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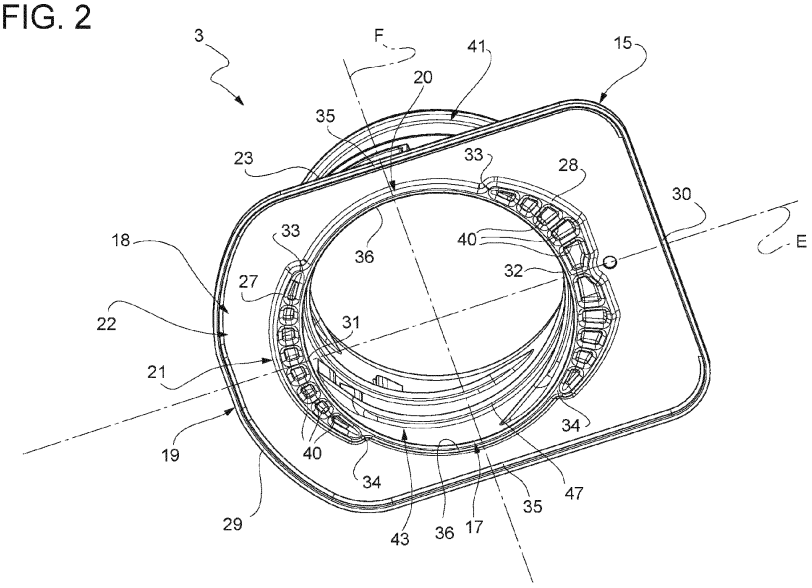
(54) OPENING DEVICE FOR A PACKAGE AND PACKAGE HAVING AN OPENING DEVICE

(57) There is described an opening device (3) for a package (1) having a main body (2) filled with a pourable product and having a designated pour opening. The opening device (3) comprising at least a base frame (15) for coupling the opening device (3) to the main body (2) and about the designated pour opening. The base frame (15) comprises a rim (16) delimiting an opening (17) configured to be aligned with the designated pour opening and a first surface (18) configured to receive glue and to be glued onto an outer surface (10) of the main body (2). The base frame (15) comprises at least a first barrier (19) extending from a peripheral portion of the first surface (18), a second barrier (20) extending from the first surface (18) and being arranged adjacent to the rim (16) and a third barrier (21) extending from the first surface (18) and being interposed between the first barrier (19) and the second barrier (20).

FIG. 2



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Description

TECHNICAL FIELD

[0001] The present invention relates to an opening device for a package, in particular a composite package, filled with a pourable product, in particular a pourable food product.

[0002] Furthermore, the present invention relates to a package, in particular a composite package, filled with a pourable product, in particular a pourable food product, and having an opening device.

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 composite packages made of a multilayer composite packaging material.

[0004] A typical example is the parallelepiped-shaped package for pourable food products known as Tetra Brik Aseptic (registered trademark), which is made by sealing and folding a laminated strip packaging material. The packaging material has a multilayer structure comprising a carton and/or paper base layer, covered on both sides with layers of heat-seal plastic material, e.g. polyethylene. In the case of aseptic packages for long-storage products, the packaging material also comprises a layer of oxygen-barrier material, 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] It is also known that some types of such packages comprise:

- a main body formed from a composite packaging material and having a designated pour opening; and
- an opening device glued onto the main body, in particular by means of a hot melt glue, and about the designated pour opening.

[0006] The opening device comprises a base frame, which is glued onto the main body, and a collar aligned with the designated pour opening and extending from the main body.

[0007] Even though the known opening devices work satisfyingly well, a desire is felt in the sector to further improve the opening devices, in particular such that once the opening devices are applied onto the respective main body they have an increased attachment force with respect to the known opening devices.

[0008] Additionally, a desire is felt in the sector to provide for an improved package for pourable products having an opening device, in particular an opening device that once applied onto the main body of the package has an increased attachment force with respect to the known opening devices.

DISCLOSURE OF INVENTION

[0009] It is therefore an object of the present invention to provide in a straightforward and low-cost manner an improved opening device for a package, in particular a composite package filled with a pourable product, in particular a pourable food product.

[0010] It is a further object of the present invention to provide in a straightforward and low-cost manner an improved package, in particular an improved composite package, filled with a pourable product, in particular with a pourable food product, and having an opening device.

[0011] According to the present invention, there is provided an opening device according to claim 1.

[0012] Further advantageous embodiments of the opening device are specified in the claims being directly or indirectly dependent on claim 1.

[0013] According to the present invention, there is also provided a package according to claim 14 or 15.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] 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 perspective view of a package having an opening device according to a first embodiment of the present invention, with parts removed for clarity;
Figure 2 is a perspective bottom view of the opening device of Figure 1, with parts removed for clarity;
Figure 3 is another perspective bottom view of the opening device of Figure 1 illustrating an additional portion of the opening device not shown in Figure 2, with parts removed for clarity;
Figure 4 is a perspective and sectioned view of the opening device of Figure 1; and
Figure 5 is a perspective bottom view of an opening device according to a second embodiment of the present invention, with parts removed for clarity.

BEST MODES FOR CARRYING OUT THE INVENTION

[0015] Number 1 indicates as a whole a package, in particular a composite package, for a pourable product, in particular a pourable food product, even more particular a liquid food product, comprising:

- a (composite) main body 2, in particular a sealed (composite) main body 2, being filled with the pourable food product and having a designated pour opening configured to allow for an outflow of the pourable product from main body 2; and
- an opening device 3, in particular a plastic opening device 3, connected to main body 2 about the des-

ignated pour opening.

