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(54) **CONTAINER**

(57) A container (100) moveable, when squeezed, between a flat first configuration and a second configuration providing a volume therewithin to receive an item comprises: first and second faces joined at first and second opposing sides, and at third and fourth opposing sides; a slit (122) extending across the second face, a slit apex being closer to the fourth side than end-points of the slit are; a first line of weakness on the second face, extending away from the slit towards the third side; a second line of weakness (2) on the first face, extending from the fourth side, wherein the first and second lines are straight, parallel to the first and second sides, and aligned with the slit apex; and a third line of weakness on the first face, having end-points by the fourth side, and extending away from that side therebetween, further than the slit. The faces bend along the lines of weakness in the second configuration.

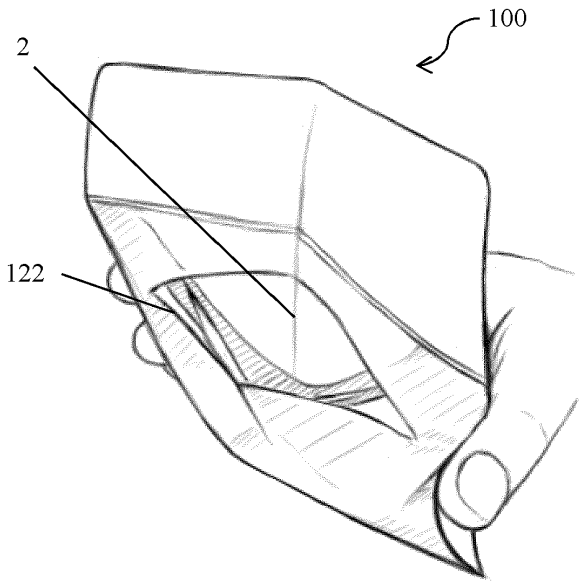

Figure 6

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Description

[0001] The present invention relates to a container, a web for forming a container, and a method of using a container. In particular, but not exclusively, the present invention relates to a packet which can be folded flat in a first configuration and then squeezed so as to adopt a second configuration, with an opening of the container being arranged to widen when squeezed to facilitate insertion of an item.

[0002] The skilled person will appreciate that placing an item to be transported in a traditional paper envelope may lead to a discontinuous shape which may lead to a risk of tearing or other damage during handling. Providing a padded envelope or box may require increased storage space when not in use, and would also increase postage costs if the envelope or box is to be distributed by mail prior to use. The skilled person will appreciate that small and delicate items may present a particular issue; for example, an item may be too small to be safely or reliably handled by a postal service, or small enough that it could easily be lost. Putting such an envelope into a large box or envelope might result in deleterious movement in transit, excessive packaging requirements, and/or ripping due to a discontinuous shape around the item catching processing machinery or the likes.

[0003] It is desirable to have a container that can be folded flat, for example for ease of distribution or storage, and then easily be reconfigured to contain a three-dimensional item. Such a container is disclosed in the applicant's granted patent, EP3597550. However, difficulties remain for insertion of an item into the container in the second configuration - a reconfigurable container with improved ease of item insertion is therefore desired.

[0004] According to a first aspect of the invention, there is provided a container arranged to receive an item and comprising:

first and second faces joined at a first side and at a second side opposite the first side, and joined at a third side perpendicular to the first and second sides, and at a fourth side opposite the third side;

an opening, the opening comprising a slit in the second face extending across the second face, between the first and second sides, in the region of the fourth side, with an apex of the slit being closer to the fourth side than end-points of the slit are;

a first line of weakness located on the second face, the first line of weakness being straight and extending away from the slit towards the third side, parallel to the first and second sides and aligned with the apex of the slit;

a second line of weakness located on the first face, the second line of weakness being straight and extending from the fourth side, parallel to the first and second sides and aligned with the apex of the slit; and

a third line of weakness located on the first face, the third line of weakness having end-points near or at the fourth side, the third line of weakness extending away from the fourth side between the end points, and wherein the third line of weakness extends further from the fourth side than the slit, such that an apex of the third line of weakness is on the far side of the slit from the end points of the third line of weakness.

[0005] The container is moveable between a first configuration in which the first and second faces are flat such that the container is at least substantially flat, and a second configuration in which the first and second faces are bent along the lines of weakness, so providing a volume within the container between the first and second faces.

[0006] The container is arranged to adopt the second configuration when a pressure is applied to the first and second sides, and the opening is arranged to allow an item to be inserted into the volume when the container is in the second configuration.

[0007] The first, second, and third lines of weakness detailed above are arranged to cause the container to bend so as to widen the opening, when moved into the second configuration. Additional lines of weakness may also be present to facilitate bending of the container into the second configuration. The container may be otherwise as disclosed in the applicant's granted patent, EP3597550, but with the slit and lines of weakness as described herein.

[0008] The pressure may be applied by squeezing the container, for example between a finger and thumb. The container may be described as a pop-up container, as the container "pops up" into the second configuration when the pressure is applied.

[0009] It will be appreciated that each line of weakness may or may not be weakened along the full length of the "path" as described for each, or may not be evenly weakened along that path. For example, whereas scoring or pre-folding of card may be used to provide even weakening, perforation naturally creates variations in weakening at and around each hole. Further, only a portion, or multiple portions, of the path may be perforated, scored, or otherwise weakened. For example, the third line of weakness may comprise one or more weakened sections along that path - for example two, unjoined, straight line weakened portions extending away from the fourth side, and angled towards each other such that distance between the straight line portions decreases as distance from the fourth side increases. Alternatively, a single weakened section may be provided, optionally in a V-shape or U-shape, with the "arms" of the V or U extending towards, but not reaching or closely approaching, the fourth side. The weakened section(s) may be selected such that the container bends at least approximately along the path, guided by the weakened sections, even when the whole of the path is not weakened. Each line of weakness is therefore a path along which bending of the container is facilitated, whether or not the entire length

of that line is weakened. In some embodiments, the entire path length of each line of weakness is weakened, optionally evenly.

[0010] The first line of weakness may have an end point near or at the slit.

[0011] The container may have a negligible height in the first configuration; it may be substantially flat. There may be only a negligible space, or no space, between the first and second faces.

[0012] The container may have a non-negligible height in the second configuration. There may be a non-negligible space between the first and second faces. The skilled person will appreciate that the container design may provide a non-negligible height along most, if not all, of the container's length, and that this may reduce the risk of the container being mistakenly identified as a flat envelope by mail sorting/handling machinery (and handled inappropriately as a result).

[0013] Once an item is placed within the container and the pressure on the sides is released, the container may relax into an intermediate configuration having a height/shape between that of the first configuration and the second configuration. The container may be described as self-adjusting; when the item is placed inside, the tendency of the container to return to its original shape (the first configuration) may cause the container to close/reduce in height until it touches the top and bottom surface of the item placed inside it - therefore, the container may become as slim as it can be whilst retaining its protection and maintaining the location of the item inside. Advantageously, the size reduction may improve packing efficiency for transportation and storage. The height may vary smoothly along the length of the container in the intermediate configuration - in particular, the bends along the first, second, and third lines of weakness to widen the opening may flatten out, returning the opening to its slit shape. Advantageously, smooth variation in height along the container in this intermediate configuration may reduce the chance of the container catching or tearing in transit.

[0014] The shape and/or size of the slit may be selected based on dimensions of the item to be inserted into the container.

[0015] The slit may be positioned and shaped such that it opens automatically when the container is moved into the second configuration.

[0016] All sides of the first face may be connected to corresponding sides of the second face - for example adhered thereto or formed from a fold in a single sheet - such that the item can only be inserted into the container through the slit.

[0017] The slit may have a single turning point, that turning point being the apex. Alternatively, the slit may have a straight line portion parallel to the third edge, the straight line portion providing the apex.

[0018] The apex may be located centrally with respect to slit length.

[0019] The apex may be located centrally with respect to container width (being equidistant from the first and second sides).

[0020] The slit may have a first end near the first side and a second end near the second side, and the span between the first and second ends of the slit may be at least 70% of the distance between the first and second sides (i.e. at least 70% of container width).

[0021] The slit may be arranged such that the apex of the slit is spaced from the end-points of the slit by a distance of at least 10% of the distance between the third and fourth sides (i.e. at least 10% of container length).

[0022] The slit may be curved, at least in part. Alternatively, the slit may be formed by two or more straight lines.

[0023] The slit may comprise, or consist of, two, angled, straight line portions meeting at a corner, the corner forming the apex, such that the slit has a V-shape.

[0024] The slit may comprise, or consist of, three conjoined straight-line portions, the middle straight line portion being parallel to the fourth side and forming the apex, such that the slit has a trapezoidal shape. Alternatively, the first and third portions may be curved, with a straight central portion forming the apex, or the first and third portions may be straight, with a curved central portion.

[0025] The slit may comprise a curved (e.g. circular) hole at each end-point. The hole may be small compared to slit length, optionally having a radius of 1 mm or less. The hole may serve to distribute forces at the slit ends when the container bends, so potentially reducing the chance of tearing.

[0026] The container may further comprise a fourth line of weakness located on the second face. The fourth line of weakness may be provided to facilitate bending of the second face along the first line of weakness. The fourth line of weakness may have end-points near or at the end points of the slit. The fourth line of weakness may extend away from the slit and towards the third side of the container between its end points. The fourth line of weakness may be V-shaped, or curved. As for the third line of weakness, in some embodiments, the fourth line of weakness may comprise or consist of a single weakened section in the vicinity of the apex, forming the apex, and/or two straight line weakened portions along the described path from the fourth side, rather than the entirety of the path length being weakened.

[0027] The container may further comprise a fifth line of weakness located on the first face. The fifth line of weakness may have an apex further from the fourth side than the apex of the third line of weakness. The fifth line of weakness may extend from its apex around the third line of weakness towards the fourth side of the container. The fifth line of weakness may remain spaced from the third line of weakness for its whole length, optionally by an amount that decreases nearer the end-points of the third and fifth lines of weakness.

[0028] The first and second lines of weakness may be aligned such that, in the first configuration, they are in contact along their lengths. The first and second lines of weakness may extend to the same distance from the

fourth side.

[0029] The third line of weakness may be at least partially curved, for example comprising two straight line portions joined by a curved apex portion. The third line of weakness may be V-shaped. The same may apply to the fifth line of weakness.

[0030] The third line of weakness may comprise two straight line portions each extending towards the other, away from a respective end-point of the third line of weakness. Each straight-line portion may extend away from the fourth side at an angle of around 54° to the fourth side.

[0031] In such embodiments, the two straight line portions may be joined by a curved portion which extends between the two and provides the apex of the third line of weakness. Alternatively, the two straight line portions may meet at a point, the point providing the apex of the third line of weakness

[0032] The third line of weakness may have a single apex, the single apex optionally being the only turning point of the third line of weakness. The same may apply to the fifth line of weakness.

[0033] The container may further comprise a pair of internal flaps positioned between the first and second faces and spaced inwardly from the first and second sides. In the first configuration, the internal flaps may be flat and parallel to the faces, and in the second configuration the internal flaps may be at an angle with respect to the first and second faces and arranged to act as spacers between the first and second faces, so providing a volume within the container defined by the first and second faces and the flaps. The opening may be arranged to allow an item to be inserted into the volume defined by the first and second faces and the flaps when the container is in the second configuration. In some embodiments, the flaps may cause the container to remain in the second configuration after a force applied to move it from the first configuration into the second configuration is removed.

[0034] In embodiments with internal flaps, the internal flaps may be spaced so as to form a channel therebetween arranged to receive the item when the container is in the second configuration. The channel may have a width of between 4 cm and 1 cm, and optionally of around 3 cm. The channel may be centrally located with respect to the width of the container. The skilled person will appreciate that the internal flaps may therefore prevent or limit rotation of an elongate item, and/or limit movement of the item.

[0035] The internal flaps may provide some resistance against the container returning from the second configuration to the first configuration.

[0036] The internal flaps may provide some resistance against the central region of each face bowing inwardly between the first and second sides when the pressure is applied to the first and second sides.

[0037] The internal flaps may extend along substantially the full length of the container between the slit and the closed end region.

[0038] The container may further comprise a flap support structure arranged to support the internal flaps. This support structure may comprise a protruding portion arranged to lie between the end portion of the first face nearer the opening and the second face. The end portion of the first face may be adhered to the second face only along an edge, so allowing the protruding portion to slide beneath an end portion of the second face; between the first and second faces, in the end region. The end portions may therefore provide a limitation on flap movement.

[0039] In the closed end region (i.e. the end region further from the opening), the flap and flap support structure may be arranged to end a short distance before the closed end. The skilled person will appreciate that the container may be opened to retrieve the item by cutting off the end of the container. It may therefore be beneficial to keep the number of layers of material adjacent the closed end to a minimum for ease of cutting. The shape of the internal flaps and flap support structure may be selected so as to have inclined angles to facilitate keeping the amount of material in the cut zone when the container is opened low. This design feature may assist in providing a minimal mechanical loading on a cutting device used to open the container. The skilled person will appreciate that a channel between the internal flaps may keep the item at least substantially aligned with the container, which may facilitate the item sliding out when the container is cut open.

[0040] The height of the internal flaps may be selected to at least substantially match the height of the item. The spacing between the internal flaps may be selected to at least substantially match the width of the item. The length of the flaps may be selected to extend beyond the length of the item, so as to reduce the risk of a discontinuous shape around the item making the item vulnerable to damage, e.g. by mail-processing apparatus.

[0041] The container may be arranged to receive an item. The item may be a sample container, for example a medical sample vial arranged to receive a faecal, cervical, blood or urine sample. Such items may be small, relatively delicate and easily lost. The container may therefore be sized to receive such an item, optionally engagingly. The item may be an OC-Auto sampling bottle 3, article number 20000790, available from Clindia (http://www.clindia.nl/product/103/oc-auto-sampling-bottle-3.html) - the container may therefore be arranged to receive a faecal sample bottle such as an OC-Auto sampling bottle 3.

[0042] The container may be arranged to contain a fecal sample bottle.

