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(54) **SPOUT ASSEMBLY, COMPOSITE PACKAGING MATERIAL SHEET, METHOD FOR FORMING A COMPOSITE PACKAGING MATERIAL SHEET, COMPOSITE PACKAGE AND METHOD FOR FORMING A COMPOSITE PACKAGE**

(57) There is described a spout assembly (3) comprising at least a base frame (15) for coupling the spout assembly (3) about the opening and a collar (16) having a drinking mouth (17) and being arranged at a first end (19) of the collar (16) and configured to allow a consumer to consume the pourable product. The base frame (15) comprises a first portion (34), a second portion (35) and a fold line (36) connecting the first portion (34) and the

second portion (35) with one another. The fold line (36) is configured to allow that the first portion (34) and the second portion (35) can be transversally arranged with respect to one another. The collar (16) comprises a rim (20) defining an inlet opening (21) arranged at a second end (22) of the collar (16) opposite to the first end (19) and the rim (20) comprises a coupling portion (37) being adjacent to the fold line (36).

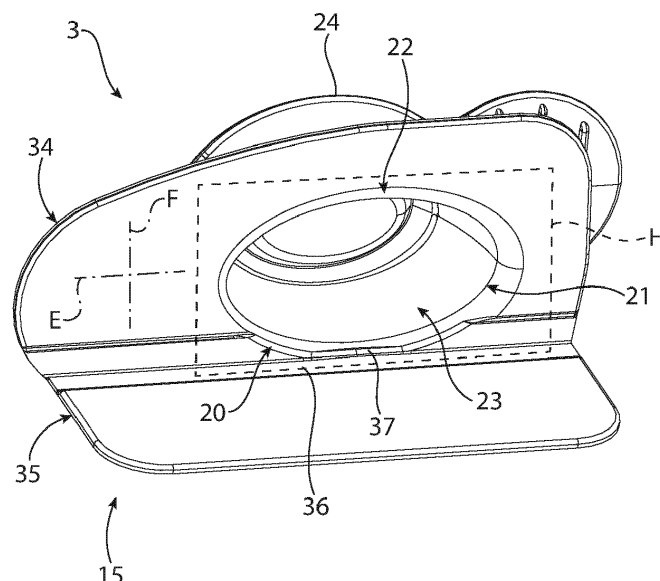


FIG. 4

Description

TECHNICAL FIELD

[0001] The present invention relates to a spout assembly for a composite packaging material sheet for the formation of an on-the-go composite package filled with a pourable food product.

[0002] The present invention also relates to a composite packaging material sheet for the formation of an on-the-go composite package, in particular an on-the-go composite package having a sealed main body, filled with a pourable food product, and a spout assembly.

[0003] Furthermore, the present invention also relates to a method for forming a composite packaging material sheet for the formation of an on-the-go composite package.

[0004] Advantageously, the present invention also relates to an on-the-go composite package, in particular an on-the-go composite package having a sealed main body, filled with a pourable food product, and comprising a spout assembly.

[0005] Additionally, the present invention also relates to a method for forming an on-the-go composite package for a pourable food product.

BACKGROUND ART

[0006] 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.

[0007] 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.

[0008] It is also known that some kinds of composite packages are on-the-go composite packages, meaning that they are thought to be used for the consumption on-the-go, i.e. at a location outside and/or away from the own household or living place.

[0009] Some kinds of on-the-go composite packages comprise:

- a main body having an opening; and
- a spout assembly connected to the main body and about the opening.

[0010] The spout assembly is thereby designed such to allow a consumer to consume the food product directly from the on-the-go composite package and by means of the spout assembly.

[0011] Such a typical spout assembly comprises a base frame connecting the spout assembly to the main body and about the opening and a collar extending from the base frame and having a drinking mouth, which is formed to allow for the consumption-on-the-go.

[0012] A typical on-the-go composite package comes along with a limited size. For example, a typical on-the-go composite package has a size that allows to contain between 100 ml to 500 ml of the pourable food product.

[0013] These size limitations result in constraints with regard to the size and the functionality of the spout assembly.

[0014] Therefore, a desire is felt in the sector to provide for an improved spout assembly, in particular which presents a size and stability so as to guarantee a good user experience.

[0015] In particular, a desire is felt in the sector to provide for an improved spout assembly for a composite packaging material sheet for the formation of on-the-go composite packages.

[0016] Furthermore, a desire is felt in the sector to provide for an improved composite packaging material sheet for the formation of on-the-go composite packages.

[0017] Another desire is felt in the sector to provide for an improved method for forming a composite packaging material sheet for the formation of on-the-go composite packages having a spout assembly.

[0018] Additionally, a desire is felt in the sector to provide for an improved on-the-go composite package for pourable products having a spout assembly.

[0019] A further desire is felt in the sector to provide for a method for forming on-the-go composite packages for pourable products having a spout assembly.

DISCLOSURE OF INVENTION

[0020] It is therefore an object of the present invention to provide in a straightforward and low-cost manner an improved spout assembly for a composite packaging material sheet for the formation of an on-the-go composite package filled with a pourable food product.

[0021] It is a further object of the present invention to provide in a straightforward and low-cost manner an improved composite packaging material sheet for the formation of an on-the-go composite package filled with a pourable product, in particular filled with a pourable food product.

[0022] It is another object of the present invention to provide in a straightforward and low-cost manner a method for forming a composite packaging material sheet for the formation of on-the-go composite packages for pourable food products.

[0023] It is an even further object of the present invention to provide in a straightforward and low-cost manner

an on-the-go composite package for a pourable food product.

