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(54) A PACKAGED CONTACT LENS

(57) A hermetically sealed blister package for a contact lens. The blister package includes a base member (100), made of a plastics material, and a sealing member (103) joined to the base member to form a blister cavity arranged to hold an unworn contact lens and contact lens packaging solution. The base member (100) has an upper surface (130) and a lower surface (132) and includes a blister well (104) and a handle (106). The handle (106) is provided by a flange that extends out from the blister well (104).

The flange includes a female connecting feature and a male connecting feature, the female connecting feature being located between a perimeter of the blister well (104) and an edge of the flange. The male connecting feature being located outside of a perimeter of the blister well (104). The female connecting feature on the base member is configured to interlock with a corresponding male connecting feature on a substantially identical base member to mechanically fasten the base member to the substantially identical base member to form a base member assembly.

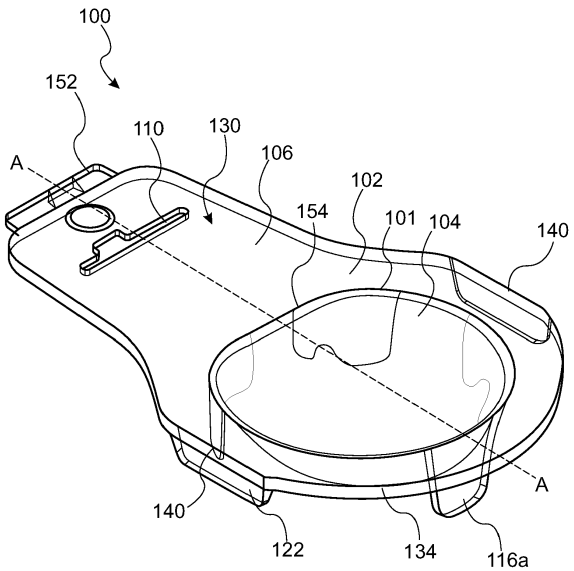

FIG. 1A

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Description

Field of the Invention

[0001] The present invention concerns a packaged contact lens. More particularly, but not exclusively, this invention concerns a sealed blister package including a base member and a sealing member joined to the base member to form a blister cavity arranged to hold an unworn contact lens and an aqueous solution.

Background of the Invention

[0002] Soft contact lenses, for example hydrogel and silicone hydrogel contact lenses, are stored in an aqueous solution in order to keep them hydrated and in a useable condition. Contact lenses are typically individually packaged in sealed blister packaging. Blister packages provide a sterile and secure environment for unused contact lenses, allowing them to be transported and stored safely until such time as they are required by an end user. A conventional blister package comprises a base member made of a plastics material and a sealing member that is sealed to that base member to form a blister cavity. A typical blister package of the prior art has a blister cavity in which the unused contact lens is stored and a handle that can be held between the finger and thumb of the user. The blister cavity is often configured as a well in the base member, the well being capable of holding a volume of contact lens packaging solution and the contact lens itself.

[0003] Martinez US 4,691,820 discloses a molded blister package for storing and dispensing a hydrophilic contact lens which comprises a base portion which includes a cavity surrounded by an outstanding flange, and a cover sheet sealed to the flange to enclose the cavity.

[0004] EP1752058 discloses a blister package housing a contact lens including a base member that includes a grip region including a curved top surface shaped to accommodate a thumb and a curved bottom surface shaped to accommodate an inner curve of a forefinger.

[0005] WO2021260353 discloses a blister package for a contact lens that includes a base sheet and sealing sheet where one includes a bowl and the other includes a dome.

[0006] A blister package is disclosed in US 10390593 which includes a thermoplastic base member with a grip portion, a distal end region, a first side region extending from the proximal end region to the distal end region, a second side region opposing the first side region, and a cavity configured to contain a packaging solution and a contact lens.

[0007] JP2006016049 discloses a blister pack for a contact lens including a container body comprising a semi-spherical depressed section, a flange section which is extended to the external periphery of the depressed section, and supporting sections.

[0008] WO03/039969 discloses a package for contact lenses in which the overall volume of the package and the internal volumes of the lens-holding cavities in the package are minimised.

[0009] The disclosure of US 10390593 is taken to be the closest prior art. The characterising feature of claim 1 of the present invention over the disclosure of US 10390593 is that the base member has a female connecting feature and a male connecting feature and the female connecting feature is configured to interlock with a corresponding male connecting feature on a substantially identical base member to mechanically fasten the base member to the substantially identical base member to form a base member assembly.

[0010] In use, a user typically removes the sealing member from the plastic base member, removes the unworn contact lens, and discards the empty blister package in the trash where it will not be recycled. Each individual plastic base member is too small to be recycled as plastic at a recycling centre because plastic recycling processes typically require objects to have dimensions greater than specified minimum dimensions and if these requirements are not met, the recycling lines have steps to remove these smaller objects and will not recycle them. This means that small pieces of plastic, such as individual plastic base members, may not be recycled, due to their small size, even if they are made of recyclable plastic. The material that the base members of blister packages is made from is recyclable, and therefore there is a need to address this problem so that contact lens packaging can be recycled in the same way as larger plastic items.

[0011] The technical effect of the female connecting feature being configured to interlock with a corresponding male connecting feature on a substantially identical base member to mechanically fasten the base member to a substantially identical base member to form a base member assembly, is that an object can be formed that is large enough to be recycled at recycling centres. The objective technical problem is how to reduce the environmental impact of the base members disclosed in US 10390593.

Summary of the Invention

[0012] The present invention provides, according to a first aspect, a hermetically sealed blister package having the features set out in claim 1 below. Preferred but optional features of the hermetically sealed blister package are set out in the dependent claims 2 to 12.

[0013] The female connecting feature and the male connecting feature allow multiple base members to be mechanically fastened together to form a base member assembly. A base member assembly can be formed by a user when the user is ready to discard the blister packs. A base member assembly can be formed that is of the size and weight required to be recycled by recycling centres. This allows the base members to be recycled, which reduces the environmental impact of the blister packs as they will not be discarded and sent to landfill.

[0014] As used herein, the term "substantially identical

base member" encompasses identical base members as well as base members having differences that are immaterial to the substance of the invention.

[0015] The blister well may have a concave interior surface depending from the upper surface of the base member and a convex exterior surface depending from the lower surface of the base member. The blister well may have a sidewall.

[0016] The flange may be planar. The flange may have a thickness of 0.3mm to 1.0mm. The flange may have a thickness of 0.4mm to 0.7mm. The flange may have a thickness of 0.5mm. The flange may have a thickness of 0.55mm.

[0017] The base member may have an outer edge that is, in plan view, symmetric about a line running through the centre of the handle and the centre of the blister well.

[0018] The sealing member may be a laminated structure including foil and one or more layers of a plastics material. The sealing member may be made of a plastics material. The sealing member may be made of foil. The thickness of the sealing member can be from about 50 micrometers to about 100 micrometers. The sealing member may be printed with words or numbers. The sealing member may have a thickness of 60 micrometers to 70 micrometers. Suitable materials for the sealing member can be obtained from AMCOR (Switzerland). The sealing member may have an area equal to the area of the top surface of the base member. The sealing member may have an area greater than the area of the top surface of the base member. The sealing member may have an area less than the area of the top surface of the base member.

[0019] The blister well may be hemispherical or substantially hemispherical in shape. The blister well may be an irregular shape. The blister well may be cylindrical in shape. The blister well has a wall, referred to herein as a sidewall. The sidewall may include a flat portion, which may be adjacent to the handle. The blister well may have a rim.

[0020] The base member may include two or more stabilising legs. The base member may include three or more stabilising legs. The stabilising legs may extend down from the lower surface of the base member. The stabilising legs may be vertically aligned with the rim of the blister well. The stabilising legs may extend down from the lower surface of the base member such that they extend out as far as the furthest extent of the blister well. The stabilising legs may extend down from the lower surface of the base member such that they extend out further than the furthest extent of the blister well. The stabilising legs may extend out far enough to provide stability to the base member when it is placed upright on a flat surface. The stabilising legs may allow a reduction in the weight of the blister package to be achieved while still providing a blister package that is stable when placed upright on a flat surface without the handle formed by the flange having to serve as a stability support and whilst maintaining enough structural integrity to avoid problematic deformation and enough structural integrity to adequately protect a contact lens during transportation and storage.

[0021] The base member may include at least two side tabs. The side tabs may be positioned on either side of the blister well, wherein the side tabs extend down from the upper surface of the base member. The side tabs may have a height from 2.0mm to 4.0mm. The side tabs may have a height from 3.0mm to 4.0mm. The side tabs may have a height of 3.0mm. The side tabs may have a height of 4.0mm. The side tabs may have a length along the upper surface of the flange of 6.0mm to 10.0mm. The side tabs may have a length along the upper surface of the flange of 7.0mm to 9.00mm. The side tabs may have a length along the upper surface of the flange of 8.0mm. The side tabs may increase the structural integrity of the base member. The side tabs may reduce the likelihood of problematic deformation of the base member. The side tabs may increase the stability of the base member when it is placed upright on a flat surface. The side tabs may provide a gripping region.

[0022] The female connecting feature may comprise a hole in the flange of the base member. The hole in the flange of the base member may be rectangular. The hole in the flange of the base member may be oval shaped. The hole in the flange of the base member may be circular. The hole in the flange of the base member may be key-shaped. The female connecting feature may be located at a greater distance from the perimeter of the blister well than from a perimeter of the handle. The female connecting feature may be a hole extending through the flange. The hole may be located closer to an outer edge of the handle than to the centre of the blister well. The hole may be located at a distance of 10.0mm to 30.0mm from the centre of the blister well. The hole may be located at a distance of 20.0mm from the centre of the blister well. The hole may be a slot having a width of 0.5mm to 1.5mm. The hole may be a slot having a width of 1.1mm. The hole may be a slot having a width of 1.0mm. The hole may be a slot having a width of 0.9mm. The width of the hole may be the shorter dimension of the slot. The hole may be a slot with a length of 8.0mm to 12.0mm. The hole may be a slot with a length of 9.0mm to 11.0mm. The hole may be a slot with a length of 9.0mm. The hole may be a slot with a length of 10.0mm. The side or the length of the hole may be parallel to the end of the handle. The length of the hole may be perpendicular to a longitudinal axis of the base member. The length of the hole may be parallel to a longitudinal axis of the base member. The length of the hole may by between 5 degrees and 45 degrees from being perpendicular to a longitudinal axis of the base member. The female connecting feature may be a hole that includes a notch at an edge of the hole. The hole may include a notch in the longest side of the hole. The notch may be central along the length of the hole. The notch may be off centre along the length of the hole. The notch in the edge of the hole may protrude from the hole by 0.5mm to 1.5mm. The notch in the edge

of the hole may protrude from the hole by 1.1mm. The notch in the edge of the hole may have a length of 2.0mm to 3.0mm. The notch in the edge of the hole may have a length of 2.7mm. The notch may have a square shape. The notch may have a curved shape. The notch may have an oval shape. The notch may have a circular shape. The female connecting feature may include only one hole extending through the flange. The female connecting feature may include more than one hole extending through the flange. One or more holes in the handle may reduce the weight of the base member.

[0023] The blister package may include a contact lens. The contact lens may be a hydrogel contact lens. The contact lens may be a silicone hydrogel contact lens.

[0024] The base member may be made from a recyclable thermoplastic material.

[0025] The sealing member is hermetically sealed to the base member. The sealing member may be hermetically sealed to the base member at a sealing region. The sealing region may be substantially annular, when viewed in a top plan view. The sealing region may be on the base member. It may be that the sealing region is not annular when viewed from a top plan view (i.e. from above). The sealing region may have a vertex adjacent to the handle of the base member. As used herein, a vertex is understood to be a portion of a geometric shape having the sharpest turn relative to the rest of the shape. For example, the vertex can be a point where two or more line segments meet. However, if the line segments are curved it can be appreciated that the intersection may be blended in such a way that there is a region having a smaller radius than a portion of the line segments located away from the vertex. A sealing region with a vertex reduces the separation force required to separate the sealing member from the sealing region. If a lower separation force is required to separate the sealing member from the sealing region, the base member can have a reduced structural integrity, i.e. be less robust (and can therefore be made lighter) without reducing the protection that the blister package provides to a contact lens.

[0026] The sealing region may have a width from 1.0mm to 4.0mm. The sealing region may have a width from 1.0mm to 2.5mm. The sealing region may have a width of 2.0mm. The sealing region may have a width of 1.0mm. The sealing region may have a width of 1.7mm. A reduced width of the sealing region may improve the ease of opening the blister pack whilst maintaining a hermetic seal.

[0027] The blister well may hold a volume of contact lens packaging solution of 0.4mL to 1.6mL. It may be that the blister well holds a volume of contact lens packaging solution of 0.6mL to 1.4mL. The blister well may hold a volume of contact lens packaging solution of 0.8mL to 1.2mL. The blister well may hold a volume of contact lens packaging solution of 0.6mL. The blister well may hold a volume of contact lens packaging solution of 0.7mL. The blister well may hold a volume of contact lens packaging solution of 0.8mL. The base member may have a length from 40.0mm to 50.0mm and a width from 25.0mm to 35.0mm. The base member may have a length from 40.0mm to 50.0mm. The base member may have a length from 43.0mm to 47.0mm. The base member may have a length of 46.0mm. The base member may have a length of 46.31mm. The base member may have a width of 25.0mm to 35.0mm. The base member may have a width of 27.0mm to 33.0mm. The base member may have a width of 28.0mm to 30.0mm. The base member may have a width of 29.0mm. The base member may have a weight of 2.25g or less. The base member may have a weight of 1.0g or less. The base member may have a weight of less than 0.90g. The base member may have a weight of less than 0.80g. The base member may have a weight of less than 0.72g. The base member may have a weight from 0.40g to 0.72g. In an example, the base member has a weight of 0.70g. The base member may have a weight of 0.72g. The base member may have a weight of less than 0.70g. The base member may have a weight of less than 0.65g. A reduction in the weight of the blister package allows the environmental impact of the blister pack to be further reduced by reducing the amount of fossil fuels required to transport the blister package.

