lines 21 allow to

improve the gripping of packages 1, 1', 1", 1‴, 1'''' and 1‴‴.

[0151] Additionally, weakening lines 21 improve the tactile experience when gripping packages 1, 1' , 1", 1‴, 1‴‴ and 1‴‴.

[0152] Additionally, weakening lines 21 allow to define desired aesthetic characteristics of packages 1, 1', 1'', 1‴, 1‴‴ and 1‴‴.

[0153] Clearly, changes may be made to packages 1, 1', 1", 1‴, 1‴‴ and 1‴‴ and/or packaging blanks 2, 2" and 2‴‴ as described herein without, however, departing from the scope of protection as defined in the accompanying claims.

[0154] For example, packages 1', 1'', 1‴ and 1‴‴ may comprise the weakening lines 20 and weakening lines 21 of package 1‴‴.

Claims

1. Package (1, 1', 1", 1‴, 1‴‴, 1‴‴) filled with a pourable product;

   the package (1, 1', 1", 1‴, 1‴‴, 1‴‴) comprises a bottom wall (3) and a top wall (4) spaced apart from one another along a longitudinal axis (A) of the package (1, 1', 1" , 1‴, 1‴‴, 1‴‴) and a side wall (5) interposed between the top wall (3) and the bottom wall (4);
   wherein the side wall (5) comprises a first group of first weakening lines (20) and a second group of second weakening lines (21);
   wherein the side wall (5) is folded along the first weakening lines (20) and the side wall (5) is not folded along the second weakening lines (21).

2. Package according to claim 1, wherein each second weakening line (21) is a continuation of a respective first weakening line (20).

3. Package according to claim 1 or 2, wherein the side wall (5) comprises a plurality of corner panels (11), each corner panel (11) being delimited by a plurality of first weakening lines (20).

4. Package according to claim 3, wherein each corner panel (11) is delimited by four first weakening lines (20).

5. Package according to claim 3 or 4, wherein each first weakening line (20) delimiting the respective corner panel (11) extends from a top edge (12) of the top wall (4) or a bottom edge (13) of the bottom wall (3) towards a center portion (22) of the side wall (5).

6. Package according to any one of claims 3 to 5, wherein the side wall (5) comprises a plurality of main panels (8; 9; 10);
   wherein each corner panel (11) is interposed between two respective main panels (8; 9; 10).

7. Package according to claim 6, wherein each first weakening line (20) delimiting the respective corner panel (11) comprises a first end (23) and a second end (24) opposite to the first end (23);
   wherein each first end (23) is interposed between two respective main panels (8; 9; 10) and each second end (24) is arranged on a center portion (22) of one respective main panel (8; 9; 10).

8. Package according to any one of claims 3 to 7, wherein each second weakening line (21) is arranged on one respective main panel (8; 10) and/or is interposed between two respective corner panels (11).

9. Package according to any one of claims 3 to 8, wherein the corner panels (11) are free of any second weakening line (21) and/or no second weakening line (21) extends onto the corner panels (11).

10. Package according to any one of claims 3 to 9, wherein each second weakening line (21) extends from a first weakening line (20) partially delimiting a first corner panel (11) and to a second first weakening line (20) partially delimiting a second corner panel (11) different from the first corner panel (11).

11. Package according to any one of the preceding claims, wherein each second weakening line (21) contacts at least one first weakening line (20).

12. Package according to any one of the preceding claims, wherein each second weakening line (21) intersects with and/or contacts at least another second weakening line (21) .

13. Package according to any one of the preceding claims, wherein the top wall (4) comprises a plurality of top edges (12) and the bottom wall (3) comprises a plurality of bottom edges (13);

    wherein the top wall (4) also comprises a plurality of top intersection edges (14) and the bottom wall (3) comprises a plurality of bottom intersection edges (15);
    wherein at each top intersection edge (14) two respective top edges (12) intersect and/or contact one another and at each bottom intersection edge (15) two respective bottom edges (13) intersect and/or contact one another;
    wherein each first weakening line (20) extends from one respective top intersection edge (14) or from one respective bottom intersection edge (15).

14. Package according to claim 13, wherein each first

weakening line (20) extends to a center portion (22) of one respective main panel (8; 9; 10).

15. Package according to any one of the preceding claims, wherein the side wall (5) has not undergone a step of folding along any of the second weakening lines (21), prior during and after the formation of the package (1, 1', 1", 1‴, 1⁗, 1⁗⁗).

16. Method for forming a package (1, 1', 1" , 1‴, 1⁗, 1⁗⁗) from a packaging blank (2, 2'', 2⁗⁗) comprising the steps of:

- providing a packaging blank (2, 2'', 2⁗⁗) comprising a top section having a top crease pattern (30) configured to define the shape of at least a top wall (4) of the package (1, 1', 1", 1‴, 1⁗, 1⁗⁗), a bottom section having a bottom crease pattern (31) configured to define the shape of at least a bottom wall (3) of the package (1, 1', 1'', 1''', 1⁗, 1⁗⁗) and an intermediate section having an intermediate weakening line pattern (32) interposed between the top crease pattern (30) and the bottom crease pattern (31) and being configured to define a side wall (5) of the package (1, 1', 1", 1"', 1⁗, 1⁗⁗); and
- folding the top crease pattern (30) and the bottom crease pattern (31) of the packaging blank (2, 2″, 2⁗⁗);

wherein the intermediate weakening line pattern (32) comprises a first group of first weakening lines (20) and a second group of second weakening lines (21);
wherein during the step of folding, the packaging blank (2, 2", 2⁗⁗) is folded along the first weakening lines (20) and the packaging blank (2, 2'', 2⁗⁗) is not folded along the second weakening lines (21).