[0043] The container may further comprise a closure, such as a sealing flap. The closure may comprise a flap arranged to cover the opening. The flap may extend from an end region of the first face (or the second face) and be arranged to be folded onto the face comprising the opening slit to seal the container. The closure may comprise a pressure sensitive bonding agent. The pressure sensitive bonding agent may cover the entirety of the

opening area. The closure may provide a hermetic seal for the container when sealed. In embodiments in which the closure extends from the fourth side of the container, the second line of weakness may continue / extend across the closure.

[0044] The container may comprise a sealing flap extending from the fourth side and arranged to be folded so as to cover the slit and thereby seal the container.

[0045] In the first configuration, the container may have substantially only two faces (having a negligible height). The container may resemble a traditional flat envelope. The container may be substantially rectangular in the first configuration.

[0046] Each of the first and second faces may comprise:

a first-side line of weakness extending between, and tending inwardly between, end regions of the first side, the first-side line of weakness dividing a first edge region of the face from a central region of the face; and

a second-side line of weakness extending between, and tending inwardly between, end regions of the second side, the second-side line of weakness dividing a second edge region of the face from the central region of the face.

[0047] In such embodiments, in the second configuration, the first and second edge regions are at an angle with respect to the central region of the faces - the container is bent along the first-side and second-side lines of weakness. A pressure may be applied to the first and second sides to cause this bending. In the second configuration, the central region of each face may be curved to accommodate the position of the edge regions.

[0048] In the second configuration, the first edge region of the first face and the first edge region of the second face may form a third face, and the second edge region of the first face and the second edge region of the second face may form a fourth face. The third and fourth faces may be at least substantially perpendicular to the first and second faces in the second configuration. The container may resemble a box in the second configuration. These first- and second-side lines of weakness may extend along at least substantially the full length of the container, and/or may be curved. The third and fourth faces may be lens-shaped; having a shape formed by two arcs joined at their end-points. The arcs may be circular arcs. The first and second sides may take the form of lines (e.g. fold lines) in the first configuration. The lines may become centre lines of the third and fourth faces in the second configuration. The third and fourth faces may be flat/planar across the height of the container, or may be angled around the centre lines. The third and fourth faces may be curved (or folded so as to have portions at different angles) along the length of the container.

[0049] In such embodiments, an edge of a sheet of material forming the central region of the second face may be inwardly offset from the line of weakness. This may facilitate folding and/or reduce the risk of the edge of the sheet of material becoming unstuck with movement between configurations. For example, the first face, the edge portions of the second face, and a connection means to allow attachment of the central region of the second face may be provided by a single sheet folded to form the first and second edges. The central region of the second face may be provided by an hourglass-shaped sheet portion (which may or may not be integral with the first sheet). The hourglass shape may be curved (formed by two concave curves) or angled (formed by two V-shapes or two trapezia). There may be a spacing between the inwardly-tending edges of the hourglass and the lines of weakness, with the edges of the hourglass being closer to a central line along the length of the container; for example an offset of between 0.5 mm and 2 mm, and optionally of around 1 mm. This spacing may be provided by the connection means, which may take the form of a flap extending from the edge portion of the second face, on the far side of the line of weakness therefrom. The skilled person will appreciate that if these inwardly tending lines were matched instead of offset, the amount of force required to fold the pack may be increased. By providing an offset, folding along the line of weakness may be facilitated, so facilitating moving to the second configuration. The offset may allow a central region of the line of weakness to fold/crease more easily, and may aid the popping up of the container into the second configuration. Further, if exerting the pressure between the sides put pressure on the join (e.g. adhesive, such as glue or a heat-bonding coating) between the central region of the second face and the edge regions, the chance of delamination of the sheets may be increased. The offset may provide a lip shielding the join from direct pressure.

[0050] The container may further comprise an absorbent material adhered to an inner surface of the container. The absorbent material may be provided on an inner surface of the first face or of the second face. The absorbent material may be arranged to absorb any fluid leaked from the item. In embodiments with internal flaps, the absorbent material may be arranged to lie along the channel created between the internal flaps. The skilled person will appreciate that arranging the absorbent material within the channel may minimise height in the first configuration as the internal flaps may fold adjacent to the absorbent material and not overlap therewith.

[0051] The container may be a packet. The container may be made of card. The card may have a polymeric coating, for example providing a bio-polymeric bonding surface. The polymeric coating may provide water resistance. The polymeric coating may be used for thermal bonding of portions of the container during assembly.

[0052] According to a second aspect, there is provided a web for creating a container according to the first aspect from a single sheet of material.

[0053] The web may further comprise an absorbent

material. The absorbent material may be adhered to an inner surface of the second face. The strip of absorbent material may be referred to as an absorbent element. In embodiments with internal flaps, the absorbent material may comprise a strip arranged between the internal flaps.

[0054] The sheet of material may be paper or card.

[0055] At least one face of the sheet of material may be coated with a coating. The coating may be a polymeric coating (optionally a bio-polymeric coating). The coating may be arranged to provide at least one of water resistance; and thermal bonding.

[0056] The skilled person will appreciate that features described with respect to one aspect may be applied to any other aspect, *mutatis mutandis*.

[0057] Embodiments of the invention will be described, by way of example only, with reference to the accompanying drawings, in which:

Figure 1 shows a perspective back view of a container of an embodiment;

Figure 2 shows a perspective front view of the container of Figure 1;

Figure 3 shows the perspective back view of Figure 1, emphasising lines of weakness around the opening;

Figure 4 shows the perspective front view of Figure 2, emphasising lines of weakness around the opening;

Figure 5 shows the container of the preceding Figures being squeezed so as to widen the opening;

Figure 6 shows the container of the preceding Figures being squeezed so as to further widen the opening;

Figure 7 illustrates the web used to form the containers shown in the preceding Figures, emphasising the lines of weakness around the opening;

Figures 8 and 9 show schematic perspective views of a container according to an embodiment which includes internal flaps in the first configuration (flat) and in an intermediate configuration (partially popped up, with the opening partially opened), respectively;

Figures 10 and 11 show schematic side views of the container of the preceding Figures in the first configuration and in the intermediate configuration, respectively;

Figures 12A and 12B show schematic top and bottom plan views, respectively, of the container of the preceding Figures in the first configuration;

Figures 13A and 13B show schematic top and bottom plan views, respectively, of the container of the preceding Figures in the intermediate configuration;

Figure 14 and 15 illustrate the web used to form the containers shown in the preceding Figures;

Figure 16 illustrates a method of an embodiment;

Figure 17 illustrates a schematic perspective view of the container of any of Figures 1 to 7 in a partially assembled configuration;

Figure 18 is a photograph of a container with an additional line of weakness, held in the second configuration; and

Figure 19 illustrates the fold lines / lines of weakness on the first face and sealing flap of the container shown in Figure 18.

[0058] In the figures, like reference numerals are used for like components.

[0059] Figures 1 and 2 show rear and front perspective views of a container 100 of an embodiment. As used herein, the "front" of the container 100 is the side with the opening 122, and the "rear" of the container 100 is the side without the opening, opposite the front.

[0060] Figures 1 and 2 show the container 100 in a first configuration, in which the container is at least substantially flat. The opening 122 takes the form of a slit in the first configuration.

[0061] Figures 5 and 6 show the same container 100 in a second configuration, in which the container 100 is "popped up" / no longer flat. The container 100 has a non-negligible height, H, in this configuration, and the opening 122 is widened.

[0062] The container 100 is arranged to receive an item 10; in the embodiment being described, the item 10 is a medical sample bottle. The medical sample bottle has dimensions of 8 cm by 1.5 cm by 0.8 cm.

[0063] The skilled person will appreciate that containers of other embodiments may be sized and shaped to receive items of different dimensions, and that embodiments may have particular utility when the items 10 to be contained are relatively small compared to standard mailing envelopes.

[0064] The container 100 has a width (W) of 10 cm and a length (L) of 14.2 cm (not including the sealing flap 112) in the embodiment being described. In the first configuration, the container 100 has a height (H) of less than 0.8 cm, and more particularly of 0.2 cm or less in the embodiment being described. The height may be the thickness of four layers of the material used to make the container 100, which is card in the embodiment being described.

[0065] The skilled person will appreciate that the container may have different dimensions in different embodiments (for example with a varying width as indicated by the broken lines in Figures 8 and 9, among others), and that the dimensions listed herein are provided by way of example only. For example, the width may be between 5 cm and 50 cm and the length may be between 5 cm and 50 cm. The length and the width may be equal in some embodiments. The height is small with respect to the length and width in all embodiments. For example, the height may be a maximum of 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, or 1 cm. The height may be defined by the number of layers of card overlying each other in the first configuration. The height may include a small amount of open space in addition to the number of layers of card.

[0066] The container 100 has first 110 and second 120 faces. The first and second faces 110, 120 are joined

along their sides so as to form a pocket 101 (i.e. an enclosed space or volume) therebetween, in which the item 10 can be received.

[0067] The container 100 has first and second sides 102, 104 along the length (L) of the container 100. The first side 102 is opposite the second side 104, and is parallel thereto in the embodiment being described. The skilled person will appreciate that, whilst the container of the embodiment being described is substantially rectangular (at least in the first configuration), other shapes may be used in alternative embodiments (e.g. trapezoidal containers) and the sides may be opposing but not parallel in such embodiments.

[0068] The container 100 has a third side 106 across the width (W) of the container 100. The third 106 side forms a closed end of the container 100 (i.e. the end of the container further from the opening 122). The third side 106 is perpendicular to the first and second sides 102, 104 in the embodiment being described. The skilled person will appreciate that, whilst the container 100 of the embodiment being described is substantially rectangular, other shapes may be used in alternative embodiments (e.g. trapezoidal containers) and the third sides may not be perpendicular to the first and second sides in such embodiments.

[0069] The container 100 has a fourth side 108 across the width of the container 100. The fourth side 108 is located in an open end region of the container 100 (i.e. the end of the container closer to the opening 122 / the end region including the opening 122). The fourth side 108 is perpendicular to the first and second sides 102, 104 and parallel to the third side 106 in the embodiment being described. This may differ in alternative embodiments, as indicated above.

[0070] In the embodiment being described, a sealing flap 112 extends from the fourth side 108 of the first face 110. A fold line 108a is located on the fourth side 108 of the first face 110; the sealing flap 112 is connected to the first face 110 by the fold line 108a. The sealing flap 112 is arranged to fold over an end region of the second face 120 and to be adhered thereto so as to seal the container 100. The sealing flap 112 is arranged to cover the opening 122 of the container 100, which is described in more detail below.

[0071] In the embodiment being described, an underside 112a of the sealing flap 112 is provided with an adhesive (e.g. as a double-sided tape or coating). The adhesive may be contact-sensitive adhesive and/or moisture-sensitive adhesive. In the embodiment being described, the sealing flap 112 is provided with a full coverage of a pressure sensitive bonding agent to facilitate the opening 122 being hermetically sealed by covering the full area of the opening122.

[0072] In the embodiment being described, the first and second faces 110, 120 are adhered together in a region of the fourth side 108. The item 10 therefore cannot be inserted into the container 100 by insertion between the edges of the faces where they meet. Instead, a slit 122 in the second face provides the opening 122.

[0073] In the embodiment being described, the slit 122 is curved. The curve has the approximate shape of half of an oval / a semi-ellipse. The span of the curve (at least substantially parallel to the width of the container) is greater than the maximum height of the curve (at least substantially parallel to the length of the container 100). The curve is symmetrical about a central line down the length of the container 100.

[0074] In the embodiment being described, the slit 122 has a span of 7.6 cm; i.e. around 76% of the width of the container 100. In alternative embodiments, the slit 122 may have a span of at least 70% of the container width. In alternative embodiments, the slit 122 may have a span of between 50% and 90%, and preferably between 70% and 90%, of the container width.

[0075] In the embodiment being described, the slit 122 has a maximum height of around 17 mm (slit "height" in this context referring to spacing between the end-points and another point on the slit, along the container's length, with the maximum being at the curve's apex); i.e. around 200% of the thickness of the item 10. In alternative embodiments, the slit 122 may have a height of between 150% and 400%, and preferably between 175% and 225%, of the container height, H. The skilled person will appreciate that the height of the slit should be sufficient to allow insertion of the item 10 when the container 100 is bent as described below, and should be preferably sufficiently short for the sealing flap 112 to be able to cover the entirety of the slit 122 and to allow space at either side of the slit such that a complete seal of the opening 122 can be provided by the sealing flap 112

[0076] The skilled person will appreciate that the length of the slit should be sufficiently long to allow insertion of the item 10.

[0077] In the embodiment being described, the slit 122 is arranged to automatically open when the container 100 is compressed/squeezed, and designed to provide a sufficient entry height for the item 10 in the second configuration.

[0078] The curvature of the slit 122 has been reversed as compared to that disclosed in the applicant's granted patent, EP3597550, such that the apex is closer to the fourth side 108 than the end-points of the slit are - it curves towards the nearest end of the container 100 instead of away from it. Whilst this change in curvature alone could make it harder to insert an item 10 into the container, with the upwardly-extending "flap" 120a of the opening 122 potentially catching on the item 10, the combination of this with the jaw-type opening described below, provided by the lines of weakness, facilitates item insertion. In particular, the change in orientation of the slit 122 may help to ensure that tape or another adhesive for the closure of the sealing flap is not exposed to the inside of the container 100, and therefore will not come into contact with the item 10 and stick to it.

[0079] In alternative embodiments, the slit 122 may not be curved, or may only be curved in part. However, in

every embodiment, an apex of the slit (be that a vertex where two lines meet, a turning point of a curve, or a straight line portion of a slit with multiple different portions) is located closer to the fourth side 108, and in particular is the closet part of the slit 122 to the fourth side 108. For example, the slit 122 may be V-shaped, with a vertex closer to the fourth edge108 than either end-point of the slit is. Alternatively, the slit 122 may be trapezoidal in shape, with two angled portions each leading away from a respective end-point of the slit towards the fourth edge 108, and being joined by a straight line portion parallel to the fourth edge 108, the middle portion forming the apex. Preferably, the apex is centrally located with respect to the slit 122, and with respect to container width, W. Preferably, the two end-points of the slit 122 are equidistant from the fourth edge 108 / at the same distance along the length of the container 100.

