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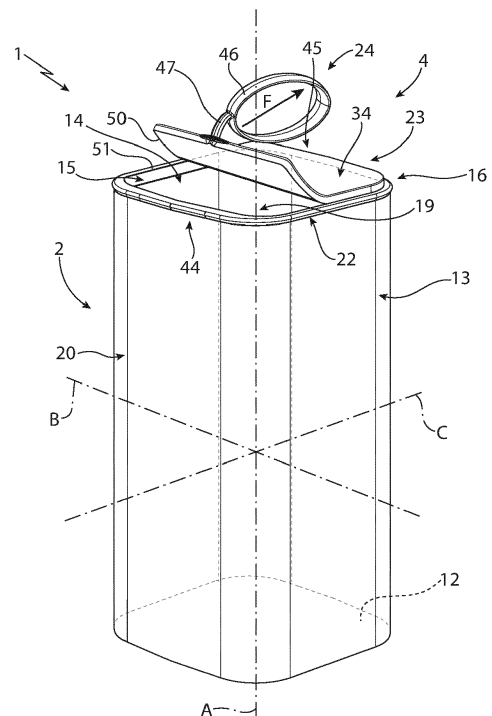
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(54) **PACKAGE FOR HOLDING A FOOD PRODUCT AND MOULD FOR A PACKAGING MACHINE**

(57) A package (1) for holding a food product, comprising a main body (2) formed from a multilayer packaging material (3) and having a wall section (13) for forming an inner space (14) for the food product, and an opening (15) arranged at an end (16) of the wall section (13). The package (1) has a lid structure (4) formed from a plastic material and attached to the main body (2) for sealing the opening (15) and the inner space (14). The lid structure (4) has a lid frame (22) and a lid (23) detachably joined with the lid frame (22) for sealing the opening (15) in cooperation with the lid frame (22), and a pull element (24) connected to a peripheral portion (25) of the lid (23) and configured to, when pulled, at least partially detach the lid (23) from the lid frame (22) and thereby at least partially freeing the opening (15).



**FIG. 2**

## Description

### Technical Field

[0001] The present invention relates to a package for holding a food product, in particular a pourable food product such as yoghurt, milk or the like. The present invention also relates to a mould for a packaging machine.

### Background

[0002] As is known, many food products, in particular pourable food products, such as fruit juice, milk, UHT (ultra-high-temperature treated) milk, wine, tomato sauce, yoghurt, cottage cheese, soup, salt, sugar etc., are sold in packages at least partially being made from a multilayer packaging material.

[0003] One of the prominent examples of such packages is the parallelepiped-shaped package for pourable food products known as Tetra Brik Aseptic (registered trademark). Such packages are made by folding and sealing a laminated multilayer 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.

[0004] There exist varying approaches on how to allow to access the packaged food product. E.g. some packages are provided with a lid-spout assembly or other opening devices.

[0005] It is furthermore known that some packages are thought for the consumption on-the-go; i.e. the consumer has the possibility to consume the product outside from the consumer's domicile. Such packages must be designed such that the consumer can easily access the food product present within the packaging.

[0006] Even though the known packages for food products work satisfyingly well, a need is felt in the sector to even further improve the known packages, in particular in respect of providing an opening for the package to allow easy access to the product it holds.

### Summary

[0007] It is an object of the invention to at least partly overcome one or more limitations of the prior art. In particular, it is an object to provide a package allowing to easily access the food product within the packaging, even more particular so as to allow for a simple consumption on-the-go.

[0008] It is a further object of the present invention to provide a mould for a packaging machine.

[0009] According to the present invention, there is provided a package according to the independent claim 1.

[0010] Preferred embodiments of the package are claimed in the claims being directly or indirectly dependent on claim 1.

[0011] According to the present invention, there is also provided a mould for a packaging machine according to claim 15.

[0012] In addition, according to one aspect of the invention, there is provided a package for holding a food product. The package comprises a main body formed from a multilayer packaging material that comprises a layer of fibrous material and a lid structure formed from a plastic material and attached to the main body.

[0013] The main body has: a bottom section, a wall section extending from the bottom section for forming an inner space for the food product, and an opening arranged at an end of the wall section that is opposite to the bottom section.

[0014] The lid structure is configured to seal the opening and the inner space (14) and comprises: a lid frame attached to the main body at the opening, a lid detachably joined with the lid frame and sealing the opening in co-operation with the lid frame, and a pull element connected to a peripheral portion of the lid and configured to, when pulled, exert an opening force on the lid so as to at least partially detach the lid from the lid frame and thereby at least partially freeing the opening.

[0015] The package is advantageous in that by arranging the pull element at the peripheral portion of the lid, it is possible to efficiently direct the opening force, at the very beginning of the opening, onto a locally restricted portion of the lid thereby allowing to improve the separation of the lid from the lid frame. This provides for an opening that allows easy access to the food product held by the package.

[0016] The pull element may extend from a lid top surface of the lid by an angle that is in the range of 50° to 100° or in the range of 70° to 90° or (substantially) 85°. The angle may be the angle between a plane of the lid top surface of the lid and a direction by which the pull element extends from the lid, at the location where the pull element is connected to the lid and measured on a side of the pull element facing a center of the lid. In this way, it is possible to further guarantee the concentration of the opening forces.

[0017] The pull element may be connected to the lid at one coupling point only or at two coupling points only. This allows to direct and concentrate the force on one single portion of the lid further improving the efficiency of the detaching of the lid.

[0018] The pull element may comprise a ring-shaped gripping structure, and the lid may comprise a depression that is located beneath the ring-shaped gripping structure. In this manner, it is possible to allow for an improved housing of the ring-shaped gripping structure. The ring-shaped gripping structure may be closed or may be open with its ends connected to the lid or to two elements (legs)

that extend from the lid.

**[0019]** The lid may comprise a protrusion that extends over the lid frame, and the pull element may be connected to the protrusion. This allows to even further improve the separation properties of the lid from the lid frame.

**[0020]** The lid may cover at least 90% of the opening of the main body. In this way, it is possible to liberate a significant portion of the opening facilitating the access to the food product, in particular for consumption-on-the-go solutions.

**[0021]** The lid frame may comprise a frame top surface extending along an entire periphery of the opening of the main body. The lid may comprise a cover portion and a lid wall section. The lid wall section may extend around a peripheral section of the cover portion and may be joined to the lid frame and may lift peripheral section of the cover portion above the frame top surface. The presence of the lid wall section allows the forces to follow the orientation of the lid wall section itself, thereby allow to concentrate the forces and to facilitate the separation of the lid from the lid frame.

**[0022]** The lid may comprise a tip-shaped protrusion extending into the lid frame, at a location underneath the pull element. The tip-shaped protrusion allows to concentrate the forces onto the interface formed between the tip-shaped protrusion and the lid frame leading to even further improved separation properties of the lid from the lid frame.

**[0023]** The lid structure may comprise a tear section that is located where the lid is joined with the lid frame. The tear section guarantees on the one side the joining between the lid frame and the lid and provides on the other side for the possibility to detach the lid from the lid frame.

**[0024]** At least 70% of the length of the tear section may follow a contour that has the same shape as the shape of the contour of the opening of the main body. In this way one ensures to easily access the food product.

**[0025]** The lid may be at least partially detached, the entire periphery of the lid has exact correspondence to an inner part of the lid frame from where the lid was detached. In this manner, the lid retains its original structure and is simply detached from the lid frame without any incision or the like within the lid.

**[0026]** The tear section may comprise a tip-shaped section that extends into the lid frame, at a location underneath the pull element. This allows to concentrate at the very beginning of the separation of the lid from the lid frame to a localized portion.

**[0027]** The tear section may be interrupted at a side of the opening of the main body that is opposite the side of the main body where the pull element is located. This allows to guarantee that the lid remains attached to the lid frame, thereby that the lid will be correctly disposed with the rest of the package.