[0024] It is an even other object of the present invention to provide in a straightforward and low-cost manner a method for forming on-the-go composite packages for pourable food products.

[0025] According to the present invention, there are provided spout assemblies according to claims 1 and 6.

[0026] Further advantageous embodiments of the spout assembly are specified in the claims being directly or indirectly dependent on respectively claim 1 and claim 6.

[0027] According to the present invention, there is also provided an on-the-go composite package according to claim 5.

[0028] According to the present invention, there is also provided a composite packaging material sheet according to independent claim 11.

[0029] Further advantageous embodiments of the composite packaging material sheet are specified in the claims being directly or indirectly dependent on claim 11.

[0030] According to the present invention, there is also provided a method for forming composite packaging material sheets according to claim 15.

[0031] According to the present invention, there is also provided a method for forming on-the-go composite packages according to independent claim 16.

BRIEF DESCRIPTION OF THE DRAWINGS

[0032] A non-limiting embodiment 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 an on-the-go composite package according to the present invention, with parts removed for clarity;

Figure 2 is an enlarged perspective view of a spout assembly of the on-the-go composite package of Figure 1, with parts removed for clarity;

Figure 3 is a bottom view of a packaging material sheet for the formation of an on-the-go composite package according to Figure 1, with parts removed for clarity;

Figure 4 is a perspective bottom view of the spout assembly of Figure 2; and

Figure 5 is a perspective view of a detail of the on-the-go composite package of Figure 1, with parts removed for clarity.

BEST MODES FOR CARRYING OUT THE INVENTION

[0033] Number 1 indicates as a whole an on-the-go composite package for 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 a pourable

food product, even more particular a liquid food product, and having an opening configured to allow for an outflow of the pourable product from main body 2; and

- a spout assembly 3, in particular a plastic spout assembly 3, connected to main body 2 about the opening.

[0034] It should be noted that the term "on-the-go" indicates that composite package 1 is designed to be used for the consumption-on-the-go, i.e. composite package 1 is configured such that a consumer can consume the food product directly from composite package 1 and/or when being outside from the consumer's house.

[0035] In the specific case, spout assembly 3 is configured to allow for the consumption-on-the-go. In other words, spout assembly 3 is formed such that the consumer can consume the food product directly from composite package 1 through spout assembly 3. In even further detail, spout assembly 3 is designed to receive a consumer's mouth such that the consumer can drink the pourable product directly from composite package 1 through spout assembly 3.

[0036] Additionally, composite package 1 may present a size, which allows composite package 1 to contain a determined volume, which can range between 100 ml to 500 ml.

[0037] In particular, composite package 1 may contain pourable food products such as milk products (pure milk, flavored milk, etc.), yoghurt drinks, juices, wine, and similar.

[0038] 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.

[0039] 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.

[0040] 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.

[0041] More specifically, first wall 5 may be transversal, in particular perpendicular, to longitudinal axis A, and main body 2 may extend from first wall along longitudinal axis A. Preferentially, first wall 5 may define a support surface of composite 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.

[0042] Additionally, first wall 5 may define a bottom wall of package 1 during a normal use of package 1.

[0043] 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 composite package 1 along longitudinal axis A.

[0044] 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.

[0045] Moreover, first wall 5 may be arranged and/or define a first end of composite package 1, in particular main body 2, and second wall 7 may be arranged and/or define a second end of composite package 1, in particular main body 2, opposite to the first end.

[0046] In particular, lateral walls 6 may be interposed between first wall 5 and second wall 7.

[0047] 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.

[0048] According to some non-limiting embodiments, first wall 5 and second wall 7 may be parallel to one another.

[0049] According to alternative non-limiting embodiments not shown, first wall portion 5 and second wall portion 7 may be inclined with respect to one another.

[0050] 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).

[0051] According to some non-limiting embodiments, second wall 7 may carry and/or comprise the designated opening.

[0052] Furthermore, main body 2 may comprise a plurality of edges, in particular:

- a plurality of longitudinal edges 8, in the specific case shown four, each arranged and/or formed between two neighboring lateral walls 6;
- a plurality of first transversal edges 9, in the specific case shown four, each arranged and/or formed between one respective lateral wall 6 and first wall 5; and
- a plurality of second transversal edges 10, in the specific case shown four, each arranged and/or formed between one respective lateral wall 6 and second wall 7.

[0053] In particular, first transversal edges 9 and second transversal edges 10 may be transversal, in particular perpendicular, to longitudinal edges 8.

[0054] In further detail, first transversal edges 9 may define bottom transversal edges of main body 2 and second transversal edges 10 may define top transversal edges of main body 2.

[0055] Moreover, longitudinal edges 8 may be (substantially) parallel to longitudinal axis A.

[0056] Furthermore, main body 2 may comprise an inner space 11 for the pourable food product. In particular, first wall 5, lateral walls 6 and second wall 7 may delimit inner space 11.

[0057] Additionally, the designated opening may be configured to allow for the outpouring of the pourable product from main body 2, in particular out of inner space 11.

[0058] Furthermore, composite package 1, in particular main body 2, may comprise an inner surface 12 facing inner space 11 and/or contacting the pourable product, and in particular an outer surface 13 opposite to inner surface 12.

[0059] With particular reference to Figures 1 to 5, spout assembly 3 comprises:

- a base frame 15 for coupling spout assembly 3 to main body 2 and arranging spout assembly 3 about the opening; and
- a collar 16 extending from base frame 15.

