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# (54) PACKAGING BLANK FOR FORMING A PACKAGE AND PACKAGE FORMED FROM A PACKAGING BLANK

(57) There is described a packaging blank (2; 2') having two longitudinal boundary edges (10; 11), two transversal boundary edges (10; 11) and a top crease pattern (14). The top crease pattern (14) comprises a first transversal crease line (16) and a second transversal crease line (17). The second transversal crease line (17) comprises at least two lateral portions (21), a central portion (22) and two inclined portions (23). The top crease pattern (14) comprises one or more main inclined crease lines (27) and one or more auxiliary crease lines (28). Each lateral portion (21) defines a respective imaginary endless line (24) comprising the respective lateral portion (21) and the respective inclined portion (23) defines an imaginary inclined endless line (25) comprising the respective inclined portion (23) intersecting the respective imaginary endless line (23) at an intersection point (26). Each main inclined crease line (27) intersects the respective intersection point (26) and each auxiliary crease line (28) does not intersect the second transversal crease line (17), the imaginary endless line (24), the respective intersection point (26) and the respective main inclined crease line (27).

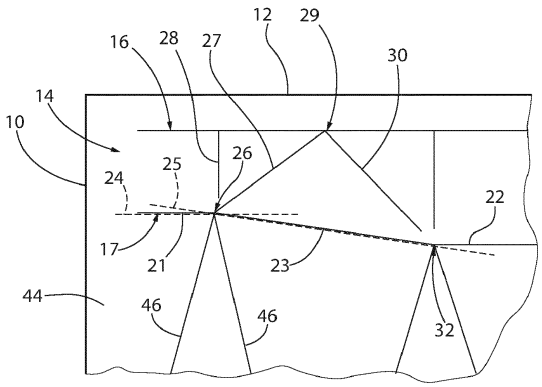


FIG.3

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## Description

### TECHNICAL FIELD

**[0001]** The present invention relates to a packaging blank, in particular having a multilayer structure, for forming a package filled with a pourable product, in particular a pourable food product.

**[0002]** Advantageously, the present invention also relates to a package filled with a pourable product, in particular a pourable food product, and being formed from a packaging blank.

### 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 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]** Typically, a packaging blank has a rectangular shape and is delimited by a first longitudinal boundary edge, a second longitudinal boundary edge, a first transversal boundary edge and a second transversal boundary edge.

**[0009]** A typical packaging blank also comprises a top crease pattern configured to form a top portion of the package and a bottom crease pattern configured to form a bottom portion of the package. The top crease pattern comprises at least a first transversal crease line and a second transversal crease line and the bottom crease pattern comprises at least a third transversal crease line and a fourth transversal crease line.

**[0010]** 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. 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.

**[0011]** It is known that such packages are produced form packaging blanks having an appropriate top crease pattern. The top crease pattern comprises a first transversal crease line and a second transversal seal line and a plurality of auxiliary crease lines and inclined crease lines intersecting the first transversal crease line and the second transversal crease line.

**[0012]** Even though the packages formed from such packaging blanks provide for excellent results, a desire is felt in the sector, to further improve the packaging blanks.

### DISCLOSURE OF INVENTION

**[0013]** It is therefore an object of the present invention to provide an improved packaging blank.

**[0014]** It is another object of the present invention to provide an improved package formed from a packaging blank.

**[0015]** According to the present invention, there is provided a packaging blank as claimed in claim 1.

**[0016]** Preferred non-limiting embodiments of the packaging blank are claimed in the respective dependent claims.

**[0017]** According to the present invention, there is also provided a package according to claim 15.

### BRIEF DESCRIPTION OF THE DRAWINGS

**[0018]** Two 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 schematic view of a package filled with a pourable product, with parts removed for clarity;
Figure 2 is a plan view of a packaging blank according to a first embodiment of the present invention;
Figure 3 is an enlarged view of a detail of the packaging blank of Figure 2; and
Figure 4 is a plan view of a packaging blank according to a second embodiment of the present invention.

### BEST MODES FOR CARRYING OUT THE INVENTION

**[0019]** Number 1 in Figure 1 indicates a package formed from a packaging blank 2 (see Figure 2).

**[0020]** Preferentially, each package 1 is formed from one respective packaging blank 2 by means of an auto-

matic packaging machine.

**[0021]** The automatic packaging machine is configured to form packages 1 from the respective packaging blanks 2 and to fill packages 1 with a pourable product, in particular a pourable food product such as pasteurized milk, fruit juice, wine, tomato sauce, etc.

**[0022]** Preferentially, packaging blanks 2 may have a multilayer structure.

**[0023]** 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.

**[0024]** 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.

**[0025]** 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.

**[0026]** According to some preferred non-limiting embodiment, packaging blanks 2 may be provided in the form of a web.

**[0027]** In more detail, the web may be formed from a plurality of successively arranged packaging blanks 2.

**[0028]** 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.

**[0029]** 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.

**[0030]** In particular, each packaging blank 2 may comprise a desired pattern/decoration.

**[0031]** Each packaging blank 2 may be designed to form a package 1 comprising:

- a first package portion 3, preferentially having a first wall;
- a second package portion 4, preferentially having a second wall, displaced from first package portion 3 along a longitudinal axis A of package 1;
- an intermediate package portion 5, preferentially having and/or defining a side wall, being (fixedly) connected to and extending from first package portion 3, preferentially the first wall, and second package portion 4, preferentially the second wall.