**[0028]** The tear section may comprise an angled-side portion that, at the side of the main body where the pull element is located and at a respective side of the pull

element, extends with an angle relative an outer periphery of the lid frame, such that the distance between the tear section and the outer periphery of the lid frame increases along the angled side portion, in a direction away from the pull element. Such a solution allows to improve the detachment properties of the lid from the lid frame after the initial detachment of the lid has started.

**[0029]** According to a further aspect of the invention, there is provided a mould for a packaging machine, the mould comprising a cavity having a shape that corresponds to the shape of the above-described lid structure of the package. The mould allows to shape the lid structure and attach it onto the main body of the package.

**[0030]** Still other objectives, features, aspects and advantages of the invention will appear from the following detailed description as well as from the drawings.

## Drawings

**[0031]** Embodiments of the invention will now be described, by way of example, with reference to the accompanying schematic drawings.

Figure 1 is a perspective view of a package having a main body, a lid structure and a cover;

Figure 2 is a perspective view of the package of Figure 1 with the cover removed and the lid structured opened;

Figure 3 is a schematic view of a multilayer packaging material that forms the main body of the package of Figure 1;

Figure 4 is an enlarged perspective view of the lid structure of the package of Figure 1;

Figure 5A is a bottom view of the lid structure of Figure 4;

Figure 5B is an enlarged bottom view of a detail of the lid structure of Figure 4;

Figure 6A is a cross-sectional side view of the lid structure of Figure 4;

Figure 6B is a an enlarged cross-sectional side view of a detail of the lid structure of Figure 4;

Figures 7 and 8 are enlarged perspective views of the lid structure of Figure 4; and

Figure 9 is a perspective view of a package with a pull element according to a second embodiment.

## Detailed Description

**[0032]** Embodiments of the invention will now be described more fully hereinafter with reference to the accompanying drawings, in which some, but not all, embodiments of the invention are shown. The invention may be embodied in many different forms and should not be construed as limited to the embodiments set forth herein.

**[0033]** With reference to Figures 1 and 2 an exemplary package 1 for holding a food product, in particular a pourable food product, such as milk, yoghurt, cottage cheese, tomato sauce, soup, salt, sugar or similar, is illustrated.

**[0034]** In more detail and with further reference to Figure 3, package 1 comprises a main body 2 formed from a multilayer packaging material 3 and a lid structure 4 attached to, in particular molded onto, main body 2.

**[0035]** The multilayer packaging material 3 may comprise: a layer of fibrous material 5, such as e.g. paper or cardboard, and at least two layers of heat-seal plastic material 6, e.g. polyethylene, interposing the layer of fibrous material 5 in between one another.

**[0036]** Moreover, the multilayer packaging material 3 may also comprise a layer of gas- and light-barrier material 7, e.g. aluminum foil or ethylene vinyl alcohol (EVOH) film, in particular being arranged between one of the layers of heat-seal plastic material 6 and layer of fibrous material 5. Preferentially, the multilayer packaging material 3 may also comprise a further layer of heat-seal plastic material 8 being interposed between layer of gas- and light-barrier material 7 and layer of fibrous material 5.

**[0037]** Turning back to Figures 1 and 2, the main body 2 comprises: a bottom section 12, a wall section 13 extending from bottom section 12, in particular along a central (longitudinal) axis A, for forming an inner space 14 for the food product, and an opening 15 arranged at an end 16 of the wall section 13, which end 16 is opposite to bottom section 12.

**[0038]** Moreover, the lid structure 4 is attached onto the main body 2 so as to seal the opening 15 and the inner space 14. As is explained in further detail further below, the lid structure 4 may be manipulated such that a consumer can access the inner space 14, e.g. so as to outpour the food product from the inner space 14 and/or to directly consume the food product out of the main body 2.

**[0039]** More specifically, the bottom section 12 may define a support surface of package 1, in particular of the main body 2, which is configured to be put in contact with a support surface, 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, it is readily recognizable that the bottom section 12 is to be arranged at a lower position than the other positions, when being placed on the support surface. In particular, bottom section 12 defines the lowest portion of package 1.

**[0040]** Furthermore, also during a manipulation (opening) of the lid structure 4, the bottom section 12 defines the lowest position of main body 2.

**[0041]** Thus, in the following any references referring to top, bottom, upper, lower, above, beneath and similar refers to package 1 being placed e.g. on a support surface or when being held by a consumer when this latter intends to manipulate lid structure 4, having the bottom section 12 at the lowermost position while the lid structure 4 and thus the opening 15 are located vertically above the bottom section 12.

**[0042]** In other words, a "correct" orientation of package 1 is such that bottom section 12, when being viewed by the consumer, is arranged at a lower position than lid

structure 4 as otherwise the manipulation of lid structure 4 would lead to a non-desired spilling of the food product.

**[0043]** In particular, the end 16 may be arranged at an upper position than the bottom section 12. In other words, the end 16 may define a top end of the main body 2.

**[0044]** Additionally, the package 1 may also comprise a cover 17 (only shown in Figure 1), in particular a plastic cover 17, removably coupled to main body 2 and covering the lid structure 4. In particular, the cover 17 may extend from the main body 2. Even more particular, the cover 17 may have a parallelepiped shape. The cover 17 may hold additional food product, such as Muesli, and/or may be arranged to hold a spoon or a similar tool that is suitable to use when consuming a food product from the package 1. The cover 17 is typically removed prior to manipulation (opening) of the lid structure 4.

**[0045]** The main body 2 may also extend along a first transversal axis B that is transversal, in particular perpendicular, to the central axis A and a second transversal axis C that is transversal, in particular perpendicular, to the central axis A and the first transversal axis B. An extension of the main body 2 along central axis A may be larger than the respective extensions of the main body 2 along the first transversal axis B and the second transversal axis C.

**[0046]** The main body 2, in particular the wall section 13, may have a quadratic cross-sectional profile with respect to a cross-sectional plane perpendicular to central axis A. Alternatively, the cross-section profile may be different e.g. being circular, oval, elliptic, rectangular, hexagonal or having any other shape.

**[0047]** The wall section 13 may comprise one or more single walls, in the particular case shown four. In particular, each wall is connected to two neighboring walls.

**[0048]** Additionally, the wall section 13 may comprise an annular rim 18, see Figure 6B, arranged at the end 16 and delimiting the opening 15. In particular, the rim 18 may define a periphery of the opening 15.

**[0049]** In particular, the main body 2 may be void of any further section transversal to the wall section 13 having the opening 15 and being arranged at the end 16.

**[0050]** Moreover, the main body 2 may comprise an inner face 19 facing and/or delimiting the inner space 14 and an outer face 20 that is opposite the inner face 19 (i.e. the outer face 20 faces away from the inner space 14).

**[0051]** With reference to Figures 1, 2, 4, 6A and 6B, the lid structure 4 may be formed from a plastic material and may comprise: a lid frame 22 attached to, in particular molded onto, the main body 2 at the opening 15, a lid 23 detachably joined with the lid frame 22 and sealing the opening 15 in cooperation with the lid frame 22 (see Figure 1), and a pull element 24 connected to a peripheral portion 25 of the lid 23 and configured to, when being pulled, exerting an opening force F on the lid 23 so as to at least partially detach the lid 23 from the lid frame 22 and thereby at least partially freeing the opening 15 (see Figure 2).

**[0052]** In use, after an at least partial detachment of the lid 23 from the frame 22, a consumer may outpour and/or access the food product.

**[0053]** Additionally, the lid structure 4 may comprise a tear section 26 located where the lid 23 is joined with the lid frame 22. In other words, the tear section 26 is interposed between the lid 23 and the lid frame 22 and detachably joins the lid 23 to the lid frame 22. Or in even other words, the tear section 26 at least partially connects the lid 23 with the lid frame 22.