[0060] In more detail, collar 16 comprises:

- a(n) (annular) drinking mouth 17, in particular delimiting an outlet opening 18, arranged at a first end 19 of collar 16 and configured to allow a consumer to consume the pourable product, in particular directly from collar 16; and
- a(n) (annular) rim 20 delimiting and/or defining an inlet opening 21 arranged at a second end 22 of collar 16 opposite to first end 19; and
- in particular, a flow channel 23 extending between drinking mouth 17 and inlet opening 21.

[0061] More specifically, inlet 19 may face inner space 11 and may allow the pourable food product to enter flow channel 21 and drinking mouth 17 may allow the outflow of the pourable food product.

[0062] Moreover, drinking mouth 17 is formed such to allow a consumer to contact drinking mouth 17 and to drink the pourable food product directly from composite package 1 and through spout assembly 3.

[0063] Additionally, drinking mouth 17 has an oval shape and/or rim 20 has an oval shape. Alternatively, drinking mouth 17 and/or rim 20 may present different shapes such as circular shapes.

[0064] According to the embodiment shown, a first area of outlet opening 18 (i.e. the area delimited by drinking mouth 17) and a second area of inlet opening 21 (i.e. the area delimited by rim 20) may differ. In particular, second area may be larger than first area.

[0065] More specifically, flow channel 23 may have a tapered shape.

[0066] In further detail, rim 20 may extend within a first plane H being spanned by a first axis E and a second axis F. Additionally, drinking mouth 17 may extend within a second plane parallel to and spaced apart from first plane H.

[0067] More specifically, first axis E and second axis F may be transversal to longitudinal axis A.

[0068] According to the non-limiting embodiment disclosed, an extension of rim 20 along first axis E may be larger than an extension of rim 20 along second axis F.

[0069] Moreover, spout assembly 3 may comprise a lid 24 coupled and/or couplable to collar 16 and configured to close drinking mouth 17.

[0070] In further detail, lid 24 is positioned in a closing position (see Figures 1 to 4), in which lid 24 is rupturably attached to collar 16, in particular drinking mouth 17, so as to seal outlet opening 18. In particular, composite package 1 is delivered to a sales point and/or a consumer with lid 24 being in the closed position.

[0071] Furthermore, lid 24 may be at least moveable to an opening position (see Figure 5), in which lid 24 is separated from collar 16 and allows the consumption of the pourable food product and/or the outflow of the pourable food product from outlet opening 18.

[0072] More specifically, lid 24, when being in the closing position, may be connected to collar 16, in particular drinking mouth 17, by means of an annular membrane, which, upon the first-time movement of lid 24 to the opening position irreversibly ruptures.

[0073] Furthermore, after the first-time control of lid 24 in the opening position, lid 24 is moveable in a re-closing position, in which lid 24 covers, but does not seal, outlet opening 18.

[0074] In particular, after the first-time control of lid 24 in the opening position, lid 24 is (repeatedly) moveable between the opening position and the re-closing position.

[0075] Additionally, spout assembly 3 may comprise a tethering element 25 tethering lid 24 to collar 16 and/or base frame 15, in the specific case shown to collar 16.

[0076] Moreover, spout assembly 3 may comprise a retaining element 26 configured to retain lid 24 in the open position. In particular, retaining element 26 may be configured to interact with tethering element 25 so as to retain lid 24 in the open position.

[0077] In particular, retaining element 26 is (integrally) connected to, and extends from, base frame 15.

[0078] With particular reference to Figure 3, composite package 1 is formed from a packaging material sheet 27 comprising:

- a (composite) packaging material sheet base 28 comprising a multilayer packaging material having an opening; and
- spout assembly 3 applied, in particular molded, on packaging material sheet base 28 and about the opening.

[0079] It should be noted that packaging material sheet base 28 comprises the opening and once package 1 has been formed from packaging material sheet 27 the opening of main body 2 originates from the opening of packaging material sheet base 28.

[0080] It should be furthermore noted that main body

2 is obtained by folding and sealing packaging material sheet base 28 and, as spout assembly 3 is connected to packaging material sheet base 28 (as being part of packaging material sheet 27), spout assembly 3 is also coupled to main body 2 after formation of composite package 1 as a whole.

[0081] Moreover, packaging material sheet base 28 may comprise a first face and a second face 29 opposite to the first face. In particular, the first face defines outer surface 13 and second face 29 defines inner surface 12 once composite package 1 has been formed from packaging material sheet 27.

[0082] In even further detail, packaging material sheet base 28 may comprise at least one layer of fibrous material, such as e.g. a 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 first face and the other one defining second face 29.

[0083] Moreover, packaging material sheet base 28 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 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.

[0084] With particular reference to Figures 3 and 4, first plane H may be parallel to the first face and/or second face 29 (when spout assembly 3 is part of packaging material sheet 27).

[0085] With particular reference to Figure 3, packaging material sheet 27, in particular packaging material sheet base 28, may comprise a plurality of crease lines 32 delimiting and/or defining a plurality of panels 33 of packaging material sheet 27, in particular packaging material sheet base 28.

[0086] More specifically, during formation of composite package 1, packaging material sheet 27, in particular packaging material sheet base 28, is folded along crease lines 32 so as to obtain composite package 1.

[0087] In particular, at least some crease lines 32 define and/or correspond to longitudinal edges 8, at least some crease lines 32 define and/or correspond to first transversal edges 9 and at least some crease lines 32 define and/or correspond to second transversal edges 10.

[0088] In further detail, each panel 33 may define (after folding of packaging material sheet 27) at least partially a respective wall (first wall 5 or a respective lateral wall 6 or second wall 7) of main body 2.