**[0032]** In more detail, each first package portion 3, preferentially the first wall, and each second package portion 4, preferentially the second wall, may define respectively a bottom portion, preferentially a bottom wall, and a top portion, preferentially a top wall, of the respective package 1.

**[0033]** Additionally, each intermediate package portion 5 may be interposed between the respective first package portion 3 and the respective second package portion 4.

**[0034]** Preferentially, when each package 1 is in its nominal position (i.e. when being used by a user in an intended manner), the user recognizes first package portion 3 as the bottom portion and second package portion 4 as the top portion.

**[0035]** Preferentially, each second package portion 4 may be defined as the portion of the package that can be manipulated such to allow for the outpouring of the pourable product. For example, second package portion 4 may be manipulated so as to obtain a pouring opening or second package portion 4 may comprise an opening device 6 (e.g. a cap), which can be manipulated.

**[0036]** Preferentially, each intermediate portion 5 may be defined to be gripped by a user.

**[0037]** In further detail, each first package portion 3, preferentially the first wall, may define a support surface of the respective package 1, which may be designed to be put in contact with a support, such as e.g. a shelf, when, in use, being e.g. exposed within a sales point or when being stored.

**[0038]** According to some preferred embodiment, each second package portion 4, preferentially the respective second wall, may be inclined with respect to one of the respective longitudinal axis A and/or the respective first package portion 3, preferentially the respective first wall. More preferentially, each second package portion 4, preferentially the respective second wall, may define a slanted top.

**[0039]** In more detail, each packaging blank 2 may comprise:

- two longitudinal boundary edges, preferentially a first longitudinal boundary edge 10 and a second longitudinal boundary edge 11, spaced apart from one another along a first direction D1 transversal, preferentially perpendicular, to a longitudinal axis B of the respective packaging blank 2; and
- two transversal boundary edges, preferentially a first transversal boundary edge 12 and a second transversal boundary edge 13, spaced apart from one another along a second direction D2 parallel to longitudinal axis B and/or transversal, preferentially perpendicular, to first direction D1 and/or transversal, preferentially perpendicular, to a transversal axis C of the respective packaging blank 2.

**[0040]** Preferentially, each transversal axis C may be perpendicular to the respective longitudinal axis B.

**[0041]** Preferentially, each longitudinal axis B may in-

tersect the respective transversal axis C within a centre point of the respective packaging blank 2.

**[0042]** In further detail, each packaging blank 2 may extend within a plane spanned by longitudinal axis B and transversal axis C.

**[0043]** Moreover, each packaging blank 2 may have a (substantially) 2-dimensional shape, i.e. respective extensions of each packaging blank 2 along longitudinal axis B and transversal axis C may be (significantly) larger than a thickness of packaging blank 2. In other words, the thickness of packaging blank 2 may be neglectable in comparison to the respective extensions along longitudinal axis B and transversal axis C.

**[0044]** Preferentially, each packaging blank 2 may have a rectangular or square shape.

**[0045]** Additionally, first direction D1 may be parallel to transversal axis C.

**[0046]** Moreover, each first longitudinal boundary edge 10 and each second longitudinal boundary edge 11 may be connected to and interposed between the respective first transversal boundary edge 12 and the respective second transversal boundary edge 13.

**[0047]** Preferentially, each first longitudinal boundary edge 10 and each second longitudinal boundary edge 11 may be arranged at an angle of about 90° with respect to the respective first transversal boundary edge 12 and the respective second transversal boundary edge 13.

**[0048]** 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 10, the respective second longitudinal boundary edge 11, the respective first transversal boundary edge 12 and the respective second transversal boundary edge 13 may be real edges.

**[0049]** In the case of packaging blanks 2 being arranged in the form of a web 3, the respective first longitudinal boundary edge 10 and the respective second longitudinal boundary edge 11 may be real edges (as also shown in Figure 2) and the respective first transversal boundary edge 12 and the respective second transversal boundary edge 13 may be imaginary edges. In particular, each first transversal boundary edge 12 of one packaging blank 2 may be adjacent to, or coincide with, the respective second transversal boundary edge 13 of another packaging blank 2.

**[0050]** Alternatively, the respective first transversal boundary edge 12 and the respective second transversal boundary edge 13 may be real edges and the respective first longitudinal boundary edge 10 and the respective second longitudinal boundary edge 11 may be imaginary edges. In particular, each first longitudinal boundary edge 10 of one packaging blank 2 may be adjacent to, or coincide with, the respective second longitudinal boundary edge 11 of another packaging blank 2.

**[0051]** Moreover, each longitudinal axis B may define the respective longitudinal axis A of the respective package 1 formed from the respective packaging blank 2.

**[0052]** With particular reference to Figure 2, each packaging blank 2 may comprise a top crease pattern 14 configured to form the respective second package portion 4, preferentially the respective top portion, of the respective package 1.

**[0053]** In further detail, top crease pattern 14 may be configured to form the respective second wall, preferentially the respective second wall and flaps attached to the respective second wall.

**[0054]** Preferentially, packaging blank 2 may also comprise a bottom crease pattern 15 configured to form the respective first package portion 3, preferentially the respective bottom portion, of the respective package 1.