**[0054]** Moreover, the tear section 26 may be configured such that upon exertion of the opening force F, tear section 26 detaches from the lid 23 and/or the lid frame 22 so as to allow for the separation of the lid 23 from the lid frame 22.

**[0055]** With particular reference to Figures 4, 6A and 6B, the lid frame 22 may have an annular shape. In particular, the shape of the lid frame 22 may correspond to the cross-sectional profile of the main body 2 (with respect to the cross-sectional plane being perpendicular to central axis A), in particular at the end 16.

**[0056]** The lid frame 22 may comprise an inner ring 27 and an outer ring 28 spaced apart from one another. The inner ring 27 and the outer ring 28 may define an annular interspace (see Figures 6A and 6B) within which a portion of the wall section 13 is arranged so as to attach the lid frame 22 to the main body 2, in particular wall section 13. In other words, the upper portion of the wall section 13 may be interposed between the inner ring 27 and the outer ring 28.

**[0057]** The lid frame 22 may also comprise a connection portion 30, the inner ring 27 and the outer ring 28. In particular, the inner ring 27 and the outer ring 28 transversally, in particular (substantially) perpendicularly, protrude from the connection portion 30.

**[0058]** The lid frame 22 may be attached to the wall section 12 such that the rim 18 is housed within the interspace formed between the inner ring 27 and the outer ring 28.

**[0059]** The inner ring 27 may be radially arranged inside and the outer ring 28 may be arranged radially outside (with respect to center axis A and an axis radially extending from central axis A). In other words, the inner ring 27 may be closer to the central axis A than the outer ring 28.

**[0060]** The inner ring 27 may be (at least) partially arranged within the inner space 14.

**[0061]** The inner ring 27 may be attached to, in particular fused and/or molded onto, the inner face 19 and the outer ring 28 may be attached to, in particular fused and/or molded onto, the outer face 20.

**[0062]** With reference to Figures 2, 4A, 4B and 5, the lid frame 22, in particular the connection portion 30, may also comprise a frame top surface 31. The frame top surface 31 may face away from the inner space 14.

**[0063]** The frame top surface 31 may extend within a first plane H1, preferentially being transversal, in particular perpendicular, to central axis A. In particular, the first

plane H1 is parallel to a plane being spanned by first transversal axis B and second transversal axis C. The frame top surface 31 may extend along the entire periphery of the opening 15 and/or along the entirety of the rim 18.

**[0064]** With reference to Figures 1, 4, 6A, 6B, 7 and 8, the lid 23 may comprise a cover portion 34, in particular being configured to expand over the opening 15, and a lid wall section 35 extending from the cover portion 34. In particular, the lid wall section 35 may transversally, in particular perpendicularly, extend from an annular peripheral section 36 of cover portion 34. The peripheral portion 25 of the lid 23 may comprise the annular peripheral section 36 of the cover portion 34. The lid wall section 35 may be (substantially) parallel to central axis A.

**[0065]** The cover portion 34 may be transversally, in particular perpendicularly, arranged with the central axis A, and in the lid wall section 35 may be (substantially) parallel to central axis A.

**[0066]** The lid wall section 35 may be detachably joined to lid frame 22, in particular along the tear section 26. The lid wall section 35 may be connected to the cover portion 34, in particular to the peripheral section 36, at a first end of lid wall section 35 and to the lid frame 22, more specifically to the connection portion 30 of the lid frame 22, at a second end of the lid wall section 35 opposed to the first end.

**[0067]** The lid wall section 35 may lift at least the peripheral section 36 above the lid frame 22, in particular above frame top surface 31. In other words, the lid frame 22 and the frame top surface 31 may be interposed between the peripheral section 36 and the bottom section 12.

**[0068]** The lid 23, in particular the cover portion 34, may comprise a lid top surface 37, in particular facing away from lid frame 22 and/or inner space 14. The peripheral section 36 may comprise an annular zone 38 of lid top surface 37. The annular zone 38 may extend within a second plane H2, in particular being transversal, even more particular perpendicular, to central axis A. Additionally, the second plane H2 may be parallel to the first plane H1.

**[0069]** The lid 23, in particular the cover portion 34, may comprise a center 39. The center 39 may be intersected by central axis A. The lid 23, in particular the cover portion 34, may comprise a depression 40.

**[0070]** The cover portion 34 may be curved, even more particular having a concave shape relative to second plane H2.

**[0071]** The deepest point and/or the point of inflection of the depression 40 may be laterally displaced from the center 39 and/or pointing towards and/or into the inner space 14.

**[0072]** The lid 23, in particular the cover portion 34, may cover at least 90% the opening 15. Furthermore, the lid frame 22 may cover the portions of the opening 15 not covered by the lid 23, in particular the cover portion 34.

**[0073]** With reference to Figures 1, 4, 6A, 6B, 7A and 7B, the pull element 24 may be connected to and/or may extend from the lid 22, in particular from the peripheral portion 25, even more particular from peripheral section 36, and in particular away from the lid 23 and the lid frame 23.

**[0074]** The pull element 24 may be connected to and/or may extend from the lid 23, in particular from the peripheral portion 25, even more particular from the peripheral section 36, at a coupling point 41. The coupling point 41 may be a single coupling point, i.e. the only point at which the pull element is attached to the lid 23. In other words, even though there might be more than one connection point, there may be only one single connection between the pull element 24 and the lid 23.

**[0075]** The pull element 24 may extend from the lid top surface 37, even more particular from the annular zone 38, at a coupling point 41. The pull element 24 may extend from lid 23, in particular from lid top surface 37, even more particular from annular zone 38, by an angle  $\alpha$  that is in the range of  $50^\circ$  to  $100^\circ$ , in the range of  $70^\circ$  to  $90^\circ$ , or substantially  $85^\circ$ .

**[0076]** More specifically, the angle  $\alpha$  may be an angle between the second plane H2 and a direction D by which the pull element 24 extends from the lid 22 at the coupling point 41 and measured on a side of the pull element 24 facing the center 39. The direction D may point from the second plane H2 upwards.

**[0077]** With reference to Figures 4 and 6A to 8, the lid 23, in particular the cover portion 34, may comprise a protrusion 42 extending over the lid frame 22, in particular over the frame top surface 31. The pull element 24 may be connected to the protrusion 42. The protrusion 42 may have a (substantially) plate-like shape and/or may consist of a plate. The protrusion 42 may extend within second plane H2. The protrusion 42 may radially extend from the lid 23, in particular from the cover portion 34.

**[0078]** Alternatively or additionally, the lid 23, in particular lid wall section 35, may comprise a tip-shaped protrusion 43 extending into lid frame 22. In particular, the tip-shaped protrusion 43 may be positioned underneath pull element 24 or, in other words, the tip-shaped protrusion 43 may be interposed between the lid frame 22 and the pull element 24.

**[0079]** The protrusion 42 may be interposed between the tip-shaped protrusion 43 and the pull element 24 or in other words, the protrusion 42 may be arranged above tip-shaped protrusion 43 and below the pull element 24. The tip-shaped protrusion 43 may have a wedge-like shape.

**[0080]** The pull element 24 and/or the protrusion 42 and/or the tip-shaped protrusion 43 may be arranged at and/or adjacent to a side 44 of main body 2 and/or opening 15. The main body 2 and/or the opening 15 may comprise a further side 45 opposite to side 44. in use, during exertion of opening force F, the lid 23 may detach from the lid frame 22 starting at side 44 and ending at side 45. The pull element 24 may be configured such

that the opening force F is directed from side 44 towards side 45.

**[0081]** With reference to Figures 1, 2, 4, 6A, 7 and 8, the pull element 24 may comprise a ring-shaped gripping structure 46, in particular being configured to allow to be gripped by a consumer. The ring-shaped gripping structure 46 may comprise elements improving the gripping properties of the ring-shaped gripping structure 46. Such elements may be arranged at a top surface of the ring-shaped gripping structure 46.