[0089] Moreover, at least one panel 33 may comprise the opening. In particular, according to the specific embodiment shown in Figure 3, two panels 33 comprise the opening.

[0090] Preferentially, one of the panels 33 comprising

the opening may at least partially form second wall 7 after formation of composite package 1 and/or the other panel 33 comprising the opening may form one respective lateral wall 6 after formation of composite package 1.

[0091] Moreover, the panels 33 having the opening may be delimited by a plurality of crease lines 32 and/or may have a rectangular shape.

[0092] With particular reference to Figures 1 to 5, base frame 15 comprises a first portion 34, a second portion 35 and a fold line 36, in particular a rectilinear fold line 36, connecting first portion 34 and second portion 35 with one another.

[0093] In particular, with reference to Figure 3, when spout assembly 3 is part of packaging material sheet 27 (i.e. applied to packaging material sheet base 28) first portion 34 and second portion 35 are (substantially) parallel and/or flush to one another.

[0094] Furthermore, with reference to Figures 1, 2, 4 and 5, when spout assembly 3 is part of composite package 1 (i.e. spout assembly 3 is applied to main body 2) first portion 34 and second portion 35 are transversal, in particular (substantially) perpendicular to one another.

[0095] Advantageously, fold line 36 is configured to allow during the formation of composite package 1, in particular from packaging material sheet 27, a relative folding between first portion 34 and second portion 35 such that first portion 34 and second portion 35 can be transversally arranged with respect to one another. In other words, fold line 36 guarantees that the relative orientation between first portion 34 and second portion 35 can change during the formation of packaging material sheet 37 so as to obtain composite package 1.

[0096] In particular, with spout assembly 3 being part of composite package 1 (i.e. when being applied on main body 2) fold line 36 defines an edge between first portion 34 and second portion 35.

[0097] Preferentially, first axis E may be parallel to fold line 36.

[0098] Furthermore, collar 16 extends from first portion 34. In particular collar 16 may be connected, in particular integrally connected, to first portion 34.

[0099] Advantageously, rim 20 comprises a coupling portion 37 being adjacent to fold line 36. In other words, collar 16 is arranged adjacent to fold line 36. In particular, in this way, one lateral side 38 of collar 16 extends from fold line 36 and/or the respective edge defined by fold line 36.

[0100] More specifically, a distance between fold line 36 and coupling portion 37 is less than 2,0 mm, preferably less than 1,0 mm, even more preferably less than 0,5 mm.

[0101] Alternatively, or in addition, coupling portion 37 contacts and/or is part of fold line 36.

[0102] According to the embodiment shown, coupling portion 37 is part of fold line 36 or, in other words, fold line 36 comprises coupling portion 37.

[0103] By having coupling portion 37 adjacently arranged to fold line 36 one obtains on the one side a stable spout assembly 3 and, on the other side, an improved

use of the available spaces.

[0104] In further detail, fold line 36 may be parallel to and aligned with at least one reference crease line 39 of crease lines 32. In particular, fold line 36 may be interposed between two portions of reference crease line 39.

[0105] Additionally, reference crease line 39 may be interposed between and connected to two respective panels 33 or interposed between two walls of main body 2, in particular between second wall 7 and one respective transversal wall 6.

[0106] Preferentially, reference crease line 39 may be parallel to second transversal axis C.

[0107] Moreover, first portion 34 may be connected to, in particular fused to, and/or molded on, one of these two panels 33 and second portion 35 may be connected to, in particular fused to, and/or molded on, the other panel 33 or when considering composite package 1, first portion 34 may be connected to, in particular fused to, and/or molded on, one of these two walls, in particular second wall 7, and second portion 35 may be connected to, in particular fused to, and/or molded on, the other wall, in particular the respective lateral wall 6.

[0108] Preferentially, each one of first portion 34 and second portion 35 is connected to, in particular fused to, and/or molded on, (a respective portion of) second face 29 or (a respective portion of) inner surface 12.

[0109] According to some possible non-limiting embodiments, the opening may comprise a first opening portion and a second opening portion. In particular, one panel 33 of the two panels 33 interposing reference crease line 39 between one another may comprise the first opening portion and the other panel 33 of these two panels 33 may comprise the second opening portion. In other words, after the formation of composite package 1, one of the two walls, in particular second wall 7, interposing reference crease line 39 between one another may comprise the first opening portion and the other wall, in particular the respective lateral wall 6, may comprise the second opening portion.

[0110] Preferentially, first portion 34 may be associated to the first opening portion and second portion 35 may be associated to the second opening portion. Furthermore, second portion 35 (permanently) covers and seals the second opening portion and in particular first portion 34 covers and seals the first opening portion as long as lid 24 rests in the closing position and covers the first opening portion when being in the re-closing position.

[0111] With particular reference to Figure 2, base frame 15 may comprise a peripheral portion 40 being connected, in particular fused, to second face 29 or inner surface 12.

[0112] More specifically, each one of first portion 34 and second portion 35 may comprise a respective portion of peripheral portion 40.

[0113] Furthermore, base frame 15 may comprise a central portion 41 connected to, in particular integrally connected to, peripheral portion 40.

[0114] In particular, central portion 41 may be flush with

the first face or outer surface 13.

[0115] Furthermore, the forming of one respective packaging material sheet 27 comprises at least the steps of:

- providing the respective packaging material sheet base 28 having the opening;
- arranging a mold around the opening; and
- feeding a molten polymer to the mold and molding the respective spout assembly 3 onto packaging material sheet base 28 and about the opening.