**[0055]** In further detail, bottom crease pattern 15 may be configured to form the respective first wall, preferentially the respective first wall and flaps attached to the respective first wall.

**[0056]** In more detail, each top crease pattern 14 may define a respective top region and each bottom crease pattern 15 may define a respective bottom region of the respective packaging blank 2.

**[0057]** With particular reference to Figures 2 and 3, each top crease pattern 14 comprises at least a first transversal crease line 16 and a second transversal crease line 17 extending transversally to longitudinal axis B of the respective packaging blank 2.

**[0058]** Preferentially, each first transversal crease line 16 and the respective second transversal crease line 17 are displaced from one another along second direction D2.

**[0059]** Preferentially, each first transversal crease line 16 is interposed between the respective first transversal boundary edge 12 and second transversal crease line 17. In other words, each first transversal crease line 16 is closer to the respective first transversal boundary edge 12 than the respective second transversal crease line 17.

**[0060]** Moreover, each second transversal crease line 17 may be closer to the centre point of the respective packaging blank 2 than the respective first transversal crease line 16.

**[0061]** According to some preferred non-limiting embodiments, no further transversal crease line being or having at least portions perpendicular to the respective longitudinal axis B are interposed between the respective first transversal boundary edge 12 and the respective first transversal crease line 16.

**[0062]** With particular reference to Figures 2 and 3, each second transversal crease line 17 may comprise:

- at least two lateral portions 21 opposed to one another and transversal, preferentially perpendicular, to longitudinal axis B;
- at least a central portion 22;
- at least two inclined portions 23 inclined with respect to longitudinal axis B and each one extending between one respective lateral portion 21 and central portion 22.

**[0063]** Preferentially, one lateral portion 21 may be ar-

ranged closer to first longitudinal boundary edge 10 than the other lateral portion 21 and the other lateral portion 21 may be arranged closer to second longitudinal boundary edge 11 than the one lateral portion 21.

**[0064]** Preferentially, each lateral portion 21 may have a rectilinear shape and/or may be perpendicular to longitudinal axis B.

**[0065]** According to some preferred non-limiting embodiments, central portion 22 may have a rectilinear shape and/or may be perpendicular to longitudinal axis B.

**[0066]** Alternatively, central portion 22 may have a shape differing from a rectilinear one, e.g. central portion 22 may be curved or may have at least a curved part.

**[0067]** According to some preferred embodiments, each inclined portion 23 may have a rectilinear shape.

**[0068]** According to the embodiment shown, each lateral portion 21 may intersect the respective inclined portion 23 (i.e. lateral portion 21 and the respective inclined portion 23 contact one another).

**[0069]** Alternatively, each lateral portion 21 may not intersect the respective inclined portion 23, i.e. respective endpoints of each lateral portion 21 and of the respective inclined portion 23 do not touch each other or, in other words, a respective free space is interposed between each lateral portion 21 and the respective inclined portion 23.

**[0070]** According to some non-limiting embodiments, each lateral portion 21 defines a respective imaginary endless line 24 comprising the respective lateral portion 21 and the respective inclined portion 23 defines an imaginary inclined endless line 25 comprising the respective inclined portion 23.

**[0071]** Moreover, each imaginary endless line 24 and the respective imaginary inclined endless line 25 may intersect at a respective intersection point 26.

**[0072]** In the case that each lateral portion 21 and the respective inclined portion 23 intersect one another, the respective intersection point 26 corresponds to the respective point of contact.

**[0073]** With reference to Figures 2 and 3, top crease pattern 14 also comprises one or more main inclined crease lines 27, preferentially two main inclined crease lines 27, more preferentially exactly two main inclined crease lines 27, being inclined with respect to longitudinal axis B.

**[0074]** Additionally, top crease pattern 14 may also comprise one or more auxiliary crease lines 28 extending transversally to main inclined crease lines 27 and/or parallel to longitudinal axis B and/or parallel to the longitudinal boundary edges, preferentially first longitudinal boundary edge 10 and second longitudinal boundary edge 11. Preferentially, each auxiliary crease line 28 may be interposed between one respective main inclined crease line 27 and one respective longitudinal boundary edge.

**[0075]** More preferentially, at least one auxiliary crease line 28 may be interposed between the respective main inclined crease line 27 and first longitudinal boundary edge 10 and another auxiliary crease line 28 may be interposed between the respective main inclined crease line 27 and second longitudinal boundary edge 11.

**[0076]** Moreover, each main inclined crease line 27 may be interposed between and/or may extend between first transversal crease line 16 and second transversal crease line 17 intersecting one respective intersection point 26.

**[0077]** Preferentially, each main inclined crease line 27 may extend from the respective intersection point 26 towards first transversal crease line 16.

**[0078]** Advantageously, each main inclined crease line 27 may intersects also first transversal crease line 16 at a respective auxiliary intersection point 29.

**[0079]** According to some preferred embodiments, each main inclined crease line 27 may extend from the respective intersection point 26 to the respective auxiliary intersection point 29.

**[0080]** Preferentially, a respective first distance d1 of each intersection point 26 from longitudinal axis B may be larger than a respective second distance d2 of the respective auxiliary intersection point 29 from longitudinal axis B.