**[0082]** The ring-shaped gripping structure 44 may be arranged above the depression 40, or in other words, the depression 40 may be arranged below the ring-shaped gripping structure 46. In even other words, the depression 40 may be interposed between the ring-shaped gripping structure 46 and the inner space 14 and/or the bottom section 12. The depression 40 may be configured to at least partially receive the ring-shaped gripping structure 46.

**[0083]** The pull element 24 may also comprise a leg 47 connected on one of its end sides to lid 23 and at another of its end sides to the ring-shaped gripping structure 46. The leg 47 may extend from the lid 23 by the angle  $\alpha$ .

**[0084]** With reference to Figures 5A and 5B, at least 70% of the tear section 26, in particular the length of tear section 26, may follow a contour that has the same shape as the shape of a contour of the opening 15 and/or the rim 18.

**[0085]** The lid 23, in particular the lid wall section 35, may comprise a periphery 50 being connected to an inner part 51 of the lid frame 22, in particular via the tear section 26.

**[0086]** When the lid 23, in particular the lid wall section 35, is at least partially detached from the lid frame 22, the periphery 50 of the lid 23, in particular the lid wall section 35, may have, in particular in its entirety, exact correspondence to the inner part 51 of the lid frame 22 from where lid 23, in particular lid wall section 35, is detached. The periphery 50 may only comprise portions, which prior to being detached, are joined via the tear section 26 to lid frame 22.

**[0087]** The tear section 26 may comprise a tip-shaped section 52 that may extend into the lid frame 22 at a location underneath the pull element 24 and/or underneath the protrusion 42 and/or underneath the tip-shaped protrusion 43. The tip-shaped section 52 may be arranged at side 44.

**[0088]** The tip-shaped protrusion 43 may be joined to lid frame 22 along the tip-shaped section 52 or the tear section 26. In particular, the tip-shaped section 52 may follow the shape of tip-shaped protrusion 43.

**[0089]** The tear section 26 may comprise a first end 53 and a second end 54 distinct from first end 53. In other words, the tear section 26 may be arc-shaped (and not annularly shaped). Or in even other words, the tear section 26 may be interrupted at the side 45.

**[0090]** The lid structure 4 may comprise a tethering

and/or hinge element 55 extending between the first end 53 and the second end 54. The lid frame 22 and the lid 23, in particular the lid wall section 35, may be joined to one another along tethering and/or hinge element 55. In particular, tethering and/or hinge element 55 may be configured to guarantee that the lid 23 remains attached to the lid frame 22 even after detachment of the lid 23 along the tear section 26; i.e. tethering and/or hinge element 55 does not rupture upon exertion of opening force F. The tethering and/or hinge element 55 may be arranged at side 45. In one embodiment the hinge element 55 is omitted and the tear section 26 extends along the full length of side 45, allowing the entire lid 23 to be removed from the lid frame 22.

**[0091]** In further detail, the tear section 26 may comprise at least one, in particular two, angled side portions 56 arranged at side 44. The angled side portions 56 may meet at the tip-shaped section 52, thereby forming the tip-shaped section 52. The tear section 26 may comprise two (parallel) side portions 57 that are transversal to the angled side portions 56.

**[0092]** The tear section 26 may comprise one or more auxiliary portions 58, in the specific case shown two, joined with the side portions 57 and being arranged at side 45. The auxiliary portions 58 may interpose tethering and/or hinge element 55 between one another. One auxiliary portion 58 may comprise the first end 53 and the other one the second end 54.

**[0093]** With reference to Figure 5A, each of the angled side portions 56 may extend with an angle  $\beta$  relative to an outer periphery 59 of lid frame 22, in particular relative to the outer ring 28, such that a distance between the angled side portion 56 and the outer periphery 59 of lid frame 22 increases along the angled side portion 56 in a direction away from the pull element 24. Two respective imaginary lines, each containing one respective angled side portion 56, may define a wedge-shaped structure and a respective intersection of the two imaginary lines may radially point away from center axis A.

**[0094]** A mould (not shown) is used for forming the lid structure 4. The mould is manufactured according to known principles within the art and is configured to be installed in a packaging machine, which is arranged to package the food products into packages like the package 1 described herein. The mould has a cavity 66 having a shape that corresponds to the shape of lid structure 4. In other words, the cavity 66 is shaped such to allow for formation of lid structure 4. The mould is also configured to mold the lid structure 4 onto main body 2.

**[0095]** In use, a consumer receives package 1 with the lid 23 being joint to the lid frame 22. In order to at least partially free the opening 15, the consumer must exert the opening force F so as to allow for the lid 23 detach from the lid frame 22 along at least a part of the tear section 26. Obviously, prior to exerting the opening force F, the consumer needs to remove the cover 17. In order to exert opening force F, the consumer grips ring-shaped gripping structure 46.

**[0096]** With reference to Figure 9 a package 11 with a pull element 241 according to another embodiment is illustrated. Except for a different shape of the pull element 241 the package 11 corresponds to and has the same features as the package 1 previously described.

**[0097]** Thus, the package 11 has the same main body and lid structure including lid frame 22 and detachable lid 23 as the package 1 of Figure 1. The pull element 241 is connected to the peripheral portion 25 of the lid 23 and is configured to, when pulled, exert an opening force on the lid 23 so as to at least partially detach the lid 23 from the lid frame 22.

**[0098]** The pull element 241 comprises a first leg 47 connected at one of its ends to the lid 23 and at the other of its ends to a first end of an open, ring-shaped gripping structure 461. The pull element 241 comprises a second leg 472 which is connected at one of its ends to the lid 23 and at another of its ends to the second end of the open, ring-shaped gripping structure 461.

**[0099]** The pull element 241 is, via the first leg 47, connected to and extends from the lid 23, in particular from the peripheral portion 25 at a first coupling point 41. The first coupling point 41 is in this case not the only point at which the pull element 241 is attached to the lid 23. The pull element 241 is via the second leg 472 attached to the lid 23 at a second coupling point 412. The second leg 472 is connected to the lid 23 at a position behind the first leg 47, as seen in a direction from the protrusion 42 towards the first leg 47. In other words, the first leg 47 is connected to the lid 23 at a coupling point 41 between the peripheral portion 25 and the coupling point 412 on the lid 23 where the second leg 472 is attached to the lid 23.

**[0100]** The first leg 47 for the package 11 according to the second embodiment may have the same shape and form as the leg 47 for the package 1 shown in Figures 1-8.

**[0101]** From the description above follows that, although various embodiments of the invention have been described and shown, the invention is not restricted thereto, but may also be embodied in other ways within the scope of the subject-matter defined in the following claims.

## Claims

1. A package (1) for holding a food product, the package (1) comprising

a main body (2) formed from a multilayer packaging material (3) that comprises a layer of fibrous material (5), the main body (2) having

- a bottom section (12),
- a wall section (13) extending from the bottom section (12) for forming an inner space (14) for the food product, and
- an opening (15) arranged at an end (16)

of the wall section (13) that is opposite to the bottom section (12), and

a lid structure (4) that is formed from a plastic material and attached to the main body (2) for sealing the opening (15) and the inner space (14), the lid structure (4) having

- a lid frame (22) attached to the main body (2) at the opening (15),
- a lid (23) detachably joined with the lid frame (22) and sealing the opening (15) in cooperation with the lid frame (22), and
- a pull element (24, 241) connected to a peripheral portion (25) of the lid (23) and configured to, when pulled, exert an opening force (F) on the lid (23) so as to at least partially detach the lid (23) from the lid frame (22) and thereby at least partially freeing the opening (15).

2. Package according to claim 1, wherein the pull element (24, 241) extends from a lid top surface (37) of the lid (23) by an angle (a) that is

in the range of 50° to 100°,  
in the range of 70° to 90°, or  
substantially 85°,  
the angle (a) being the angle between a plane (H2) of the lid top surface (37) of the lid (23) and the direction (D) by which the pull element (26) extends from the lid (23), at the location (41) where the pull element (26) is connected to the lid (23) and measured on a side of the pull element (26) facing a center (39) of the lid (23).