FIG. 1

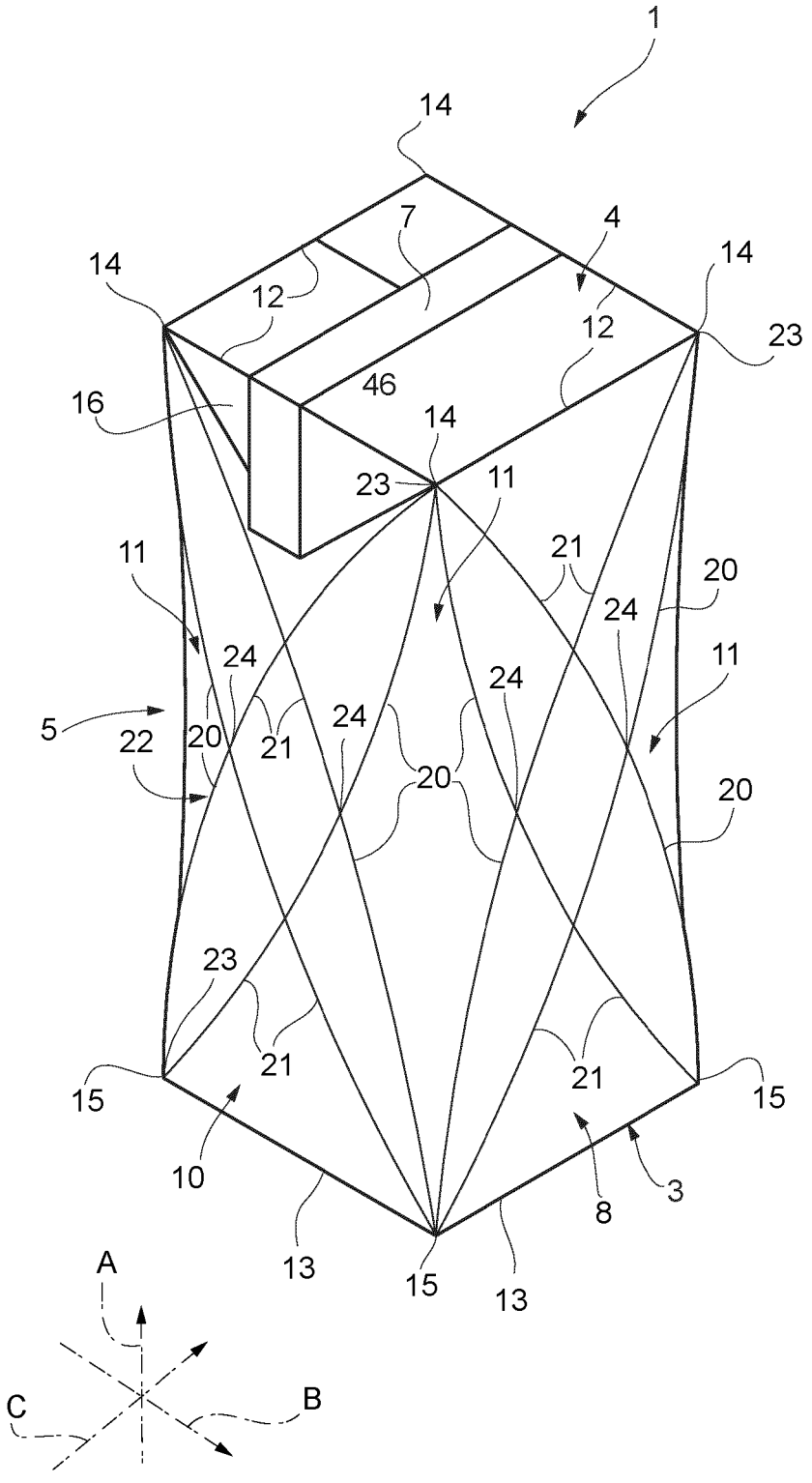
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FIG. 2