[0028] The blister well may have a depth at its centre of 5.0mm to 8.0mm. The blister well may have a depth at its centre of 6.0mm to 7.0mm. The blister well may have a depth at its centre of 6.0mm. The blister well may have a depth at its centre of 6.7mm.

[0029] The flange of the base member may have a thickness that is no greater than the thickness of the sidewall of the blister well. The flange of the base member may have a thickness that is no greater than 95% of the thickness of the sidewall of the blister well. The flange of the base member may have a thickness that is no greater than 90% of the sidewall of the blister well. The flange of the base member may have a thickness that is no greater than 85% of the thickness of the sidewall of the blister well.

[0030] The sidewall of the blister well may have a thickness of 0.3mm to 1.0mm. The sidewall of the blister well may have a thickness of 0.5mm to 0.7mm. The sidewall of the blister well may have a thickness of 0.6mm. If the sidewall of the blister well is too thin, evaporation might occur through the plastic resulting in changes in the packaging solution, potentially resulting in the contact lens drying out and becoming unusable. The blister well sidewall thickness may allow a reduction in weight of the blister package whilst still being thick enough to avoid any evaporation of the contact lens packaging solution. That enables the lens to remain hydrated prior to use by a contact lens wearer.

[0031] The blister well sidewalls may facilitate retention of the base member in a base member carrier of a heat sealing system or machine. It can be understood that slots may be provided in the base member carrier to receive one or more sidewalls to provide a physical fit between the base member and the base member carrier

to ensure that the upper surface of the base member remains stable and parallel to a surface of a heat sealing die that is pressed against the sealing member on top of the upper surface of the base member to seal the sealing member to the base member.

[0032] The flange of the base member may have a stiffness from 50,000psi.mm^2 to 150,000psi.mm^2. The flange of the base member may have a stiffness from 60,000 psi.mm^2 to 90,000 psi.mm^2. The flexural modulus of the base member material may be from 230,000psi to 276,000psi. The stiffness of the present base members is calculated by multiplying the flexural modulus of the base member material by the square of the thickness of the flange in mm. The flexural modulus can be measured using conventional equipment, such as equipment provided by Instron (Norwood, MA, USA) or it can be provided by the plastics manufacturer as part of the plastics technical data. The flexural modulus can be used as determined by the ISO 178 testing method.

[0033] The flange includes a male connecting feature. The male connecting feature may comprise a clip, or a barb, or a combination thereof. The male connecting feature may comprise a latch. The latch may be configured to interlock with the female connecting feature. The male connecting feature may be a protrusion. The male connecting feature may be a protrusion on the outer edge of the handle. The male connecting feature may be located at a gripping portion of the base member. The protrusion may have a length along the flange of 9.0mm to 1 1.0mm. The protrusion may have a length along the flange of 9.8mm. The protrusion may extend out 2.0mm to 3.0mm from the edge of the base member. The protrusion may extend out 2.3mm from the edge of the base member. It may be that inserting the male connecting feature of one base member into the female connecting feature of a second substantially identical base member joins the two base members together in a specific orientation and prevents the male connecting feature from being removed from the female connecting feature.

[0034] The male connecting feature may include a key-shaped protrusion. The key-shaped protrusion may be configured to fit within a notch of a corresponding female connecting feature on a substantially identical second base member. The key-shaped protrusion and the notch may be configured such that when the key-shaped protrusion is inserted into a notch of a second base member, the second base member is oriented in a specific manner relative to the base member. The male connecting feature may be a protrusion that includes a tab. The male connecting feature may be a rectangular shaped protrusion that has a tab extending from its side such that the protrusion appears key-shaped. The male connecting feature may be a rectangular shaped protrusion that has a tab extending centrally from its side. The tab may be positioned off-centre along the side of the rectangle. The tab may extend downwards from the upper surface of the flange. The tab may have a length of 2.0mm to 3.0mm along the flange. The tab may have a length of 2.2mm to 2.4mm along the flange. The tab may have a length of 2.3mm along the flange. The tab may have a height of 1.0mm to 6.0mm. The tab may have a height of 1.75mm. The male connecting feature may comprise a protrusion that extends down along the entire width of the end of the handle. The tab may be sized and configured to fit into a female connecting feature of a substantially identical base member. The male connecting feature may latch on to the female connecting feature of a substantially identical base member to mechanically fasten the base member to a substantially identical base member. The female connecting feature may be a hole in the flange. The female connecting feature may include a notch in the hole in the flange. The male connecting feature on the base member is configured to interlock with a corresponding female connecting feature on a substantially identical base member. This means that a plurality of base members may be attached together, for example to form a base member assembly or a base member recycling unit, which means the base members may be accepted for recycling in a recycling centre.

[0035] The female connecting feature may be a concave inner surface of a second well. The male connecting feature may be a convex exterior surface of the second well. The male connecting feature may be a protrusion on a convex exterior surface of the second well. The female connecting feature may interlock with a corresponding male connecting feature on a substantially identical base member by an interference fit between the male and female connecting features.

[0036] The base member may include three stabilising legs. The base member may include four stabilising legs. The base member may include five stabilising legs. The base member may include three stabilising legs that are positioned approximately 120 degrees apart from each other about a vertical axis extending through the centre of the blister well. The base member may include four stabilising legs that are positioned approximately 90 degrees apart from each other about a vertical axis extending through the centre of the blister well. The stabilising legs may include a planar lower edge. The stabilising legs may include a rounded lower edge. The stabilising legs may include a curved lower edge.

[0037] When the base member is placed upright on a flat surface it may have more than one point of contact with the surface. When the base member is placed upright on a flat surface it may have more than two points of contact with the surface.

[0038] When the base member is placed upright on a flat surface it may have more than three points of contact with the surface. When the base member is placed upright on a flat surface it may have more than four points of contact with the surface. Multiple points of contact between the base member and the flat surface may allow a force exerted on the base member by the surface to be distributed across the base member. This may reduce the stiffness required in any individual region of the base member, for example the blister well, which may allow

the weight of material used to make the base member to be reduced. The weight of material used to make the base member may be reduced without compromising the ability of the blister package to provide adequate protection to a contact lens.

[0039] When the lower surface of a first base member, according to an embodiment of the invention, is placed up against the lower surface of a second base member, according to the same embodiment, there may be more than one point of contact between the base members. There may be more than two points of contact between the base members. There may be more than three points of contact between the base members. There may be more than four points of contact between the base members. Multiple points of contact between the base members may allow a force exerted on the first base member by the second base member to be distributed across the first base member and vice versa. This may reduce the stiffness required by any individual region of a base member, for example the blister well. A reduction in the stiffness required may allow the weight of material used to make the base member to be reduced. The weight of material used to make the base member may be reduced without compromising on the ability of the blister package to provide adequate protection to a contact lens during storage and transportation.

[0040] The blister well may be reinforced by supporting ribs. The blister well may be reinforced by two or more supports. The blister well may be reinforced by three or more supports. The blister well may be reinforced by supports so that the thickness of the sidewall of the blister well may be reduced without compromising on the ability of the blister package to provide adequate protection to a contact lens.

[0041] The blister well may have a rim. The rim of the blister well may be enclosed on the upper surface of the base member by a sealing region.

[0042] The male connecting feature may be a barb configured to be inserted into a female connecting feature of a second base member from a first direction. The female connecting feature of the second base member may be configured to prevent the barb from exiting in a second direction opposite to the first direction.

[0043] The male connecting feature may include a first end defining a barb and a second end defining a barb. The first barb and the second barb may be configured to be inserted into a female connecting feature of a second base member from a first direction and the female connecting feature of the second base member may be configured to prevent the first barb and the second barb from exiting in a second direction opposite to the first direction.

[0044] The base member can be made by injection molding a plastics material into a suitably shaped base member cavity of a conventional injection molding machine, as understood by persons of ordinary skill in the art.

[0045] The present invention provides, according to a second aspect, a base member assembly according to claim 13. Thus, the base member assembly includes a plurality of base members, wherein the base members are made of plastics material and have an upper surface and a lower surface and include a blister well and a handle. The handle is provided by a flange that extends out from the blister well. The flange includes a female connecting feature and a male connecting feature. The female connecting feature is located between a perimeter of the blister well and an edge of the flange. The male connecting feature is located outside of the perimeter of the blister well. The female connecting feature on the base member is configured to interlock with a corresponding male connecting feature on a substantially identical base member to mechanically fasten the base member to the substantially identical base member to form a base member assembly. The base member assembly includes base members which are each mechanically connected to one or more other base members in the assembly, wherein each mechanical connection is between the female connecting feature on one of the base members and a corresponding male connecting feature on another of the base members. The base member assembly may comprise at least 14 base members. The base member assembly may comprise at least 16 base members. The base member assembly may comprise at least 20 base members. The base member assembly may have a height of at least 15cm. The base member assembly may have a height of at least 20cm.

[0046] The present invention provides, according to a third aspect, a method of manufacturing a packaged contact lens according to claim 14 as set out below.

[0047] The step of sealing a sealing member to the sealing region of the base member may be carried out by pressing a foil laminate sealing member against a plastic base member under heat, to melt the layer of plastic of the foil laminate and the sealing region of the base member together. The step of sealing a sealing member to the sealing region may be done at a temperature of 210 degrees to 240 degrees Celsius. The step of sealing a sealing member to the sealing region may be done using a heated die pressing the sealing member against the flange of the base member at a pressure of 25 PSI to 60 PSI. The heated die may press the sealing member against the flange for a time of 100ms to 1100ms.

[0048] Desirably, the sealing region provides a sufficient seal between the base member and the sealing member to withstand separation forces that occur during a contact lens autoclave sterilization process, and also is relatively easy for a person to peel open using the person's fingers. If a lower separation force is required to separate the sealing member from the sealing region, the base member can be made lighter without reducing the protection that the blister package provides to a contact lens.

[0049] For example, the sealing region may be configured to provide an average separation force of less than 15 Newtons (N). In some embodiments, the sealing region is configured to provide a separation force from

about 4 N to about 14 N. In further embodiments, the sealing region is configured to provide a separation force from about 6 N to about 11 N. In yet further embodiments, the sealing region is configured to provide a separation force from about 8 N to about 10 N.

[0050] The peel strength can be measured using an INSTRON Model 5943 machine. For purposes of these measurements, the angle of pull is set at 45 degrees. The load cell of the machine is calibrated prior to testing the peel strength. Generally, the operating instructions are set by the manufacturer.

[0051] The sealing configuration can be adjusted by controlling the temperature of a heat sealing head surface that is pressed against the sealing member on the top surface of the base member, controlling the pressure with which the sealing head is applied to the sealing member, or controlling the time for which the sealing head is applied to the sealing member, or combinations thereof, as described above.

[0052] The present invention provides, according to a fourth aspect, a method of recycling a sealed blister package, comprising: removing the sealing member from the base member; removing the contact lens from the blister well; removing the liquid contact lens packaging solution from the blister well; mechanically fastening the base member to a substantially identical base member by interlocking the female connecting feature on the base member with a corresponding male connecting feature on the substantially identical base member to form a base member assembly. The method may also include the step of mechanically fastening additional base members to the base member assembly to form an assembly comprising at least 14 base members fastened together to form a base member recycling unit. The method may alternatively include the step of mechanically fastening additional base members to the base member assembly to form an assembly comprising at least 20 base members fastened together to form a base member recycling unit. The method may further comprise the step of mechanically fastening additional base members to the base member assembly to form a base member recycling unit having a height of at least 15cm.The method may further comprise the step of mechanically fastening additional base members to the base member assembly to form a base member recycling unit having a height of at least 20cm.The method may also include the step of placing the base member recycling unit in a recycling receptacle. This may allow the base members to be recycled as the base member recycling unit has a large enough volume to be recycled.

[0053] It will of course be appreciated that features described in relation to one aspect of the present invention may be incorporated into other aspects of the present invention. For example, the method of the invention may incorporate any of the features described with reference to the apparatus of the invention and *vice versa*.

Description of the Drawings

[0054] Embodiments of the present invention will now be described by way of example only with reference to the accompanying schematic drawings of which:

FIG. 1A shows a perspective view of a contact lens package base member according to a first embodiment of the invention;

FIG. 1B shows a perspective view of a contact lens package including a base member and a sealing member according to a first embodiment of the invention;

FIG. 2A shows a top view of the base member of FIG. 1A;

FIG. 2B shows a top view of the female connecting feature of the base member of FIG. 1A;

FIG. 3 shows a cross-sectional view of the base member taken along line A-A of FIG. 1A;

FIG. 4 is an end view of the base member of FIG. 1A;

FIG. 5A is a perspective view of an assembly of the base members of FIG. 1A;

FIG. 5B is a side view of an assembly of the base members of FIG. 1A;

FIG. 6 shows the steps of a method of manufacturing a packaged contact lens according to a second embodiment of the invention;

FIG. 7 shows the steps of a method of recycling a contact lens blister package according to a third embodiment of the invention;

FIG. 8A shows a top perspective view of a contact lens package base member according to a fourth embodiment of the invention;

FIG. 8B shows a bottom perspective view of the base member of FIG. 8A;

FIG. 8C shows a perspective view of a base member assembly of the base members of FIG. 8A;

FIG. 8D shows a side view of a base member assembly of the base members of FIG. 8A;

FIG. 9A shows a top perspective view of a contact lens package base member according to fifth embodiment of the invention;

FIG. 9B shows a bottom perspective view of the base

member of FIG. 9A;

FIG. 9C shows a perspective view of an assembly of the base members of FIG. 9A;

FIG. 10A shows a top perspective view of a contact lens package base member according to a sixth embodiment of the invention;

FIG. 10B shows a bottom perspective view of the base member of FIG. 10A;

FIG. 10C shows a side view of a base member assembly of the base members of FIG. 10A;

FIG. 11A shows a top perspective view of a contact lens package base member according to another embodiment of the invention;

FIG. 11B shows a bottom perspective view of the base member of FIG. 11A;

FIG. 11C shows a side view of a pair of the base members of FIG. 11A; and

FIG. 12 shows a top view of a contact lens package base member according to another embodiment of the invention.