[0016] In more detail, package 1, in particular main body 2, may contain pourable products such as milk products (pure milk, flavored milk, etc.), yoghurt drinks, juices, wine, tomato sauce, beverages containing pulp, food products containing solid and liquid components, sugar, salt and the like.

[0017] Preferentially, main body 2 may be formed from a multilayer composite packaging material.

[0018] More specifically, the multilayer composite packaging material may comprise at least one layer of fibrous material, such as e.g. paper or cardboard, and at least two layers of heat-seal plastic material, e.g. polyethylene, interposing the layer of fibrous material in between one another. One of these two layers of heat-seal plastic material defining the inner face of main body 2 contacting the pourable product.

[0019] Moreover, the multilayer composite packaging material 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, the multilayer composite packaging material 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.

[0020] With particular reference to Figure 1, package 1, in particular main body 2, may extend along a longitudinal axis A, a first transversal axis B and a second transversal axis C. In particular, the extension of main body 2 along longitudinal axis A may be larger than the extension of main body 2 along first transversal axis B and second transversal axis C. Moreover, the extension along second transversal axis C may be larger than the extension of main body 2 along first transversal axis B.

[0021] Preferentially, package 1, in particular main body 2, may be parallelepiped-shaped. Alternatively, package 1, in particular main body 2, may have a cylindrical shape or any other shape.

[0022] In more detail, main body 2 may comprise a plurality of walls, in particular a first wall 5, one or more lateral walls 6, in the specific case shown four, and at least one second wall 7, in the specific case shown one.

[0023] More specifically, first wall 5 may be transversal, in particular perpendicular, to longitudinal axis A, and main body 2 may extend from first wall 5 along longitudinal axis A. Preferentially, first wall 5 may define a support surface of package 1, in particular main body 2, which is designed to be put in contact with a support, such as e.g. a shelf, in particular when, in use, being e.g. exposed within a sales point or when being stored. In particular, when being arranged on a support first wall 5 defines a bottom wall of package 1.

[0024] Additionally, first wall 5 may define a bottom wall of package 1 during a normal use of package 1.

[0025] Furthermore, lateral walls 6 may be (fixedly) connected to first wall 5 and extend, in particular (substantially) parallel to longitudinal axis A, from first wall 5. In particular, lateral walls 6 (substantially) define the extension of package 1 along longitudinal axis A.

[0026] Additionally, second wall 7 may be positioned opposite to first wall 5 and may be (fixedly) connected to (at least some) lateral walls 6. In particular, also second wall 7 may be transversal to longitudinal axis A.

[0027] Moreover, first wall 5 may be arranged at and/or define a first end of package 1, in particular main body 2, and second wall 7 may be arranged at and/or define a second end of package 1, in particular main body 2, opposite to the first end.

[0028] In particular, lateral walls 6 may be interposed between first wall 5 and second wall 7.

[0029] In particular, when being arranged on a support and/or during a normal use of package 1, second wall 7 may define a top wall of main body 2.

[0030] According to some non-limiting embodiments, first wall 5 and second wall 7 may be parallel to one another.

[0031] According to alternative non-limiting embodiments not shown, first wall 5 and second wall 7 may be inclined with respect to one another.

[0032] According to another alternative embodiment not shown, second wall 7 may have two portions transversal to one another (i.e. so as to form a gable-top configuration).

[0033] According to some non-limiting embodiments, second wall 7 may carry and/or comprise the designated pour opening.

[0034] Furthermore, main body 2 may comprise an inner surface 8 facing an inner space 9 of main body 2 and an outer surface 10 opposite to inner surface 8 and facing away from inner space 9. In particular, the pourable product is filled into inner space 9 and contacts inner surface 8.

[0035] According to some possible non-limiting embodiments, package 1 may also comprise a separation membrane sealing the designated pour opening. In particular, in use, the separation membrane is to be ruptured and/or opened and/or cut and/or pierced so as to allow for the outpouring of the pourable product from package 1, in particular main body 2.

[0036] In more detail, the separation membrane separates in the area of, in particular at, the designated pour opening inner space 9 from an outer space 11.

[0037] Preferentially but not necessarily, the separation membrane comprises, in particular consist of, a gas- and light-barrier material, e.g. aluminum foil or ethylene vinyl alcohol (EVOH) film.

[0038] With particular reference to Figures 2 to 4, opening device 3 comprises at least a base frame 15 for coupling opening device 3 to package 1, in particular main body 2, and about the designated pour opening. In particular, base frame 15 is designed to be glued onto main body 2, in particular onto outer surface 10.

[0039] In more detail, base frame 15 comprises:

- a rim 16 delimiting an opening 17 of base frame 15, opening 17 being configured to be aligned with the designated pour opening; and
- a first surface 18 configured to receive glue, in particular a hot melt glue, and to be glued onto outer surface 10 of main body 2, in particular onto a portion of outer surface 10, the portion belonging to second wall 7.

[0040] Advantageously, base frame 15 also comprises:

- a first barrier 19 extending from a peripheral portion of first surface 18;
- a second barrier 20 extending from first surface 18 and being arranged adjacent to, in particular at, rim 16; and
- a third barrier 21 extending from first surface 18 and being interposed between first barrier 19 and second barrier 20.

[0041] Preferentially, first barrier 19 and third barrier 21 may be formed such to delimit a receiving area 22 of first surface 18, which is configured to receive the glue. Additionally, second barrier 20 may be configured such to avoid glue to enter into and/or arrive at opening 17.