[0116] In particular, the mold has a cavity corresponding to the shape of spout assembly 3.

[0117] According to some possible embodiments, in particular for improving the preciseness of the positioning of spout assembly 3, the formation of packaging material sheet 27 also comprises the step of:

- reading a mark applied on packaging material sheet base 28; and
- aligning the mold around the opening and/or adjacent to reference crease line 39 in dependence of the position of the mark.

[0118] In particular, the mark may be a magnetic mark or a different kind of mark. Preferentially, the mark may be a magnetic mark as allowing for a precise positioning of the mold and therewith of spout assembly 3.

[0119] In further detail, packaging material sheet bases 28 may be provided in the form of a web. In particular, the web may comprise a plurality of basic units, each basic unit corresponding to one respective packaging material sheet base 28. Thus, during the step of providing, the web of packaging material sheet bases 28 is advanced, in particular intermittently advanced, to a molding station, at which spout assemblies 3 are molded onto the respective packaging material sheet bases 28. In this way, one obtains a web of packaging material sheets 27.

[0120] Moreover, the formation of packages 1 comprises the following steps:

- providing packaging material sheet 27;
- folding packaging material sheet 27 according to crease lines 32 for obtaining package 1;
- sealing, in particular longitudinally and transversally sealing, package 1; and
- filling package 1 with the pourable product.

[0121] In more detail, packaging material sheet 27 may be provided in the form of a web of packaging material sheets 27 and the web of packaging material sheets 27 may be (continuously) advanced to a tube forming station, at which the web of packaging material sheets 27 may be formed into a tube.

[0122] Moreover, during the step of sealing, the tube may be longitudinally sealed and transversally sealed.

[0123] Additionally, during the step of filling, the tube may be filled with the pourable product.

[0124] The formation of packages 1 may also comprise the step of forming, during which the tube is formed and the step of transversally cutting the tube so as to obtain the single packages 1.

[0125] The advantages of spout assembly 3 and/or packaging material sheet 27 and/or of composite package 1 and/or the method for forming a packaging material sheet 27 and/or the method for forming a composite package 1 according to the present invention will be clear from the foregoing description.

[0126] In particular, by having first portion 34 and second portion 35 and having coupling portion 37 adjacent to fold line 36 it is possible to increase stability of spout assembly 3 and guaranteeing a size of collar 16 allowing for a good user experience, in particular as offering an excellent outflow of the pourable food product.

[0127] In more detail, by having first portion 34 and second portion 35 being transversally arranged with respect to one another, it is possible to guarantee a good stability of composite package 1 and spout assembly 3 so as to avoid possible deformations. Additionally, due to the increased stability and the positioning of collar 16 adjacent to fold line 36 it is possible to provide for a collar 16 having a size allowing that drinking mouth 17 comes along with a maximized size.

[0128] Clearly, changes may be made to spout assembly 3 and/or packaging material sheet 27 and/or of composite package 1 and/or the method for forming a packaging material sheet 27 and/or the method for forming a composite package 1 according as described herein without, however, departing from the scope of protection as defined in the accompanying claims.

Claims

1. Spout assembly (3) for an on-the-go composite package (1) filled with a pourable food product;

the spout assembly (3) comprising at least:

- a base frame (15) for coupling the spout assembly (3) about the opening; and
- a collar (16) having a drinking mouth (17) and being arranged at a first end (19) of the collar (16) and configured to allow a consumer to consume the pourable product;

wherein the base frame (15) comprises a first portion (34), a second portion (35) and a fold line (36) interposed between the first portion (34) and the second portion (35) and connecting the first portion (34) and the second portion (35) with one another;

wherein the first portion (34) and the second portion (35) are transversally arranged with respect

- to one another;
 wherein the collar (16) extends from the first portion (34) of the base frame (15);
 wherein the collar (16) comprises a rim (20) defining an inlet opening (21) arranged at a second end (22) of the collar (16) opposite to the first end (19);
 wherein the rim (20) comprises a coupling portion (37) being adjacent to the fold line (36). 5
2. Spout assembly according to claim 1, wherein a distance between the fold line (36) and the coupling portion (37) is less than 2,0 mm and/or the coupling portion (37) contacts the fold line (36) and/or the fold line (36) comprises the coupling portion (37). 10
3. Spout assembly according to claim 1 or 2, wherein the fold line (36) is rectilinear. 15
4. Spout assembly according to any one of the preceding claims, wherein the rim (20) extends within a plane (H) being spanned by a first axis (E) and a second axis (F); 20
- wherein the first axis (E) is substantially parallel to the fold line (36); 25
 wherein an extension along the first axis (E) is larger than an extension along the second axis (F).
5. On-the-go composite package (1) for a pourable product comprising: 30
- a main body (2) formed from a composite packaging material, having an opening and having a plurality of walls (5, 6, 7); and 35
 - a spout assembly (3) according to any one of the preceding claims;
- wherein the spout assembly (3) is coupled to the main body (2) and about the opening; 40
 wherein the first portion (34) is connected to a first wall (7) and the second portion (35) is connected to a second wall (6). 45
6. Spout assembly (3) for a composite packaging material sheet (27) having an opening and being suitable for the formation of an on-the-go composite package (1) filled with a pourable food product; 50
- wherein the spout assembly (3) comprises at least:
- a base frame (15) for coupling the spout assembly (3) about the opening; and 55
 - a collar (16) having a drinking mouth (17) and being arranged at a first end (19) of the collar (16) and configured to allow a con-

sumer to consume the pourable product;