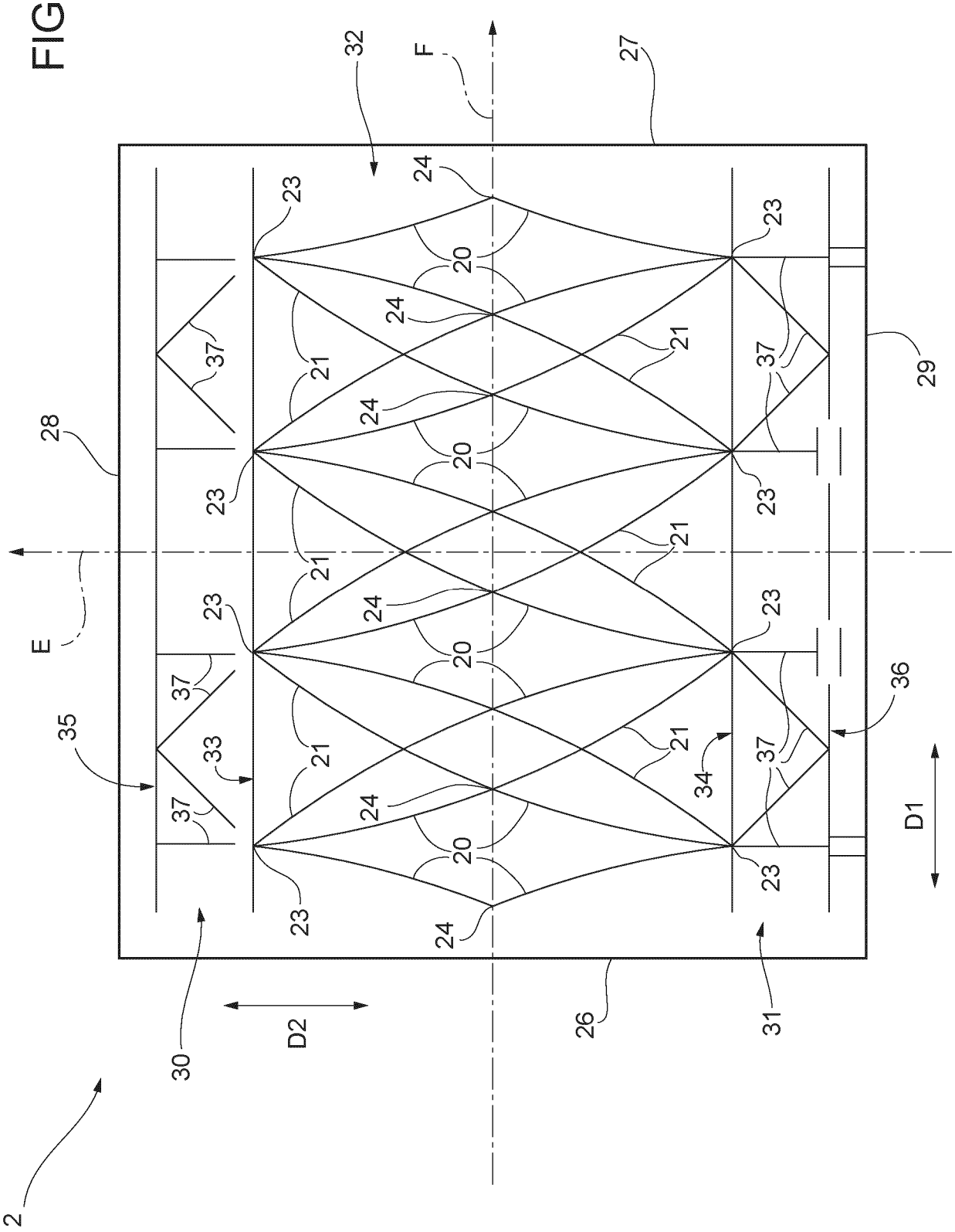

FIG. 4

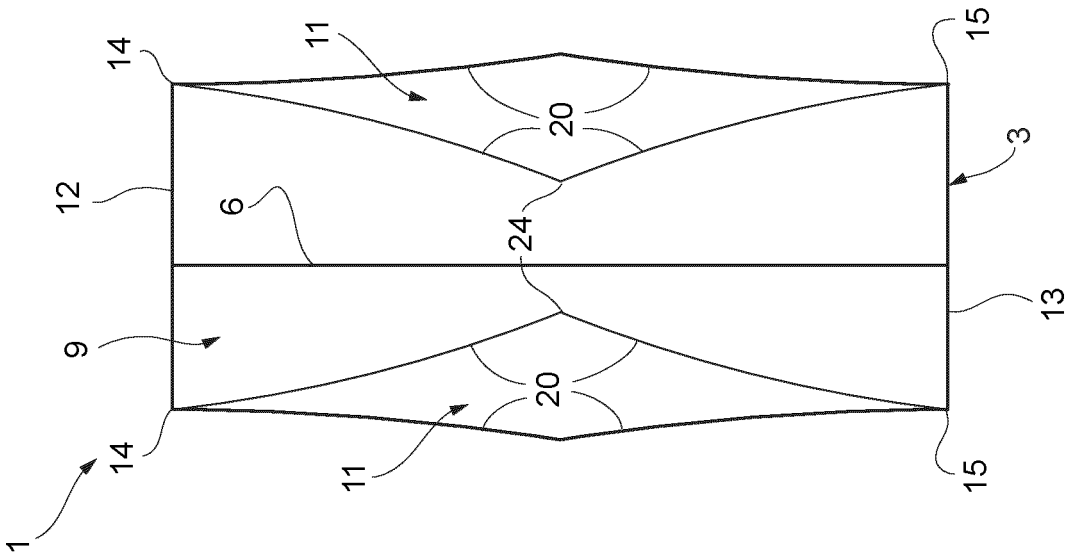
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FIG. 3

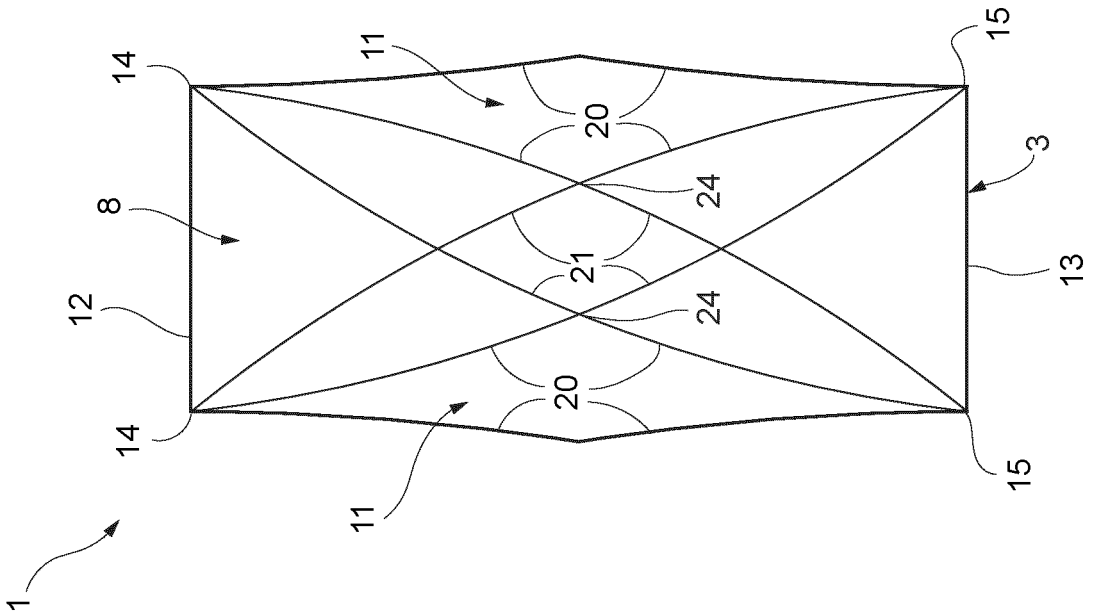
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FIG. 5