[0042] In more detail, first surface 18 is designed to face outer surface 10.

[0043] Alternatively, or additionally, first barrier 19 and/or second barrier 20 and/or third barrier 21 are formed to contact outer surface 10 with base frame 15 being glued onto main body 2, in particular onto outer surface 10.

[0044] Preferentially, each one of first barrier 19 and/or second barrier 20 and/or third barrier 21 may comprise a respective tip portion configured to face and/or contact outer surface 10 with base frame 15 being glued onto main body 2, in particular onto outer surface 10. In particular, each tip portion defines the portion of first barrier 19 or second barrier 20 or third barrier 21 having the largest distance from first surface 18.

[0045] According to some possible non-limiting embodiments, at least the respective tip portions of first barrier 19 and of second barrier 20 may lie within a plane H, in particular plane H being (substantially) parallel to first surface 18. Additionally, also the respective tip portion of third barrier 21 may lie within plane H.

[0046] With particular reference to Figures 2 and 3, first barrier 19 and/or second barrier 20 has/have respective annular shapes.

[0047] In particular, second barrier 20 surrounds opening 17. Preferentially, second barrier 20 and rim 16 may be integral to one another, i.e. second barrier 20 defines (at least partially) rim 16. In other words, second barrier 20 delimits opening 17.

[0048] In further detail, second barrier 20 is arranged radially inside of first barrier 19 with respect to a central axis of opening 17.

[0049] According to some possible embodiments, base frame 15 may comprise a peripheral portion 23 and the peripheral portion of first surface 18 may follow (a contour of) peripheral portion 23.

[0050] According to the specific embodiment shown, third barrier 21 may comprise a first portion 27 and a second portion 28, in particular distinct and detached from one another.

[0051] Preferentially, each one of first portion 27 and second portion 28 may be arc-shaped.

[0052] Furthermore, first barrier 19 may comprise a first zone 29 and a second zone 30 distinct from one another. In particular, second zone 30 is opposite to first zone 29.

[0053] Alternatively or in addition, second barrier 20 may comprise a first section 31 and a second section 32 distinct from one another. In particular, second section 32 may be opposite to first section 31.

[0054] Preferentially, each one of first zone 29 and/or second zone 30 and/or first section 31 and/or second section 32 may be arc-shaped.

[0055] With particular reference to Figures 2 to 4, first portion 27 and second portion 28 may be connected to second barrier 20.

[0056] More specifically, each one of first portion 27 and second portion 28 may comprise a respective first end 33 and a respective second end 34. In particular, each first end 33 and each second end 34 may be connected to second barrier 20 at respectively a corresponding first position and a corresponding second position, the second position being distinct from the first position.

[0057] Even more specifically, first section 31 and second section 32 may (at least partially) extend from one respective first position and one respective second position.

[0058] According to some preferred non-limiting embodiments, first portion 27 may be interposed between first zone 29 and first section 31 and second portion may be interposed between second zone 30 and second section 32.

[0059] Moreover, receiving area 22 may comprise a portion extending between first portion 27 and first zone 29 and another portion extending between second portion 28 and second zone 30.

[0060] Furthermore, first barrier 19 may comprise lateral zones 35 interposed between first zone 29 and second zone 30 and second barrier 20 may comprise lateral sections 36 interposed between first section 31 and second section 32.

[0061] Moreover, receiving area 22 may also comprise portions interposed between lateral zones 35 and lateral sections 36.

[0062] Preferentially, base frame 15 may have (substantially) a plate-like configuration.

[0063] In more detail, base frame 15 may extend along a first axis E and a second axis F perpendicular to first axis E. Similarly, also first surface 18 may extend along first axis E and second axis F.

[0064] In particular, an extension of base frame 15 along first axis E is larger than an extension of base frame 15 along second axis F. Furthermore, a thickness (extension along a third axis perpendicular to first axis E and second axis F) of base frame 15 is (significantly) smaller than the extensions of base frame 15 along first axis E and second axis F.

[0065] Preferentially, first surface 18 may have a first extension along first axis E and a second extension along second axis F. In particular, the first extension is larger than the second extension.

[0066] Moreover, second zone 30 and second section 32 may be opposite to respectively first zone 29 and first section 31 along first axis E and/or with respect to second axis F.

[0067] With particular reference to Figures 2 and 3, base frame 15 may also comprise a plurality of reinforcing ribs 40, in particular (substantially) rectilinear reinforcing ribs 40, extending between second barrier 20 and third barrier 21, in particular between first section 31 and first portion 27 and between second section 32 and second portion 28.

[0068] In more detail, each reinforcing rib 40 may be connected to both second barrier 20 and third barrier 21. In particular, each reinforcing rib 40 may be connected to first portion 27 and first section 31 or second portion 28 and second section 32.

[0069] Preferentially, each reinforcing rib 40 may be transversal to second barrier 20 and third barrier 21.

[0070] Preferably, reinforcing ribs 40 may extend from first surface 18 towards plane H without contacting or intersecting plane H.

[0071] With particular reference to Figures 2 to 4, opening device 3 may also comprise a collar 41 extending from base frame 15 and being aligned, in particular being coaxial with opening 17.

[0072] In more detail, collar 41 may comprise an outlet opening 42 and a flow channel 43 for the pourable product extending from opening 17 to outlet opening 42. In particular, opening 17 is arranged at a first end of collar 41 and outlet opening 42 is arranged at a second end of collar 41 opposite to the first end.

[0073] In particular, collar 41 is integral to base frame 15.

[0074] Furthermore, second barrier 20 may be formed so as to avoid a flow of glue into flow channel 43.