[0080] In the embodiment shown in Figure 7, the slit 122 takes the form of an arc of a circle for the majority of its length, curving more sharply near its end points to form end regions at least approximately parallel to container length, L. The arc has a radius of 53 mm in the embodiment shown. The slit 122 has a span of around 75 mm, and is a circular arc for around 66 mm of that span, with the remaining 4.5 mm of span at each end of the central arc being covered by the non-circular arc end regions. Dimensions and curvature vary in other embodiments. The "height" of the slit 122 (spacing between end-points and apex, parallel to container length, L) in the embodiment being described is around 17.5 mm. In general, the height of the slit 122 is at least 25%, and optionally at least 30%, of the slit span.

[0081] In some embodiments, each end of the slit 122 may terminate in a small hole (not shown) through the second face 120. The hole may have a radius of less than 1 mm, and optionally less than 0.5 mm. The hole may serve to distribute forces at the slit ends when the container bends, so reducing the chance of tears. In embodiments with a fourth line of weakness 4 as described below, the fourth line of weakness 4 may also have its end-points on these holes.

[0082] In the embodiment being described, the portion of the second face 120 between the slit 122 and the fourth edge 108 is arranged to lie on an inner surface of the first face 110. In the embodiment being described, at least some of the portion of the second face 120 between the slit 122 and the fourth edge 108 is adhered to the inner surface of the first face 110 in the region of the fourth edge 108, in particular in the central region, near the apex of the slit 122.

[0083] As such, once an item 10 is inserted fully through the opening 122, the slit edge formed by the portion of the second face 120 adhered to the inner surface of the first face 110 may act as a lip 122a and may serve to restrain movement of the item 10 even if the container 100 is tipped up before the sealing flap 112 is closed. In the embodiment being described, the slit edge is not directly adhered to the first face 110, so the lip created in the second configuration may be slightly deeper than the material thickness of the lip.

[0084] The opening slit 122 is surrounded by one or more lines of weakness arranged to cause the container 100 to bend so as to widen the opening, when moved into the second configuration. This arrangement may be referred to as a jaw-type opening, and the lines of weakness may be referred to as "opening lines of weakness" to differentiate them from lines of weakness used for other purposes. The one or more lines of weakness may be formed by pre-folding or pre-creasing the material used to make the container 100 in the relevant places, and/or by deliberately thinning or otherwise weakening the material of the container 100 in those areas (e.g. by scoring, etching, and/or perforating it).

[0085] A first opening line of weakness 1 is located on the second face 120. The first opening line of weakness 1 is straight and extends away from the slit 122, towards the third side 106 of the container 100. One end-point of the first line of weakness 1 is located on/at the slit 122, and more particularly at the apex of the slit. The second end-point of the first line of weakness 1 is located closer to the third side 106

[0086] The first line of weakness 1 is parallel to the first and second sides and aligned with the apex of the slit 122, and so is centrally located with respect to the width of the container 100 in the embodiment being described. The first opening line of weakness 1 may extend for 20% to 60% of the container length, L, and optionally to a point around 40% of the length of the container 100 from the fourth side 108. The first opening line of weakness 1 has a length of around 5 cm to 6 cm in the embodiment being described. The first opening line of weakness 1 is arranged to allow the "flap" 102a to fold outwards when the container 100 is squeezed, so forming a mouth or spout shape, facilitating insertion of the item 10. In particular, the apex of the flap 120a moves outwards, away from the first face 110.

[0087] A second opening line of weakness 2 is located on the first face 110. The second opening line of weakness 2 is straight and extends from the fourth side 108, parallel to the first and second sides and aligned with the apex of the slit 122. The second line of weakness 2 is aligned with the first line of weakness 1 such that they are almost collinear / are adjacent along their lengths in the first configuration. As the first and second faces 110, 120 are adhered together in the region of the fourth side 108, a line of weakness 2 may be visible on the second side 120, extending upwards from the slit 122 in the orientation shown, effectively continuing the first line of weakness 1, as can be seen in Figure 2. In embodiments in which the sealing flap 112 is provided by the second side 120, this line of weakness 2 may also be deliberately introduced to the second side to facilitate bending. The second line of weakness 2 extends past the slit 122, or at least past the apex of the slit. The second opening line of weakness 2 may extend for 20% to 60% of the container length, L, and optionally to a point around 40% of

the length of the container 100 from the fourth side 108. The second opening line of weakness 2 has a length of around 5.5 cm to 6.5 cm in the embodiment being described, and optionally extends further towards the third side 106 than the first opening line of weakness 1 does. The second opening line of weakness 2 is arranged to allow the "rear" of the container to fold outwards when the container 100 is squeezed, so adding to the mouth or spout shape, facilitating insertion of the item 10. In particular, the central portion of the container 100 "above" the opening in the orientation shown / on and around the fourth side 108 of the container, moves rearward, away from the second face 120. The opening 122 may therefore have a substantially diamond shape if viewed from above / from the fourth side, looking towards the slit 122, with end-points of the slit forming two vertices of the diamond and the first and second lines of weakness forming the other two vertices.

[0088] A third opening line of weakness 3 is located on the first face 110. The third opening line of weakness 3 has end-points at or near (for example within 2 mm of) the fourth side 108 of the container, and an apex further from the fourth side 108. The third line of weakness 3 extends away from the fourth side 108 between the end points. The third line of weakness 3 extends further from the fourth side 108 than the slit 122, such that the apex of the third line of weakness 3 is on the far side of the slit 122 from the end points of the third line of weakness and from the fourth side 108. The apex of the third line of weakness 3 may intersect the second line of weakness 2 at or near an end of the second line of weakness 2 furthest from the fourth edge 108.

[0089] In the embodiment shown, the third opening line of weakness 3 comprises two straight line portions, each extending away from the fourth edge 108 at an angle, and a curved portion joining the two. The curved portion is aligned with the apex of the slit 122. In particular, an apex of the curved portion is aligned with the apex of the slit 122, and therefore also centrally located with respect to the width of the container in the embodiment shown. In alternative embodiments, the third opening line of weakness 3 may comprise two straight line portions which meet at a point, the point forming the apex of the line of weakness 3. The apex may again be aligned with the apex of the slit 122. In the embodiment shown, the angle between the straight line portions and the fourth edge is between 50° and 60°, and more specifically is around 54°.

[0090] In the embodiment shown, the end points of the third opening line of weakness 3, on the fourth edge 108, are spaced apart by a distance of 77 mm. In various embodiments, the end points of the third opening line of weakness 3 may be spaced apart by a distance of at least 70%, and optionally at least 75%, of the container width, W.

[0091] A fourth opening line of weakness 4, as sketched in dotted lines in Figure 7, may additionally be provided in some embodiments. This fourth line of weakness 4 may facilitate the bending of the flap 120a, playing a similar role to that played for the second line of weakness 2 by the third 3. The fourth opening line of weakness 4 of the embodiment depicted comprises two straight line portions meeting at a vertex at or near the end of the first line of weakness 1 furthest from the slit 122. The fourth line of weakness 4 may instead be curved, or comprise a curved portion (for example, having a shape similar to that shown for the third line of weakness), in other embodiments, or may not be present at all. A fourth line of weakness 4 may develop in use of the container 100, even if not initially provided.

[0092] Aside from the opening lines of weakness 1, 2, 3, in the embodiment being described, the first and second faces 110, 120 each comprise two further, inwardly-tending, lines of weakness 114a, 114b, 124a, 124b. These lines of weakness may be referred to as side lines of weakness, to distinguish them from the opening lines of weakness.

[0093] The first lines of weakness 114a, 124a are adjacent the first side 102; one 114a is on the first face 110 and the other 124a on the second face 120. The first lines of weakness 114a, 124a each separate a first edge region 116a, 126a of the face 110, 120 from a central region 117, 127 of that face.

[0094] The second lines of weakness 114b, 124b are adjacent the second side 104; one 114b is on the first face 110 and the other 124b on the second face 120. The second lines of weakness 114b, 124b each separate a second edge region 116b, 126b of the face 110, 120 from the central region 117, 127 of that face. Each face 110, 120 therefore comprises a central region 117, 127 and two edge regions 116a, 116b, 126a, 126b.

[0095] In the embodiment being described, the side lines of weakness 114a, 114b, 124a, 124b extend along substantially the full length of the container 100. The edge regions 116a, 116b, 126a, 126b therefore also extend along at least substantially the full length of the container 100.

[0096] In the embodiment being described, the side lines of weakness 114a, 114b, 124a, 124b terminate approximately 5 mm from the fourth side 108 of the container 100. The gap, G, may facilitate sealing, preferably hermetic sealing, of the container. In the embodiment being described, the spacing between the end of the lines of weakness and the fourth side 108 is used to adhere the fourth edge region 108 of the second face 120 to the fourth edge region of the first face 110.

[0097] In the embodiment being described, the side lines of weakness 114a, 114b, 124a, 124b are curved. In the embodiment being described, the apex of each curve, which is the furthest point on the curve from the side 102, 104 it extends along, is around 6-8 mm from that side 102, 104. In alternative embodiments, the apex may be differently positioned, for example being between 3mm and 20 mm, and optionally between 5 mm and 10 mm, from the side. The skilled person will appreciate that the spacing chosen may depend on the size of the item

10.

[0098] The skilled person will appreciate that V-shaped side lines of weakness could be used in the same manner in alternative embodiments, optionally with a central fold-line across the width of the container 100, between apices of V-shaped lines of weakness. The skilled person will appreciate that trapezoidal side lines of weakness could be used in the same manner in alternative embodiments, optionally with fold-lines across the width of the container, and/or in other designs such as those disclosed in the applicant's granted patent, EP3597550. The skilled person will therefore appreciate that the inwardly-tending sides and lines of weakness may be curved, trapezoidal, V-shaped, or the likes in various embodiments, with the apex of the curve or V-shape, or the shorter parallel side of the trapezium, being further toward a centre line of the container 100than each extremity of the line of weakness.

[0099] In the second configuration, the container 100 folds along the lines of weakness, so creating third and fourth faces 170, 180 of the container 100. The envelope-shaped container of the first configuration therefore becomes more box-shaped, having a non-negligible height. In the embodiment being described, a height, H, of the container 100 between the apices of the pairs of lines of weakness along each side 102, 104 is around 1.5 cm in the second configuration. In the earlier design disclosed in the applicant's granted patent, EP3597550, this height between the apices of the pairs of lines of weakness along each side 102, 104 was the maximum height of the container 100 in the second configuration, and height decreased smoothly towards ends of the container 100. However, in the newer design disclosed herein, the "jaw"-type opening provides an increased height in the second configuration - which may be greater than or equal to the height mentioned above - in the region of the opening slit 122. The height between the apices of the pairs of lines of weakness along each side 102, 104 is, in many embodiments, the maximum container height in the intermediate configuration, in which the opening 122 can be closed / return to a slit shape whilst still providing a volume within the container 100 for the item 10.

[0100] Figure 8 shows a container 100 of an embodiment in a first configuration, in which the container is at least substantially flat. In this embodiment, the container 100 comprises internal flaps 130a, 130b, as described in more detail below and in the applicant's earlier granted patent (EP3597550). The internal flaps 130 may allow the container 100 to remain in the second position even when the squeezing pressure is released.

[0101] The container 100 of the embodiment being described with respect to Figures 8 to 15 and 17 further comprises internal flaps 130a, 130b. The internal flaps 130a, 130b are located between the first 110 and second 120 faces. In the embodiment being described, the container 100 comprises a pair of symmetrical flaps; in other embodiments, the flaps 130a, 130b may not be symmetrical, or no internal flaps may be present. In the embodiment being described, the flaps 130a, 130b are substantially rectangular. In the embodiment being described the internal flaps 130a, 130b are parallel to the length of the container 100. In alternative embodiments, the internal flaps may be differently angled.

[0102] In the embodiment being described the internal flaps 130a, 130b have a constant height along the majority of their lengths. In the embodiment being described, the internal flaps 130a, 130b have a height of around 1 cm. In alternative embodiments, the flaps may have a different height, for example between 0.5 cm and 3 cm. The height of the flaps may depend on the shape and size of the item 10 to be contained.

[0103] In the embodiment being described, the internal flaps 130a, 130b extend along at least two thirds of the length of the container 100. The skilled person will appreciate that the length of the internal walls is arranged to provide not only guidance and positioning for the item 10, but also to increase compression strength of the container 100 in the second configuration, and potentially also in the intermediate configuration.

[0104] In the embodiment being described, the internal flaps 130a, 130b are arranged to form internal walls 130a, 130b in the second configuration, as shown in Figure 9, and to create a channel 131 therebetween to receive the item 10. In the embodiment being described, the item 10 is elongate and the channel 131 is sized such that the item 10 is retained at least substantially aligned with the length of the container 100; i.e. so that the item 10 cannot rotate by 90°, and optionally not by more than 30° or not by more than 15° or 10°. The internal walls/flaps 130a, 130b are at least substantially perpendicular to the central regions of the first and second faces 110, 120 in the second configuration, and optionally also in the intermediate configuration.

[0105] In the first configuration, the internal flaps are parallel to the central regions of the first and second faces 110, 120, such that the container 100 can be substantially flat. In the second configuration, the internal flaps may act as spacers; separating the first and second faces 110, 120. The flaps 130 may maintain, or help to maintain, a gap between the first and second faces 110, 120.

[0106] The internal flaps 130a, 130b are each connected to a flap support structure. The flap support structures are arranged to hold the flaps in place and to facilitate movement of the flaps between the first and second configurations. In the embodiment being described, each flap 130a-b is connected to two shaped sheets 132a-b, 134a-b.