3. Package according to any one of the preceding claims, wherein the pull element (24, 241) is connected to the lid (23) at one coupling point (41) only or at two coupling points (41, 412) only.

4. Package according to any one of the preceding claims, wherein the pull element (24, 241) comprises a ring-shaped gripping structure (46, 461), and the lid (23) comprises a depression (40) that is located beneath the ring-shaped gripping structure (46).

5. Package according to any one of the preceding claims, wherein the lid (23) comprises a protrusion (42) that extends over the lid frame (22), and the pull element (24, 241) is connected to the protrusion (42).

6. Package according to any one of the preceding claims, wherein the lid (23) covers at least 90% of the opening (15) of the main body (2).

7. Package according to any one of the preceding claims, wherein

the lid frame (22) comprises a frame top surface (31) that extends along the entire periphery (18) of the opening (15) of the main body (2), the lid (23) comprises a cover portion (34) and a lid wall section (35), and the lid wall section (35) extends around a peripheral section (36) of the cover portion (34), is joined to the lid frame (22) and lifts peripheral section (36) of the cover portion (34) above the frame top surface (31).

8. Package according to claim 7, wherein the lid (23) comprises a tip-shaped protrusion (43) that extends into the lid frame (22), at a location underneath the pull element (24, 241).

9. Package according to any one of the preceding claims, wherein the lid structure (4) comprises a tear section (26) that is located where the lid (23) is joined with the lid frame (22).

10. Package according to claim 9, wherein at least 70% of the length of the tear section (26) follows a contour that has the same shape as the shape of the contour of the opening (15) of the main body (2).

11. Package according to claim 9 or 10 wherein, when the lid (23) is at least partially detached, the entire periphery (50) of the lid (23) has exact correspondence to an inner part (51) of the lid frame (22) from where the lid (23) was detached.

12. Package according to any one of claims 9 to 11, wherein the tear section (26) comprises a tip-shaped section (52) that extends into the lid frame (22), at a location underneath the pull element (24, 241).

13. Package according to any one of claims 9 to 12, wherein the tear section (26) is interrupted at a side (45) of the opening (15) of the main body (2) that is opposite the side (44) of the main body (2) where the pull element (24, 241) is located.

14. Package according to any one of claims 8 to 13, wherein the tear section (26) comprises an angled-side portion (56) that, at the side (44) of the main body (2) where the pull element (24, 241) is located and at a respective side of the pull element (24, 241), extends with an angle ( $\beta$ ) relative an outer periphery (59) of the lid frame (22), such that the distance between the tear section (26) and the outer periphery (59) of the lid frame (23) increases along the angled side portion (56), in a direction away from the pull element (24, 241).

15. A mould (65) for a packaging machine, the mould (65) comprising a cavity (66) having a shape that corresponds to the shape of the lid structure (4) of

the package (1) according to any proceeding claim.

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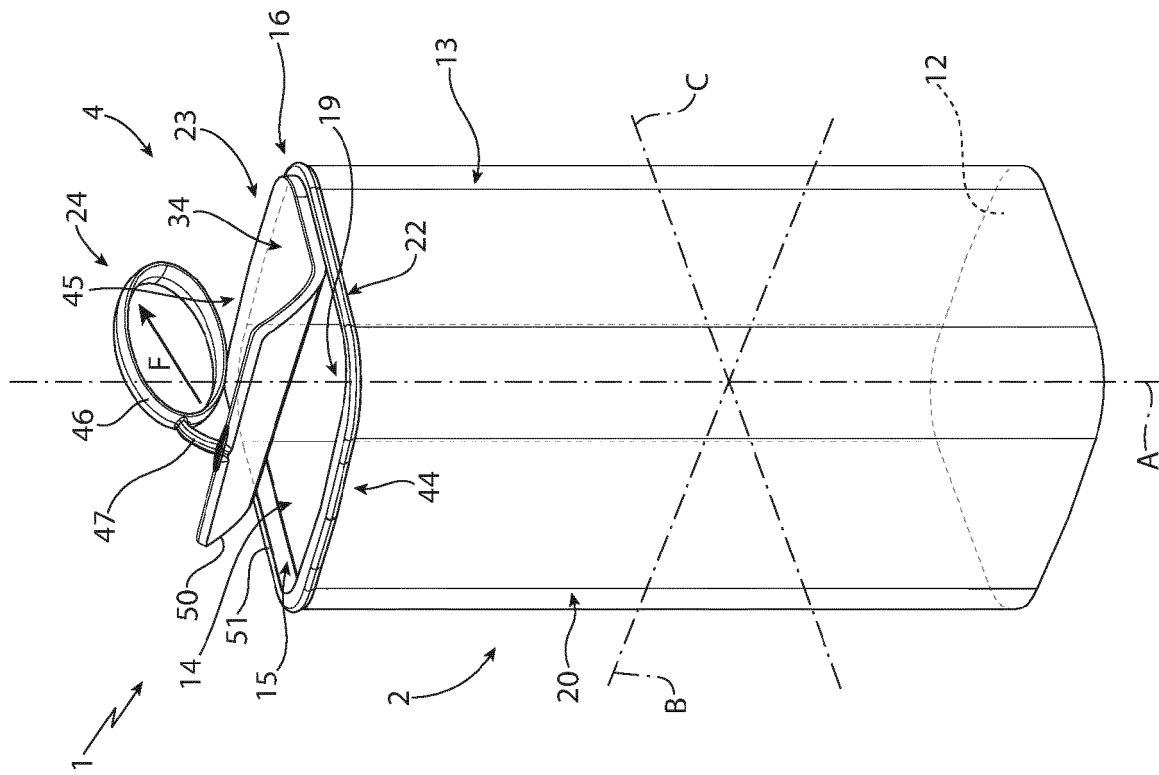