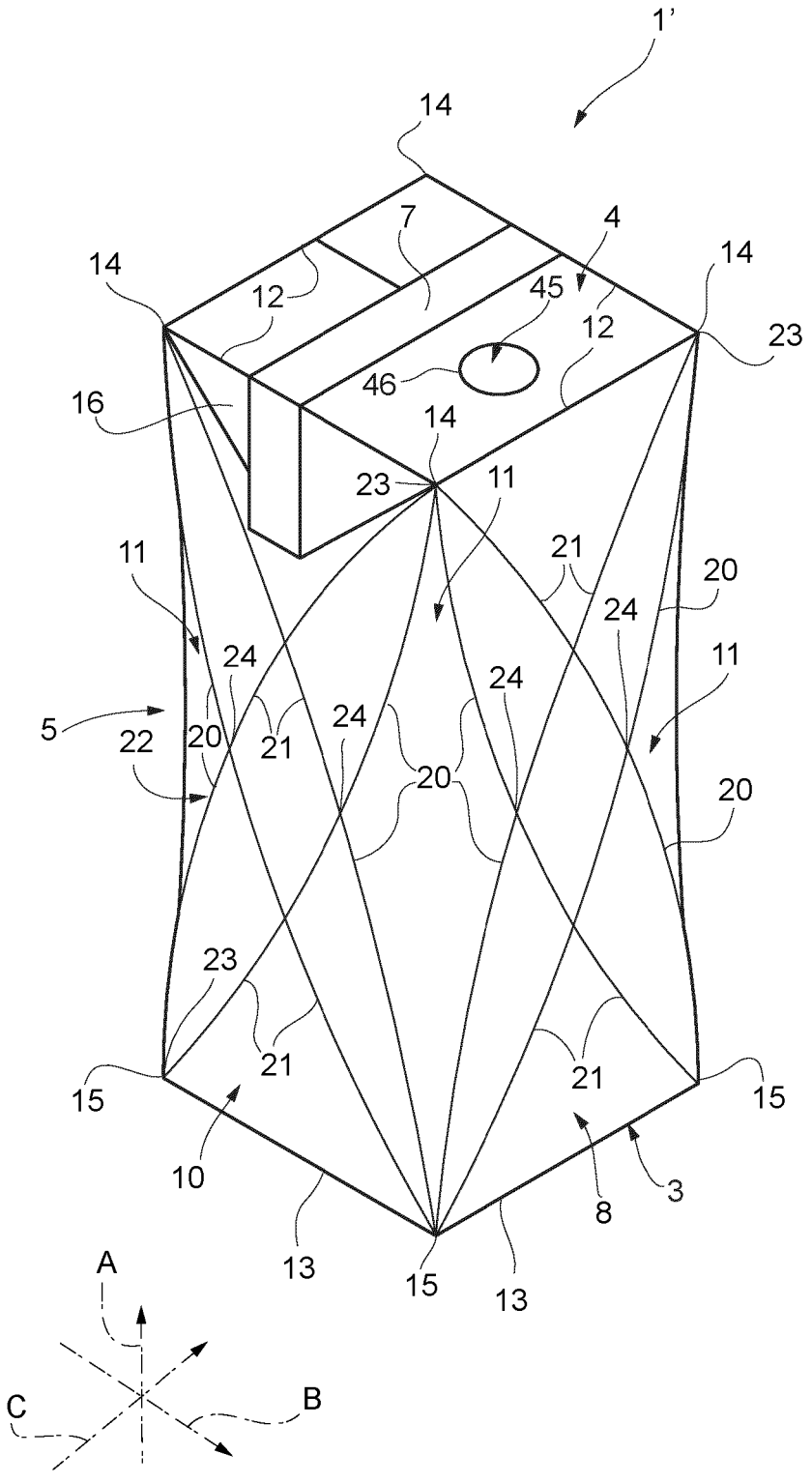
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FIG. 6