[0075] Additionally, opening device 3 may comprise a lid 44 designed to cover and/or seal outlet opening 42. In particular, lid 44 is at least moveable between a closed position in which lid 44 covers outlet opening 42 and an open position in which lid 44 frees outlet opening 42 for allowing outpouring of the pourable product.

[0076] According to the specific example shown, lid 44 is moveable from the closed position to the open position by means of an angular movement of lid 44.

[0077] Preferentially, initially lid 44 is positioned in the closed position.

[0078] Moreover, opening device 3 may also comprise a coupling ring arranged around collar 41 and a tethering element tethering lid 44 to the coupling ring.

[0079] According to some preferred non-limiting embodiments, opening device 3 may also comprise a cutter 45 moveably arranged within collar 41, in particular flow channel 43.

[0080] Preferentially, cutter 45 is configured to at least partially cut, in use, the separation membrane.

[0081] More specifically, cutter 45 is moveable between a rest position in which cutter 45 is distanced and/or configured to be distanced from the separation membrane and an active position (see Figure 3) in which cutter 45 is configured to at least partially cut the separation membrane.

[0082] Preferentially, cutter 45 is initially placed in the rest position.

[0083] According to some preferred embodiments, opening device 3 may also comprise an actuation assembly 46 (only partially shown) configured to actuate a movement of cutter 45 from the rest position to the active position.

[0084] Furthermore, the actuation assembly may be operatively coupled to lid 44 such that during a first-time movement of lid 44 from the closed position to the open position also movement of cutter 45 from the rest position to the active position is actuated.

[0085] Moreover, opening device 3 may also comprise a cam mechanism 47 (only partially shown) configured to guide movement of cutter 45 from the rest position to the open position.

[0086] The formation of package 1 comprises the step of forming and filling main body 2 and to glue opening device 3 onto main body 2 or a blank of the multilayer composite packaging material from which main body 2 is formed and about the designated pour opening.

[0087] During the gluing of opening device 3 onto main body 2 or the blank, first surface 18 receives the glue, in particular the hot melt glue. Thereby, the flow of the glue is delimited by first barrier 19, second barrier 20 and third barrier 21.

[0088] In use, a consumer receives package 1 with lid 44 being in the closed position and cutter 45 being in the rest position.

[0089] Upon movement of lid 44 from the closed position to the open position, cutter 45 moves from the rest position to the active position and cuts the separation membrane so that the consumer can outpour the pourable product.

[0090] With reference to Figure 5, number 3' indicates an alternative embodiment of an opening device according to the present invention; as opening device 3' is similar to opening device 3, the following description is limited to the differences between them, and using the same references, where possible, for identical or corresponding parts.

[0091] In particular, opening device 3' differs from opening device 3 in that base frame 15 further comprises a plurality of auxiliary reinforcing ribs 48, in particular

(substantially) rectilinear auxiliary reinforcing ribs 40, extending between first barrier 19 and third barrier 21 and/or extending between first barrier 19 and second barrier 20.

[0092] In more detail, a first group of auxiliary reinforcing ribs 48 may extend between and may contact first barrier 19 and third barrier 21 and a second group of auxiliary reinforcing ribs 48 may extend between and may contact first barrier 19 and second barrier 20.

[0093] In even more detail, auxiliary reinforcing ribs 48 of the first group of auxiliary reinforcing ribs 48 may extend between and may contact either first portion 27 and first zone 29 or second portion 28 and second zone 30.

[0094] Alternatively or in addition, auxiliary reinforcing ribs 48 of the second group of auxiliary reinforcing ribs 48 extend between and may contact lateral zones 35 and lateral zones 36.

[0095] Preferably, auxiliary reinforcing ribs 48 may extend from first surface 18 towards plane H without contacting or intersecting plane H.

[0096] The formation of package 1 when using opening device 3' is similar to the formation of package 1 when using opening device 3 and therefore we refer to the above-provided description.

[0097] As also the use of package 1 when being provided with opening device 3' is similar to the use of package 1 when being provided with opening device 3, we refer to the above-provided description.

[0098] The advantages of opening device 3 and opening device 3' and/or package 1 according to the present invention will be clear from the foregoing description.

[0099] In particular, opening device 3 and opening device 3' allow for an increased adhesion force with respect to the known opening device. This is as first barrier 19, second barrier 20 and third barrier 21 allow on the one side to delimit the flow of the glue and on the other side to maximize the portion of first surface 18, which can effectively receive the glue, without risking contamination of opening 17 and/or the separation membrane and/or flow channel 43 and/or cutter 45, and in particular without risking any malfunction of cutter 45.

[0100] A further advantage resides in providing for reinforcing ribs 40 allowing an increase of the stiffness of base frame 15.

[0101] An even other advantage resides in providing for auxiliary reinforcing ribs 48 allowing on one side to increase the stiffness of base frame 15 and to guide the flow of the glue.

[0102] Clearly, changes may be made to opening device 3 and/or opening device 3' and/or package 1 as described herein without, however, departing from the scope of protection as defined in the accompanying claims.

Claims

1. Opening device (3) for a package (1) having a main body (2) filled with a pourable product and having a designated pour opening;

   the opening device (3) comprising at least a base frame (15) for coupling the opening device (3) to the main body (2) and about the designated pour opening;
   wherein the base frame (15) comprises:

   - a rim (16) delimiting an opening (17) configured to be aligned with the designated pour opening; and
   - a first surface (18) configured to receive glue and to be glued onto an outer surface (10) of the main body (2);

   wherein the base frame (15) comprises at least:

   - a first barrier (19) extending from a peripheral portion of the first surface (18);
   - a second barrier (20) extending from the first surface (18) and being arranged adjacent to the rim (16); and
   - a third barrier (21) extending from the first surface (18) and being interposed between the first barrier (19) and the second barrier (20).