Detailed Description

[0055] In example embodiments of the invention, the base member is a recyclable plastic material. The base member includes a blister well and a handle. The base member may include stabilising legs and side tabs. The base member includes a lower surface designed to face downwards during use and an upper surface designed to face upwards during use, such as when using the blister pack to present a hydrated contact lens to a person to remove from the blister pack. The blister well extends downwards from the upper surface of the base member with a concave interior surface and protrudes downwards from the lower surface of the base member with an opposing convex exterior surface. The blister well may have a rim. The rim of the blister well may be where the concave interior surface of the blister well meets the planar upper surface of the base member. The rim of the blister well may be enclosed on the upper surface of the base member by a sealing region. This sealing region in use is the region at which the base member of the blister pack is hermetically sealed to a sealing member of the blister pack. A flange extends from a perimeter of the blister well to an edge of the base member. At a first end of the base member the flange may extend out to a curved edge at a constant distance from the perimeter of the blister well. At a second end of the base member the flange may extend out further than at the first end and form a handle suitable to be held between the thumb and finger of a user when in use. The flange includes a female connecting feature and a male connecting feature. The female connecting feature is located between a perimeter of the blister well and an edge of the flange. The male connecting feature is located outside of the perimeter of the blister well. The blister well is dimensioned to hold a contact lens and contact lens packaging solution. A plurality of stabilising legs may extend down from a lower surface of the flange around the convex exterior surface of the blister well. When in use the stabilising legs may allow the base member to be placed with the lower surface of the base member contacting a surface without tipping. A side tab may extend down from the edge of the flange on either side of the blister well, thus there may be a side tab extending symmetrically either side of the line running centrally from the first end of the base member to the second end of the base member, where the line passes through the central point of the blister well. The female connecting feature may be a hole extending through the flange of the base member. The male connecting feature may be located at the end of the handle of the base member. The male connecting feature may be a protrusion at the end of the handle. The protrusion may include a tab which extends down from the lower surface of the flange of the base member.

[0056] The contact lens contained in the blister package is preferably a soft contact lens. A soft contact lens can be a hydrogel contact lens in that it has an equilibrium water content (EWC) from 10-90%. Preferably, the soft contact lens is a silicone hydrogel contact lens (that is, a hydrogel contact lens that comprises polymeric units derived from at least one silicone-containing chemical).

[0057] A first example embodiment of the invention will now be described with reference to FIGS. 1A to 5B. FIG. 1A shows a base member 100 formed from a thermoplastic layer. The base member 100 has a weight of 0.72g. The base member 100 is made of a recyclable plastics material. The base member 100 has a length of 46.31mm at its longest point and a width of 29mm at its widest point. The base member 100 includes a blister well 104 and a handle 106. The blister well 104 is dimensioned to accommodate a contact lens. The blister well 104 has a sidewall 105 (FIG. 3). The blister well 104 has a rim 101. The rim 101 is substantially circular apart from a linear portion 154. The handle 106 provides a gripping portion configured to be held between a thumb and finger of a user. FIG. 3 shows a cross sectional view of the base member 100.

[0058] The base member has a lower surface 132 and an upper surface 130. The lower surface 132 and the upper surface 130 meet at an edge 134, which runs around the boundary of the base member.

[0059] The blister well 104 is formed as a well in the upper surface 130 of the thermoplastic layer, which extends down to form a concave interior surface. The thickness of the blister well 104 sidewall 105 is 0.6mm, i.e. the distance between the upper surface 130 of the base member 100 and the lower surface 132 of the base mem-

ber in the region of the blister well 104 is 0.6mm. The depth of the blister well 104 is 6mm at its maximum point. The blister well 104 is sized to hold a maximum of 1.6mL of contact lens packaging solution.

[0060] FIG. 1B shows a base member 100 and a sealing member 103. Where the sealing member 103 is joined to the base member 100 at a sealing region 102 which is shown in dotted lines to indicate that it is located between the sealing member 103 and the base member 100 and is not directly visible from above. The sealing region 102 is used to hermetically seal the base member 100 to the sealing member 103 to form a blister cavity. The sealing region 102 has a width of 1.5mm. FIG. 2A shows a top view of the base member 100. A flange extends out from the perimeter of the blister well 104 to the boundary of the base member 100. At a first end 138 of the base member the flange extends out to form a curved edge at a distance of 5mm from a perimeter of the blister well 104. At a second end 136 of the base member the flange extends out further to form a substantially planar handle 106 which can be used as a gripping portion. Along the width of the base member 100 the flange extends out from the perimeter of the blister well 104 to form two flat edges 140 at the boundary of the base member 100. The flat edges 140 have a length of 8mm. The distance between the flat edges 140 is 29mm.

[0061] Two side tabs 122 (one of which is visible in FIG. 1A) extend downwards from the lower surface 132 (FIG. 3) of the base member 100 from the area adjacent to the flat edges 140. The side tabs 122 have a height of 4mm and a length of 8mm. These side tabs increase the structural integrity of the base member 100 and act to provide a grip-able portion for the user to pinch between their finger and thumb when lifting the base member 100. The side tabs 122 also act to stabilise the base member 100 when it is placed upright on a flat surface.

[0062] The thickness of the handle 106 is 0.55mm. At a distance of 8.0mm from the second end 136 of the base member 100 there is a hole 110 extending through the thickness of the flange. The hole 110 is the female connecting feature. FIG. 2B shows the shape of the female connecting feature in isolation. The hole 110 is a slot, which is essentially rectangular in shape, with a length 142 of 10.5mm and a width 143 of 1mm. The hole 110 has a notch 146 on one side that extends a portion of the long side of the slot facing the second end 136 of the base member. The notch 146 has a length of 2.7mm and protrudes 1. 1mm from the slot. As shown in FIG. 2A, at the far end of the handle 106 (at the second end 136 of the base member 100) the handle 106 includes a protrusion 150 that extends out 2.3mm from the edge of the base member 100. The protrusion 150 is the male connecting feature. The protrusion 150 has a linear outer edge 152 when viewed from above (as in FIG. 2A). The linear outer edge 152 has a length of 9.8mm. There is a tab 124 which extends down from the flat outer edge 152 of the protrusion 150 (FIGS. 3 and 4).

[0063] The tab 124 has a length of 2.3mm and extends down 1.75mm away from the upper surface of the base member 100. Three stabilising legs 116a-c extend down from the lower surface 132 of the base member 100 and are vertically aligned with the rim 101 of the blister well on the upper surface 130 of the base member 100. The three legs 116a-c are arranged around the convex exterior surface of the blister well 104. At the first end 138 of the base member 100 one of the stabilising legs 116a is positioned so that it is in the middle of the width of the base member 100. The second leg 116b and third leg 116c are shown in FIG. 4 and are arranged either side of the central line running along the length of the base member 100 from the first end 138 to the second end 136. The centre points of the three legs 116a-c are positioned approximately 120 degrees apart around an axis that runs vertically down through the centre of the blister well.

[0064] FIGS. 5A and 5B show how 14 base members 100 according to this embodiment can be joined together by inserting the protrusion 150 of one base member 100 into the hole 110 of another base member 100, with the tab 124 acting to hold each protrusion inside the hole 110 of each base member. The tab 124 has an inward facing surface 121 as shown in FIG 5B. The inward facing surface 121 of the tab 124 presses against a region of the flange adjacent to the hole 110 of another base member 100, stopping the base members 100 from coming apart. Each base member 100 is joined to at least one other base member 100 at an approximate 90 degree angle. The base members 100 in the assembly are joined in this way so that half the base members 100 are parallel to each other and the other half are joined at a 90 degree angle to the first half.

[0065] In a method 200 of manufacturing a packaged contact lens according to a second embodiment, shown in FIG. 6, a contact lens blister package according to the first aspect of the invention is provided 202. A contact lens is placed into the blister well of the thermoplastic base member of the blister package 204. A volume of liquid contact lens packaging solution is placed into the blister well of the thermoplastic base member 206. A sealing member is sealed to the sealing region of the thermoplastic base member 208. The method optionally includes the step 210 of autoclaving the sealed contact lens blister package to sterilize the contact lens and the packaging solution.

[0066] FIG. 7 shows the steps of a method 300 of recycling the contact lens blister package of the present invention according to a third embodiment. The steps of the method are as follows. The sealing member is removed from the thermoplastic base member 312. The contact lens is removed from the blister well 314. The liquid contact lens packaging solution is removed from the blister well in the thermoplastic base member 316. In step 318, the thermoplastic base member is mechanically fastened to a substantially identical thermoplastic base member by interlocking the female connecting feature on the thermoplastic base member with a corre-

sponding male connecting feature on the substantially identical thermoplastic base member to form a base member assembly. The thermoplastic base member is interlocked with a substantially identical thermoplastic base member by inserting the protrusion of the thermoplastic base member into the hole of a substantially identical base member thermoplastic base member so that the tab lines up with the notch in the hole. The two base members together form a base member assembly 320. The method optionally includes the step 322 of mechanically fastening additional thermoplastic base members to the base member assembly to form an assembly including at least 30 thermoplastic base members coupled together to form a base member recycling unit. The method optionally includes the step 324 of placing the base member recycling unit in a recycling receptacle.

[0067] Another example embodiment of the invention (FIGS. 8A to 8D) is similar to the first example embodiment of the invention but has some alternative features. A base member 400 includes a blister well 404 and a handle 406. The blister well 404 has a rim 401. The rim 401 is enclosed by a sealing region 402. A flange extends out from the perimeter of the blister well 404 to the boundary of the base member. At one end of the base member the flange extends out to form a handle 406. The base member 400 has a hole 410 extending through the thickness of the handle 406. The hole 410 is the female connecting feature. The hole 410 is a slot, which is essentially rectangular in shape. The hole 410 has an inner side wall 433. The hole 410 has a length 442 of 10.5mm and a width 440 of 1.0mm. The long side of the hole 410 is parallel to a central line running down the length of the base member 400. The hole 410 has a notch 446 on one side that extends a portion of one of the long sides of the slot. The notch 446 is off centre along the length of the rectangle, which makes the hole 410 appear key shaped. The notch has a length of 2.7mm and protrudes 1.1mm from the slot. There is a region 431 of the flange adjacent to the hole 410 on the upper surface of the base member 400. There is a region 429 (FIG. 8B) of the flange adjacent to the hole 410 on the lower surface of the base member 400. The base member 400 has two larger holes 456a and 456b on either side of the hole 410. The holes 456a and 456b reduce the amount of material needed to make the base member 400 and therefore reduce its weight. At the end of the handle 406 furthest from the blister well 404, the handle includes a protrusion 425 (FIGS. 8B-8D). The protrusion 425 is the male connecting feature. FIG. 8B shows this protrusion 425 from a lower surface of the base member 400. The protrusion 425 has a lower surface 437 which is parallel with the lower surface of the base member 400. A lip 441 (FIGS. 8C and 8D) is parallel with the upper surface of the base member 400. Between the lower surface 437 of the protrusion 425 and the lip 441 of the protrusion 425 there is a curved portion 439 (FIG. 8B). The protrusion includes a surface 443 which faces away from the base member 400 in the plane of the flange (as shown in FIG. 8C). The surface 443 is perpendicular to the lip 441. The protrusion 425 includes a tab 424 which aligns with a notch 446 in a hole 410 on a second substantially identical base member. The tab 424 extends away from the lip 441 in a direction perpendicular to the upper surface of the base member 400. The protrusion 425 is shaped such that it can be slotted through the hole 410 of the second base member 400b (FIG. 8C). The protrusion 425 is shaped such that a first base member 400a can be placed perpendicular to a second base member 400b with the protrusion 425 sitting in hole 410. In this position, the lip 441 of the first base member 400a is next to the side wall 433 (see FIGS. 8A and 8B) of the hole 410 of the second base member 400b. The tab 424 of first base member 400a is aligned with the notch 446 (see FIG. 8A) of the second base member 400b. The surface 443 perpendicular to the lip of first base member 400a is next to the region 431 (FIG. 8A) of the flange adjacent to the hole 410 of the second base member 400b.

[0068] Once the protrusion 425 of the first base member 400a is aligned with hole 410 of the second base member 400b, the first base member 400a can be rotated 90 degrees so that the flange of the first base member 400a is parallel to the flange of the second base member 400b as shown in FIG. 8D. In this position, the lip 441 of first base member 400a is exerting a pressure on the region 429 (FIG. 8B) of the flange adjacent to the hole 410 on the lower surface of the second base member 400b. The lip 441 of the first base member 400a acts to stop the protrusion 425 of the first base member 400a from coming out of the hole 410 of the second base member 400b. The tab 424 of the first base member 400a is aligned with the notch 446 (FIG. 8A) of the second base member 400b. Thus, the act of rotating the first base member 400a by 90 degrees with respect to the second base member 400b can lock the two base members together.