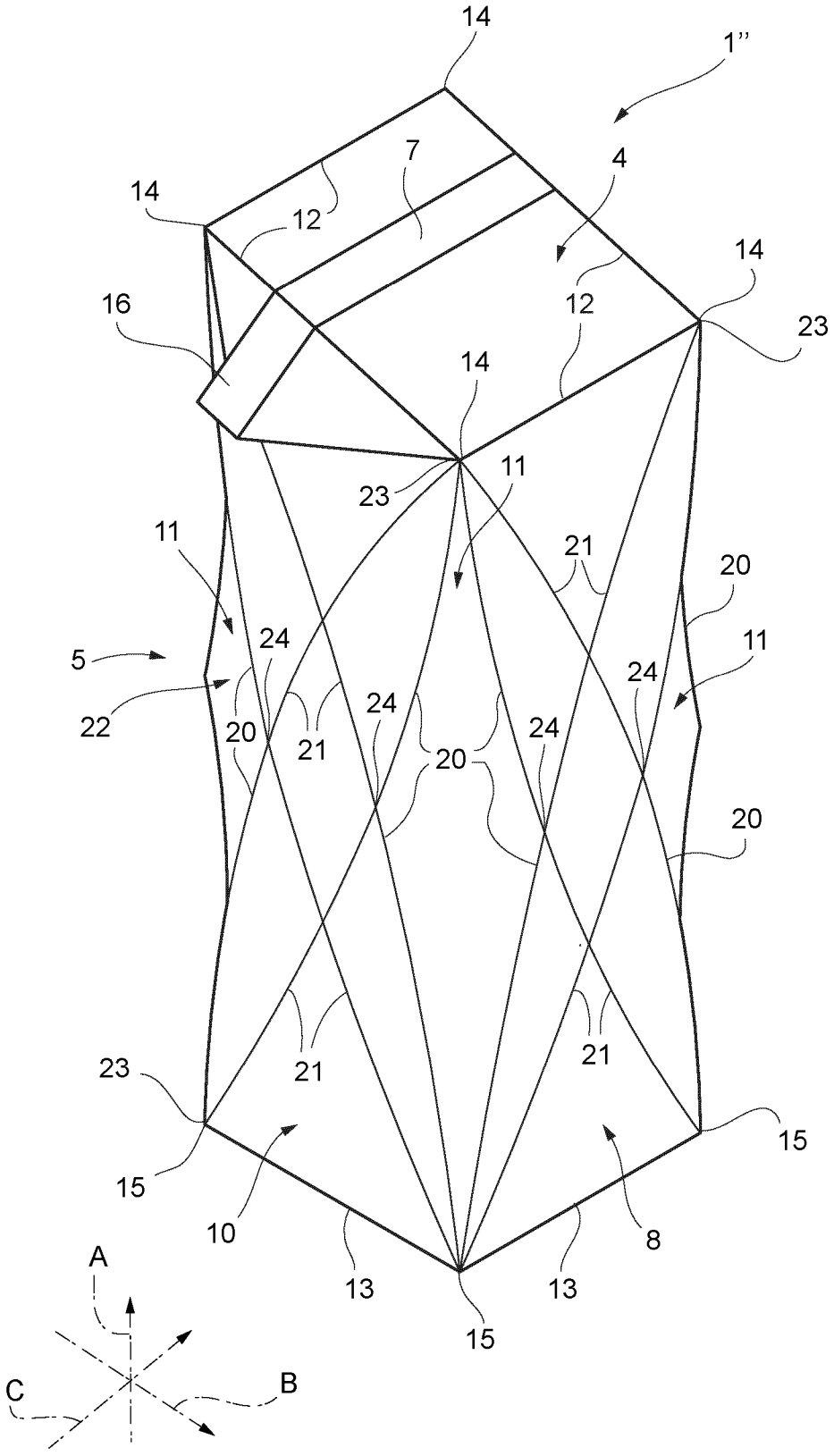
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FIG. 7