2. Opening device according to claim 1, wherein the first barrier (19) and the third barrier (21) are formed such to delimit a receiving area (22) of the first surface (18), which is configured to receive the glue and the second barrier (20) is configured such to avoid the glue to enter into and/or arrive at the opening (17).

3. Opening device according to claim 1 or 2, wherein the first barrier (19) has an annular shape and/or the second barrier (20) has an annular shape.

4. Opening device according to any one of the preceding claims, wherein the third barrier (21) comprises a first portion (27) and a second portion (28);

   wherein the first portion (27) is interposed between a first zone (29) of the first barrier (19) and a first section (31) of the second barrier (20); and
   wherein the second portion (28) is interposed between a second zone (30) of the first barrier (19) opposite to the first zone (29) and a second section (32) of the second barrier (20) opposite to the first section (31).

5. Opening device according to any one of the preceding claims, wherein the first surface (18) extends along a first axis (E) and a second axis (F) perpendicular to one another;

wherein a first extension of the first surface (18) along the first axis (E) is larger than a second extension of the first surface (18) along the second axis (F);
wherein the second zone (30) and the second section (32) are opposite to respectively the first zone (19) and the first section (31) along the first axis (E) and/or with respect to the second axis (F).

6. Opening device according to claim 4 or 5, wherein each one of the first portion (27) and the second portion (28) is connected to the second barrier (20).

7. Opening device according to claim 6, wherein each one of the first portion (27) and the second portion (28) comprises a respective first end (33) and a respective second end (34);
wherein each first end (33) and each second (34) is connected to the second barrier (20) at respectively a first position and a second position, the second position being distinct from the first position.

8. Opening device according to any one of the preceding claims, and further comprising a plurality of reinforcing ribs (40) extending between the second barrier (20) and the third barrier (21).

9. Opening device according to any one of the preceding claims, and further comprising a plurality of auxiliary reinforcing ribs (48) extending between the first barrier (19) and the third barrier (21) and/or between the first barrier (19) and the second barrier (20).

10. Opening device according to claim 9, wherein a tip portion of the first barrier (19) and/or a tip portion of the second barrier (20) lies within a respective plane (H);
wherein the auxiliary reinforcing ribs (48) extend from the first surface (18) towards the plane (H) without contacting or intersecting the plane (H).

11. Opening device according to any one of the preceding claims, and further comprising a collar (41) extending from the base frame (15) and being aligned with the opening (17).

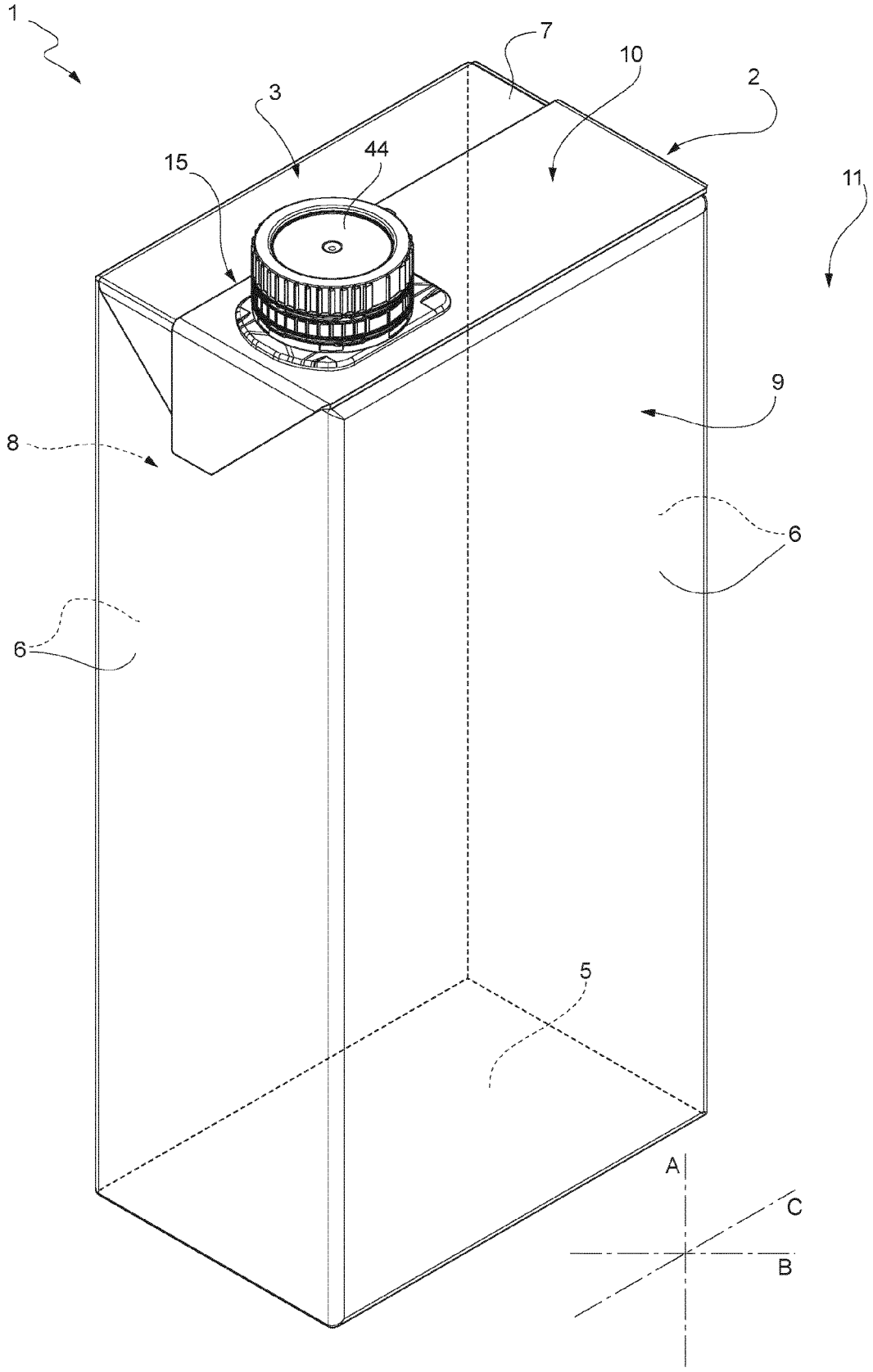
12. Opening device according to claim 11, and further comprising a cutter (45) moveably arranged within the collar (41) .