[0107] The first shaped sheet 134a, 134b is connected to the respective internal flap 130a, 130b along a first line of weakness 133a, 133b. In the embodiment being described, the line of weakness 133a, 133b is a perforated line; in other embodiments folds, scores, or the likes may be used instead of or as well as perforation.

[0108] In the embodiment being described, the first shaped sheet 134 is adhered to the internal side of the second face 120 of the container 100 when assembled. The first shaped sheet 134 serves to mount the flaps 130

to the container 100.

[0109] The first shaped sheet 134 serves to rotatably mount the internal flap 130 within the container 100 at a position spaced from an edge 102, 104 of the container 100. The internal flap 130 is rotatable with respect to the container 100 about the fold line 133. In the embodiment being described, the first shaped sheet 134 extends between the internal flap 130 and the line of weakness 124 - the skilled person will appreciate that this may facilitate making the container 100 from a single sheet of material, as described below. In alternative embodiments, the first shaped sheet 134 may be or comprise one or more strips adhered to the internal side of the second face 120 of the container 100.

[0110] In the embodiment being described, an edge of the first shaped sheet 134 nearest the fourth side 108 of the container 100 (the open end) is shaped so as not to cover the slit 122. In the embodiment being described, the edge of the first shaped sheet 134 nearest the fourth side 108 of the container 100 is curved - in alternative embodiments, the edge could be straight and optionally angled. In the embodiment being described, the edge nearest the fourth side 108 of the container 100 is arranged to lie around 2 mm within the opening 122/from the slit 122 when assembled. The skilled person will appreciate that it may be advantageous for the shaped sheet 134 not to extend to or past the slit 122 so as to avoid narrowing the opening 122 in the second configuration.

[0111] In the embodiment being described, an edge of the first shaped sheet 134 nearest the third side 106 of the container 100 (the closed end) is curved away from the third side 106. The curve is relatively shallow (0.8 cm along the length of the container 100/away from the side 106 for 3.5 cm along its length in the embodiment being described), so allowing the flap 130 to extend along most of the length of the container 100. In the embodiment being described, the container 100 is arranged to be opened by cutting off the third side 106 - the skilled person will appreciate that the first shaped sheet 134 curving away from the side 106 may allow there to be less material/fewer layers to cut through, so facilitating opening of the container 100.

[0112] In the embodiment being described, the edge of the internal flap 130 nearest the third side 106 continues the curve, C. The skilled person would appreciate that a straight line could be used instead of a curve in other embodiments. In the embodiment being described, the internal flaps 130 are angled/curved upwards towards the middle of the container 100 from the lower edge 106 thereof. The skilled person will appreciate that the curvature may reduce the amount of material to be cut through when a machine or other cutting tool is used to cut off the bottom of the container 100, so reducing wear and load on the cutting tool.

[0113] The second shaped sheet 132a, 132b is connected to the respective internal flap 130a, 130b along a second line of weakness 131a, 131b. In the embodiment being described, the line of weakness 131a, 131b is a perforated line; in other embodiments folds, scores, or the likes may be used instead of or as well as perforation. In the embodiments being described, the first and second lines of weakness 131, 133 are parallel and define the lengths of the respective flaps 130. The second shaped sheet 132 extends from the opposite side of the internal flap 130 as compared to the first shaped sheet 134.

[0114] The second shaped sheet 132 is sized and shaped such that the second shaped sheet 132 lies between the flap 130 and the closest side 102/104 of the container. The second shaped sheet 132 is parallel to and in the same plane as the flap 130 in the first configuration. The second shaped sheet 132 is parallel to and in an adjacent plane to the first shaped sheet 134 in the first configuration. The second shaped sheet 132 is at an angle to the flap 130 (optionally an angle between 45 ° and 90°) in the second configuration. The second shaped sheet 132 is spaced from the first shaped sheet 134 in the second configuration.

[0115] In the embodiment being described, the edge of the second shaped sheet 132 furthest from the flap 130 is immediately adjacent, and optionally in contact with, the side 102, 104 of the container 100. When pressure is applied to move the container 100 from the first configuration into the second configuration, the first and second sides 102, 104 are pushed together (forming centre lines of the third 170 and fourth 180 faces), so pushing the flap support structure and causing the flaps 130 to rotate about the first line of weakness 133a. In the second configuration, the third and fourth faces 130, 140 hold the flap support structure 132 in place, so holding the flap 130 in its second position. Figure 17 shows a view of the container 100 in a partly-assembled configuration; it can be seen that the third and fourth faces 170, 180 each make contact with the respective flap support structure 132a, 132b.

[0116] The shaped second sheet 132 of the flap support structure may slide along the first face 110 between the first and second configurations. The second shaped sheet 132/flap support structure may therefore be described as an actuating element for the corresponding internal flap 130.

[0117] In the embodiment being described, the edge of the second shaped sheet 132 closest to the fourth side 108 has a protruding portion 135 (the protruding portion is substantially triangular in shape in the embodiment shown but may take an alternative shape in alternative embodiments) extending toward the fourth side 108. The protruding portion 135 extends closer to the fourth side 108 than the flap 130 does. The protruding portion 135 extends beyond the slit 122, such that at least a tip of the protruding portion 135 is beneath the portion 127a of the second face 120 between the slit 122 and the fourth side 108. The protruding portion 135 ends before the point at which the first and second faces 110, 120 are adhered together 127b. The protruding portion 135 can therefore

slide beneath the portion 127a of the second face 120 between the slit 122 and the fourth side 108. The skilled person will appreciate that being beneath the portion 127a of the second face 120 may limit the motion of the second shaped sheet 132 at least substantially to the plane parallel to the second face 120. The end portion of the first face is adhered to the second face only along the edge 108 in the embodiment being described, so allowing the protruding portion 135 to slide beneath the portion 127a of the second face. The sliding therefore provides a limitation on flap movement.

[0118] The internal flaps 130 and support structure 132 have a width selected to contact the inside of sides 102, 104, so that when the container 100 is squeezed the flaps 130 are pushed into position, forming internal walls. The walls can be vertical in the second configuration (i.e. perpendicular to the first and second faces) in the embodiment being described. The skilled person will appreciate that the angle may depend upon the pressure exerted.

[0119] In the embodiment being described, friction on the flap support structure is such that the container 100 relaxes into an intermediate configuration after the applied pressure is released (i.e. with the central regions 117, 127 of the first and second faces 110, 120 closer together than in the second configuration, but with a space remaining therebetween). The internal flaps can therefore provide some resistance against the container returning from the second configuration to the first configuration. The skilled person will appreciate that the inward motion of the faces 110, 120 as the container 100 relaxes may exert a pressure on the item 10, so potentially maintaining the item 10 in place even if the container 100 is tipped upside-down before being sealed. The skilled person will appreciate that this relaxation may also reduce the space taken up by the container 100 when the item 10 is inside it - the container 100 of such embodiments may become as slim as it can be whilst retaining its protection and location of the item 10 inside. The size reduction may be advantageous in transportation.

[0120] In alternative embodiments, the container 100 may be maintained in the second configuration or return to the first configuration when the pressure is released. In embodiments in which the container 100 does not return to the first configuration when the pressure is released, applying a pressure between the first and second faces 110, 120, in some cases after pushing the internal flaps 130 away from an angle substantially perpendicular to the first and second faces 110, 120, may cause the container 100 to return to the first configuration, or to an intermediate configuration if there is an item 10 within the container 100. Movement between the configurations is reversible in the embodiments being described.

[0121] In the embodiment being described, the internal flaps 130 provide some resistance against the central region 117, 127 of each face 110, 120 bowing inwardly between the first and second sides 102, 104 when the pressure is applied to the first and second sides. The height of the flaps 130 may help to maintain the height of the container 100 in the second configuration.

[0122] In the embodiment being described, the internal flaps 130 are locked in the second configuration (the "popped up" form) and will not return to the first configuration until a sideways force is applied thereto - for example by inserting a finger or implement through the opening to push the flaps 130 from inside the container 100. The third and fourth faces 170, 180 are not locked in the popped-up position in the embodiment being described, however, and relax to the intermediate configuration, supported by the internal flaps 130. Similarly, the "jaw"-type widened opening is generally not locked in the second configuration and relaxes to the intermediate configuration, narrowing back to a slit 122.

[0123] In the embodiment being described, an absorbent material 140 is provided within the container 100, and more specifically in the channel 131 formed between the internal walls 130. In the embodiment being described, the absorbent material is provided in a strip oriented along the channel. In alternative or additional embodiments, different shapes and/or locations may be used.

[0124] In the embodiment being described, the absorbent material 140 is positioned spaced away from the opening (by 8 mm in the embodiment being described, although the skilled person will appreciate that the spacing may vary); the skilled person will appreciate that this may reduce the risk of the item 10 catching on the absorbent material 140 when inserted into the container 100.

[0125] In the embodiment being described, the absorbent material 140 is adhered to the second face 120. In alternative embodiments, the absorbent material 140 may be adhered elsewhere on an internal surface of the container 100, for example to the first face 110.

[0126] In the embodiment being described, the absorbent material 140 is a cellulosic absorbent material. In additional or alternative embodiments, different absorbent materials may be used. In the embodiment being described, the absorbent material 140 is selected and sized to be able to absorb a volume of moisture equivalent to the item's maximum fluid content, such that the entirety of a leak may be absorbed. In alternative embodiments, the absorbent material 140 may only be capable of absorbing a portion of the maximum fluid content.

[0127] A web 200 for making the container 100 is shown in Figures 7, 14 and 15. The opening lines of weakness 1, 2, 3, 4 are shown in Figure 7 only, for clarity.

[0128] The web 200 is made from a single sheet of material, and in particular from a single sheet of card, in the embodiment shown. Figure 14 shows the web 200 flat and in a single layer; Figure 15 shows the web 200 with one flap 130b and a corresponding part of the flap support structure 132b folded inwards, towards a centre line of the web 200.

[0129] In the embodiment being described, the card has a glossy surface arranged to form an outer surface of the container 100, and a coated surface arranged to

form an inner surface of the container 100. The polymeric coating (which is a polyethylene coating in the embodiment being described, although the skilled person will appreciate that alternative or additional materials could be used in other embodiments; for example a biopolymer or wax) is arranged to make the card moisture-resistant, so protecting the container from any leaks from the contained item 10. The polymeric coating is selected to act as an adhesive; in the embodiment being described, the coating is of a thermal bonding material, arranged to become sticky when heated and set when cooled. The polymeric coating is used to adhere portions of the web 200 together so as to form the container 100. The skilled person would appreciate that a different or additional adhesive, stitching, and/or the likes may be used in other embodiments.

[0130] The web 200 comprises a rectangular base element 110. The rectangular base element 110 is arranged to form the first face 110 of the container 100 (and half of each of the third and fourth faces 130, 140 in the second configuration). The rectangular base element 110 has first 102, second 104, third 106, and fourth 108 sides. The first and second sides 102, 104 form one pair of opposing sides, extending along the length of the rectangular base element 110 (which is longer than the width in the embodiment being described, although this may vary in other embodiments). The third and fourth sides 106, 108 form a second pair of opposing sides, extending across the width of the rectangular base element 110

[0131] The rectangular base element 110 comprises a first-side line of weakness 114a extending between end regions of the first side 102 thereof. The rectangular base element 110 comprises a second-side line of weakness 114b extending between end regions of the second side 104 thereof.

[0132] In the embodiment being described, the lines of weakness 114a, 114b are symmetrical. The lines of weakness 114a, 114b tend inwardly - curving towards a centre line of the rectangular base element 110 in their middle regions and out towards their ends.

[0133] In the embodiment being described, the side lines of weakness 114 divide half-lens-shaped edge regions 116 (having one straight edge and one curved edge) from the remainder of the base element 110. The half-lens shaped region 116a on the first side 102 of the container 100 is arranged to form part of the third face 170 of the container 100 in the second configuration. The half-lens shaped region 116b on the second side 104 of the container 100 is arranged to form part of the fourth face 180 of the container 100 in the second configuration.

[0134] The web 200 comprises a first edge element 126a, 134a connected to the first side 102 of the base element 110 by a fold line 110a. The first edge element 126a, 134a comprises a third line of weakness 124a symmetrical to the first line of weakness 114a across the fold line 110a. A region 126a of the first edge element 126a, 134a is arranged to form a part of the second face 120 of the container 100 in the flat configuration, and a part of the third face 170 in the popped up configuration, once assembled.

[0135] The web 200 comprises a second edge element 126b, 134b connected to the second side 104 of the base element 110 by a fold line 110b. The second edge element 126b, 134b comprises a fourth line of weakness 124b symmetrical to the second line of weakness 114b across the fold line 110b. A region 126ba of the second edge element 126b, 134b is arranged to form a part of the second face 120 of the container 100 in the flat configuration, and a part of the fourth face 180 in the popped up configuration, once assembled.

[0136] In the embodiment being described, the region 126 that is arranged to form a part of the second face 120 in the first configuration is half-lens-shaped. In the embodiment being described, two half-lens-shaped regions 116, 126 are located along each fold line 110, forming matched pairs of half-lens-shaped regions 116a, 126a and 116b, 126b). These pairs of half-lens-shaped regions form the lens-shaped third 170 and fourth 180 faces of the container 100 in the second configuration. In the embodiment being described, a second portion 134 of the edge element 126, 134 extends on the other side of the line of weakness from the half-lens-shaped region 126.

[0137] The web 200 comprises a top element 127. The skilled person will appreciate that the terms "base" and "top" are used for ease of description and refer to the orientation shown in Figures 14 and 15; the web 200 may be rotated at any angle, so the "top" element 127 may in fact be lowest in some orientations.

[0138] The top element 127 is arranged to form the central part of the second face 120 of the container once assembled. The top element 127 has first 125a and second 125b opposing sides. The sides 125 extend between, and tend inwardly between, end regions of the top element 127. In the embodiment being described, the top element 127 is substantially hourglass shaped.

[0139] The top element 127 further comprises third 106 and fourth 108 sides, which are opposing. The third side 106 of the top element 127 is flat and connected to the base element 110 along a third side 106 thereof by a fold line.