[0069] Another example embodiment of the invention (FIGS. 9A to 9C) is similar to the first example embodiment of the invention but has some alternative features. A base member 500 includes a blister well 504 and a handle 506. Where a concave interior surface of the well 504 meets an upper surface of the base member, the blister well has a rim 501. The rim 501 of the blister well 504 is enclosed by a sealing region 502. A flange extends out from the perimeter of the blister well 504 to the boundary of the base member 500. At one end of the base member 500 the flange extends out to form a handle 506. The base member 500 has a hole 510 extending through the thickness of the handle 506. The hole 510 is the female connecting feature. The hole 510 is a slot, which is rectangular in shape. The hole 510 has a length 542 of 10.5mm and a width 540 of 1.0mm. The long side of the hole 510 is perpendicular to a central line running down the length of the base member 500. At the end of the handle 506 furthest from the well 504, the handle includes a protrusion 550 which extends out in the plane of the flange. The protrusion 550 is symmetrical about a central

line running down the length of the base member 500. The protrusion 550 has a pair of hooks 551 positioned on either side of the central line. The hooks 551 have a surface 535 facing towards the blister well in the plane of the flange.

[0070] FIG. 9B shows the lower surface of the base member 500. The hooks 551 have a diagonal outward facing surface 523 that faces away from the base member 500 in the plane of the flange. There is an indent 525 between the widest point of the hooks 551 and the rest of the flange of the base member 500. There is a tab 524 that extends downwards from the lower surface at the end of the protrusion 550 furthest from the well 504. The protrusion 550 and the tab 524 are the male connecting feature. The tab 524 includes the outward end of the protrusion 521 which faces away from the base member in the plane of the flange. The tab 524 includes an inward facing surface 527 which is shown in FIG. 9C. The protrusion 550 and the tab 524 are shaped to be able to be slotted through a hole 510 of a second substantially identical base member 500 according to this embodiment. The hole 510 is surrounded by a region 529 of the lower surface of the flange. The hole 510 is surrounded by a region 531 (FIG. 9A) of the upper surface of the flange. The hole 510 is defined by an inner side wall 533 (FIG. 9B) of the flange. In order to insert the protrusion 550 and the tab 524 into a hole 510 of a second base member, the user must exert a pressure between the diagonal outward facing surface 523 of the hooks and the region 531 (FIG. 9A) surrounding the hole 510 on the upper surface of the flange. This will also exert a pressure between the end of the protrusion 521 and the region 531 surrounding the hole 510 on the upper surface of the flange. The diagonal outward facing surface 523 and the end of the protrusion 521 will flex slightly under the pressure, allowing the surfaces to pass through the hole 510.

[0071] As shown in FIG. 9C, once the protrusion 550 has been slotted through the hole 510 of the other base member 500, the tab 524 and the hooks 551 act to stop the protrusion 550 from coming out of hole 510. The inward facing surface 527 of the tab 524 rests against the region 529 of the lower surface of the flange surrounding the hole 510, which stops the protrusion 550 from coming out of the hole 510. The indent 525 of the flange of one base member is next to the inner side wall of the hole 533 (FIG. 9B). The surface 535 of the hooks (FIG. 9A) which faces towards the blister well of the first base member presses against the flange surrounding the hole on the lower surface of the base member 529, and stops the protrusion 550 from coming out of the hole 510. Once the male connecting feature (in this embodiment the protrusion 550) of one base member has been mechanically fastened to the female connecting feature (in this embodiment hole 510) of a second base member, the male connecting feature of the second base member can be mechanically fastened to the female connecting feature of a third base member. This can be done repeatedly to form an assembly of base members 500. FIG. 9C shows how 8 base members 500 according to this embodiment can be joined together by inserting the protrusion 550 of one base member 500 into the hole 510 of another base member 500, with the tab 524 and hooks 551 acting to hold each protrusion inside the hole 510 of each base member 500. Each base member 500 is joined to at least one other base member 500 at an approximately 90 degree angle. The base members 500 in the assembly are joined in this way so that half the base members 500 are parallel to each other and the other half are joined at a 90 degree angle to the first half.

[0072] Another example embodiment of the invention (FIGS. 10A to 10C) is similar to the first example embodiment of the invention but has some alternative features. A base member 600 includes a blister well 604 and a handle 606. Where a concave interior surface of the well 604 meets an upper surface of the base member 600 the blister well has a rim 601. The rim 601 of the blister well is enclosed by a sealing region 602. A flange extends out from the perimeter of the blister well 604 to the boundary of the base member 600. At one end of the base member 600 the flange extends out to form a handle 606. The base member 600 has a second well 611 which extends down from an upper surface of the handle 606 to form a concave upper surface and extends down from the lower surface of the handle 606 to form a convex lower surface. The concave upper surface of the second well 611 is the female connecting feature. FIG. 10A shows the concave upper surface of the second well 611. FIG. 10B shows a lower surface of the base member 600. A protrusion 612 extends down from the convex lower surface of the second well 611. The protrusion 612 is the male connecting feature. The protrusion 612 is shaped to be able to be pushed into the second well 611 of another base member 600 according to this embodiment and then be held there by an interference fit. FIG. 10C shows how the protrusion 612 of a first base member 600 slots into the second well 611 of a second base member 600. The interference fit between the protrusion 612 and the second well 611 holds the two base members 600 together. This can be done repeatedly to form an assembly of base members 600.

[0073] Another example embodiment of the invention (FIGS. 11A to 11C) is similar to the first example embodiment of the invention but has some alternative features. A base member 800 includes a blister well 804 and a handle 806. Where a concave interior surface of the well 804 meets an upper surface of the base member 800 the blister well has a rim 801. The rim 801 of the blister well is enclosed by a sealing region 802. A flange extends out from the perimeter of the blister well 804 to the boundary of the base member 800. The flange extends out from the perimeter of the blister well 804 to a curved edge 821 which is at a substantially equal distance from the perimeter of the blister well 804 all the way around the well 804. The flange extends out from the curved edge 821 to form a handle 806 on one side of the base member. The handle 806 is planar with the sealing region 802.

Four protrusions 860 extend downwards from the upper surface of the flange at approximately 90 degree intervals around an axis that runs vertically through the centre of the blister well 804. The protrusion 860 are the male connecting features. FIG. 11B shows the protrusions 860 extending downwards from the upper surface of the base member 800. The end of the protrusions 860 that is furthest from the upper surface of the base member 800 is hooked. FIG. 11C shows that when the well 804 of one base member 800 is slotted into the well 804 of a second base member 800 according to this example embodiment, the protrusions 860 fit over the curved edge 821 of the second base member in regions 861 that are slightly indented. Regions 861 are the female connecting features. The hook of the protrusions 860 acts to hold the protrusion in place and keep the two base members 800 joined together. This can be done repeatedly to form an assembly of base members.

[0074] Another example embodiment of the invention (FIG. 12) similar to the first example embodiment of the invention but has some alternative features. A base member 900 includes a blister well 904 and a handle 906. The base member 900 has a hole 910 extending through the thickness of the handle 906. The hole 910 is the female connecting feature. The hole is a slot, which is essentially rectangular in shape. The hole has a length 942 of 10.5mm and a width 940 of 1.0mm. The long side of the hole 910 is perpendicular to a central line running down the length of the base member. The hole 910 has a notch 946 positioned centrally along the width of the base member that extends a portion of one of the long sides of the slot. The notch has a length of 2.7mm and protrudes 1.1mm from the slot. The handle 906 includes a protrusion 950 which extends out in the plane of the flange. The protrusion 950 is the male connecting feature.

[0075] Whilst the present invention has been described and illustrated with reference to particular embodiments, it will be appreciated by those of ordinary skill in the art that the invention lends itself to many different variations not specifically illustrated herein.

[0076] Where in the foregoing description, integers or elements are mentioned which have known, obvious or foreseeable equivalents, then such equivalents are herein incorporated as if individually set forth. Reference should be made to the claims for determining the true scope of the present invention, which should be construed so as to encompass any such equivalents. It will also be appreciated by the reader that integers or features of the invention that are described as preferable, advantageous, convenient or the like are optional and do not limit the scope of the independent claims. Moreover, it is to be understood that such optional integers or features, whilst of possible benefit in some embodiments of the invention, may not be desirable, and may therefore be absent, in other embodiments.

[0077] This disclosure also includes the following clauses:

Clause 1 A hermetically sealed blister package for a contact lens, wherein the blister package includes a base member made of plastics material, and a sealing member joined to the base member to form a blister cavity arranged to hold an unworn contact lens and contact lens packaging solution;

the base member having an upper surface and a lower surface and including a blister well and a handle, the handle being provided by a flange that extends out from the blister well;
CHARACTERISED IN THAT
the flange includes a female connecting feature and a male connecting feature, the female connecting feature being located between a perimeter of the blister well and an edge of the flange, the male connecting feature being located outside of the perimeter of the blister well;
the female connecting feature on the base member is configured to interlock with a corresponding male connecting feature on a substantially identical base member to mechanically fasten the base member to the substantially identical base member to form a base member assembly.

Clause 2 A hermetically sealed blister package for a contact lens according to clause 1, wherein the base member has a weight from 0.4g to 0.72g.

Clause 3 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein the female connecting feature comprises a hole in the flange of the base member.

Clause 4 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein the female connecting feature is a hole that includes a notch at an edge of the hole.

Clause 5 A hermetically sealed blister package for a contact lens according to any preceding clause wherein the female connecting feature is located at a greater distance from the perimeter of the blister well than from a perimeter of the handle.

Clause 6 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein the male connecting feature comprises a clip, or a barb, or a combination thereof.

Clause 7 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein inserting the male connecting feature of one base member into the female connecting feature of a second substantially identical base member joins the two base members together in a specific orientation and prevents the male connecting feature from being removed from the female connecting feature.

Clause 8 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein the male connecting feature includes a key-shaped protrusion, wherein the key-shaped protrusion is configured to fit within a notch of a corresponding female connecting feature on a substantially identical second base member, wherein the key-shaped protrusion and the notch are configured such that when the key-shaped protrusion is inserted into a notch of a second base member, the second base member is oriented in a specific manner relative to the base member.

Clause 9 A hermetically sealed blister package for a contact lens according to any of clauses 1 and 2, wherein the female connecting feature is a concave inner surface of a second well and the male connecting feature is a convex exterior surface of the second well, and the female connecting feature interlocks with the corresponding male connecting feature on a substantially identical base member by an interference fit between the male and female connecting features.

Clause 10 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein the blister well has a rim, the rim of the blister well being enclosed on the upper surface of the base member by a sealing region.

Clause 11 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein the base member additionally includes three or more stabilising legs, the stabilising legs extending down from the lower surface of the base member and vertically aligned with the rim of the blister well.

Clause 12 A hermetically sealed blister package for a contact lens according to any preceding clause, wherein the base member includes at least two side tabs positioned on either side of the blister well, wherein the side tabs extend down from the upper surface of the base member.

Clause 13 A base member assembly including a plurality of base members from blister packages according to any preceding clause, wherein each base member is mechanically connected to one or more other base members in the assembly, wherein each mechanical connection is between the female connecting feature on one of the base members and a corresponding male connecting feature on another of the base members.

Clause 14 A base member assembly according to clause 13, wherein the base member assembly comprises at least 14 of the base members.

Clause 15 A base member assembly according to clause 13 or clause 14, wherein the base member assembly has a height of at least 15cm.

Clause 16 A method of manufacturing a packaged contact lens, comprising:

providing a base member of a blister package for a contact lens according to any preceding claim;
placing a contact lens into the blister well of the base member;
placing a volume of liquid contact lens packaging solution into the blister well of the base member;
sealing a sealing member to the sealing region of the base member; and
autoclaving the sealed contact lens blister package to sterilize the contact lens and the packaging solution.

Clause 17 A method of recycling the sealed blister package for a contact lens of any one of clauses 1-12, comprising:

removing the sealing member from the base member;
removing the contact lens from the blister well;
removing the liquid contact lens packaging solution from the blister well;
mechanically fastening the base member to a substantially identical base member by interlocking the female connecting feature on the base member with a corresponding male connecting feature on the substantially identical base member to form a base member assembly.

Clause 18 The method of clause 17, further comprising mechanically fastening additional base members to the base member assembly to form a base member recycling unit comprising at least 14 base members; and placing the base member recycling unit in a recycling receptacle.

Clause 19 The method of clause 17 or clause 18, further comprising mechanically fastening additional base members to the base member assembly to form a base member recycling unit having a height of at least 15cm; and placing the base member recycling unit in a recycling receptacle.

Claims

1. A hermetically sealed blister package for a contact lens, wherein the blister package includes a base member made of plastics material, and a sealing member joined to the base member to form a blister

cavity arranged to hold an unworn contact lens and contact lens packaging solution;

the base member having an upper surface and a lower surface and including a blister well and a handle, the handle being provided by a flange that extends out from the blister well;
the base member including a female connecting feature and a male connecting feature;
the female connecting feature on the base member being configured to interlock with a corresponding male connecting feature on a substantially identical base member to mechanically fasten the base member to the substantially identical base member to form a base member assembly;
CHARACTERISED IN THAT:

the flange is planar;
the planar flange includes the female connecting feature and the male connecting feature,
the female connecting feature comprises a hole in the flange located between a perimeter of the blister well and an edge of the flange and the male connecting feature is located outside of the perimeter of the blister well.

2. A hermetically sealed blister package for a contact lens according to claim 1, wherein the base member has a weight from 0.4g to 0.72g.

3. A hermetically sealed blister package for a contact lens according to any preceding claim, wherein the female connecting feature is a hole extending through the flange.

4. A hermetically sealed blister package for a contact lens according to any preceding claim, wherein the female connecting feature is a hole that includes a notch at an edge of the hole.

5. A hermetically sealed blister package for a contact lens according to any preceding claim wherein the female connecting feature is located at a greater distance from the perimeter of the blister well than from a perimeter of the handle.

6. A hermetically sealed blister package for a contact lens according to any preceding claim, wherein inserting the male connecting feature of one base member into the female connecting feature of a second substantially identical base member joins the two base members together in a specific orientation and prevents the male connecting feature from being removed from the female connecting feature.

7. A hermetically sealed blister package for a contact lens according to any preceding claim, wherein the male connecting feature is a protrusion, optionally a protrusion on the outer edge of the handle.