- wherein the base frame (15) comprises a first portion (34), a second portion (35) and a fold line (36) connecting the first portion (34) and the second portion (35) with one another;
 wherein the fold line (36) is configured to allow during the formation of the composite package (1) a relative folding between the first portion (34) and the second portion (35) such that the first portion (34) and the second portion (35) can be transversally arranged with respect to one another;
 wherein the collar (16) extends from the first portion (34) of the base frame (15);
 wherein the collar (16) comprises a rim (20) defining an inlet opening (21) arranged at a second end (22) of the collar (16) opposite to the first end (19);
 wherein the rim (20) comprises a coupling portion (37) being adjacent to the fold line (36).
7. Spout assembly according to claim 6, wherein a distance between the fold line (36) and the coupling portion (37) is less than 2,0 mm and/or the coupling portion (37) contacts the fold line (36) and/or the fold line (36) comprises the coupling portion (37).
8. Spout assembly according to claim 6 or 7, wherein the fold line (36) is rectilinear.
9. Spout assembly according to any one of claims 6 to 8, wherein the drinking mouth (17) has an oval shape and/or the rim (20) has an oval shape.
10. Spout assembly according to any one of claims 6 to 9, wherein the rim (20) extends within a plane (H) being spanned by a first axis (E) and a second axis (F);
- wherein the first axis (E) is substantially parallel to the fold line (36);
 wherein an extension of the rim (20) along the first axis (E) is larger than an extension of the rim (20) along the second axis (F).
11. Composite packaging material sheet (27) for the formation of an on-the-go composite package (1) filled with a pourable food product comprising at least:
- a packaging material sheet base (28) comprising a multilayer packaging material having an opening; and
 - a spout assembly (3) according to any one of claims 6 to 10 arranged about the opening.
12. Composite packaging material sheet according to claim 11,

wherein the packaging material sheet base (38) comprises a plurality of crease lines (32) delimiting a plurality of panels (33);
 wherein the fold line (36) is parallel to and aligned with at least one crease line (32); 5
 wherein the crease line (32) is interposed between and connected to a first panel (33) and a second panel (33);
 wherein the first portion (34) is connected to the first panel (33) and the second portion (35) is connected to the second panel (33). 10

- 13.** Composite packaging material sheet according to claim 11 or 12, wherein the packaging material sheet base (28) comprises at least a first face and a second face (29) opposite to the first face; 15

wherein the second face (29) is designed to define an inner surface (12) of the composite package (1) to be formed from the composite packaging material sheet (27); 20
 wherein the first portion (34) and the second portion (35) are connected to at least the second face (29). 25

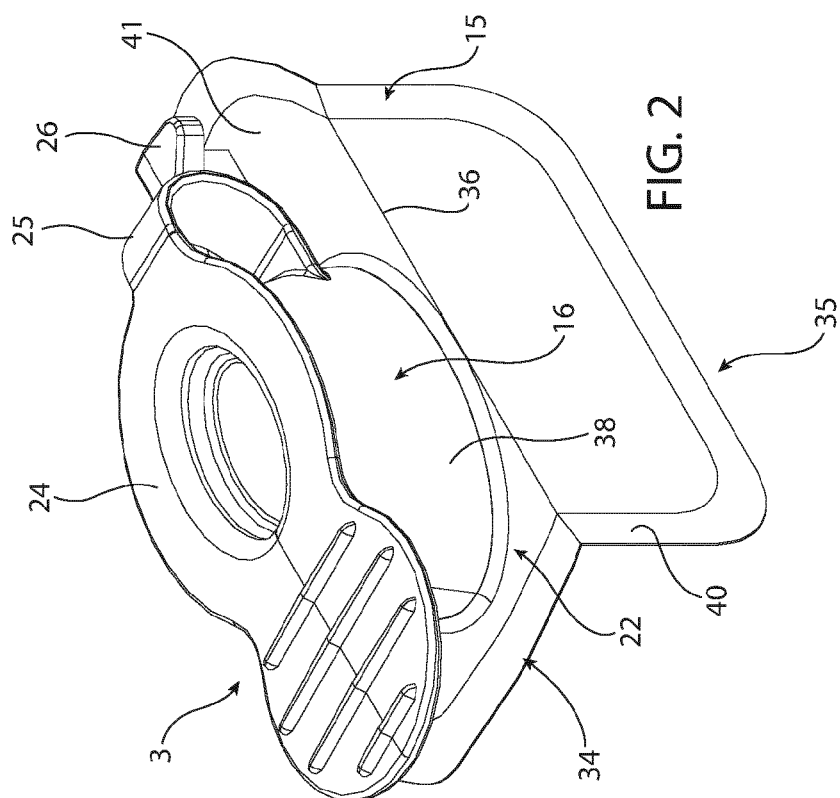
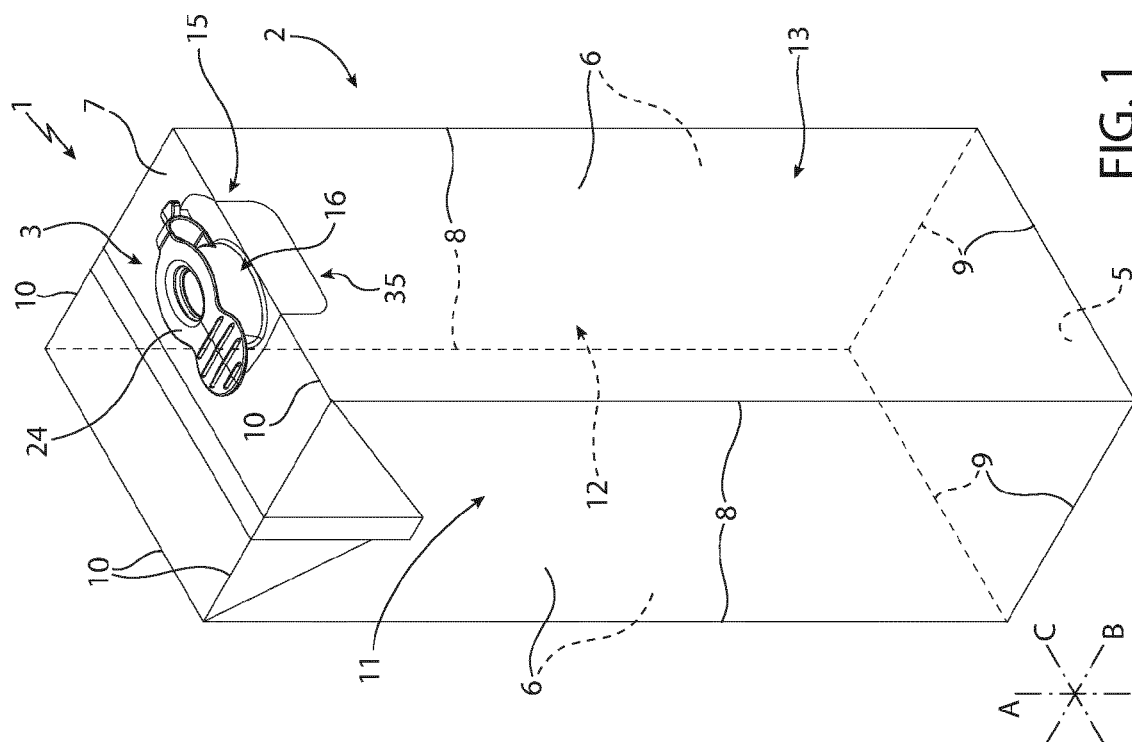
- 14.** Composite packaging material sheet according to any one of claims 11 to 13, wherein the opening comprises a first opening portion and a second opening portion;
 wherein the first portion (34) is associated to the first opening portion and the second portion (35) is associated to the second opening portion and covers and seals the second opening portion. 30