13. Opening device according to claim 11 or 12, and further comprising a lid (44) configured to cover an outlet opening (42) of the collar (41).

14. Package (1) filled with a pourable product and comprising a main body (2) having a designated pour opening and an opening device (3) according to any one of the preceding claims glued onto the main body (2) and about the designated pour opening.

15. Package according to claim 14, wherein the main body (2) is formed from a multilayer composite packaging material.

FIG. 1



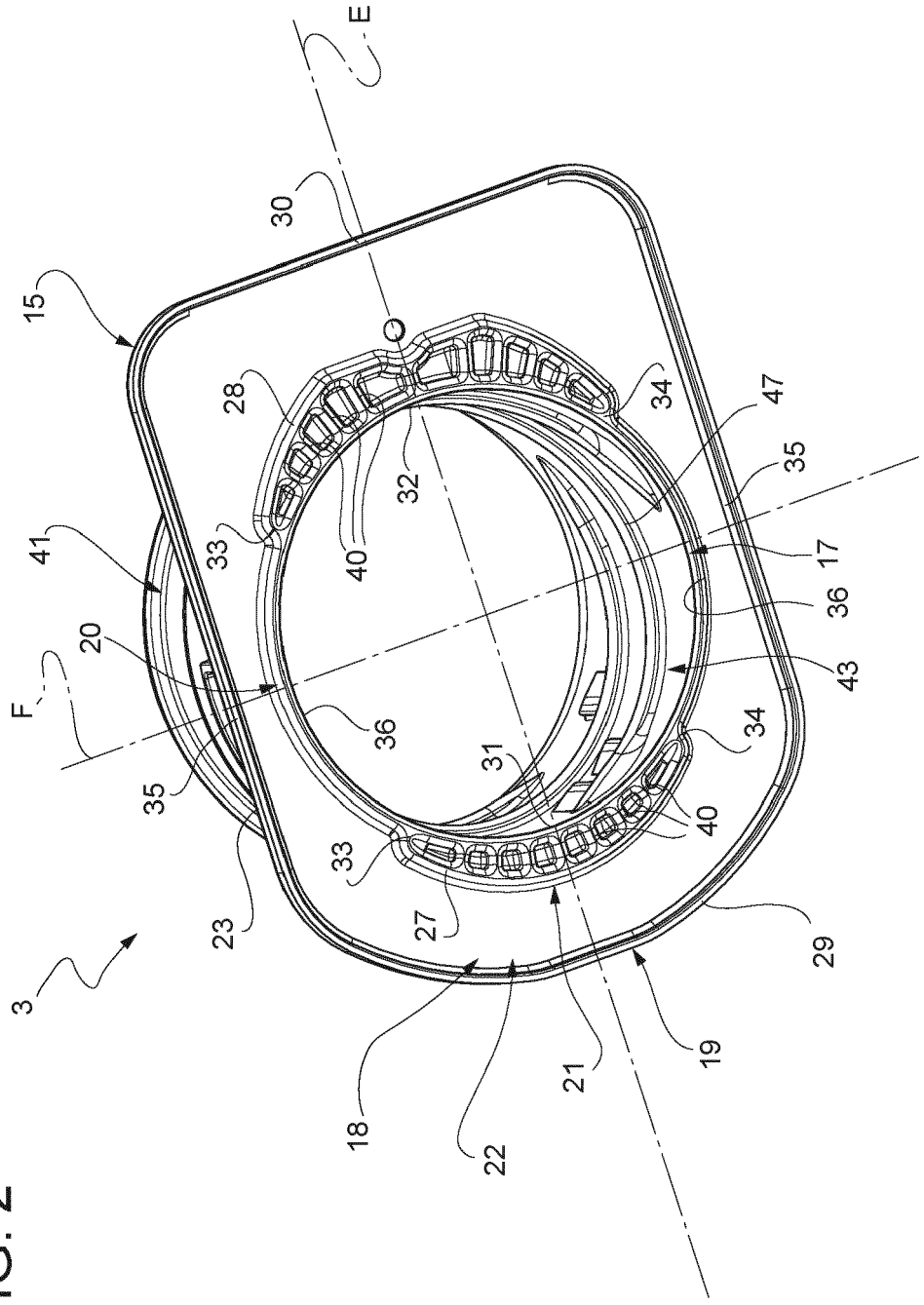

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FIG. 2

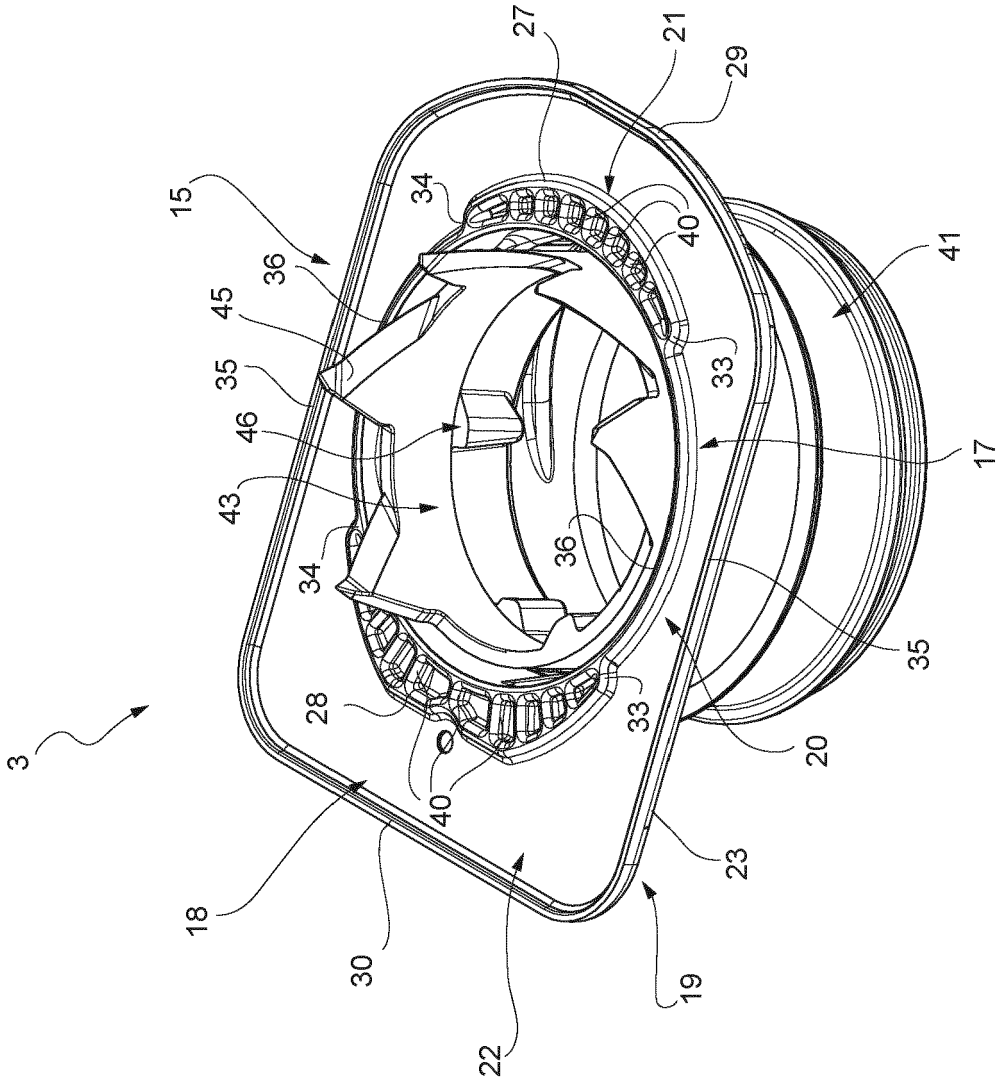
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FIG. 3