[0140] The first and second opposing sides 125a-b are arranged to be adhered to the first and second edge elements 126a-b respectively so as to create a pocket between the base element 110 and the top element 127.

[0141] In the embodiment being described, the web 200 further comprises a first internal flap structure 130a, 132a connected to the first edge element 126a, 134a by a first straight fold line 133a. The first straight fold line 133a separates the second portion 134a of the first edge element 126a, 134a from the first internal flap structure 130a, 132a. In alternative embodiments, no flaps may be provided.

[0142] In the embodiment being described, the fold lines 131, 133 on either side of each flap 130 are perforated. The skilled person will appreciate that this may

improve ease of rotation of the flaps 130. In alternative embodiments, the fold lines 131, 133 may not be perforated; optionally, they may be scored.

[0143] The first internal flap structure 130a, 132a comprises a first internal flap 130a and a first actuating element 132a. The first actuating element 132a is connected to the first internal flap 130a by a fourth straight fold line 131a parallel to the third straight fold line 133a.

[0144] In the embodiment being described, the web 200 further comprises a second internal flap structure 130b, 132b. In the embodiment being described, the second internal flap structure 130b, 132b is the mirror image of the first internal flap structure 130a, 132a across a centre line of the web 200 down the length of the web 200. In the embodiment being described, the second internal flap structure 130b, 132b is connected to the second edge element 126b, 134b by a third straight fold line 133b. The third straight fold line 133b separates the second portion 134b of the second edge element 126b, 134b from the second internal flap structure 130b, 132b.

[0145] The second internal flap structure 130b, 132b comprises a second internal flap 130b and a second actuating element 132b. The second actuating element 132b is connected to the second internal flap 130b by a fourth straight fold line 131b parallel to the third straight fold line 133a.

[0146] In the embodiment being described, the first edge element 126a, 134a is connected to the first side 102 of the base element 110 by a first fold line 110a, the first fold line 10a being arranged to form the first side of the container 100 in the first configuration.

[0147] In the embodiment being described, the second edge element 126b, 134b is connected to the second side 104 of the base element 110 by a second fold line 110b, the second fold line 110b being arranged to form the second side 104 of the container 100 in the first configuration.

[0148] In the embodiment being described, the first side 125a of the top element 127 is shaped such that there is an offset between the first opposing side 125a and the adjacent line of weakness 124a when the web 200 is assembled to form the container 100.

[0149] In the embodiment being described, the second side 125b of the top element 127 is shaped such that there is an offset between the second opposing side 125b and the adjacent line of weakness 124b when the web 200 is assembled to form the container 100.

[0150] The offset is described in more detail in in the applicant's granted patent, EP3597550, and may facilitate bending of the container between the first and second configurations. The offset may provide increased ease of folding without use of flaps 130. In alternative embodiments, the offset may not be present. In the embodiments being described herein with respect to Figures 8 onwards, both features are present but the skilled person will appreciate that they are separable. In the embodiment shown in the earlier Figures, the offset is not provided, and the internal flaps may or may not be present (these could be cut off the web 200 shown in Figure 7 before constructing the container 100, without otherwise changing the web 200).

[0151] The lines of weakness are curved in the embodiment being described, but may not be curved, and may for example be V-shaped, in other embodiments.

[0152] The skilled person will appreciate that, in other embodiments, the internal flaps 130 and associated supports/actuating elements 132, 133, 134 may not be present. Part 134 may be replaced with a part arranged to be adhered to the second face 120 so as to seal the sides of the container 100; the shape may be changed accordingly. The web 200 may be otherwise unchanged.

[0153] In the embodiment being described, an absorbent element 140, and in particular a piece of absorbent material 140, is adhered to the web 200.

[0154] In the embodiment being described, the web 200 further comprises a sealing flap 112 connected to the base element 110 by a fold line along the fourth side 108 of the base element 110. The sealing flap 112 is arranged to be folded so as to make contact with the top element 127 and seal the container 100 once assembled.

[0155] The web 200 further comprises a slit 122 in the top element 127, the slit 122 being arranged to act as an opening once the container 100 is assembled.

[0156] In alternative embodiments, the sealing flap 112 may be connected to the top element 127 and arranged to be folded so as to make contact with the base element 110 and seal the container 100 once assembled. In such embodiments, the slit 122 may be in the base element 110.

[0157] A method 800 of using a container 100, 1000, 1100 as described herein is discussed in relation to Figure 16.

[0158] At step 802, a container 100 is acquired. The container 100 is capable of being moved between a first configuration, in which the container is at least substantially flat (i.e. has a negligible height), and a second configuration, in which the container has a non-negligible height, when a pressure is applied between first and second sides of the container. The container 100 is acquired in the first configuration in the embodiment being described. In the embodiment being described, the acquiring 802 a container 100 comprises receiving the container 100 in the first configuration by post. The skilled person will appreciate that, as the container 100 is at least substantially flat in the first configuration, it may be posted in a standard envelope, for example accompanied by a reminder letter requesting a medical sample.

[0159] In various embodiments, the sender of the empty container may provide the container 100 with an address, barcode, QR code, and/or reference information for the sample (such as a patient reference or container reference) printed thereon or adhered thereto. The sender of the empty container may provide a label to be adhered to the sample bottle 10 with the container 100. Information on the label may include the same address, barcode, QR code, and/or reference information, or dif-

ferent information.

[0160] At step 804, the opposing first 102 and second 104 sides of the container 100, 1 are squeezed together so as to move the container 1 into the second configuration. The movement into the second configuration causes an opening 122 of the container 100 to open, facilitating insertion of the vial.

[0161] At step 806, a medical sample bottle/vial 10 is inserted into the container 100. The vial 10 is inserted through the opening 122, into a volume within the container 100. In the embodiment being described, the container 100 has internal flaps 130 and the vial 10 is aligned with a channel 131 formed between internal flaps 130 of the container 100, 1000 for insertion 806, and is inserted into the channel 131.

[0162] At step 808, the container 100 is sealed. In the embodiment being described, the sealing 806 is performed by moistening a sealing flap 112, folding this along a fold line 108 provided to make contact with the top/second surface 120, and applying pressure to secure the sealing flap 112 to the top surface 120 of the container 100. The skilled person will appreciate that any suitable known sealing technique may be used instead of, or as well as, this approach.

[0163] At step 810, the container 100 is posted (mailed). In the embodiment being described, a standard postage/mailing service such as the Royal Mail is used. In alternative embodiments, a specialist carrier may be used.

[0164] The skilled person will appreciate that webs and containers as described herein may be used for, and designed to fit, a wide variety of different items 10 in various embodiments.

[0165] The skilled person will appreciate that there are physical restraints on the size of the container 100 in various embodiments. In the embodiment being described, the container 100 has been designed to comply with the smallest acceptable size for the Royal Mail postal service. The skilled person will appreciate that this may reduce or minimise the amount of material used and help to keep costs low. In the embodiment being described, the sealing flap 112 is selected to be at or near the maximum length permissible in this Royal Mail design. The sealing flap has a length of 3.2 cm in the embodiment being described. The opening slit 122 is arranged to be of a shape and size to fit within the dimensions of the flap 112 when it was closed so as to ensure that the opening 122 can be sealed. In the embodiment being described, the curvature of the slit 122 was selected to utilise this available space - ensuring that the container 100 could be sealed and that the opening 122 was large enough to facilitate entry of the item 10 into the container 100.

[0166] Figures 18 and 19 illustrate containers 100 of alternative embodiments, which are generally as for the containers 100 described above but have an additional line of weakness 5. Whilst the additional line of weakness 5 differs between the example shown in Figure 18 and that in Figure 19, the function is the same - namely facilitating the change in shape between the first and second configurations when pressure is applied to the sides of the container, facilitating the provision of a wide mouth- or spout-shaped opening, so facilitating insertion of the item 10. The additional line of weakness may therefore be described as a fifth opening line of weakness 5.

[0167] The additional line of weakness 5 is located with at least most of its length on the first face 110. In some examples, such as that shown in Figure 19, the entirety of the fifth opening line of weakness 5 is located on the first face 110, and the line 5 has end-points on the first face 110 at or near (for example within 2 mm of) the fourth side 108 of the container 100. The fifth opening line of weakness 5 has an apex further from the fourth side 108 than its end points are. In other examples, such as that shown in Figure 18, the fifth line of weakness 5 extends onto the third and fourth faces 170, 180 of the container 100, with one end-point on the third face 170 and one end point on the fourth face 180, and the majority of the length of the line 5 on the first face 110. The fifth opening line of weakness 5 again has an apex further from the fourth side 108 than its end points are.

[0168] The fifth line of weakness 5 extends away from the fourth side 108 between the end points. The fifth line of weakness 5 extends further from the fourth side 108 than the slit 122, such that the apex of the fifth line of weakness 5 is on the far side of the slit 122 from the end points of the fifth line of weakness and from the fourth side 108. In the examples shown, the fifth line of weakness 5 does not intersect the second line of weakness 2; it extends further from the fourth side 108 than the second line of weakness 2 does.

[0169] The fifth line of weakness 5 does not intersect the third line of weakness 3 - it instead goes around the third line of weakness, having its apex further from the fourth side 108 than the apex of the third line of weakness 3. The fifth line of weakness 5 therefore surrounds the third line of weakness 3, below the fourth edge 108 of the container 100 in the orientation shown. The spacing between the apex of the third line of weakness 3 and the apex of the fifth line of weakness 5 may be in the range from 30 mm to 60 mm, and optionally may be around 45 mm to 50 mm. The lines 3,5 may get closer together towards their end-points, for example having a spacing of only 10-30 mm, and optionally around 15-20 mm, at or near their end-points.

[0170] In the embodiment shown, the fifth opening line of weakness 5 comprises two straight line portions, each extending away from the fourth edge 108 at an angle, and a curved portion joining the two. The curved portion is aligned with the apex of the slit 122. In particular, an apex of the curved portion is aligned with the apex of the slit 122, and therefore also centrally located with respect to the width of the container 100 in the embodiments shown. In alternative embodiments, the fifth opening line of weakness 5 may comprise two straight line portions which meet at a point, the point forming the apex of the line of weakness 5. The apex may again be aligned with

the apex of the slit 122. In the embodiment shown, the angle between the straight line portions and the fourth edge is greater than that between the straight line portions of the third line of weakness 3 and the fourth edge, and optionally is between 65° and 85°, and more specifically is around 76°.

[0171] In the embodiment shown, the end points of the fifth opening line of weakness 5, on the fourth edge 108 or on the sides 160, 170, are spaced apart by a distance greater than that of the end points of the third line of weakness, and optionally by a distance of around 90-100 mm. In various embodiments, the end points of the third opening line of weakness 3 may be spaced apart by a distance of at least 90%, and optionally 100%, of the container width, W.

[0172] When pressure is exerted on the sides of the container 100 (as indicated by the arrow markings in Figure 19, and as demonstrated by the hand holding and compressing the container in Figure 18), moving it from the first (flat) configuration to the second ("popped-up") configuration, the third and fifth lines of weakness 3,5 allow a zig-ag shape to be formed by a cross-section of the first face 110 parallel to the container's length, the fifth line of weakness 5 facilitating a convex bend and the third line of weakness facilitating a concave bend between the convex bend and the fourth edge 108 of the container 100, the concave and convex bends each running from one side 102, 104 of the container 100 to the other. This configuration has been found to facilitate the provision of a widely and smoothly opening mouth or "jaw" on the second face 120 of the container 100, so allowing easier insertion of an item 10 into the container.

Claims

1. A container arranged to receive an item and comprising:

first and second faces joined at a first side and at a second side opposite the first side, and joined at a third side perpendicular to the first and second sides, and at a fourth side opposite the third side;

an opening, the opening comprising a slit extending across the second face, between the first and second sides, in the region of the fourth side, with an apex of the slit being closer to the fourth side than end-points of the slit are;

a first line of weakness located on the second face, the first line of weakness being straight and extending away from the slit towards the third side, parallel to the first and second sides and aligned with the apex of the slit;

a second line of weakness located on the first face, the second line of weakness being straight and extending from the fourth side, parallel to the first and second sides and aligned with the apex of the slit; and

a third line of weakness located on the first face, the third line of weakness having end-points near or at the fourth side, the third line of weakness extending away from the fourth side between the end points, and wherein the third line of weakness extends further from the fourth side than the slit, such that an apex of the third line of weakness is on the far side of the slit from the end points of the third line of weakness,

wherein the container is moveable between a first configuration in which the first and second faces are flat such that the container is at least substantially flat, and a second configuration in which the first and second faces are bent along the lines of weakness, so providing a volume within the container between the first and second faces,

and wherein the container is arranged to adopt the second configuration when a pressure is applied to the first and second sides, and the opening is arranged to allow an item to be inserted into the volume when the container is in the second configuration.

2. The container of claim 1, wherein the slit has:

(i) a single turning point, that turning point being the apex; or

(ii) a straight line portion parallel to the third edge, the straight line portion providing the apex.

3. The container of claim 1 or claim 2, wherein the apex is at least one of:

(i) located centrally with respect to slit length; and

(ii) located centrally with respect to the container, being equidistant from the first and second sides.

4. The container of any preceding claim wherein at least one of the following applies:

(i) the slit has a first end near the first side and a second end near the second side, and wherein the span between the first and second ends of the slit is at least 70% of the distance between the first and second sides; and

(ii) the slit is such that the apex is spaced from endpoints of the slit by a distance of at least 10% of the distance between the third and fourth sides.

5. The container of any preceding claim wherein the slit is curved, or comprises either:

(i) two, angled, straight line portions meeting at a corner, the corner forming the apex, such that the slit has a V-shape; or
(ii) three conjoined straight line portions, the middle straight line portion being parallel to the fourth side and forming the apex, such that the slit has a trapezoidal shape.

6. The container of any preceding claim, further comprising a fourth line of weakness located on the second face, the fourth line of weakness having end-points near or at the end points of the slit, the fourth line of weakness extending away from the slit and towards the third side of the container between the end points.