**[0081]** Preferentially, each main inclined crease line 27 may extend from an end adjacent to first transversal crease line 16 towards second transversal crease line 17 and away from longitudinal axis B.

**[0082]** Advantageously, each auxiliary crease line 28 may extend between first transversal crease line 16 and second transversal crease line 17 without intersecting second transversal crease line 17 and the respective imaginary endless line 24 and the respective intersection point 26 and/or the respective main inclined crease line 27.

**[0083]** According to some possible embodiments, top crease pattern 14 may also comprise one or more auxiliary inclined crease lines 30, each one extending between first transversal crease line 16 and second transversal crease line 17, being interposed between longitudinal axis B and one respective main inclined crease line 27.

**[0084]** Preferentially, each auxiliary inclined crease line 30 may intersect one respective main inclined crease line 27, more preferentially at the respective auxiliary intersection point 29 and/or on first transversal crease line 16.

**[0085]** More preferentially, each main inclined crease line 27 and the respective auxiliary inclined crease line 30 may define in collaboration a V-shape.

**[0086]** According to some preferred non-limiting embodiments, each auxiliary inclined crease line 30 may extend between first transversal crease line 16 and second transversal crease line 17 without intersecting second transversal crease line 17 and without intersecting an imaginary line defined by (and comprising) central portion 22.

**[0087]** According to some preferred non-limiting embodiments, each auxiliary crease line 28 may be laterally

shifted from the respective intersection point 26 along first direction D1, preferentially towards longitudinal axis B. In other words, each auxiliary crease line 28 may be misaligned from the respective intersection point 26.

**[0088]** According to some preferred non-limiting embodiments, first transversal crease line 16 may have a linear shape and/or may extend parallel to first transversal boundary edge 12.

**[0089]** With particular reference to Figures 2 and 3, top crease pattern 14 may also comprise further linear crease lines 31 parallel to longitudinal axis B and/or auxiliary crease lines 28 and/or the longitudinal boundary edges. Preferentially, each further linear crease line 31 may be interposed between longitudinal axis B and one respective auxiliary crease line 28.

**[0090]** According to some preferred non-limiting embodiments, each inclined portion 23 may define together with central portion 22 one respective intersection 32, preferentially independently on whether inclined portion 23 and central portion 22 may contact one another or not. The respective intersection 32 may be defined by the respective imaginary inclined endless line 25 and an imaginary extension of central portion 22 or by a point of contact between the respective inclined portion 23 and central portion 22.

**[0091]** Moreover, each auxiliary inclined crease line 30 may extend from the respective auxiliary intersection point 29 towards, and preferentially without intersecting, one respective intersection 32.

**[0092]** According to some preferred non-limiting embodiments, each intersection point 26 defines a respective corner 33, preferentially a back corner, of second package portion 4, preferentially of the top portion, of package 1 to be formed from packaging blank 2.

**[0093]** Moreover, each intersection 32 may define a respective corner 34, preferentially a front corner, of second package portion 4, preferentially of the top portion, of package 1 to be formed from packaging blank 2.

**[0094]** Preferentially, each corner 33 may be farther distanced from first package portion 3 than corners 34 when considering a direction parallel to longitudinal axis A.

**[0095]** With particular reference to Figure 2, bottom crease pattern 15 may be displaced from top crease pattern 14 along second direction D2 and configured to form first package portion 3, preferentially the bottom portion, of package 1.

**[0096]** Preferentially, bottom crease pattern 15 may comprise at least a third transversal crease line 40 and a fourth transversal crease line 41 extending transversally to longitudinal axis B.

**[0097]** Preferentially, third transversal crease line 40 may be interposed between second transversal boundary edge 13 and fourth transversal crease line 41.

**[0098]** Preferentially, fourth transversal crease line 41 may be linear and/or continuous.

**[0099]** Moreover, bottom crease pattern 15 may comprise a plurality of additional crease lines 42, preferentially some being parallel and/or some being transversal to longitudinal axis B. Preferentially, additional crease lines 42 may be interposed between the respective third transversal crease line 40 and the respective fourth transversal crease line 41.

**[0100]** Preferentially, one or more additional crease lines 42 may intersect fourth transversal crease line 41 at a respective additional intersection point 43. More preferentially, each additional intersection point 43 is aligned with a respective intersection point 26 or a respective intersection 32.

**[0101]** Moreover, top crease pattern 14 and bottom crease pattern 15 may delimit an intermediate region 44 designed to form intermediate package portion 5, preferentially the side wall, of package 1.

**[0102]** Intermediate region 44 may comprise an intermediate crease pattern 45 at least partially defining a shape of intermediate package portion 5, preferentially the side wall.

**[0103]** Preferentially, intermediate crease pattern 45 may comprise a plurality of crease lines 46, preferentially aligned according to a desired pattern, the desired pattern at least partially defining the shape of intermediate package portion 5.

**[0104]** Preferentially, at least one crease line 46, more preferentially at least two crease lines 46, may intersect one respective intersection point 26 or one respective intersection 32, and preferentially also the respective additional intersection point 43.

**[0105]** More specifically, each crease line 46 may comprise a respective first inclined portion being inclined with respect to longitudinal axis B and intersecting the respective intersection point 26 or the respective intersection 32, a respective second inclined portion being inclined with respect to longitudinal axis B and intersecting the respective additional intersection point 43 and a linear portion parallel to longitudinal axis B and being interposed between the respective first inclined portion and the respective second inclined portion.