FIG. 2

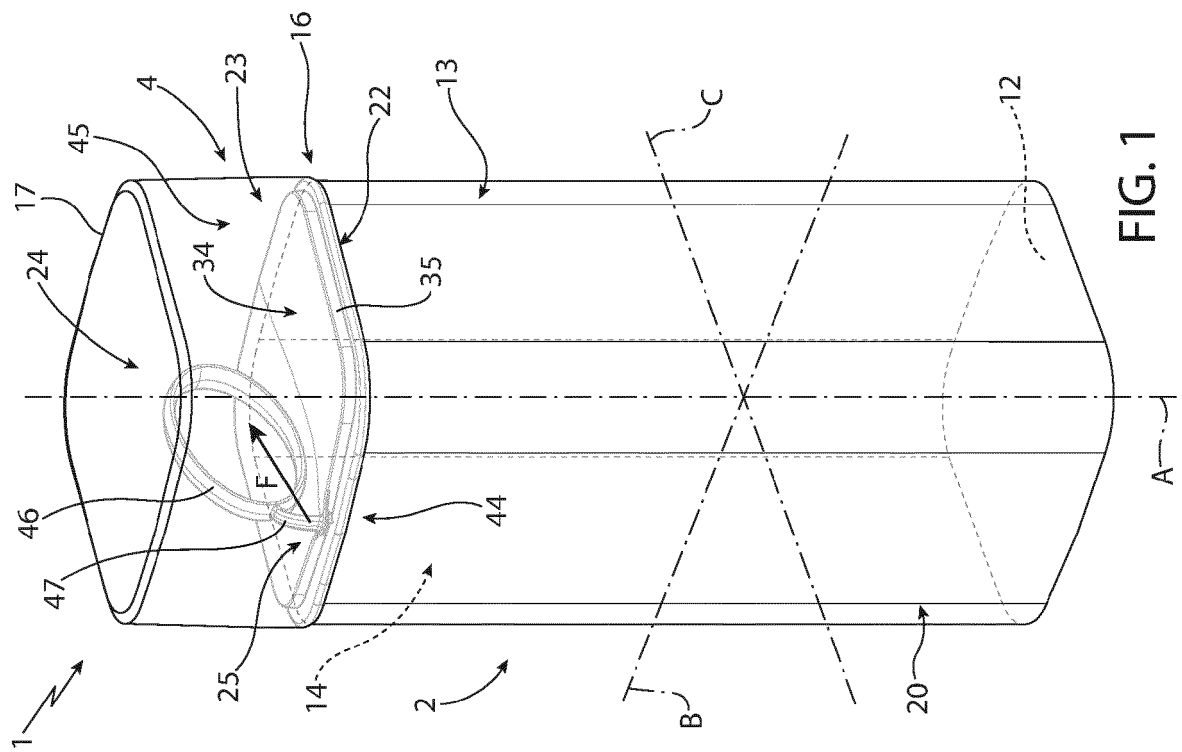
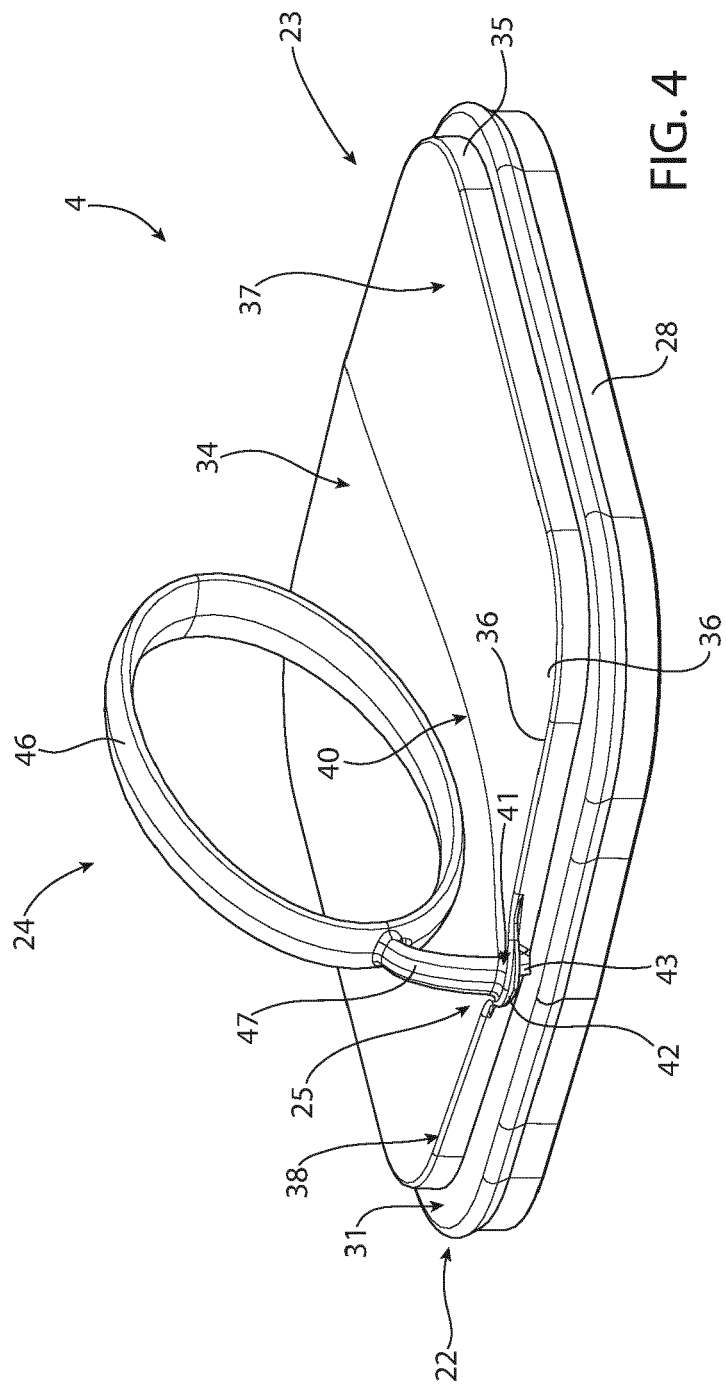
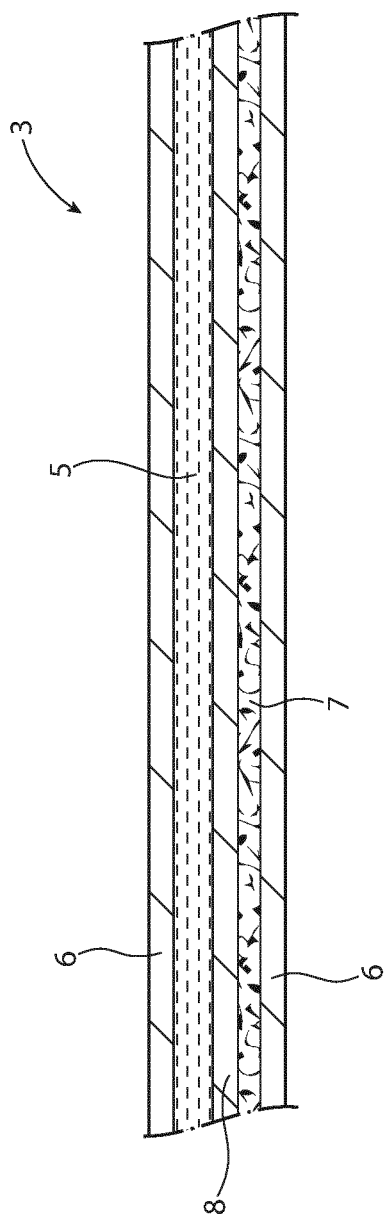