8. A hermetically sealed blister package for a contact lens according to any preceding claim, wherein the male connecting feature includes a rectangular-shape protrusion that has a tab extending from its side such that the protrusion appears key-shaped, wherein the key-shaped protrusion is configured to fit within a notch of a corresponding female connecting feature on a substantially identical second base member, wherein the key-shaped protrusion and the notch are configured such that when the key-shaped protrusion is inserted into a notch of a second base member, the second base member is oriented in a specific manner relative to the base member.

9. A hermetically sealed blister package for a contact lens according to any preceding claim, wherein the base member additionally includes three or more stabilising legs, the stabilising legs extending down from the lower surface of the base member and vertically aligned with the rim of the blister well.

10. A hermetically sealed blister package for a contact lens according to any preceding claim, wherein the base member includes at least two side tabs positioned on either side of the blister well, wherein the side tabs extend down from the upper surface of the base member.

11. A base member assembly including a plurality of base members, wherein each base member is made of plastics material, has an upper surface and a lower surface and includes a blister well and a handle, the handle being provided by a flange that extends out from the blister well, the base member including a female connecting feature and a male connecting feature, and wherein the female connecting feature on the base member interlocks with a corresponding male connecting feature on a substantially identical base member to mechanically fasten the base member to the substantially identical base member to form the base member assembly, so that each base member is thereby mechanically connected to one or more other base members in the assembly, and wherein each mechanical connection is between the female connecting feature on one of the base members and a corresponding male connecting feature on another of the base members;
CHARACTERISED IN THAT:

the flange is planar;
the planar flange includes the female connecting feature and the male connecting feature,
the female connecting feature comprises a hole

in the flange located between a perimeter of the blister well and an edge of the flange and the male connecting feature is located outside of the perimeter of the blister well.

12. A base member assembly according to claim 11, wherein the base member assembly comprises at least 14 of the base members.

13. A base member assembly according to claim 11 or claim 12, wherein the base member assembly has a height of at least 15cm.

14. A method of manufacturing a packaged contact lens, comprising:

providing a base member of a blister package for a contact lens according to any of claims 1-10;
placing a contact lens into the blister well of the base member;
placing a volume of liquid contact lens packaging solution into the blister well of the base member;
sealing a sealing member to the sealing region of the base member; and
autoclaving the sealed contact lens blister package to sterilize the contact lens and the packaging solution.

15. A method of recycling the sealed blister package for a contact lens of any one of claims 1-10, comprising:

removing the sealing member from the base member;
removing the contact lens from the blister well;
removing the liquid contact lens packaging solution from the blister well;
mechanically fastening the base member to a substantially identical base member by interlocking the female connecting feature on the base member with a corresponding male connecting feature on the substantially identical base member to form a base member assembly.