**[0106]** In further detail, each packaging blank 2 may comprise a first face and a second face opposite to the first face. In particular, the second face may be configured to define an inner face of package 1 to be formed, the inner face being configured to be in contact with the pourable product.

**[0107]** According to some preferred embodiments, main inclined crease lines 27 may bulge from the first face, or alternatively from the second face.

**[0108]** In the first case, main inclined crease lines 27 may be obtained with a creasing device having a male tool interacting with the second face and a female tool interacting with the first face. In the second case, main inclined crease lines 27 may be obtained with a creasing device having a male tool interacting with the first face and a female tool interacting with the second face.

**[0109]** Preferentially, first transversal crease line 4 and/or second transversal crease line 5 and/or auxiliary crease lines 28 and/or bottom crease pattern 15 may

bulge from the first face, or alternatively from the second face.

**[0110]** In the first case, first transversal crease line 4 and/or second transversal crease line 5 and/or auxiliary crease lines 28 and/or bottom crease pattern 15 may be obtained with a creasing device having a male tool interacting with the second face and a female tool interacting with the first face. In the second case, first transversal crease line 4 and/or second transversal crease line 5 and/or auxiliary crease lines 28 and/or bottom crease pattern 15 may be obtained with a creasing device having a male tool interacting with the first face and a female tool interacting with the second face.

**[0111]** With reference to Figure 4, number 2' indicates an alternative embodiment of a packaging blank according to the present invention; as 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.

**[0112]** In particular, packaging blank 2' differs from packaging blank 2 in that main inclined crease lines 27 do not intersect first transversal crease line 16.

**[0113]** Additionally, also auxiliary inclined crease lines 30 do not intersect first transversal crease line 16.

**[0114]** Moreover, each packaging blank 2' may comprise further linear crease lines 47 parallel to longitudinal axis B, intersecting first transversal crease line 16 and having one portion arranged between first transversal crease line 16 and second transversal crease line 17 and another portion arranged between first transversal crease line 16 and first transversal boundary edge 12.

**[0115]** The advantages of packaging blank 2 according to the present invention will be clear from the foregoing description.

**[0116]** In particular, the Applicant has observed that by having main inclined crease lines 27 intersecting the respective intersection point 26 and by having the respective auxiliary crease line 28 not intersecting the respective intersection point 26, formation of packages 1 is facilitated, in particular it is possible to obtain improved corners 33.

**[0117]** Clearly, changes may be made to packaging blank 2 and 2' as described herein without, however, departing from the scope of protection as defined in the accompanying claims.

## Claims

**1.** Packaging blank (2; 2') for forming a package (1) filled with a pourable product comprising:

- two longitudinal boundary edges (10; 11) spaced apart from one another along a first direction (D1) transversal to a longitudinal axis (B) of the packaging blank (2; 2'); and
- two transversal boundary edges (12; 13) spaced apart from one another along a second direction (D2) parallel to the longitudinal axis (B); and
- a top crease pattern (14) configured to form a top portion of the package (1);

wherein the top crease pattern (14) comprises at least a first transversal crease line (16) and a second transversal crease line (17) extending transversally to the longitudinal axis (B) of the packaging blank (2; 2'), the first transversal crease line (16) being interposed between one respective transversal boundary edge (10) and the second transversal crease line (17);

wherein the second transversal crease line (17) comprises at least two lateral portions (21) opposed to one another and transversal to the longitudinal axis (B), at least a central portion (22) and at least two inclined portions (23) inclined with respect to the longitudinal axis (B) and each one extending between one respective lateral portion (21) and the central portion (22);

wherein the top crease pattern (14) comprises one or more main inclined crease lines (27) being inclined with respect to the longitudinal axis (B) and one or more auxiliary crease lines (28) extending transversally to the main inclined crease line (27) and/or parallel to the longitudinal axis (B) and/or parallel to the longitudinal boundary edges (10; 11) and being interposed between one respective main inclined crease line (27) and one respective longitudinal boundary edge (10; 11);

wherein each lateral portion (21) defines a respective imaginary endless line (24) comprising the respective lateral portion (21) and the respective inclined portion (23) defines an imaginary inclined endless line (25) comprising the respective inclined portion (23) and intersecting the respective imaginary endless line (23) at an intersection point (26);

wherein each main inclined crease line (27) extends between the first transversal crease line (16) and the second transversal crease line (17) intersecting the respective intersection point (26);

wherein each auxiliary crease line (28) extends between the first transversal crease line (16) and the second transversal crease line (17) without intersecting the second transversal crease line (17), the imaginary endless line (24), the respective intersection point (26) and the respective main inclined crease line (27).

**2.** Packaging blank according to claim 1, wherein each main inclined crease line (27) intersects also the first transversal crease line (16) at an auxiliary intersection point (29).

3. Packaging blank according to claim 2, wherein each main inclined crease line (27) extends from the intersection point (26) to the auxiliary intersection point (29).

4. Packaging blank according to claim 2 or 3, wherein a respective first distance (d1) of each intersection point (26) from the longitudinal axis (B) is larger than a respective second distance (d2) of the respective auxiliary intersection point (29) from the longitudinal axis (B).