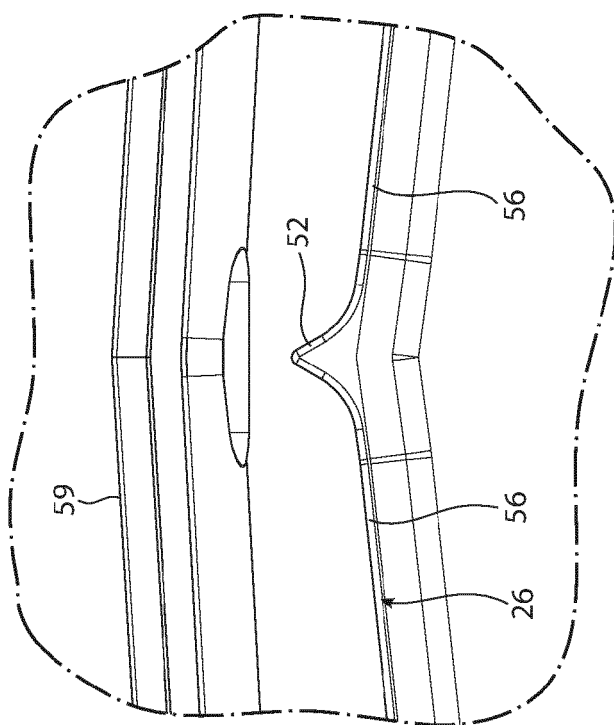
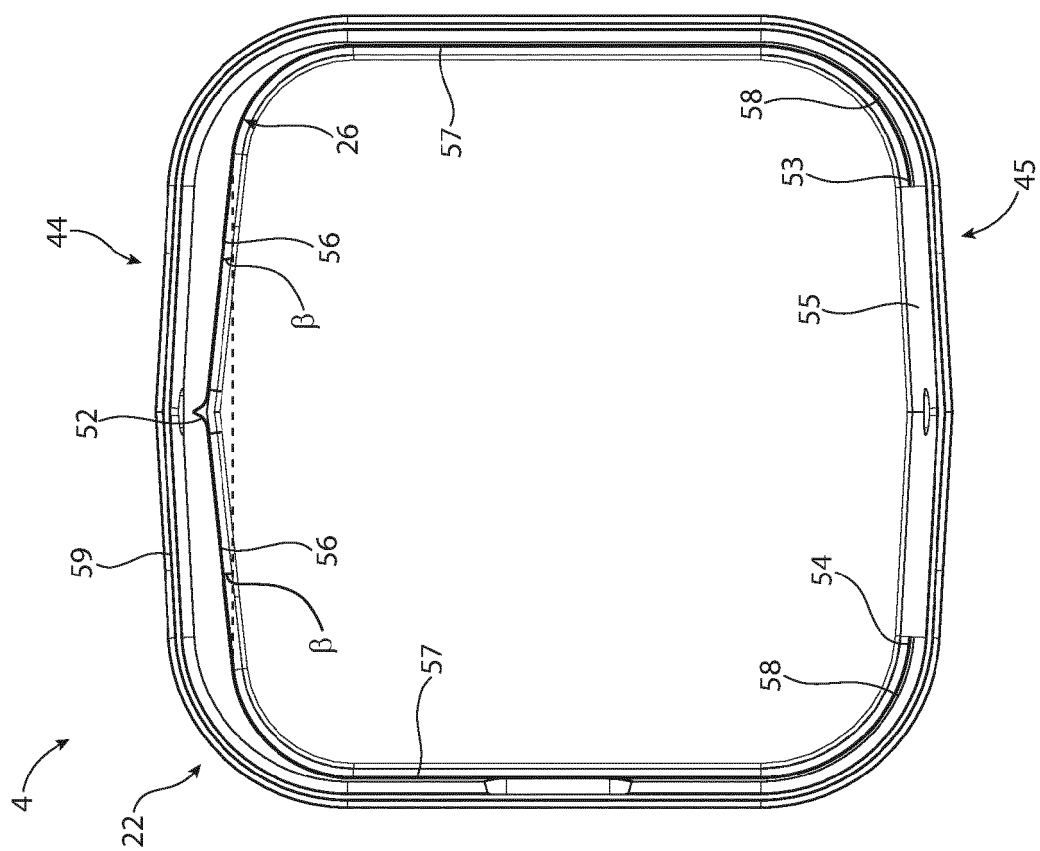
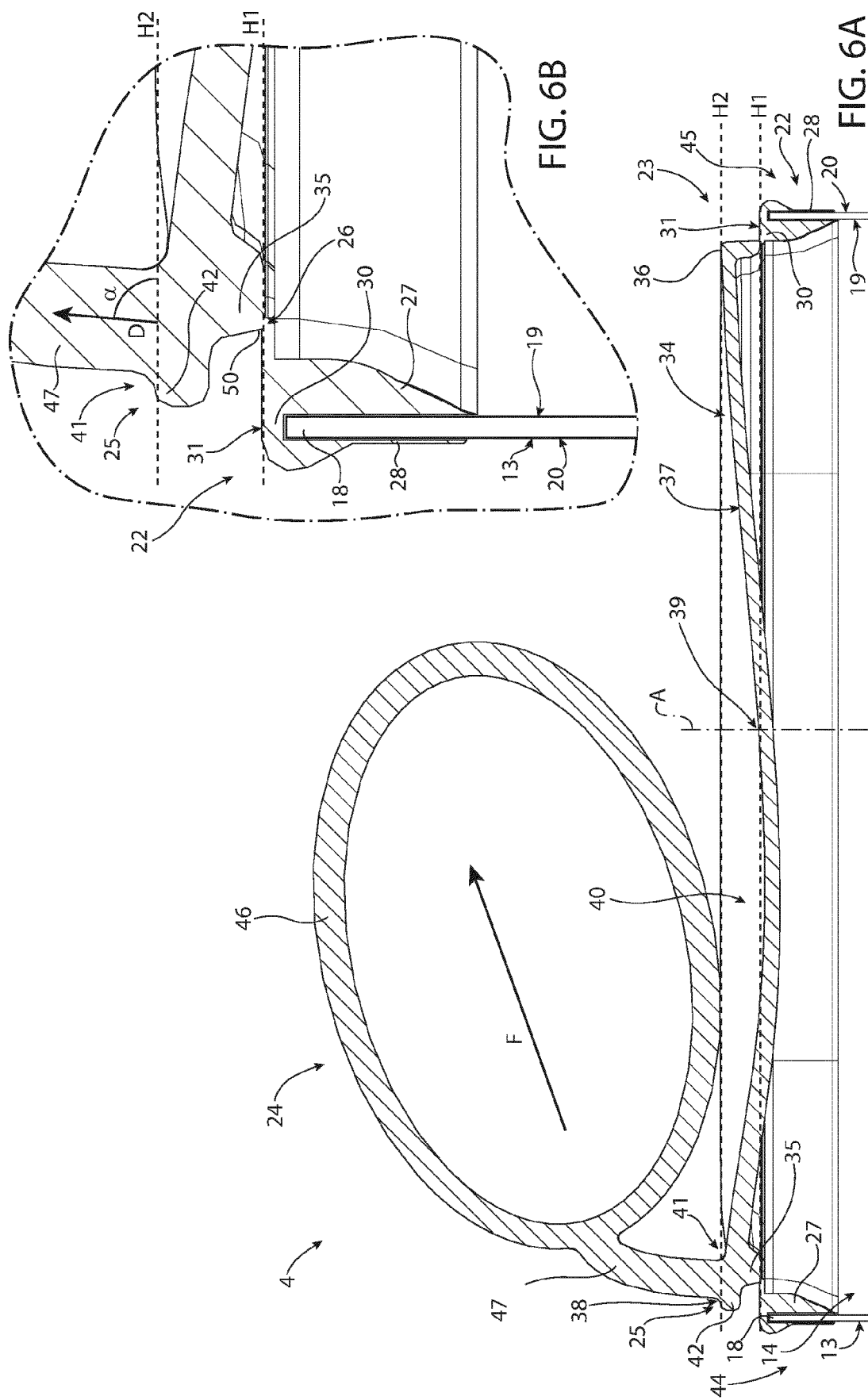