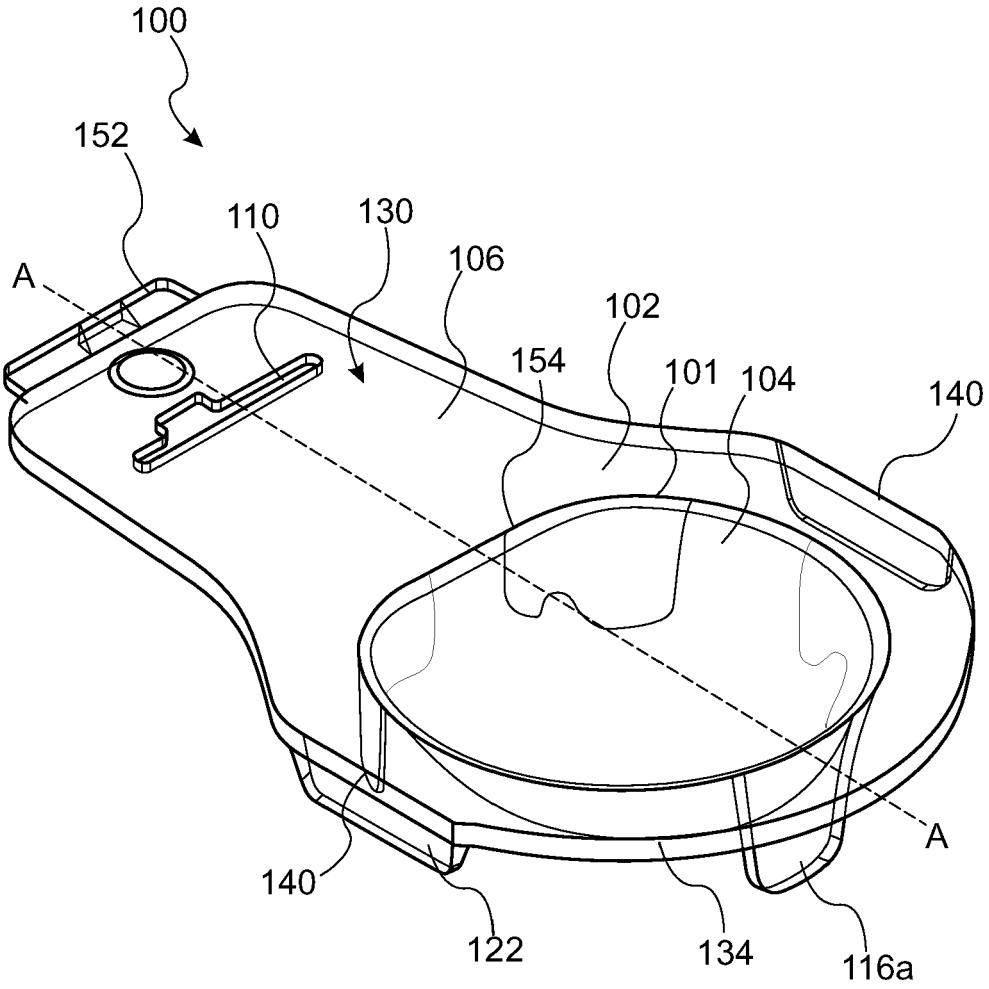

FIG. 1A

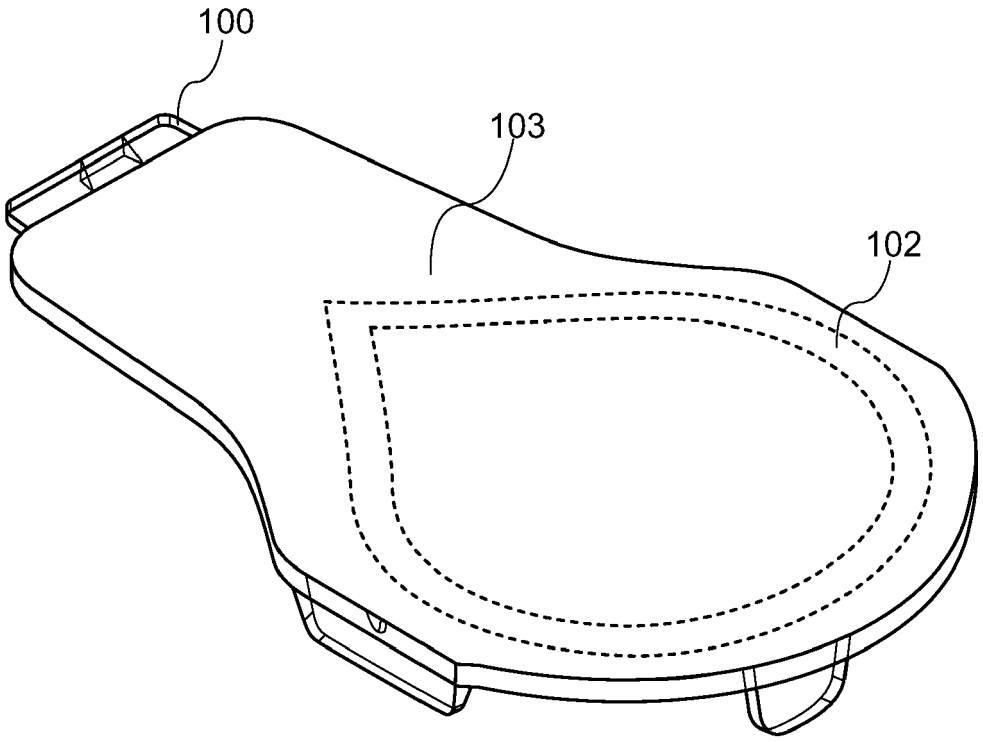

FIG. 1B

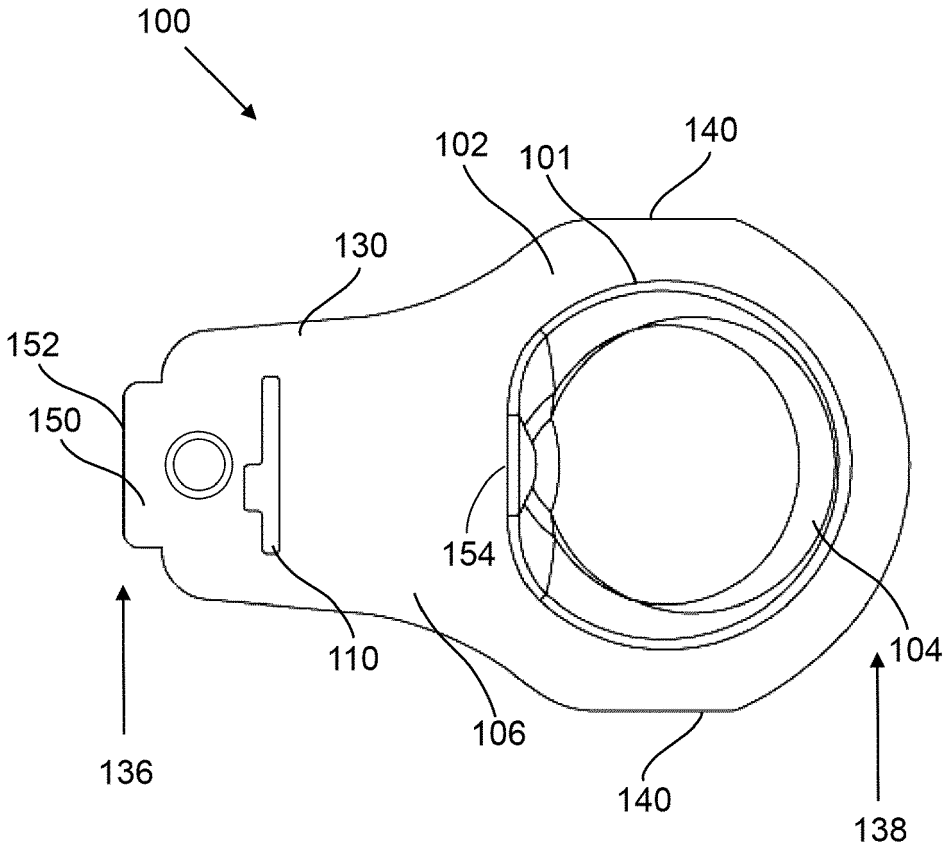

FIG. 2A

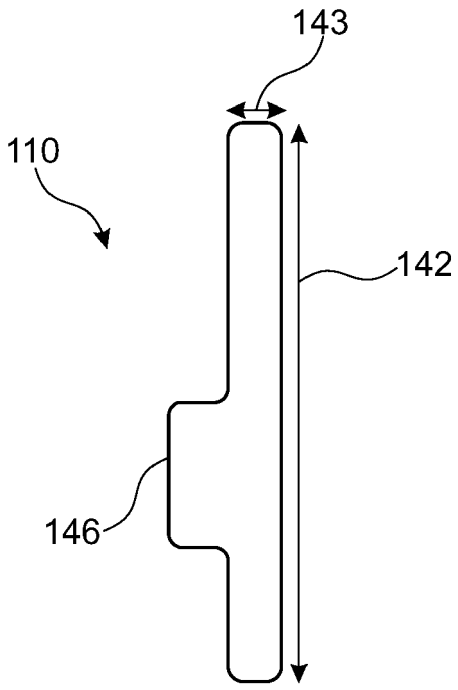

FIG. 2B

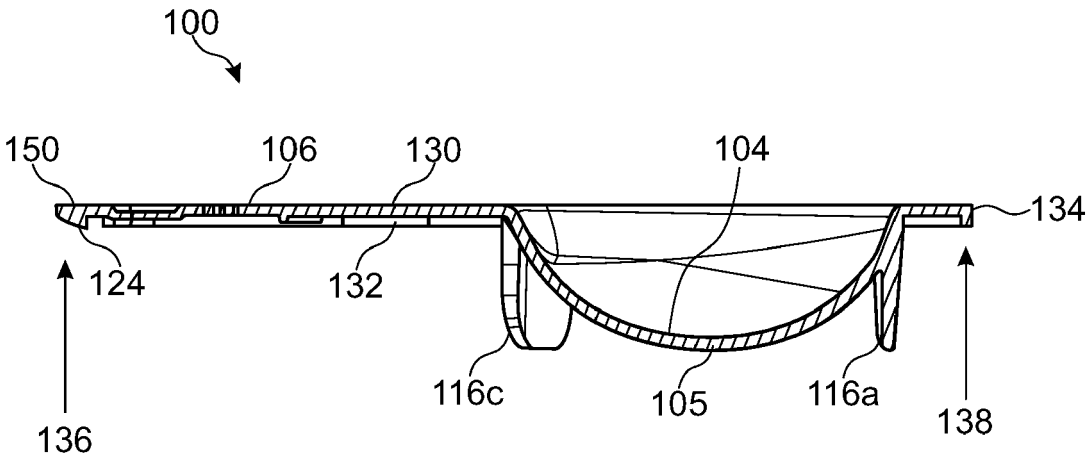

FIG. 3

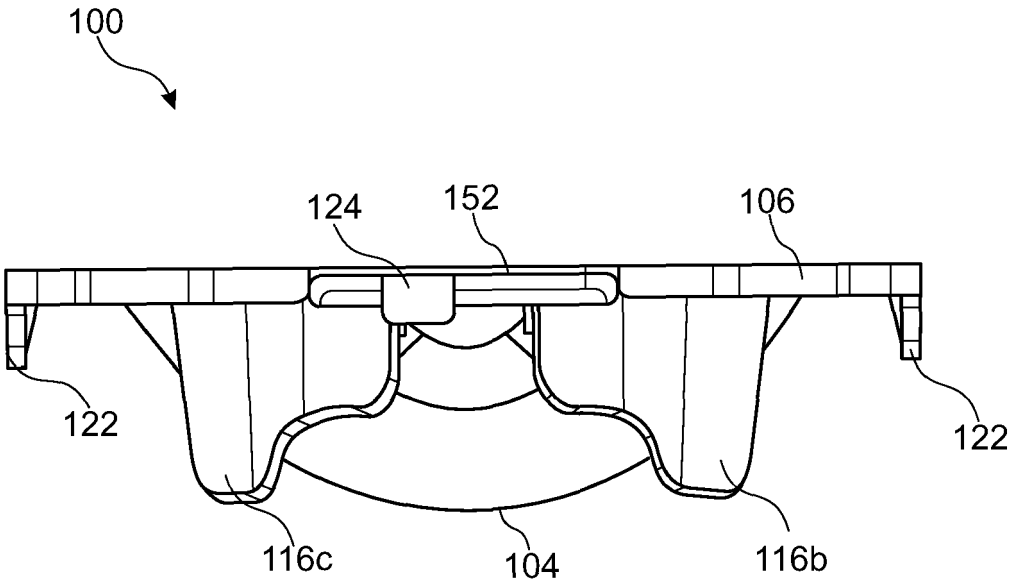

FIG. 4

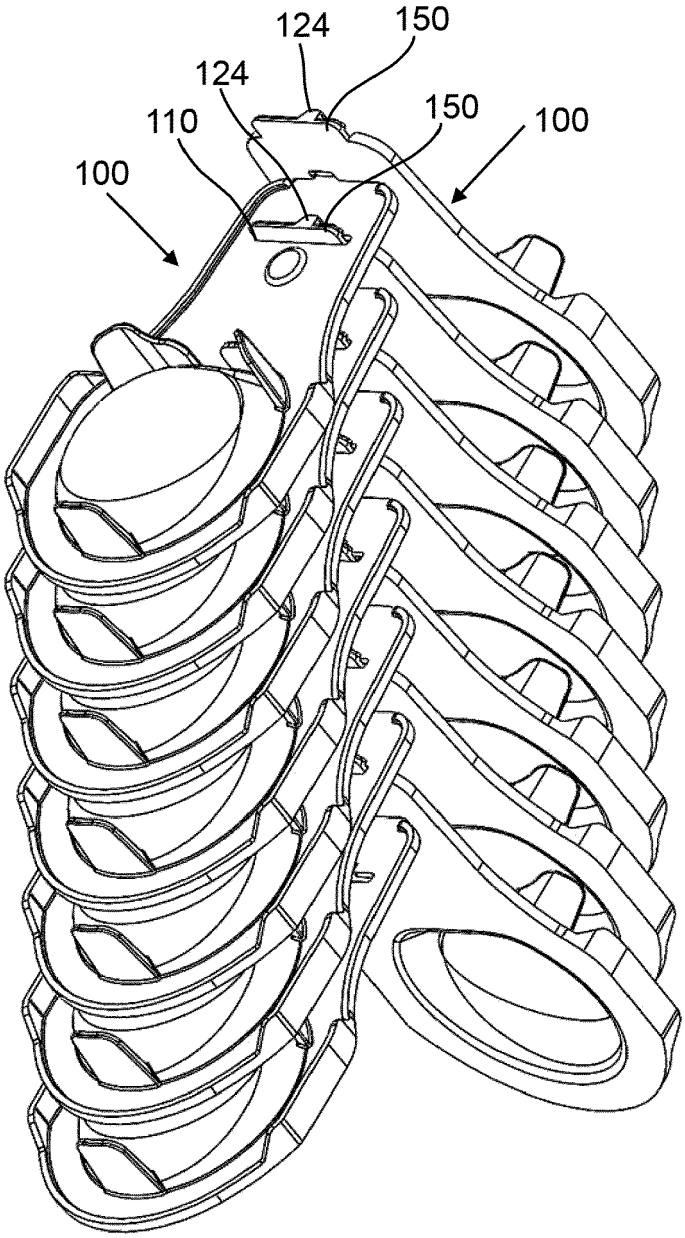

FIG. 5A

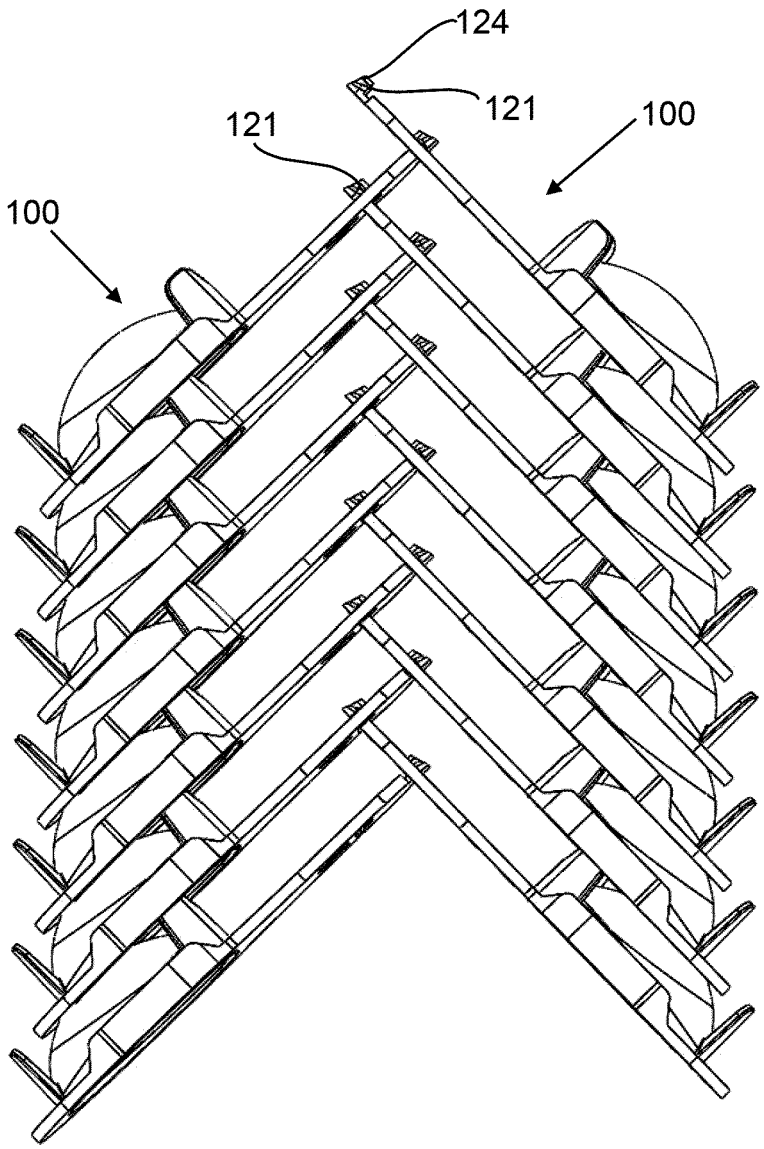

FIG. 5B

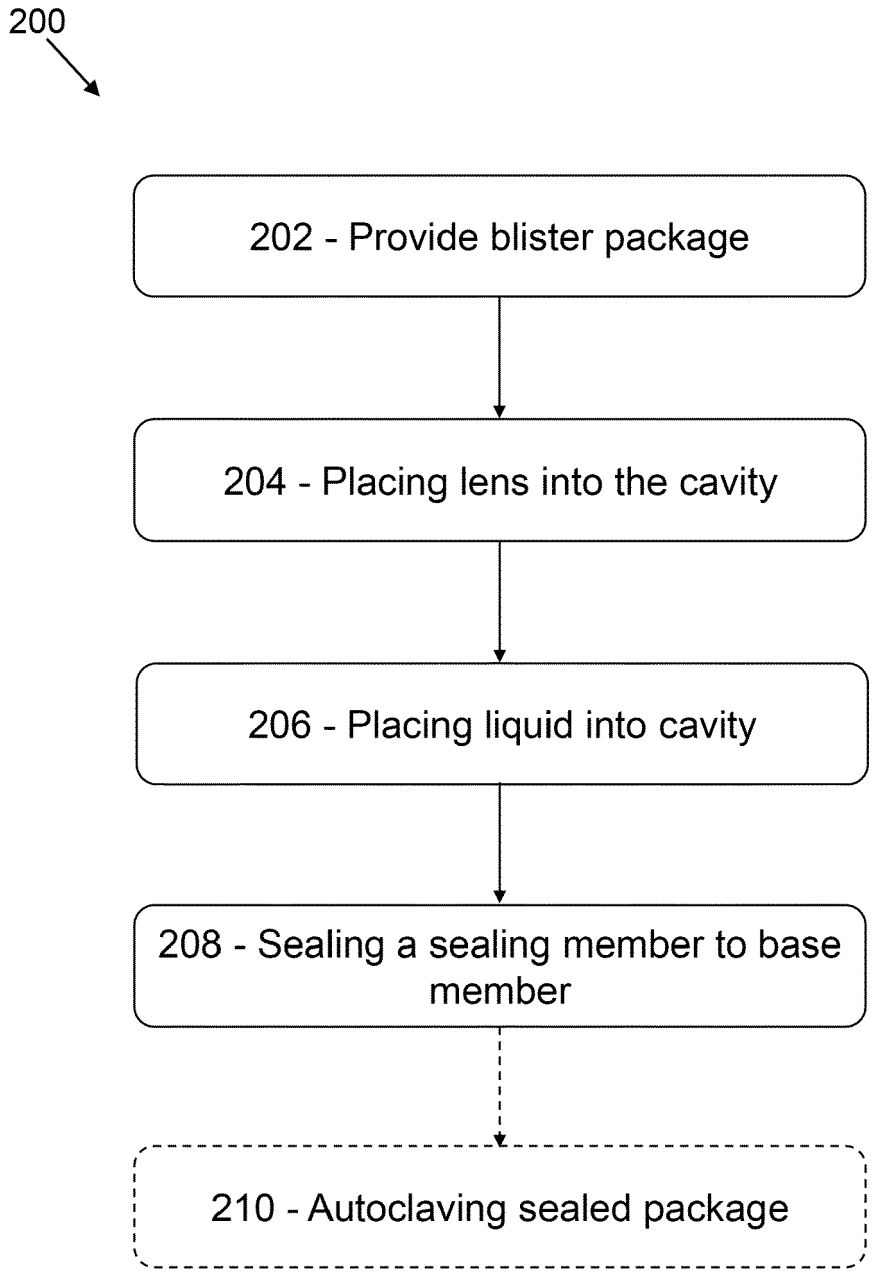
200