5. Packaging blank according to any one of the preceding claims, wherein each lateral portion (21) and/or each inclined portion (23) intersects the respective intersection point (26).

6. Packaging blank according to any one of the preceding claims, wherein the top crease pattern (14) also comprises one or more auxiliary inclined crease lines (30), each one extending between the first transversal crease line (16) and the second transversal crease line (17), being interposed between the longitudinal axis (B) and one respective main inclined crease line (27) and intersecting the respective main inclined crease line (27).

7. Packaging blank according to claim 6, wherein each auxiliary inclined crease line (30) intersects the respective main inclined crease line (27) on the first transversal crease line (16).

8. Packaging blank according to claim 6 or 7, wherein each auxiliary inclined crease line (30) extends between the first transversal crease line (16) and the second transversal crease line (17) without intersecting the second transversal crease line (17) and an imaginary line defined by the central portion (22).

9. Packaging blank according to any one of the preceding claims, and further comprising a bottom crease pattern (15) displaced from the top crease pattern (14) along the second direction (D2) and configured to form a bottom portion of the package (1).

10. Packaging blank according to claim 9, wherein the bottom crease pattern (15) comprises at least a third transversal crease line (40) and a fourth transversal crease line (41) extending transversally to the longitudinal axis (B) of the packaging blank (2; 2'), the third transversal crease line (40) being interposed between one transversal boundary edge (13) and the fourth transversal crease line (41) .

11. Packaging blank according to claim 9 or 10, wherein the top crease pattern (14) and the bottom crease pattern (15) delimit an intermediate region (44) designed to form a side wall of the package (1);

wherein the intermediate region (44) comprises an intermediate crease pattern (45) at least partially defining a shape of the side wall;

wherein the intermediate crease pattern (45) comprises a plurality of crease lines (46), at least one intersecting one respective intersection point (26).

12. Packaging blank according to any one of the preceding claims, wherein each intersection point (26) defines a corner (33) of a top portion of the package (1) to be formed from the packaging blank (2, 2').

13. Packaging blank according to any one of the preceding claims, wherein each auxiliary crease line (28) is laterally shifted from the respective intersection point (26) along the first direction (D1).

14. Packaging blank according to any one of the preceding claims, and further comprising a first face and a second face opposite to the first face;

wherein the second face is configured to define an inner face of the package (1) to be formed, the inner face being configured to be in contact with the pourable product;

wherein each main inclined crease line (27) bulges from the first face or from the second face.

15. Package (1) filled with a pourable product formed from a packaging blank (2; 2') according to any one of the preceding claims.