7. The container of any preceding claim, further comprising a fifth line of weakness located on the first face, the fifth line of weakness having an apex further from the fourth side than the apex of the third line of weakness, and extending from its apex around the third line of weakness towards the fourth side of the container.

8. The container of any preceding claim, wherein the first and second lines of weakness are aligned such that, in the first configuration, they are in contact along their lengths, and wherein optionally the first and second lines of weakness extend to the same distance from the fourth side.

9. The container of any preceding claim, wherein at least one of the following applies:

(i) the third line of weakness is at least partially curved;
(ii) the third line of weakness is V-shaped; and
(iii) the third line of weakness has a single apex, the single apex being the only turning point of the third line of weakness.

10. The container of any preceding claim, wherein the third line of weakness comprises two straight line portions each extending towards the other, away from one end-point of the third line of weakness, and wherein each straight line portion extends away from the fourth side at an angle of around 54° to the fourth side, and, wherein optionally either:

(i) the two straight line portions are joined by a curved portion which extends between the two and provides the apex of the third line of weakness; or
(ii) the two straight line portions meet at a point, the point providing the apex of the third line of weakness

11. The container of any preceding claim, further comprising a pair of internal flaps positioned between the first and second faces and spaced inwardly from the first and second sides;

wherein in the first configuration the internal flaps are flat and parallel to the faces, and in the second configuration the internal flaps are at an angle with respect to the first and second faces and arranged to act as spacers between the first and second faces, so providing a volume within the container defined by the first and second faces and the flaps,
and wherein the opening is arranged to allow an item to be inserted into the volume defined by the first and second faces and the flaps when the container is in the second configuration.

12. The container of any preceding claim, wherein at least one of the following applies:

(i) the container is arranged to contain a fecal sample bottle; and
(ii) the container further comprises a sealing flap extending from the fourth side and arranged to be folded so as to cover the slit and thereby seal the container.

13. A web for creating a container according to any preceding claim from a single sheet of material.

14. The web of claim 13, wherein at least one of the following applies:

(i) the web further comprises an absorbent material adhered to an inner surface of the container; and
(ii) at least one face of the sheet of material is coated with a coating arranged to provide at least one of water resistance; and thermal bonding.

15. The container or web of any preceding claim, wherein each line of weakness is weakened along its full length, optionally by scoring, etching, folding or perforating of along the full length of the line of weakness.