- 15.** Method for forming a composite packaging material sheet (27) according to any one of claims 11 to 14, comprising at least the steps of: 35

- providing a packaging material sheet base (28) having an opening; 40
- arranging a mold around the opening; and
- feeding a molten polymer to the mold and molding a spout assembly (3) according to any one of claims 6 to 10 onto the packaging material sheet base (28) and about the opening. 45

- 16.** Method for forming an on-the-go composite package (1) according to claim 6, comprising at least the steps of: 50

- providing a composite packaging material sheet (27) according to any one of claims 11 to 14;
- folding the composite packaging material sheet (27) for obtaining the composite package (1); 55
- sealing the composite package (1); and
- filling the composite package (1) with the pourable product.



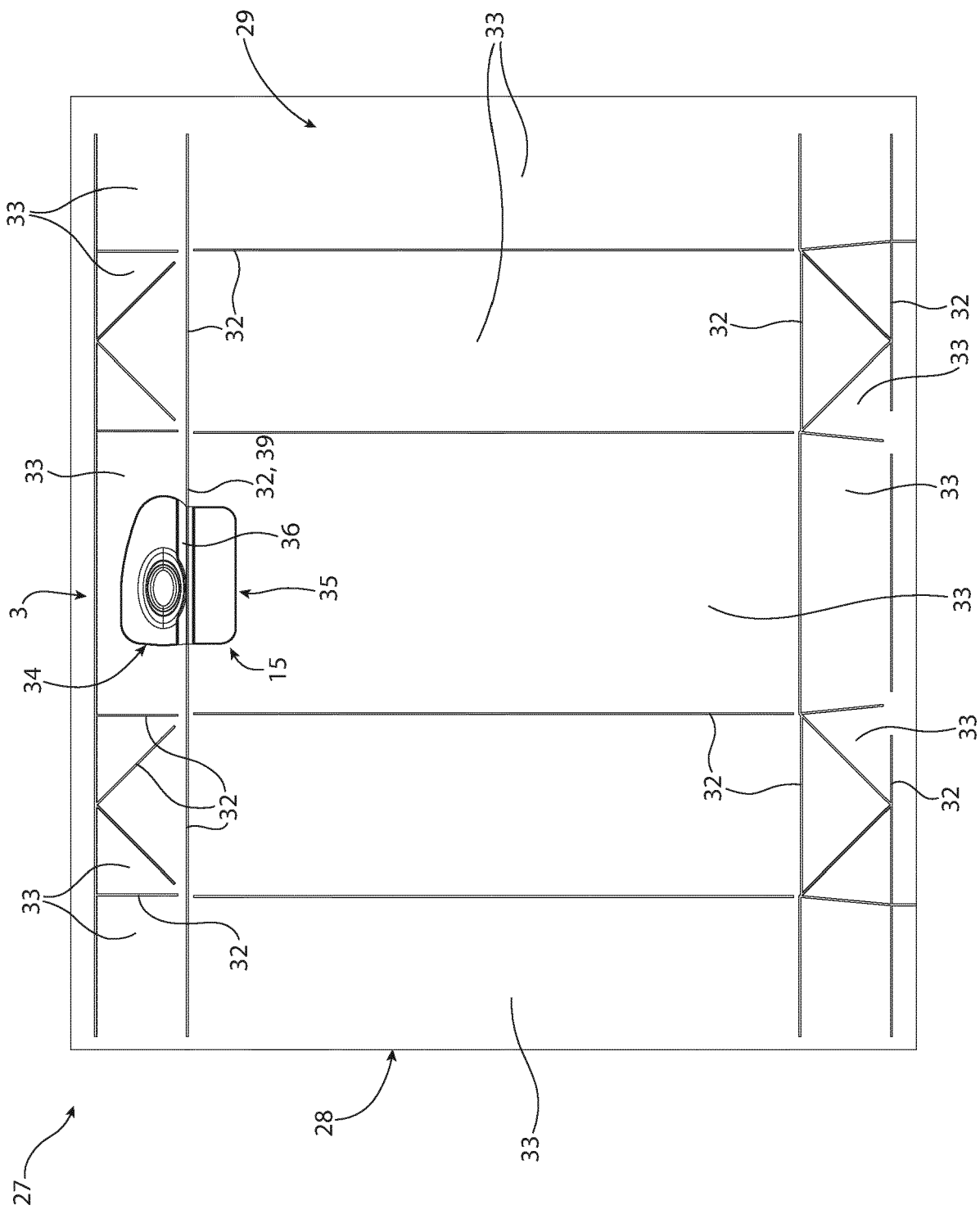


FIG. 3

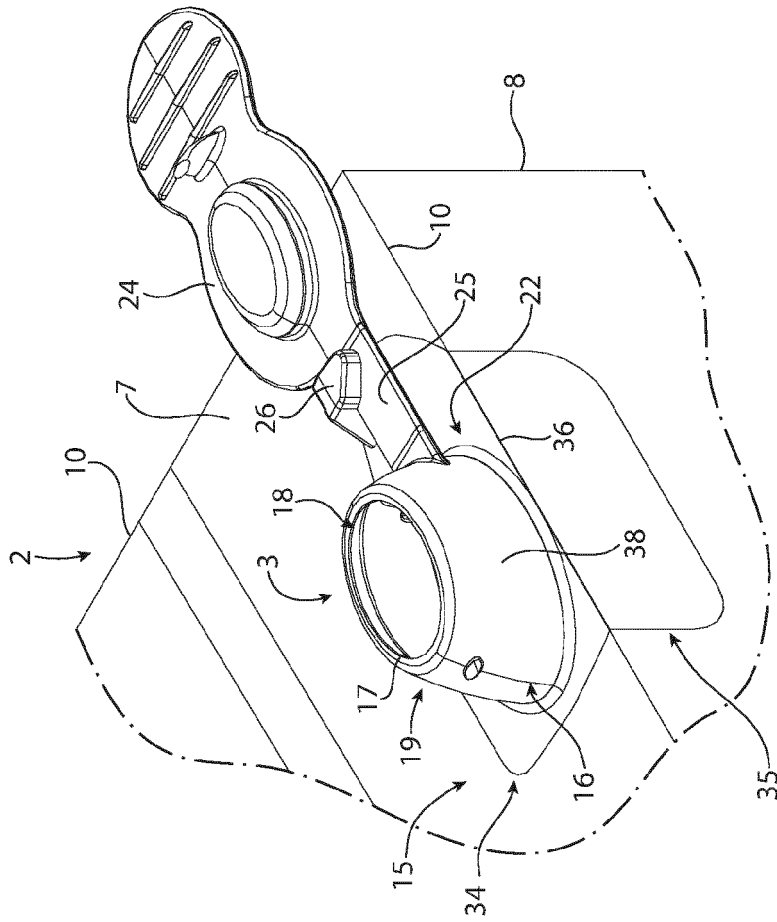


FIG. 5

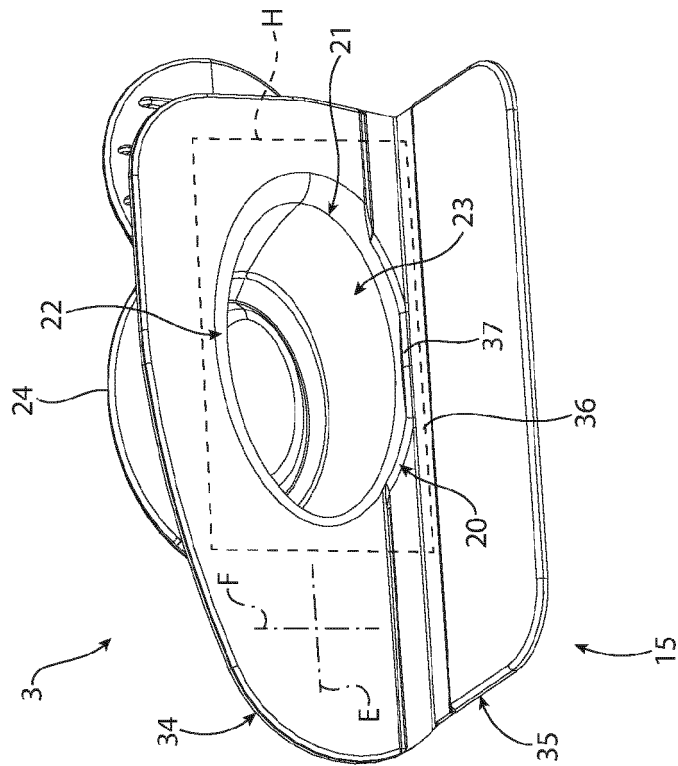


FIG. 4



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Place of search Munich		Date of completion of the search 7 October 2022	Examiner Grondin, David
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