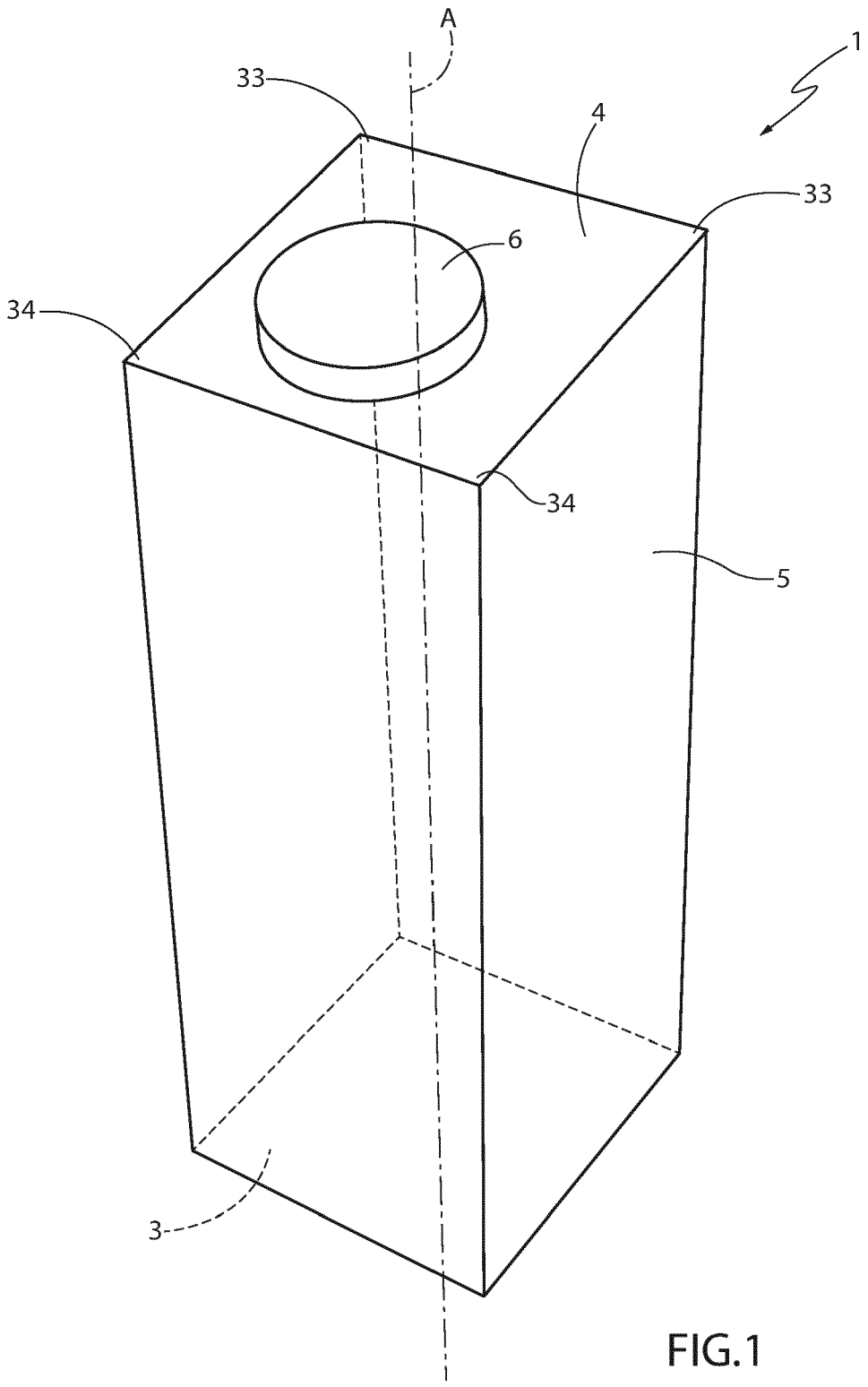
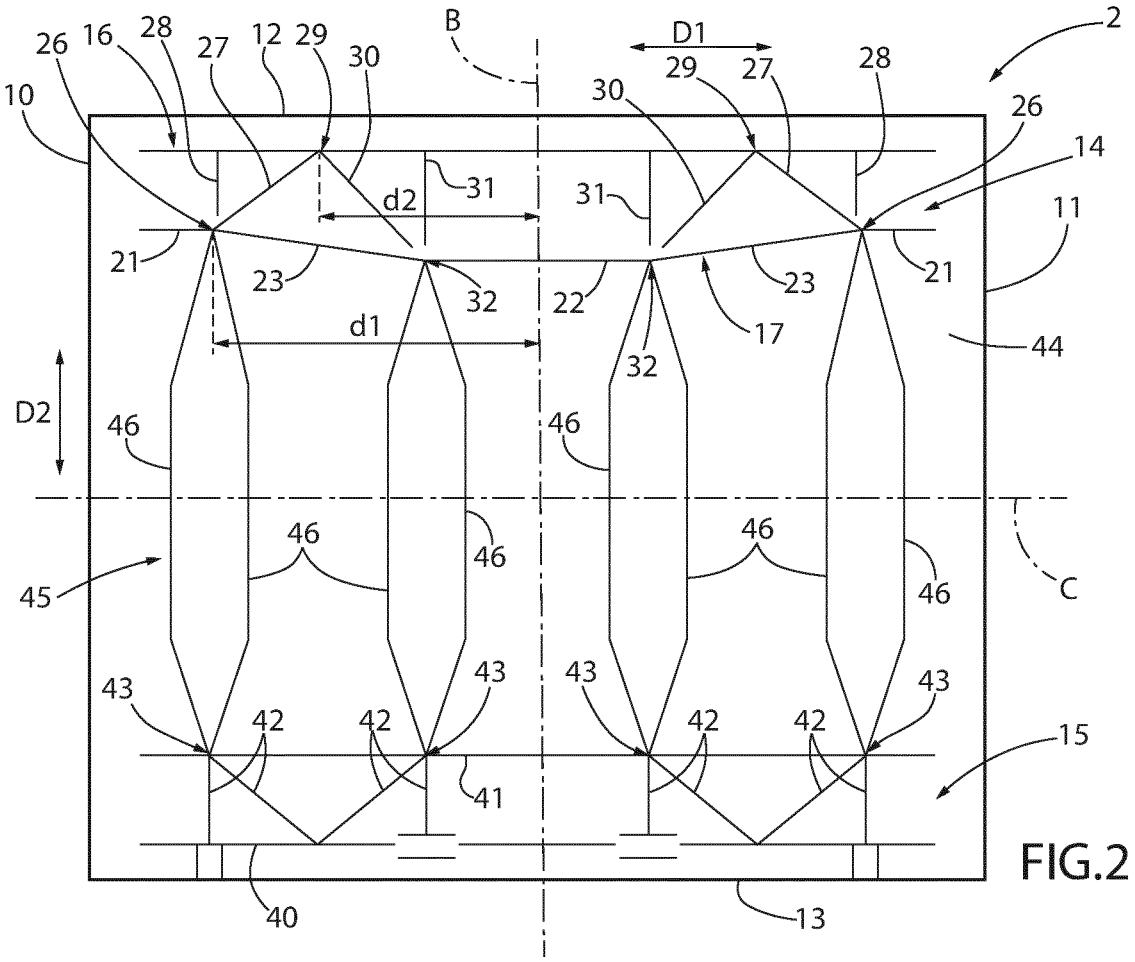



FIG.1


2
B
D1
26
16
28
27
12
29
30
10
29
27
28
30
26
14
11
d2
31
31
21
23
32
22
23
21
d1
17
44
32
D2
46
46
46
46
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C
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FIG.2