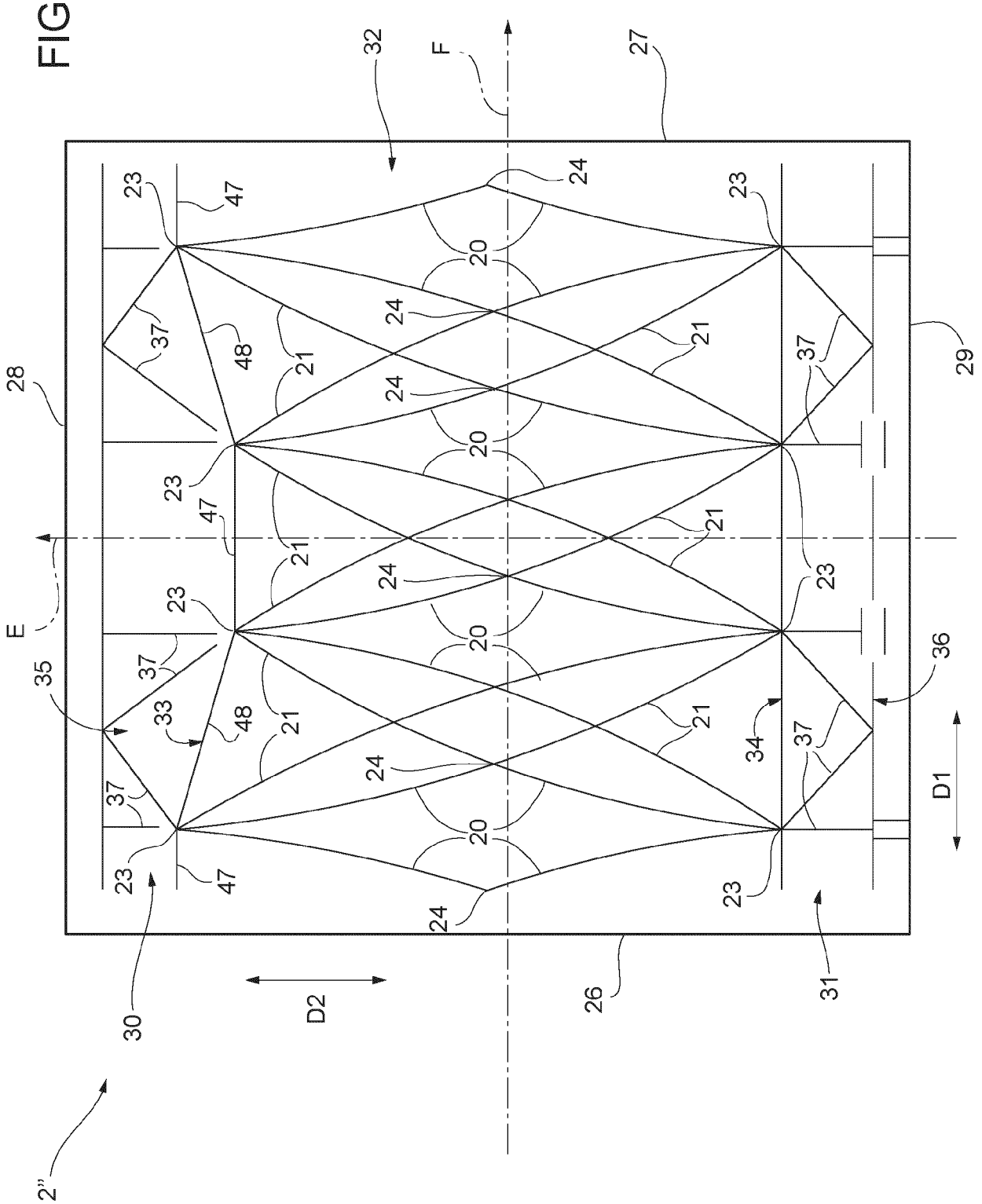

FIG. 8

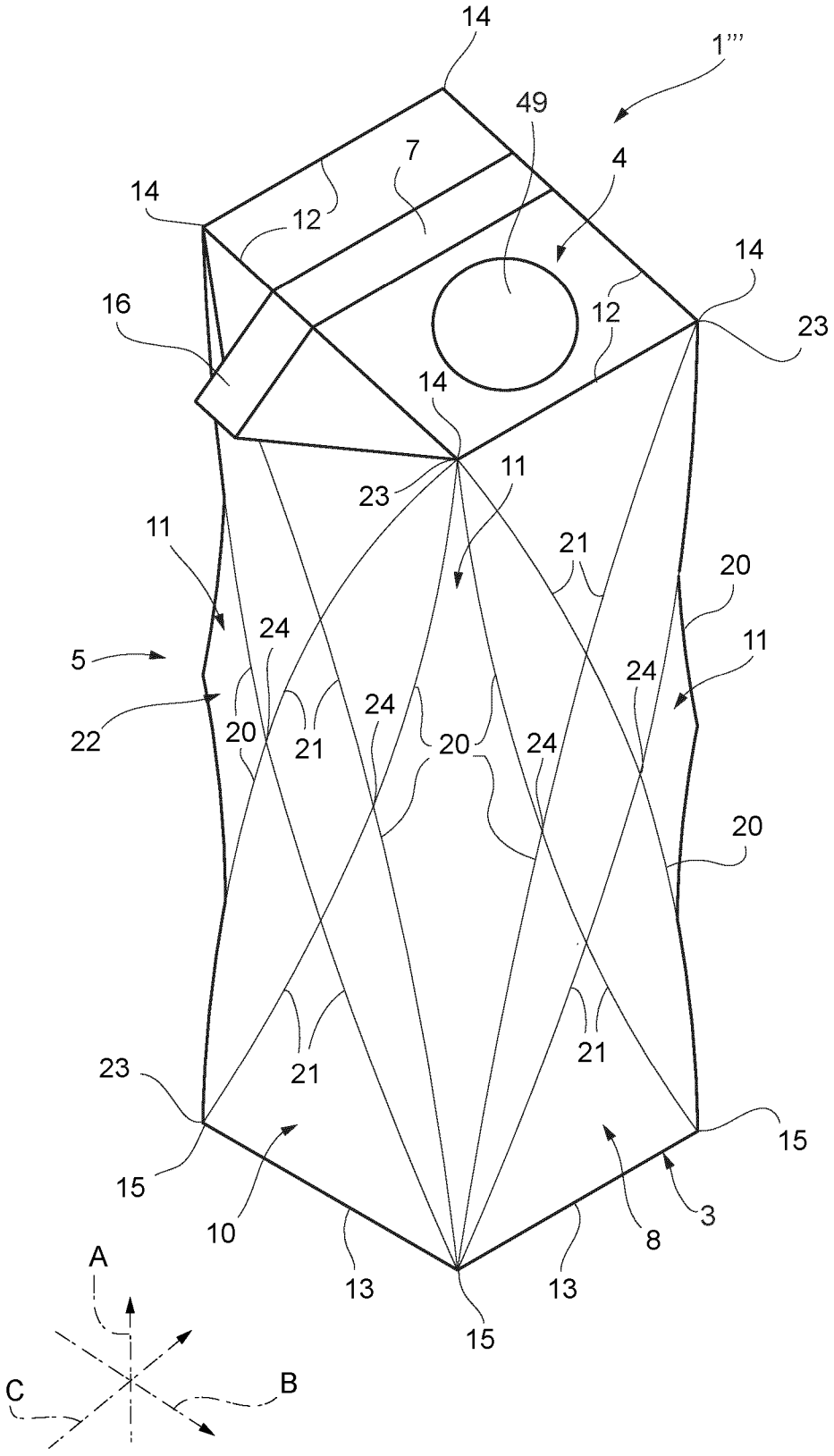
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FIG. 9