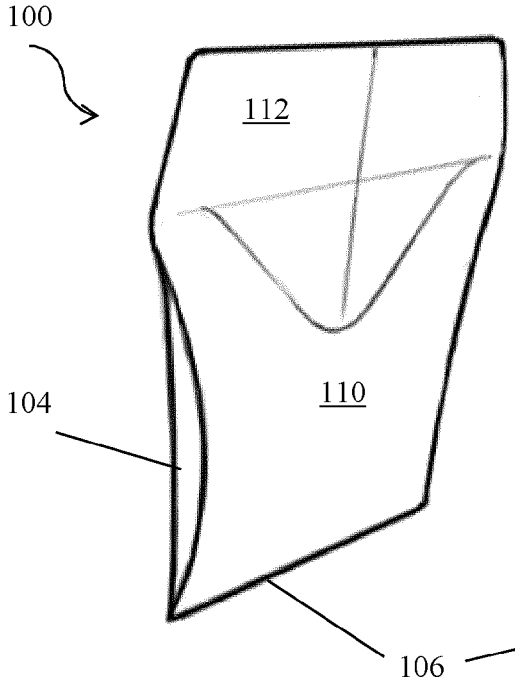


Figure 1

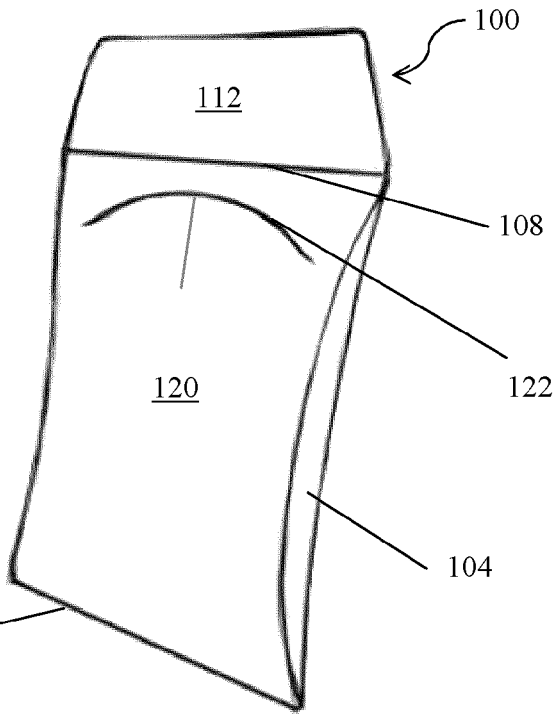


Figure 2

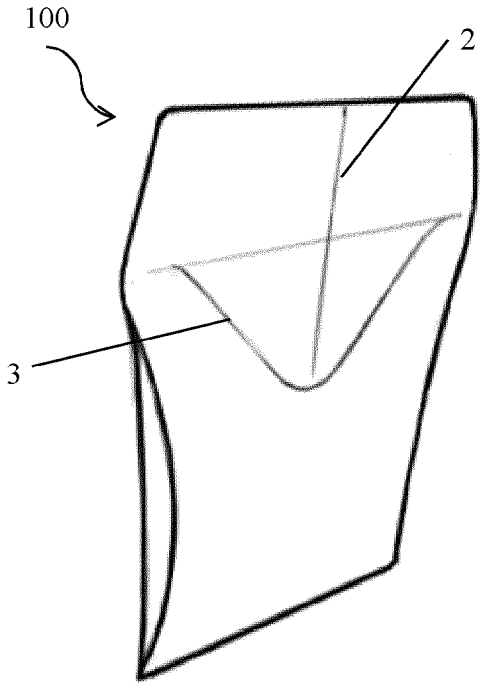


Figure 3

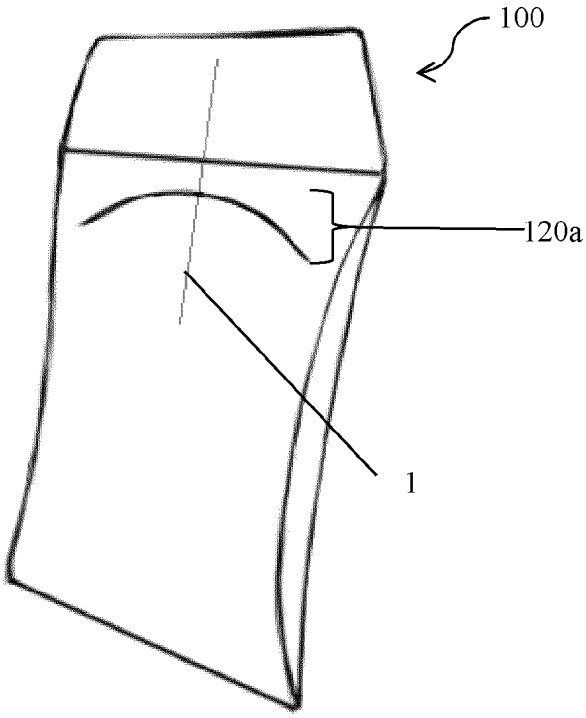


Figure 4

Figure 5

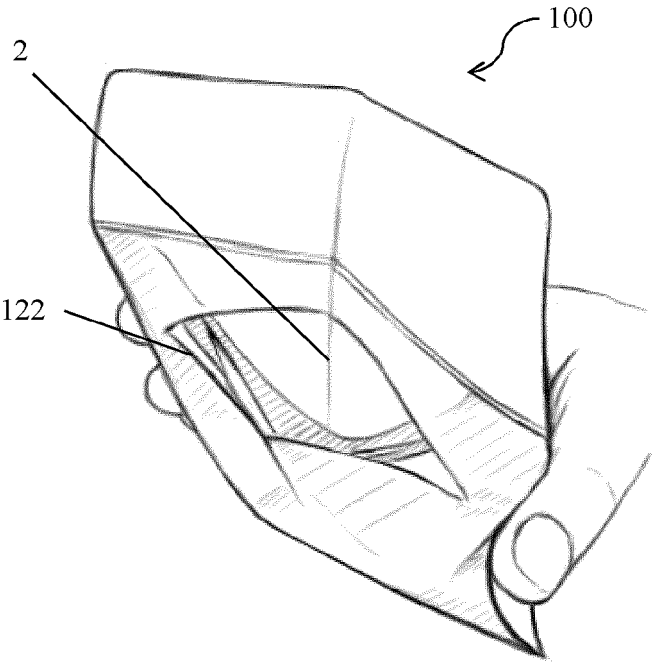


Figure 6

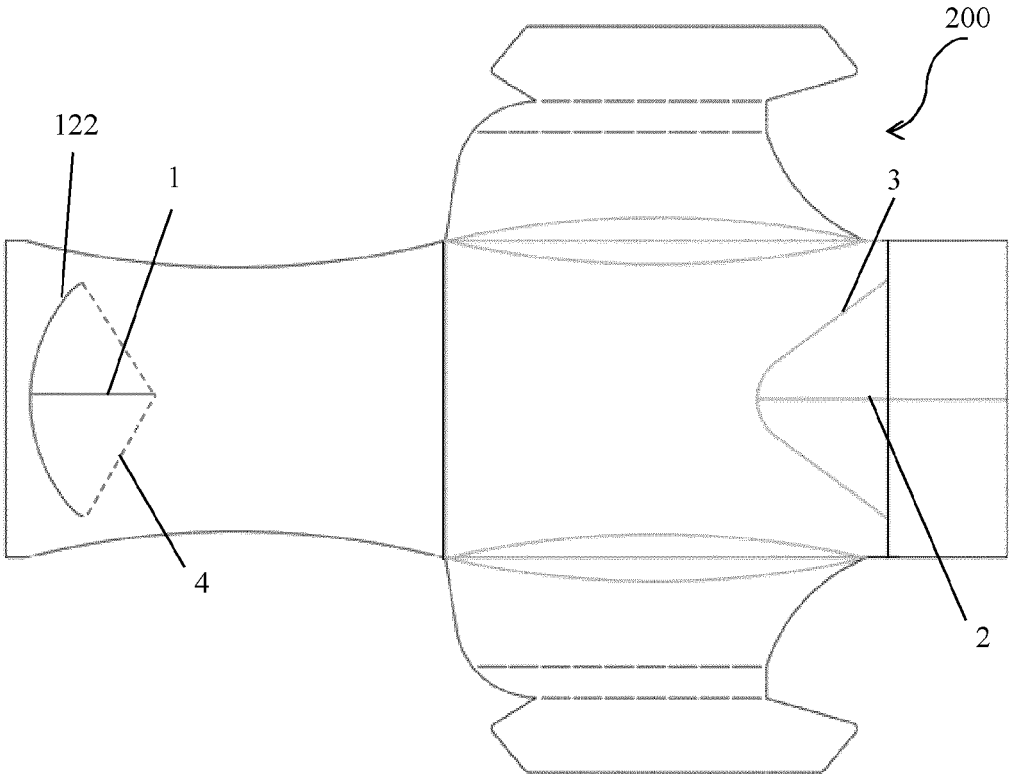


Figure 7

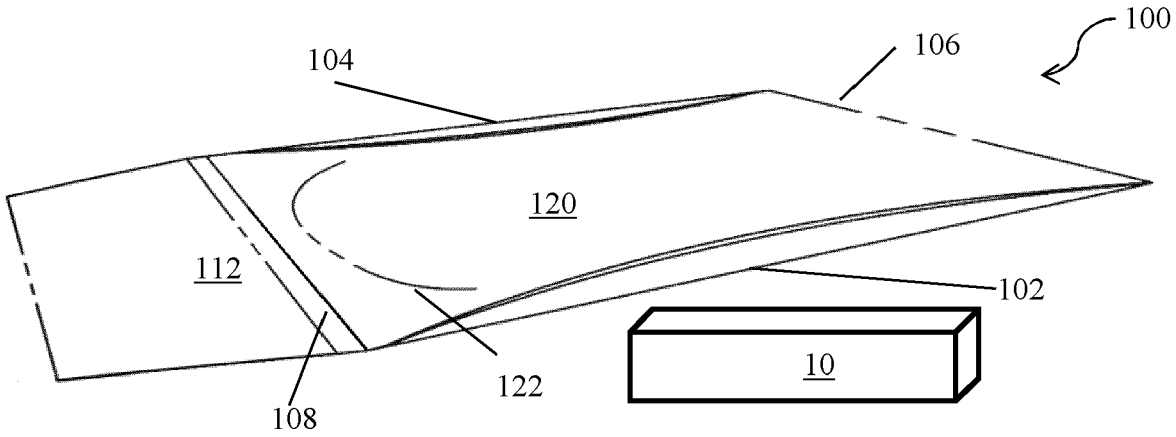


Figure 8

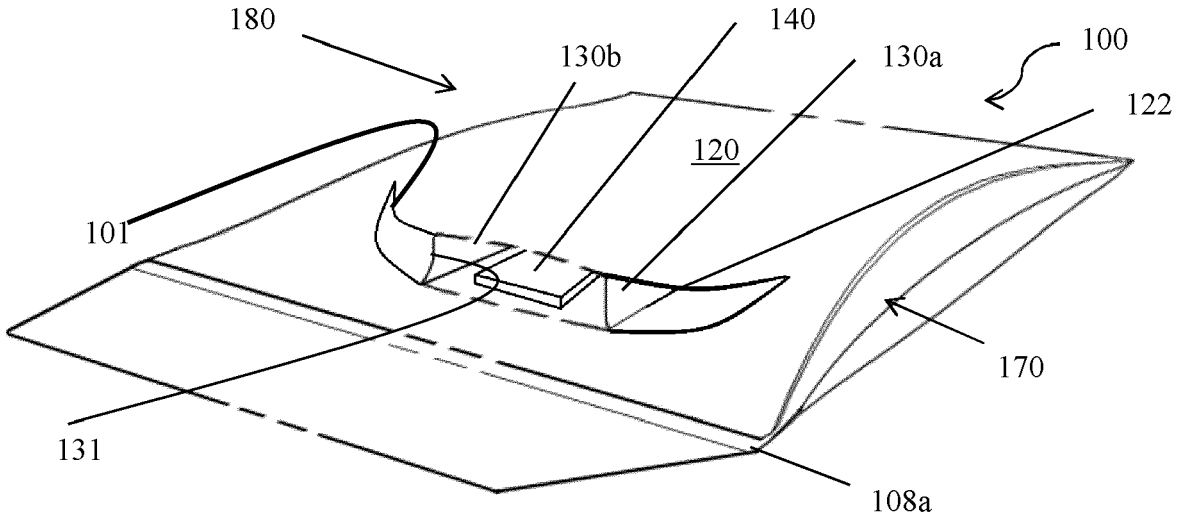


Figure 9

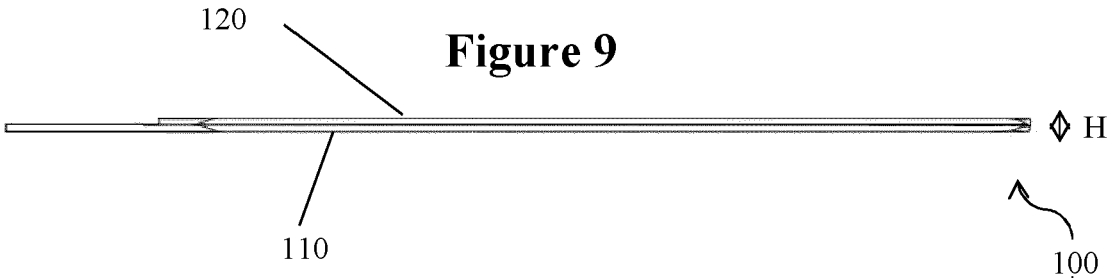


Figure 10

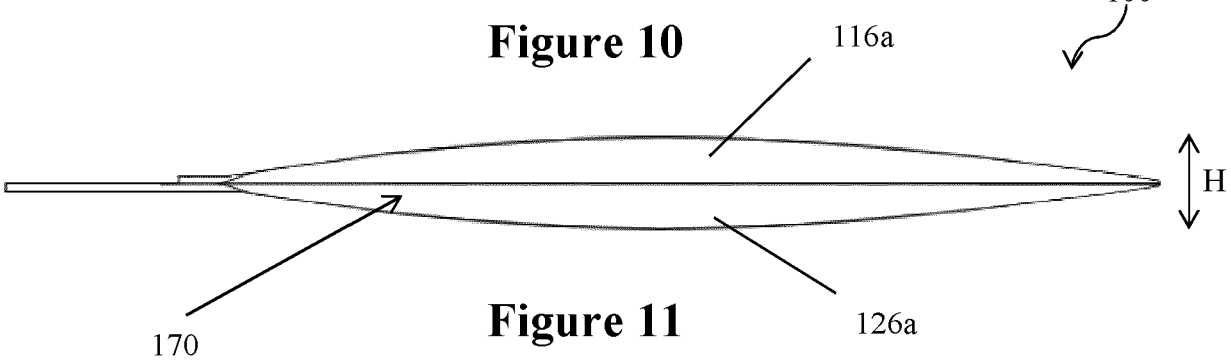


Figure 11

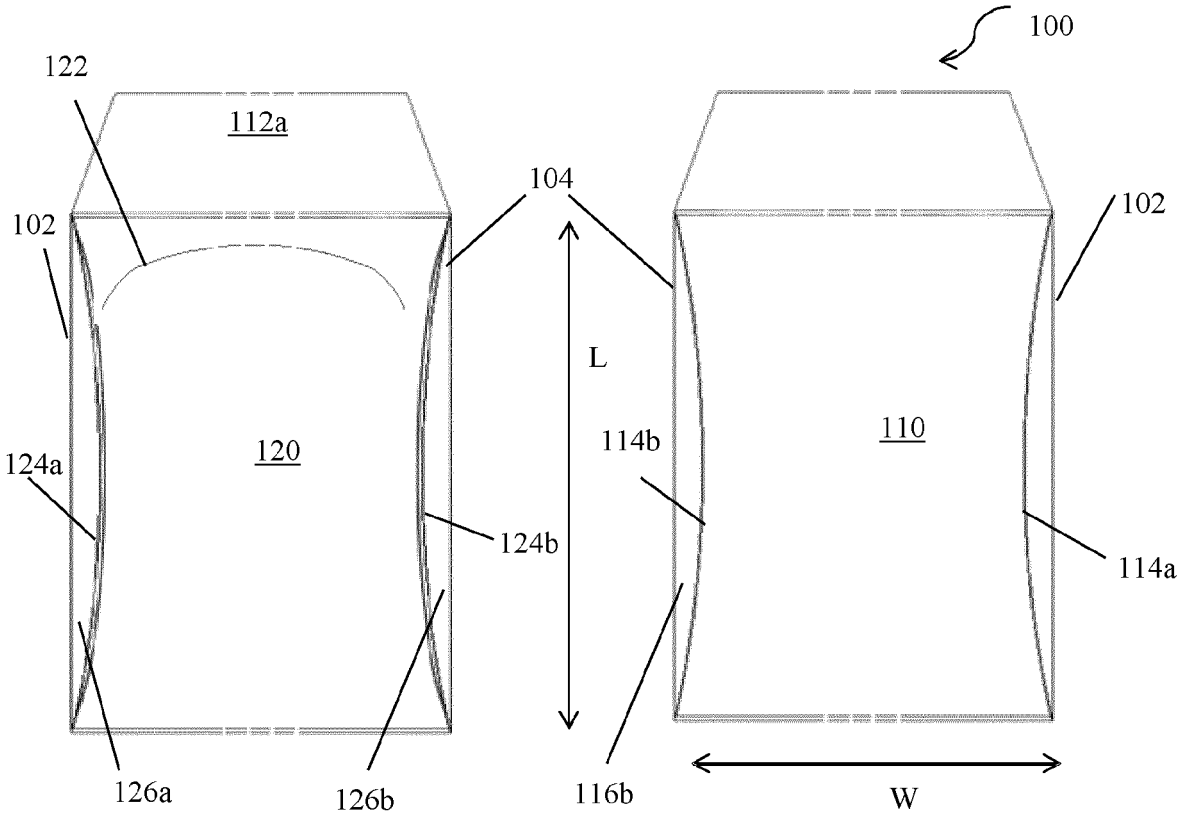


Figure 12A Figure 12B

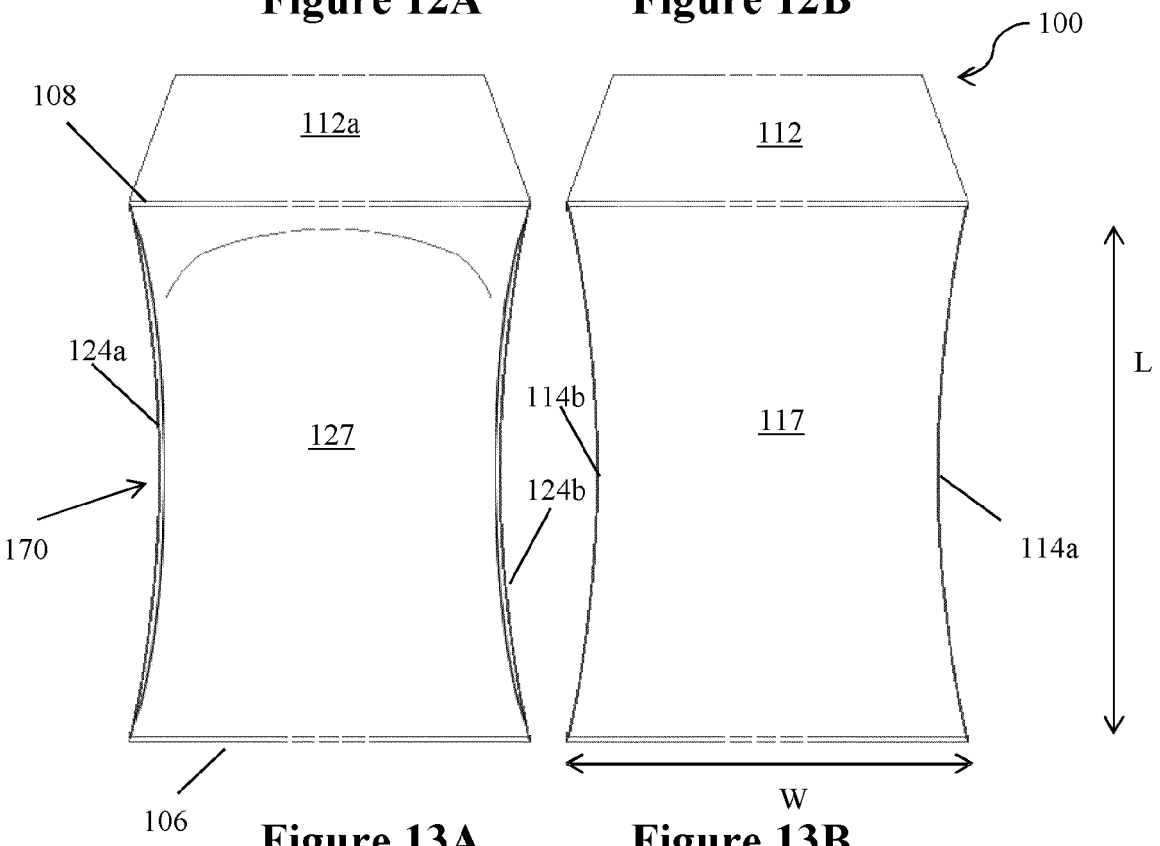
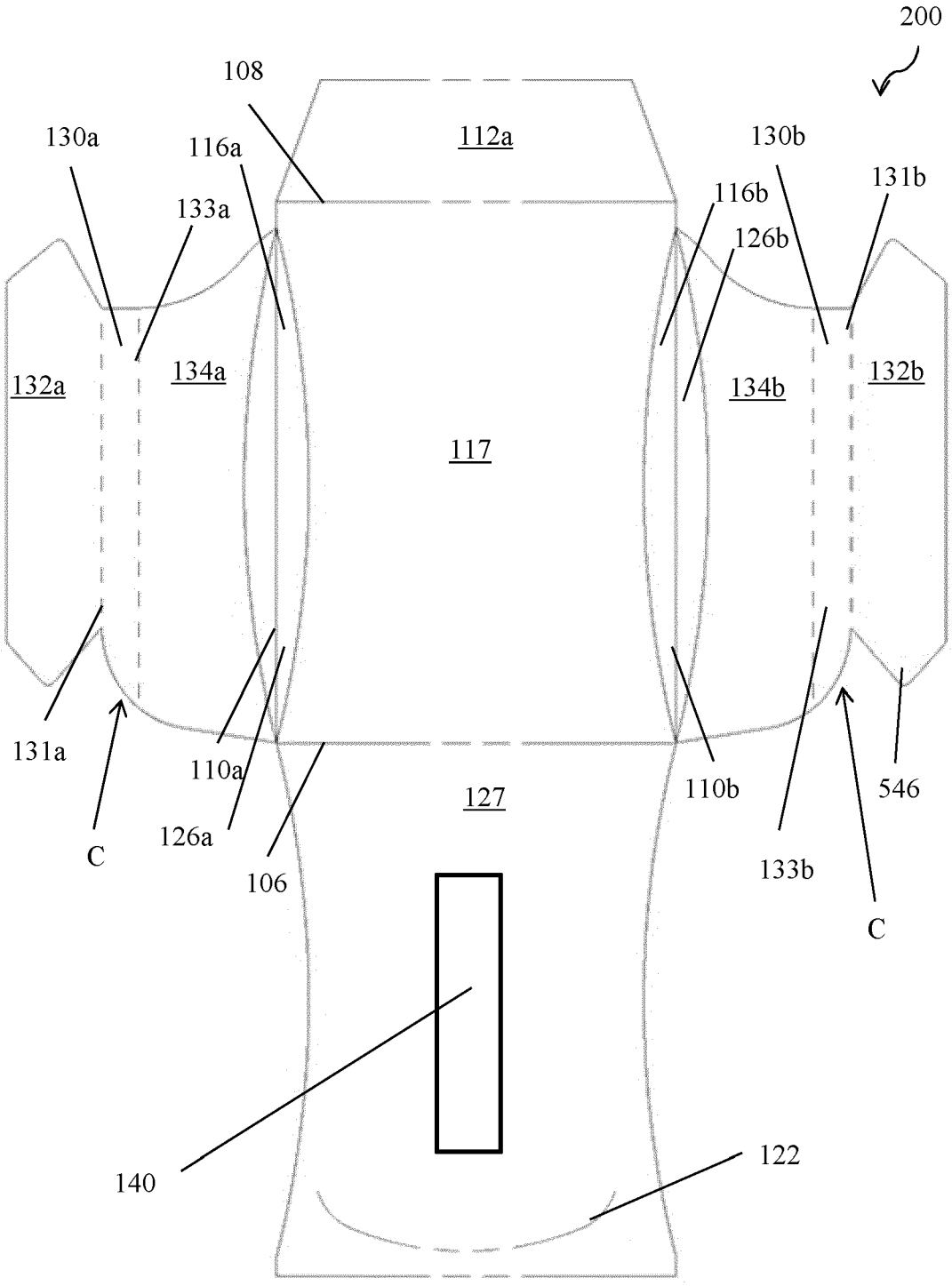


Figure 13A Figure 13B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108
130a
116a
112a
130b
131b
116b
133a
126b
132a
134a
134b
132b
117
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110b
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127
C
126a
106
133b
C
140
122