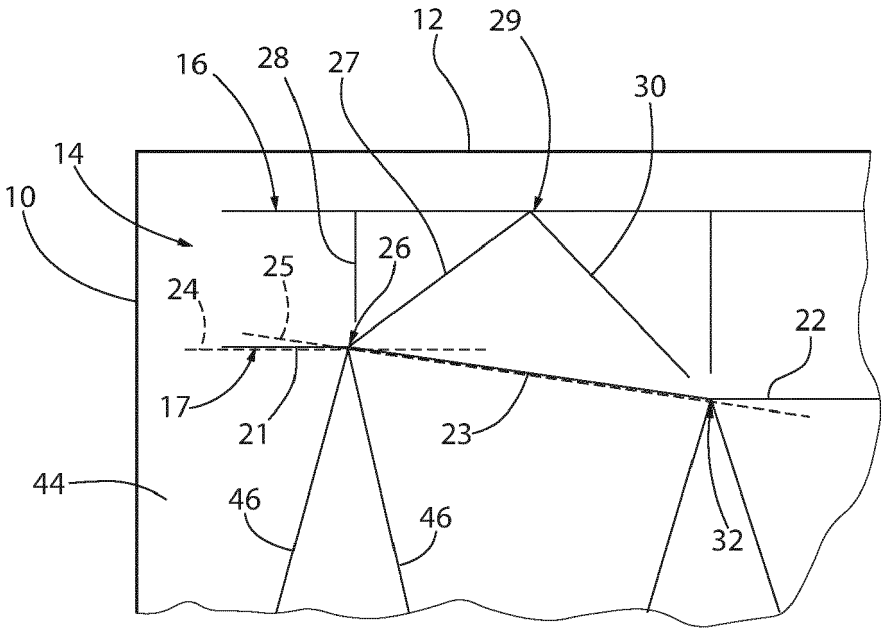


FIG.3

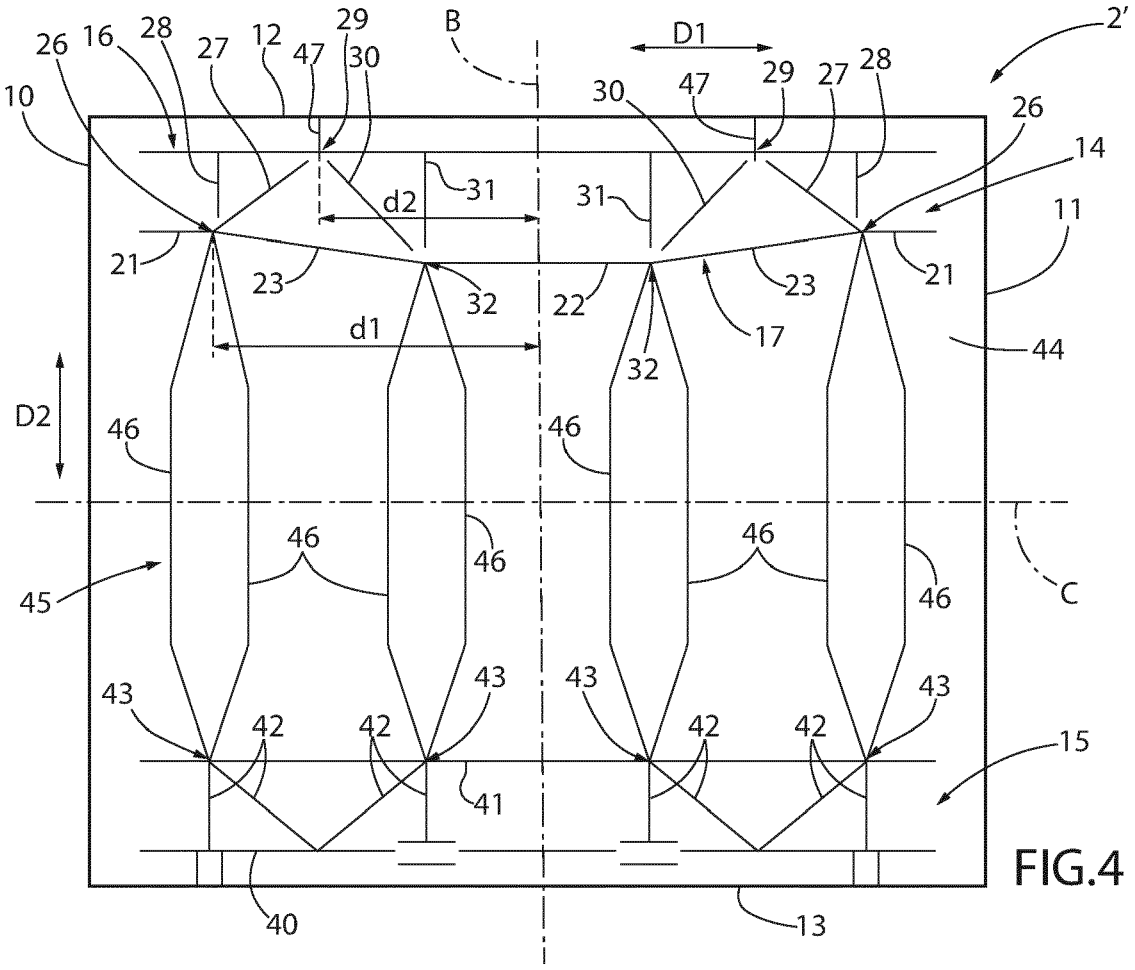
2'
B
D1
D2
d1
d2
C
10
11
12
13
14
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FIG.4

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