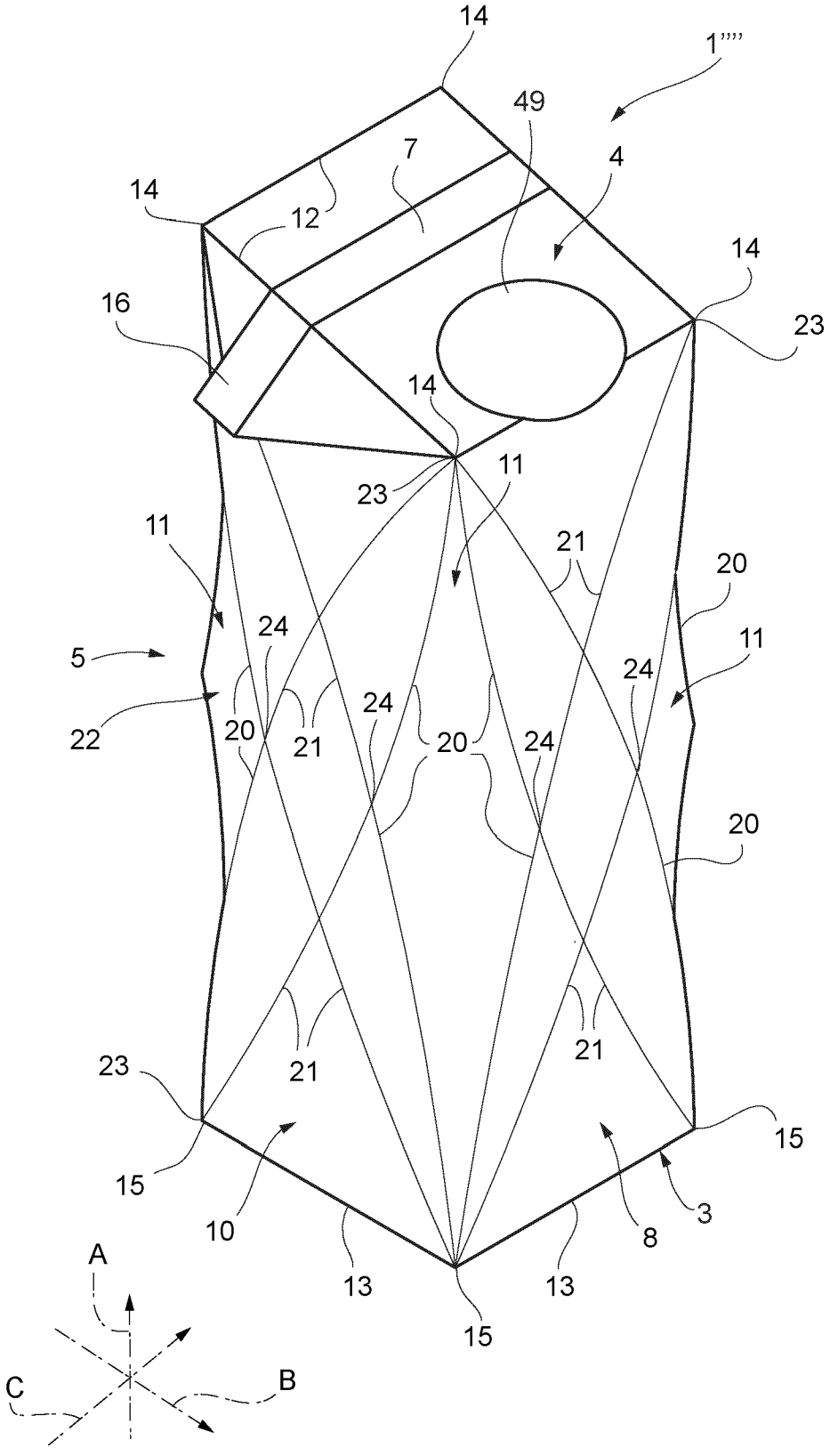
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FIG. 10