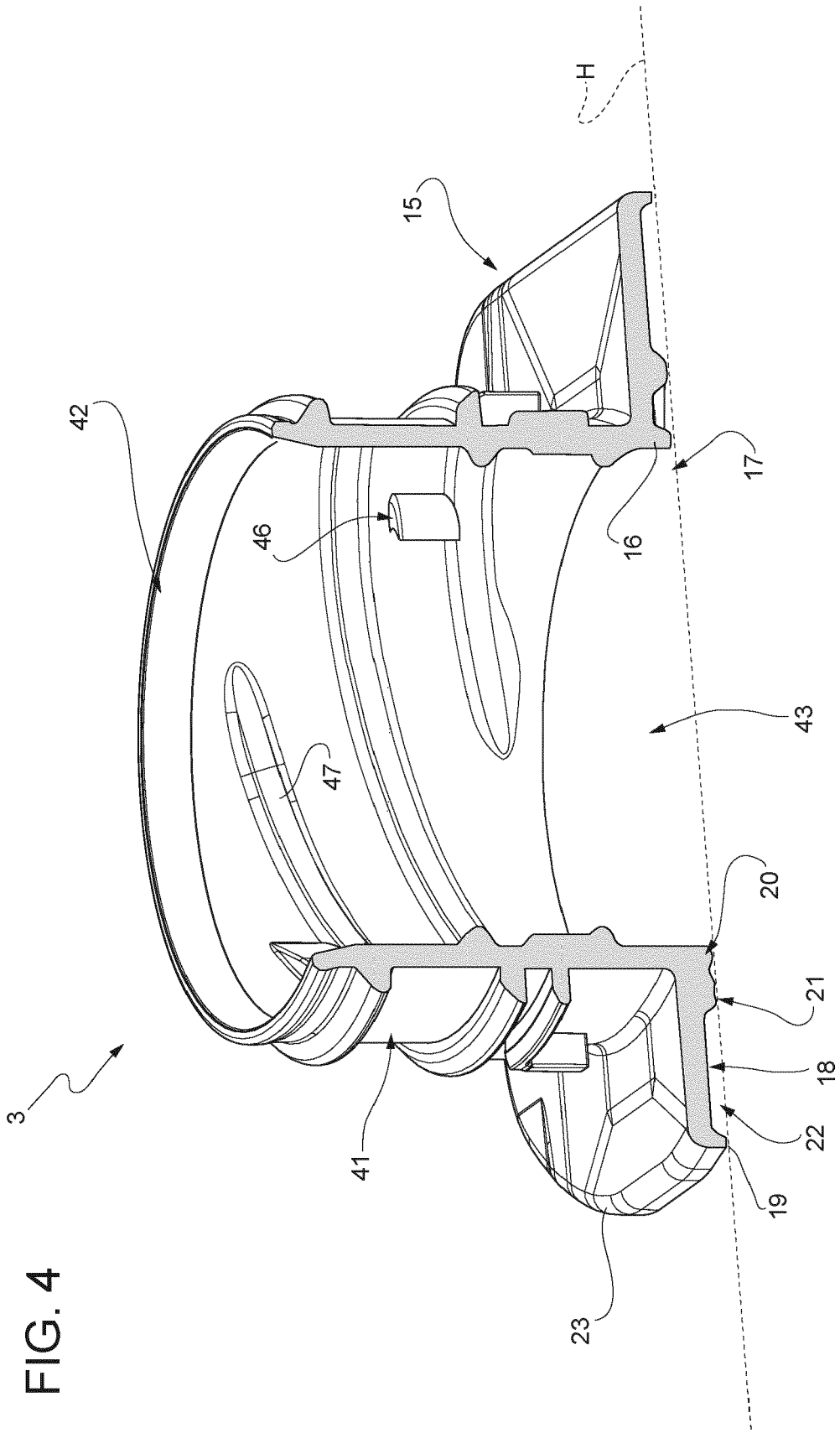
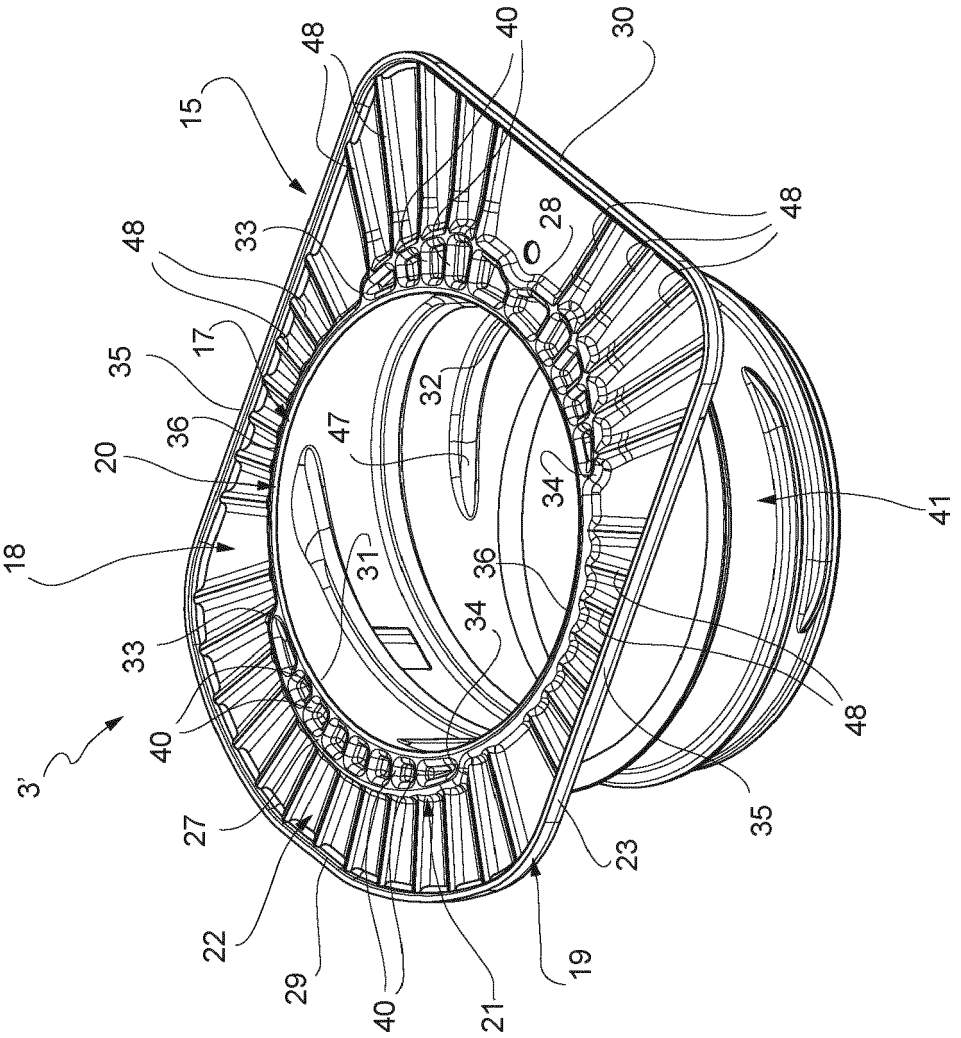


FIG. 4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41
18
31
36
34
33
48
40
3'
27
35
23
22
19
29
40
21

FIG. 5

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EUROPEAN SEARCH REPORT

Application Number
EP 21 18 7679

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Place of search	Date of completion of the search	Examiner
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