202 - Provide blister package
204 - Placing lens into the cavity
206 - Placing liquid into cavity
208 - Sealing a sealing member to base member
210 - Autoclaving sealed package

FIG. 6

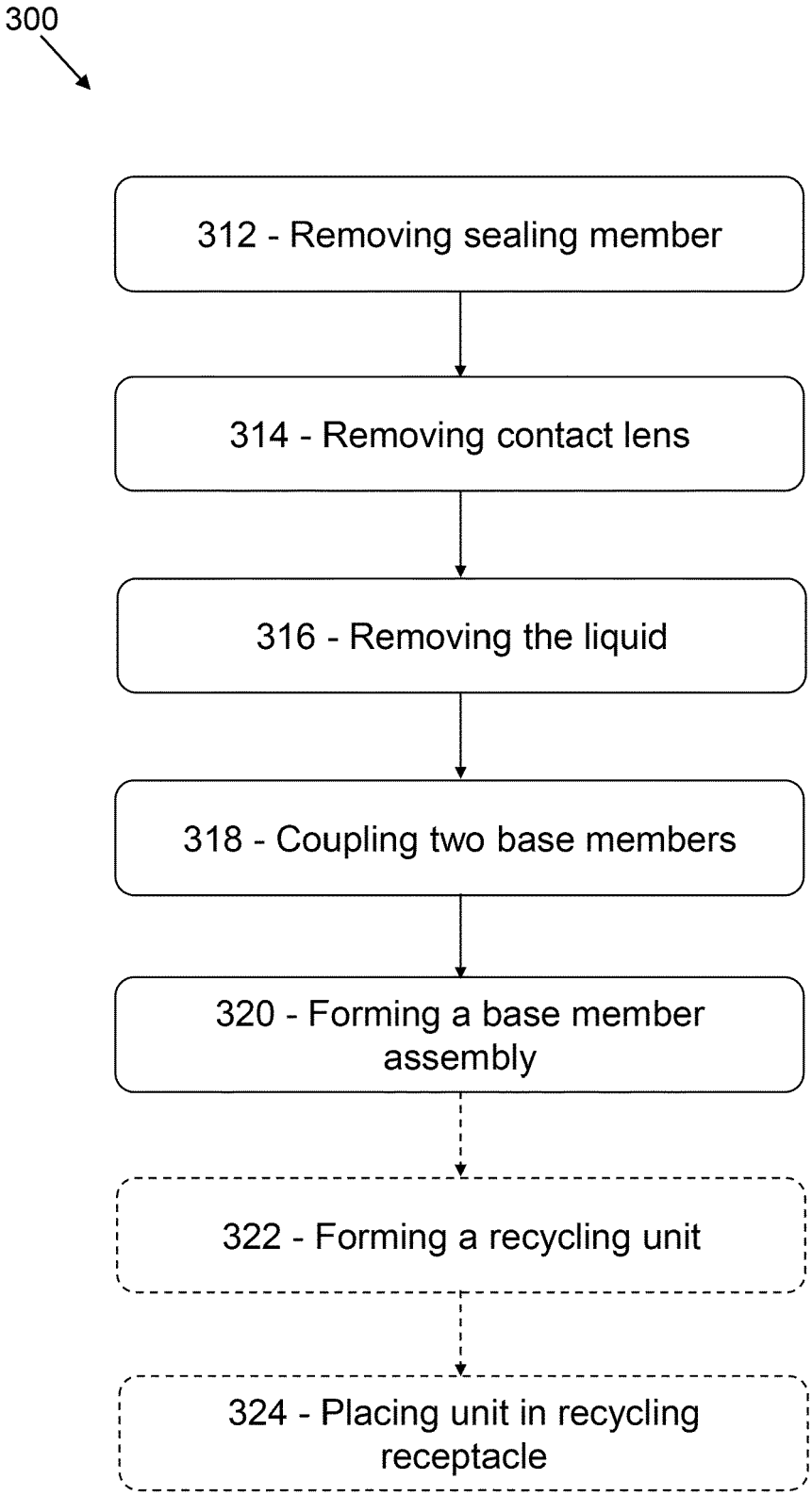
300
312 - Removing sealing member
314 - Removing contact lens
316 - Removing the liquid
318 - Coupling two base members
320 - Forming a base member assembly
322 - Forming a recycling unit
324 - Placing unit in recycling receptacle