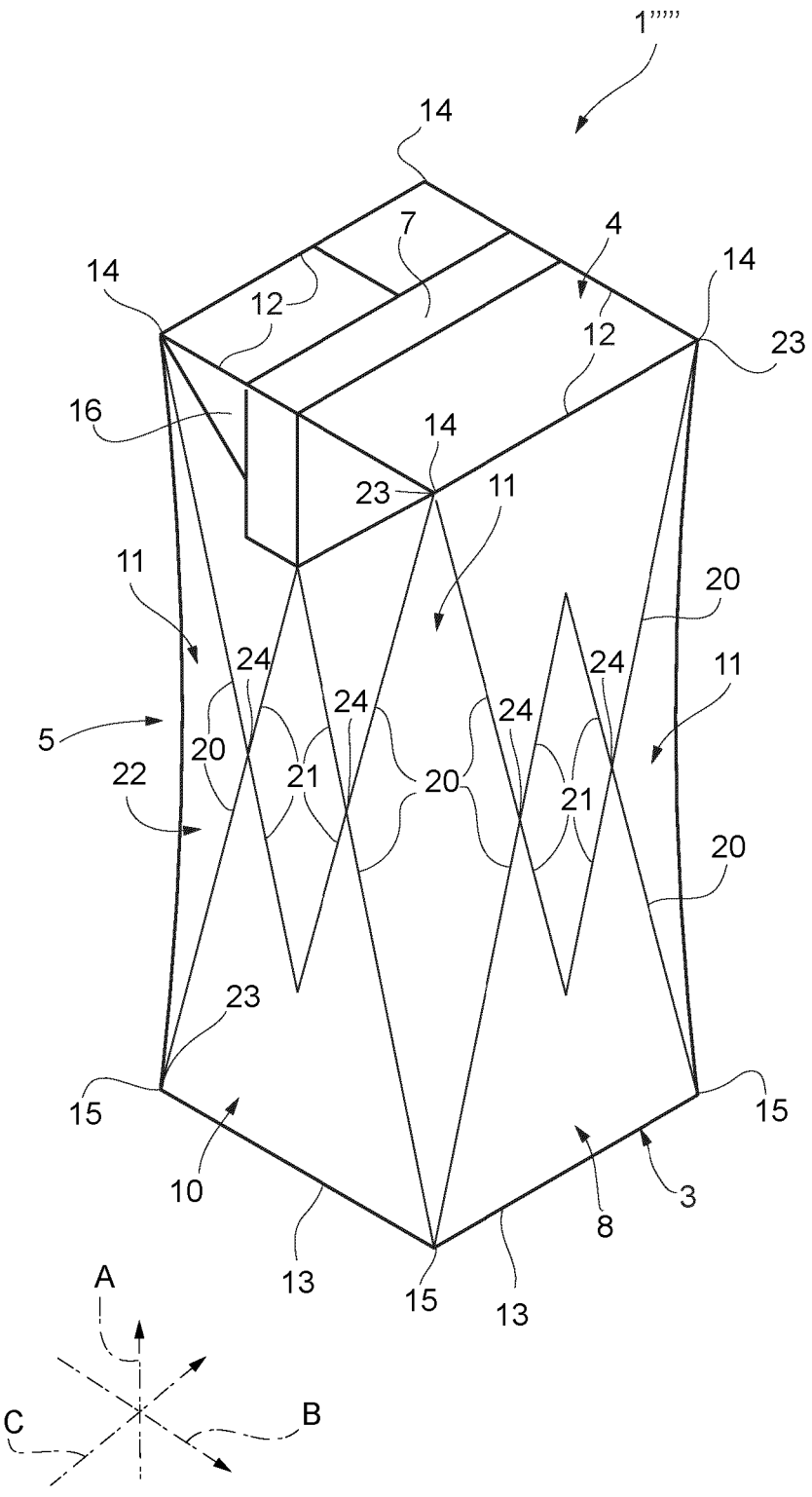
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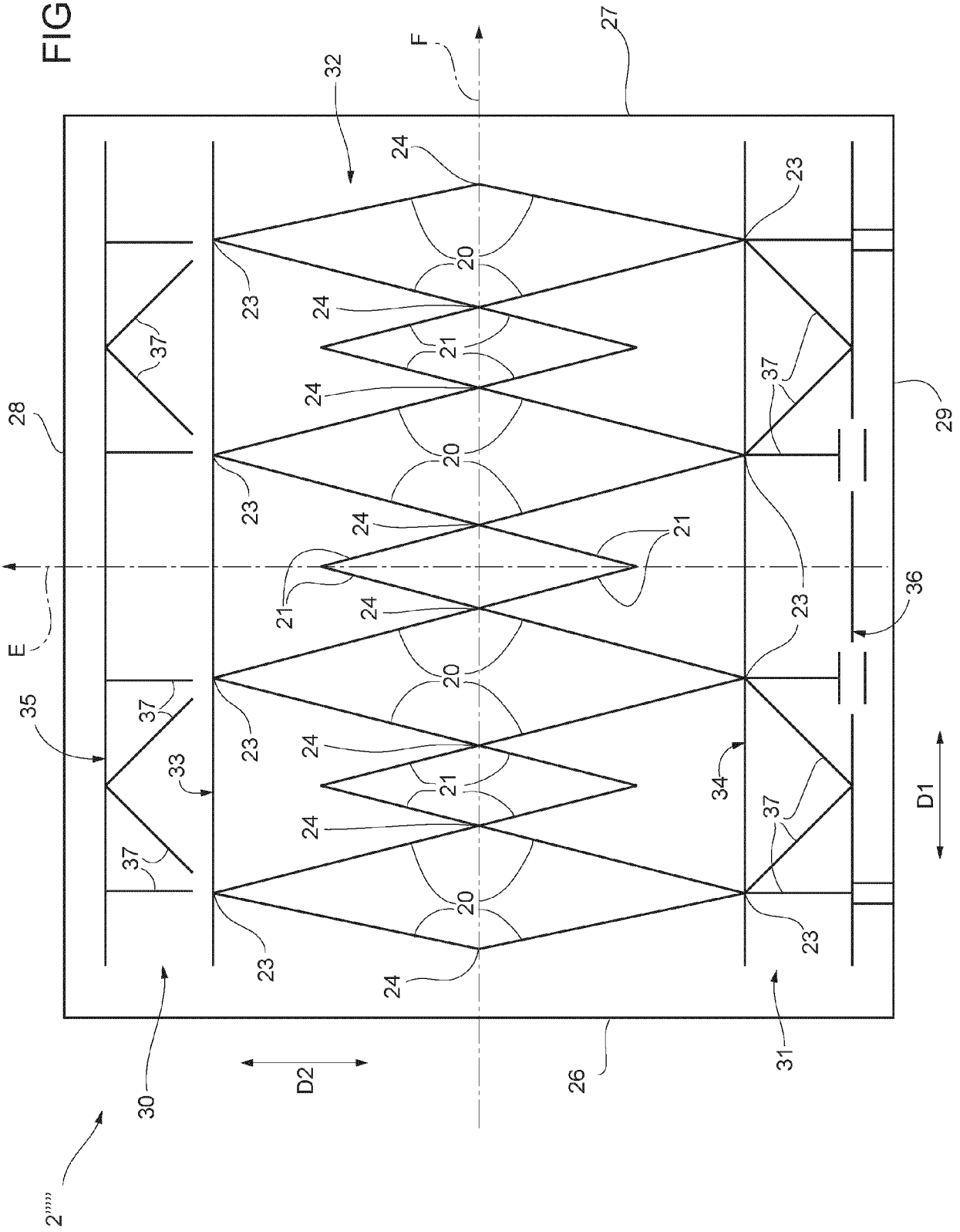
FIG. 11



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Application Number
EP 24 19 2232

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	31 October 2024	Fitterer, Johann

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