Figure 14

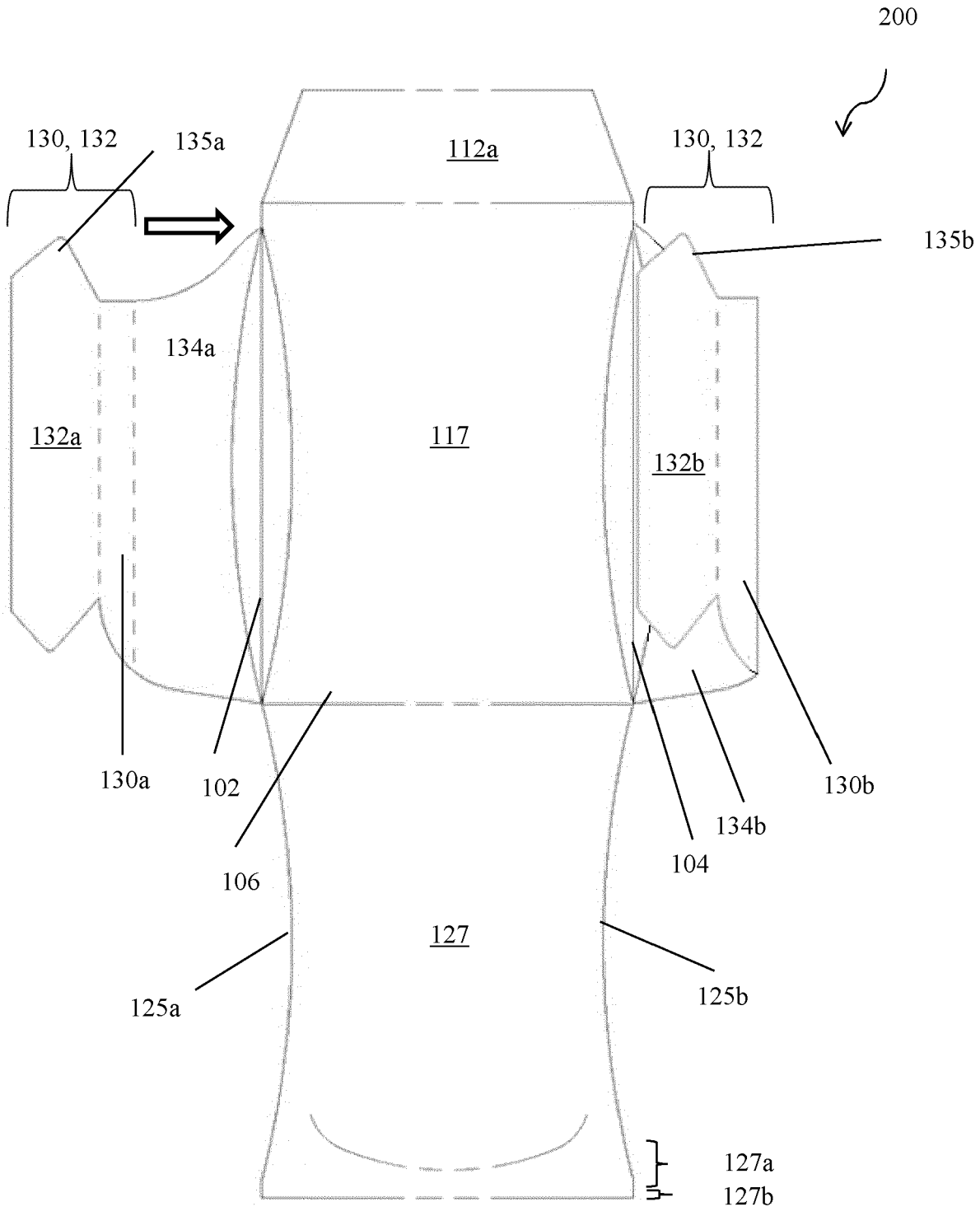
200
130, 132
135a
112a
130, 132
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Figure 15

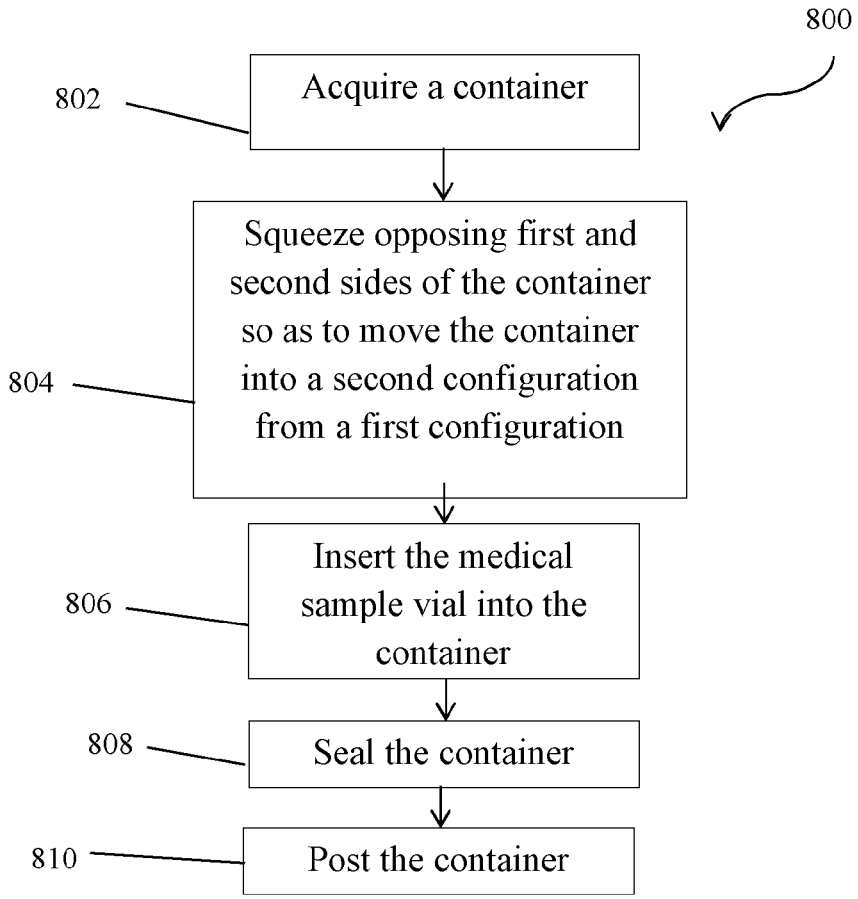

Figure 16

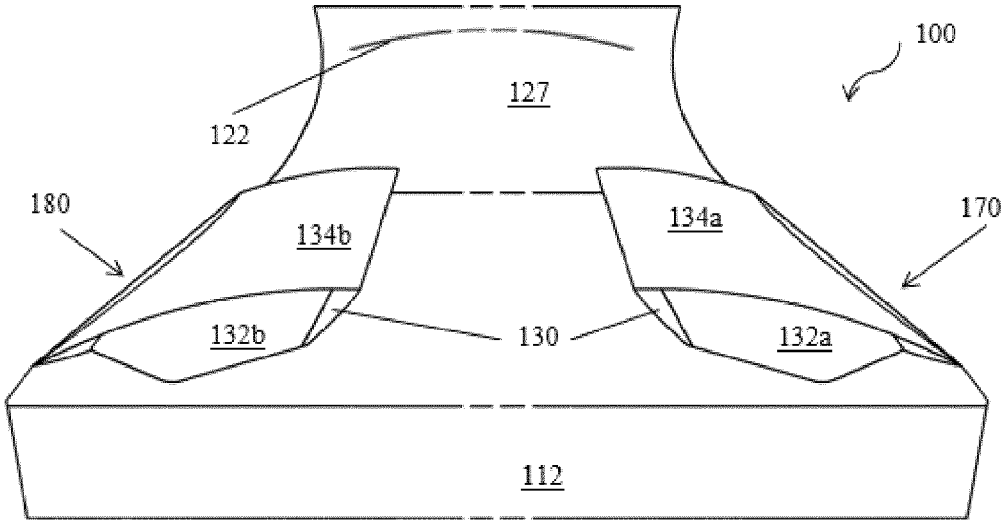

Figure 17

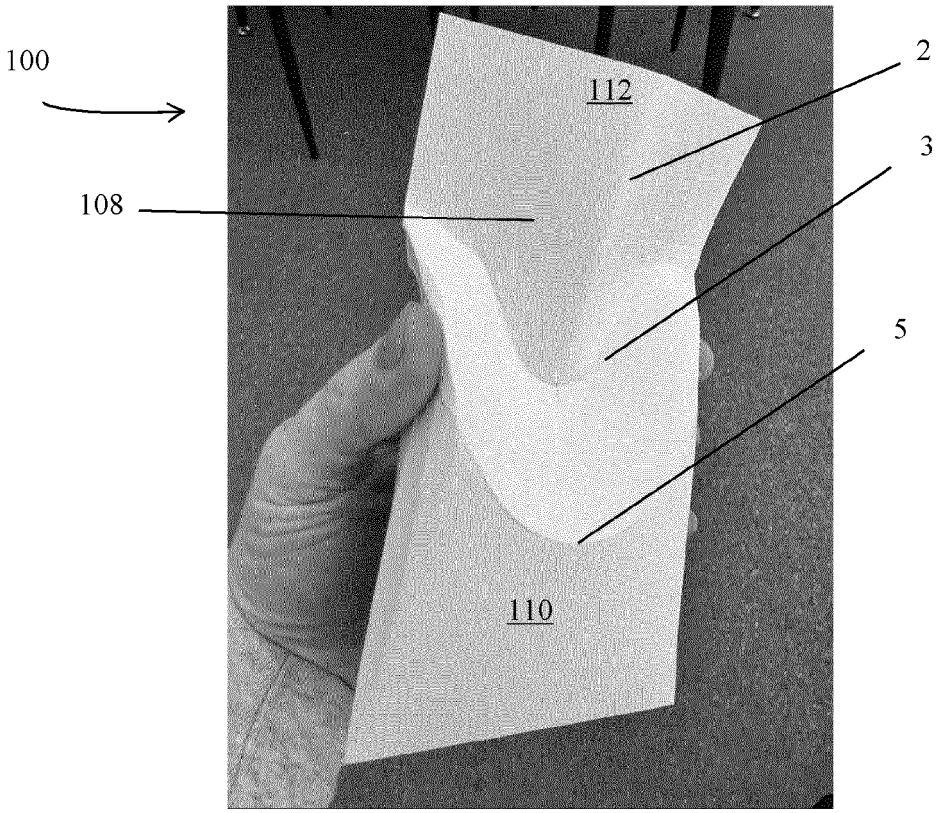

Figure 18

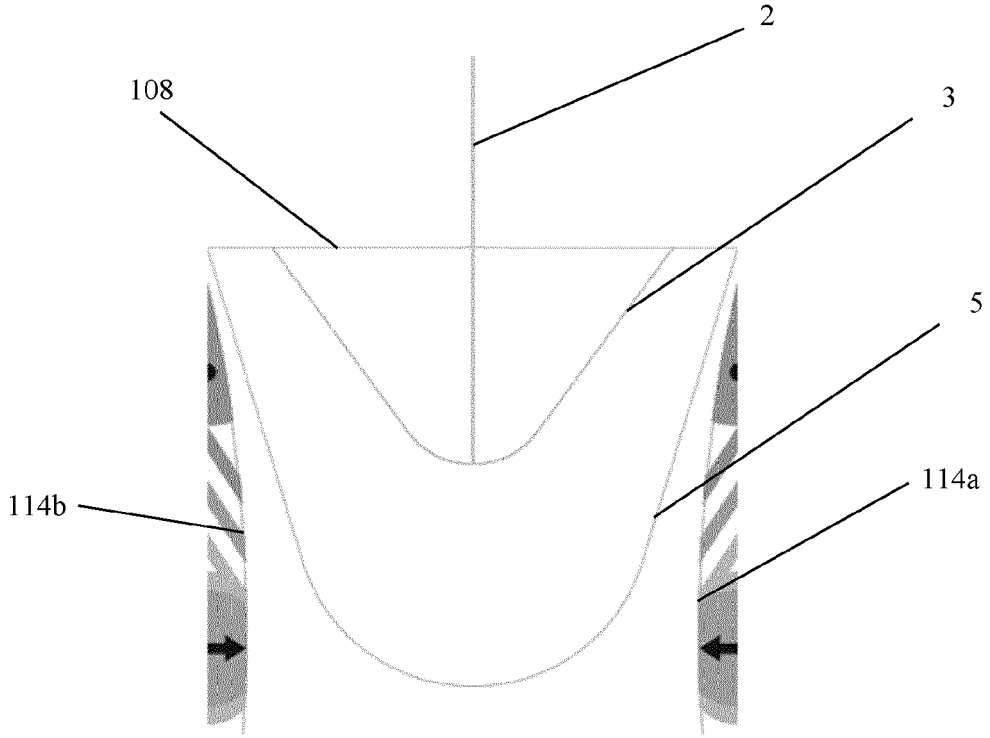

Figure 19

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EUROPEAN SEARCH REPORT

Application Number
EP 22 16 2813

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	EP 3 597 550 B1 (SHUTTLEPAC LTD [GB]; REAL DIGITAL INTERNATIONAL LTD [GB]) 17 March 2021 (2021-03-17)	13-15	INV. B65D27/36 B65D27/34
A	* paragraph [0001] - paragraph [0183]; figures 1-12 *	1-12	B65D5/02 B65D5/36 B65D30/08
A	EP 0 121 040 A1 (SCHMIDT C P VERPACKUNG [DE]) 10 October 1984 (1984-10-10) * page 1 - page 12; figures 5-8,11,12 *	1-15	B65D5/72 B65D5/74

TECHNICAL FIELDS SEARCHED (IPC)

B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	19 August 2022	Le Bihan, Nicolas

CATEGORY OF CITED DOCUMENTS

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19-08-2022

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EP 3597550 B1	17-03-2021	EP 3597550 A1	22-01-2020
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EP 0121040 A1	10-10-1984	DE 3307758 A1	06-09-1984
		EP 0121040 A1	10-10-1984

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 3597550 A **[0003] [0007] [0078] [0098] [0099] [0100] [0150]**