FIG. 1







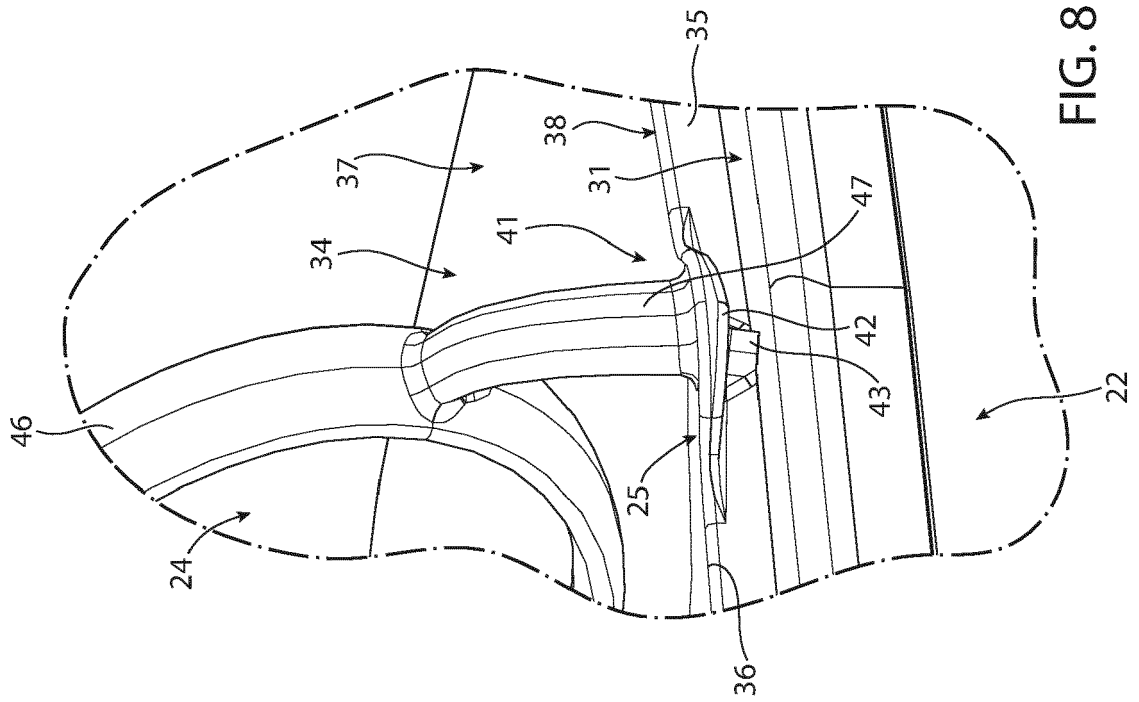


FIG. 8

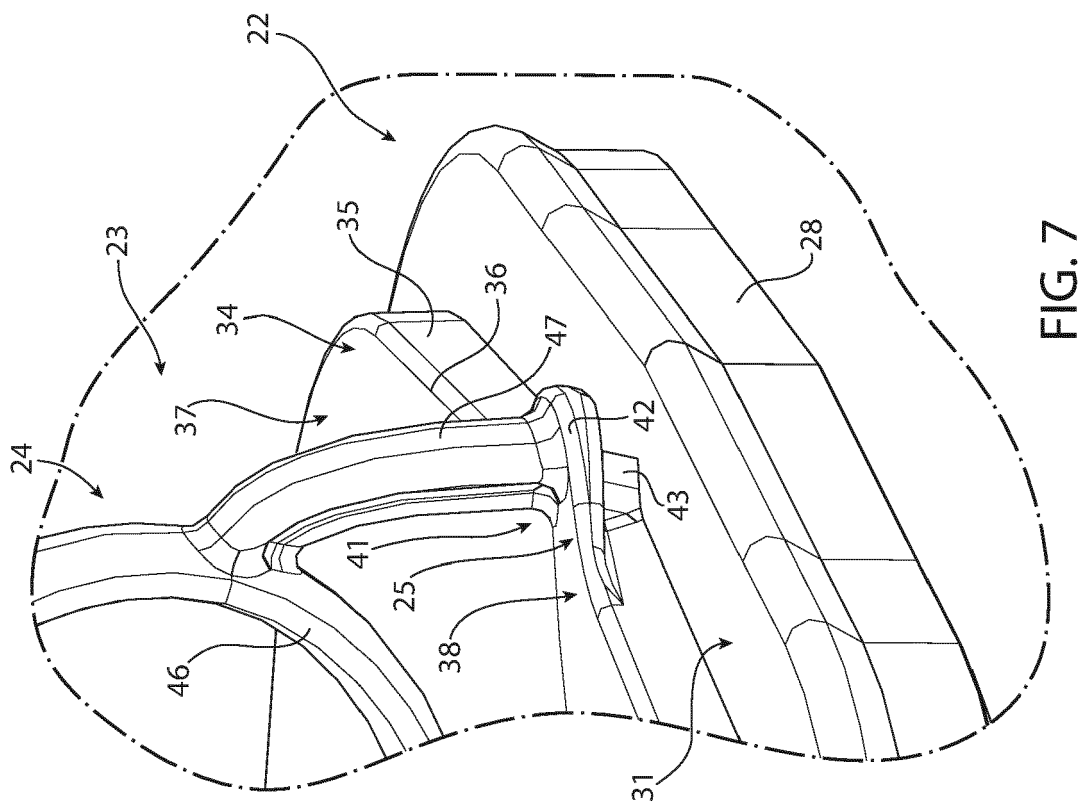


FIG. 7

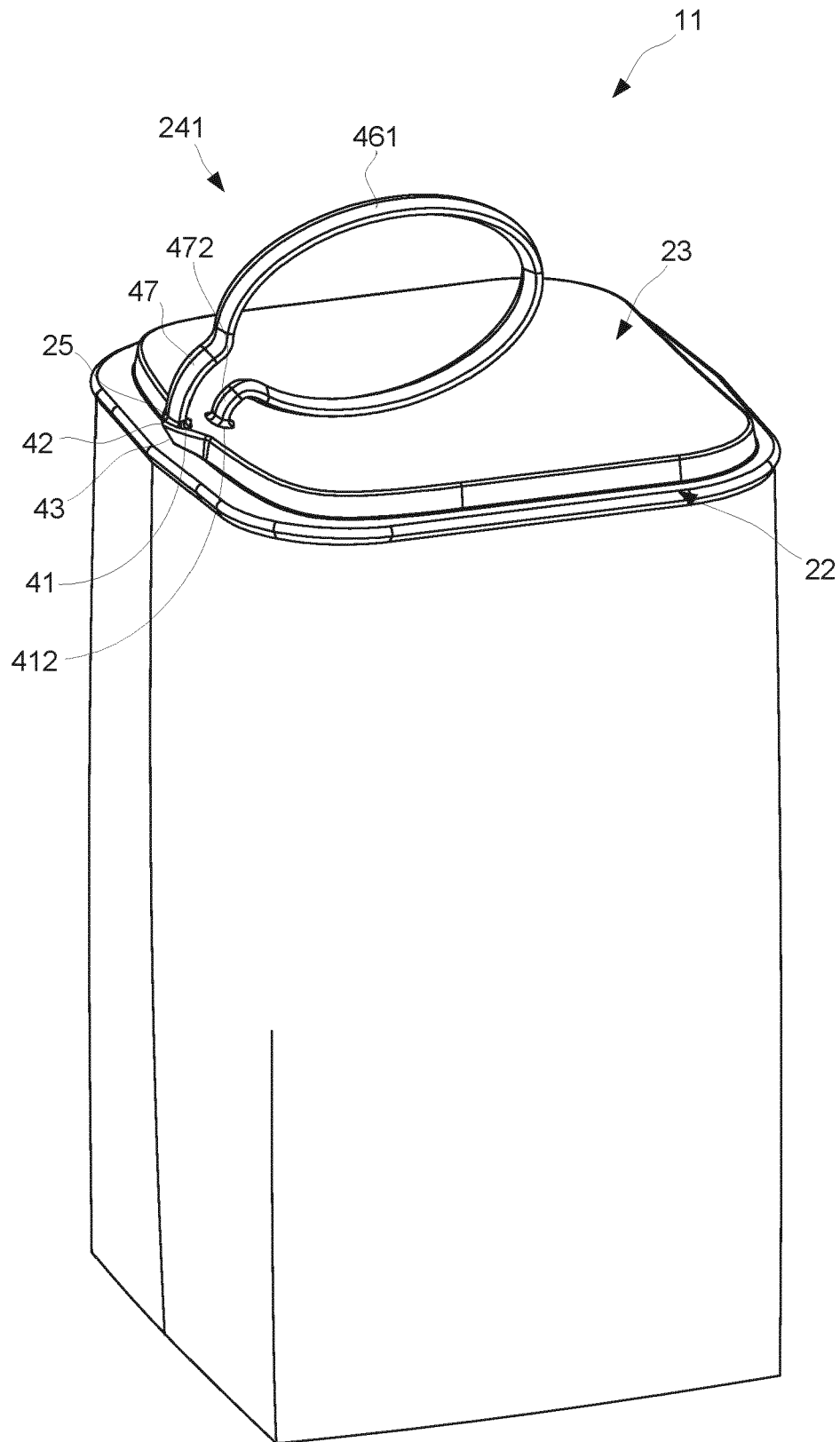


FIG. 9



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| DOCUMENTS CONSIDERED TO BE RELEVANT                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                         |                                                           |                                                          |
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| Place of search<br><b>The Hague</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                         | Date of completion of the search<br><b>31 August 2022</b> | Examiner<br><b>Mans-Kamerbeek, M</b>                     |
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