FIG. 7

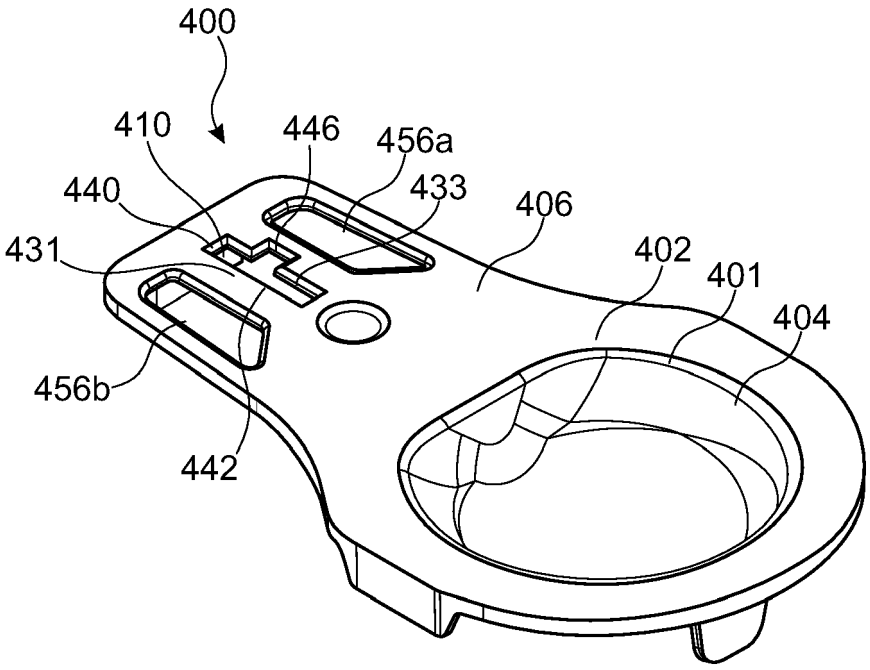

FIG. 8A

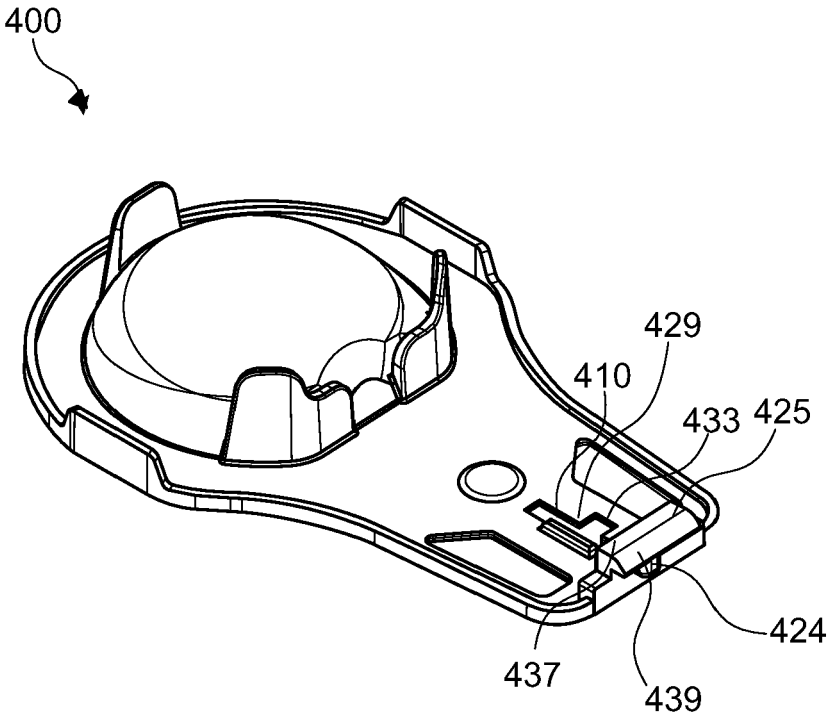

FIG. 8B

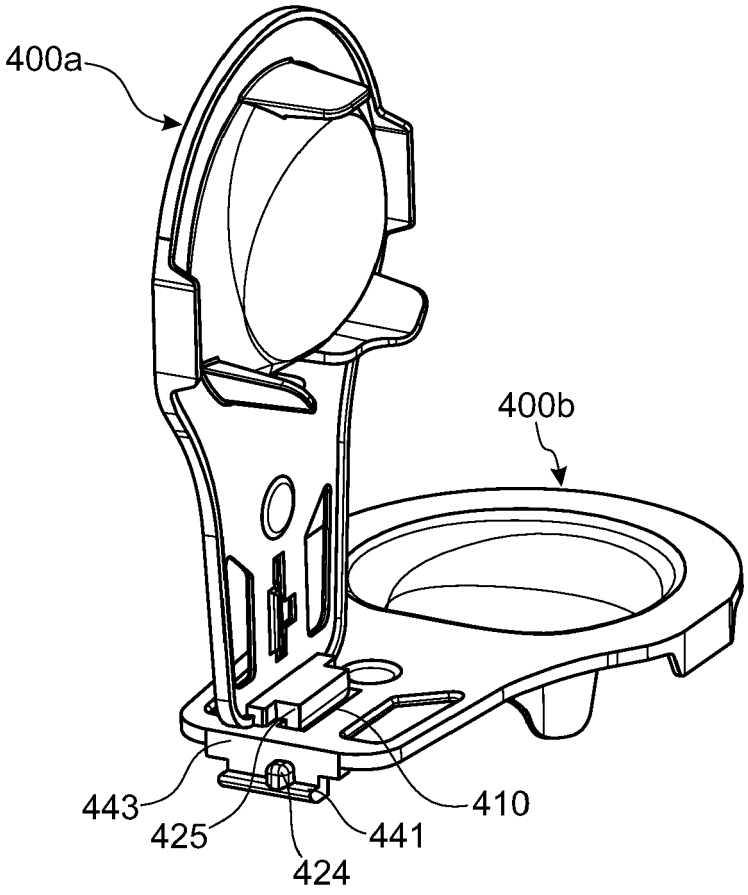

FIG. 8C

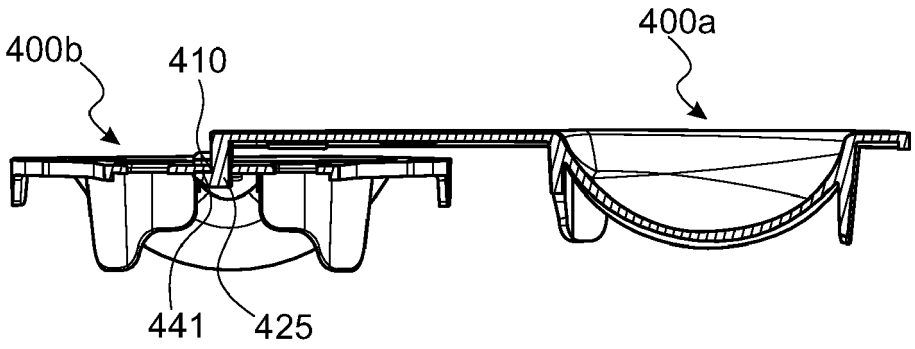

FIG. 8D

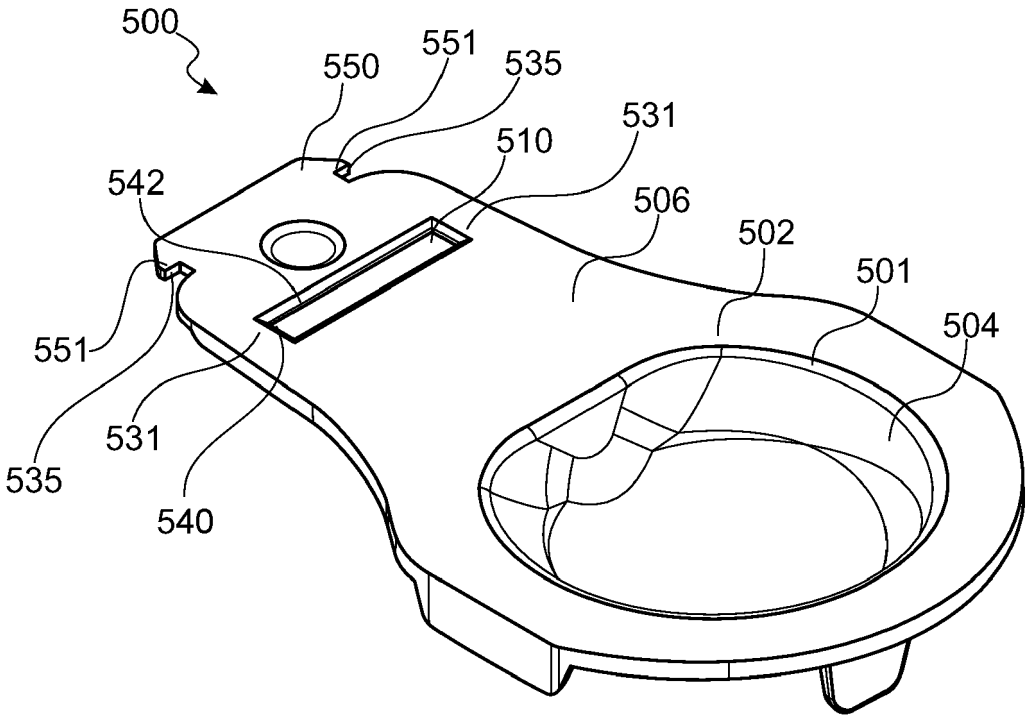

FIG. 9A

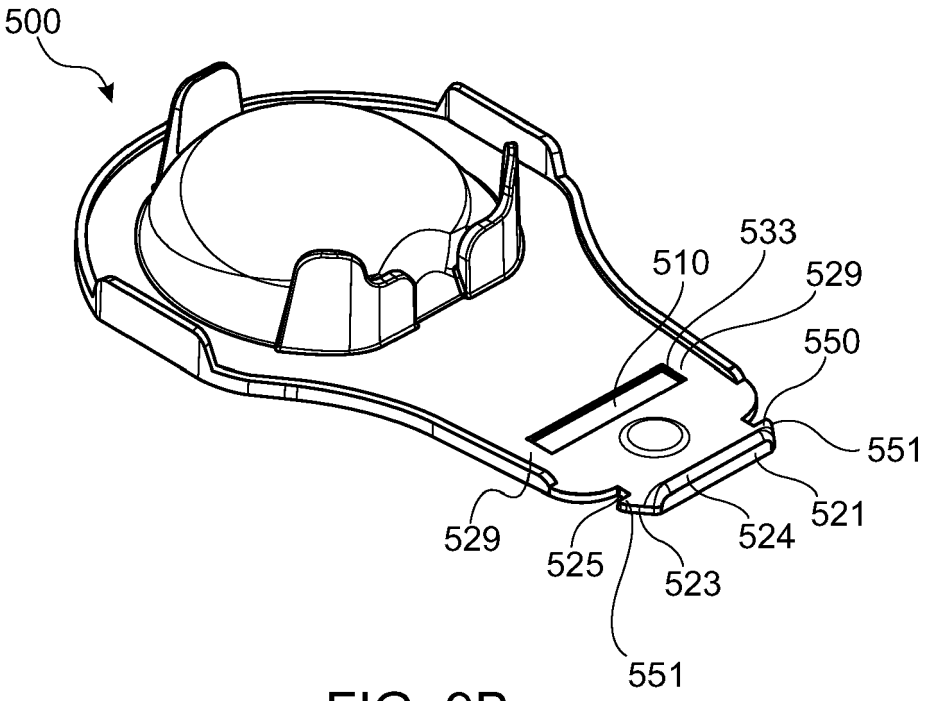

FIG. 9B

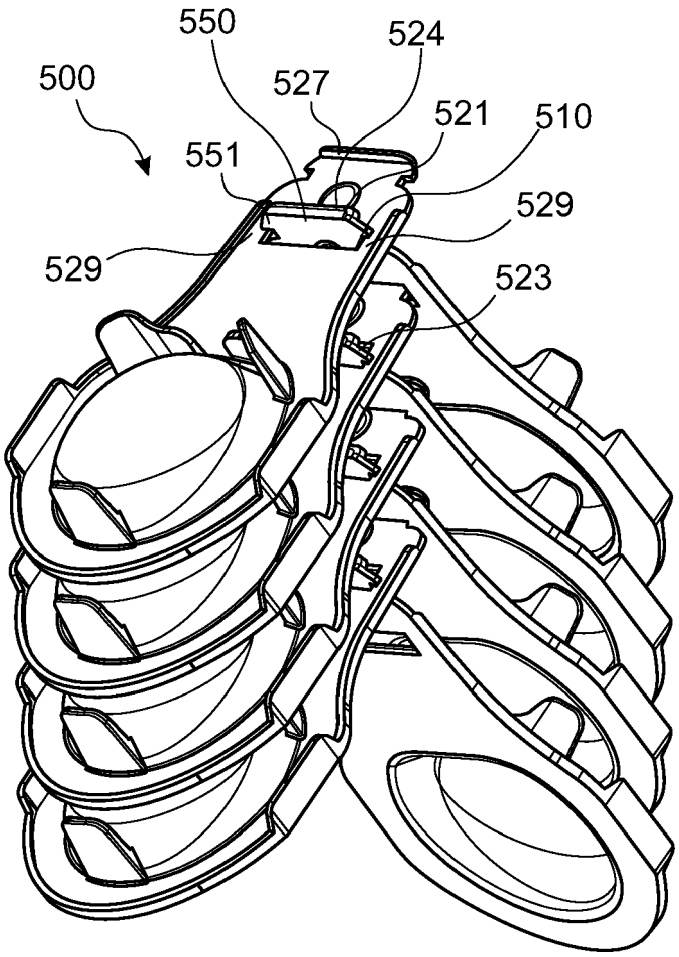

FIG. 9C

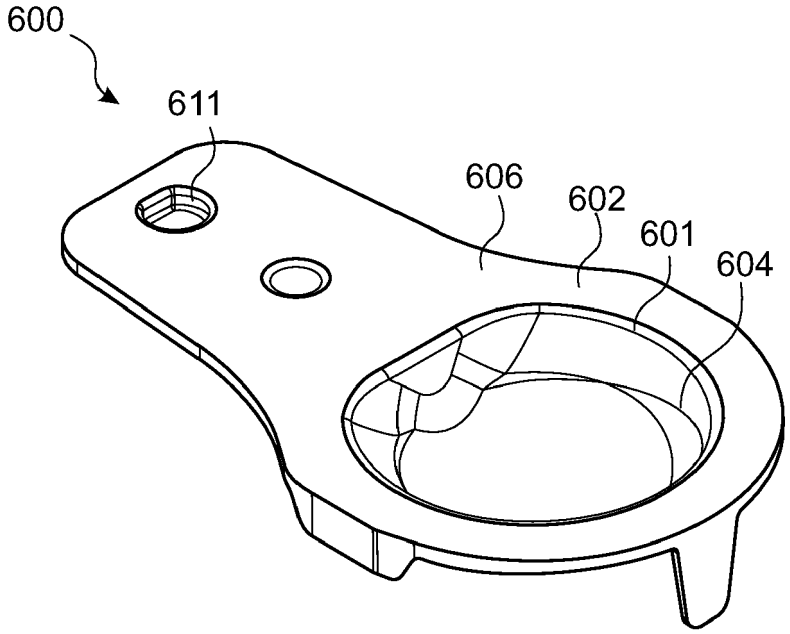

FIG. 10A

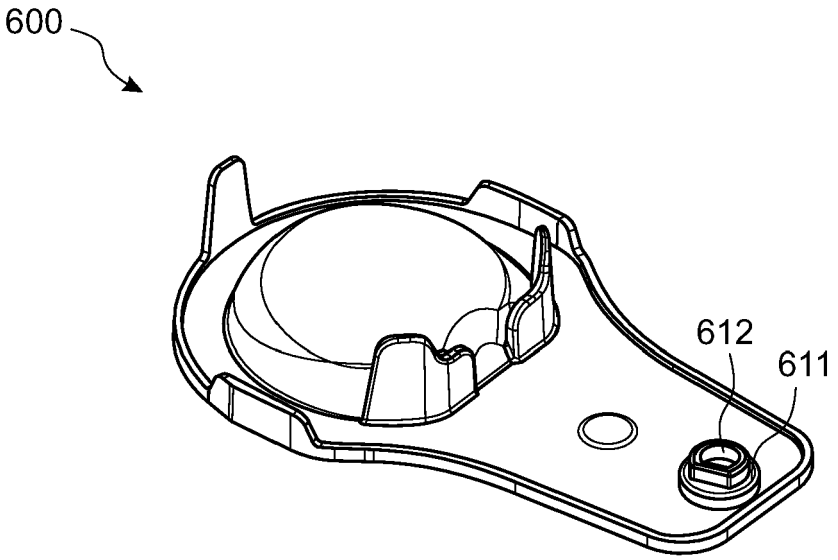

FIG. 10B

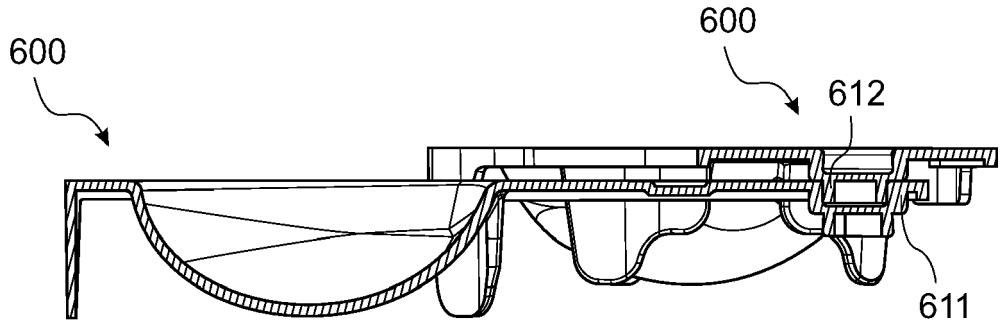

FIG. 10C

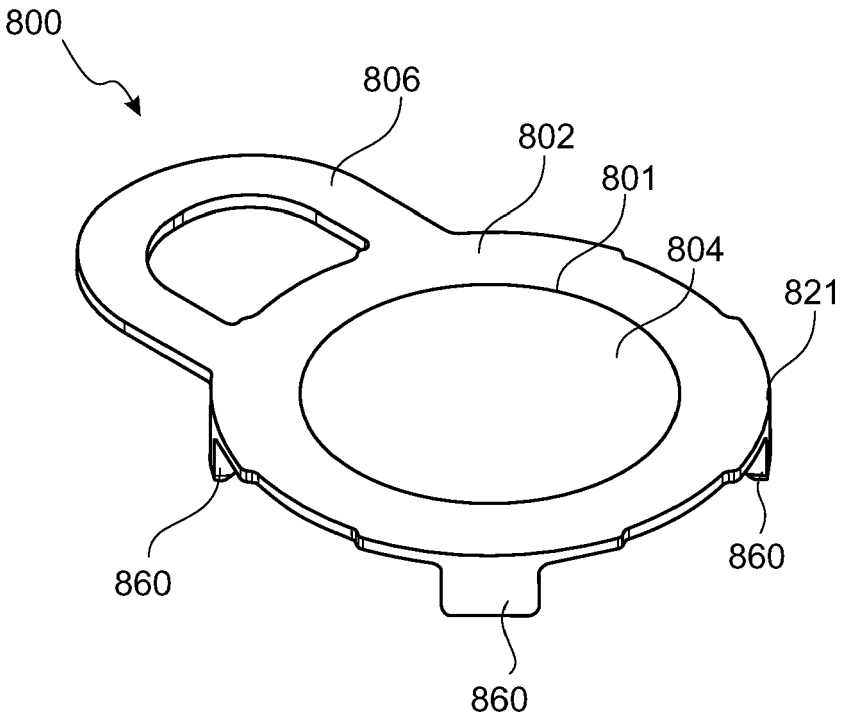

FIG. 11A

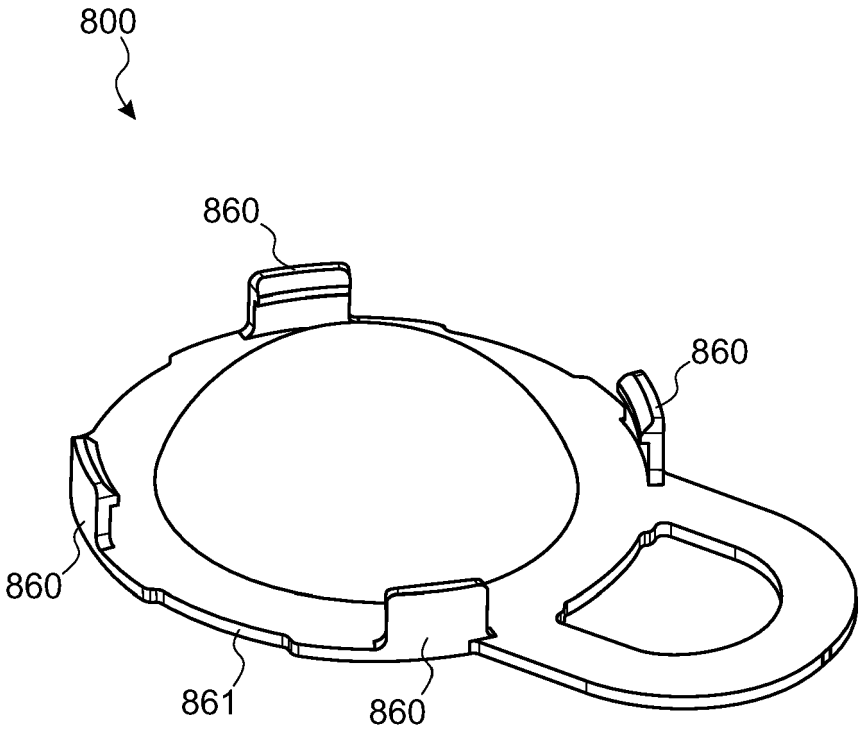

FIG. 11B

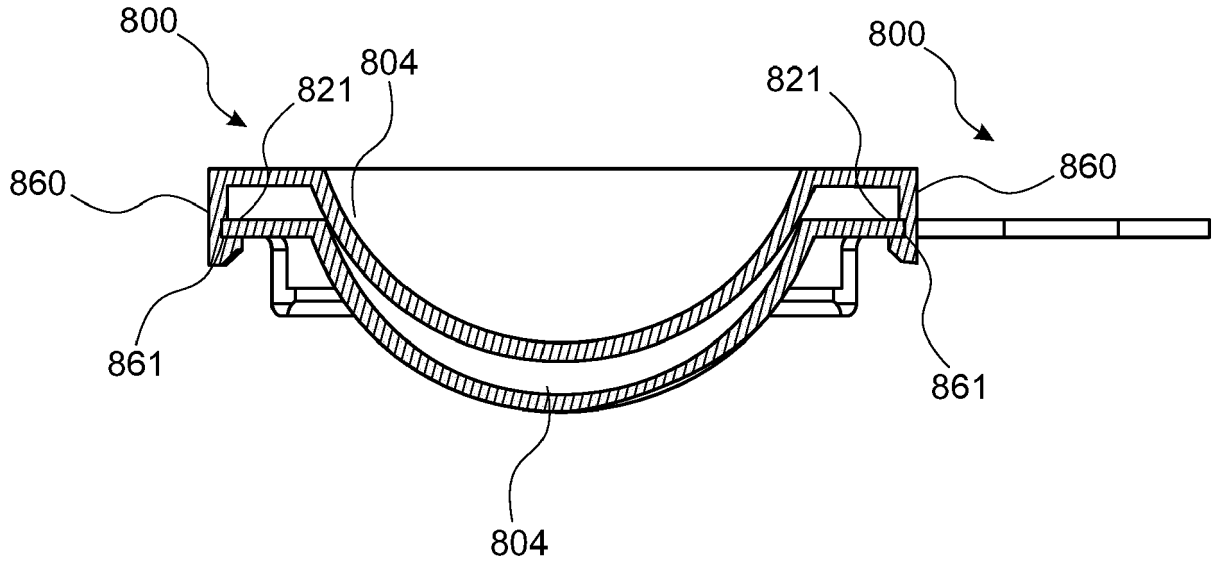

FIG. 11C

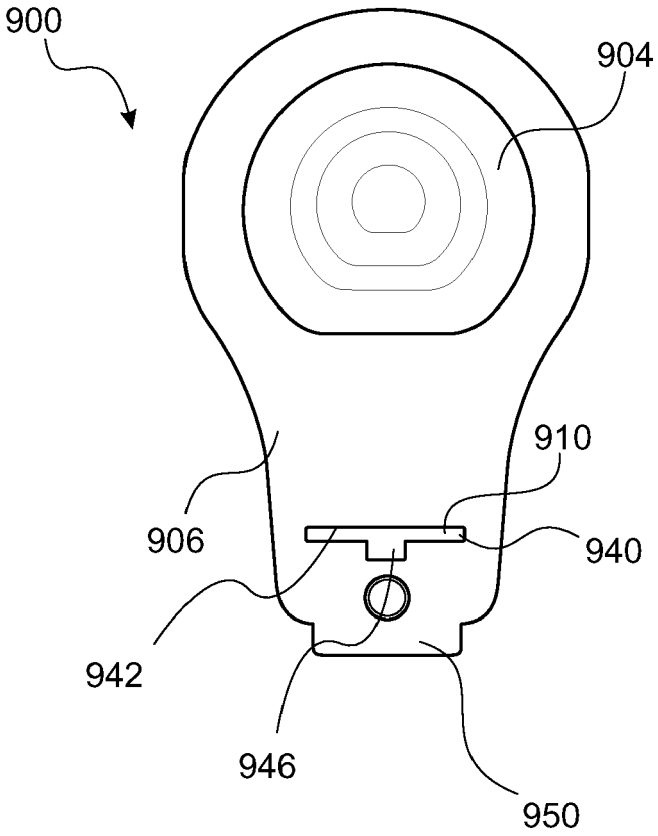

FIG. 12

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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	12 August 2024	Jervelund, Niels

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