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(54) **Hinged dual chamber storage container**

(57) A dual chamber hinged food storage container (100) is disclosed. The dual chamber food storage container (100) includes a first resealable container (102) and a second resealable container (108) joined by a hinge (114). The dual chamber food storage container (100) may assume a compact folded configuration for transportation and storage, as well as a convenient opened configuration for serving the food items stored in the dual chamber food storage container (100).

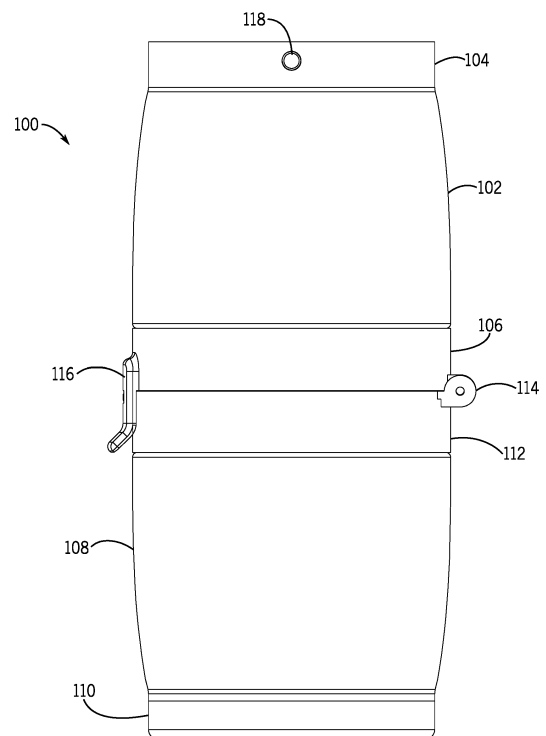


FIG. 1

Description

CROSS REFERENCE TO RELATED APPLICATION

[0001] This application claims priority from U.S. provisional patent application Ser. No. 61/974,341, entitled "Hinged Dual Chamber Storage Container" filed on April 2, 2014, the entirety of which is incorporated by reference herein.

FIELD OF THE INVENTION

[0002] Aspects of the present disclosure relate to re-sealable storage containers. In particular, the present disclosures relates to devices and methods for providing a hinged dual chamber storage container.

BACKGROUND OF THE INVENTION

[0003] The storage, transportation, and consumption of food products is an ongoing challenge in day-to-day life. A variety of food items such as soups, salads, sandwiches, pastas, stews, breads, cheeses, and other foods often have conflicting storage requirements. For example, soups and pastas may require special containers to stay warm, while salads and cheeses may require different containers to stay cool. Multiple separate containers may occupy a considerable amount of space during storage and transportation. In addition, these multiple containers and/or the associated lids may become separated or lost during transport. Further, additional containers or serving plates may be required to consume the food items, since many food storage containers are not typically designed for consumption of the food items.

[0004] A need exists for a multi-chamber food storage device capable of storing food items with different storage requirements in a compact and easily transported configuration. In addition, a need exists for a multi-chamber food storage device in which the multiple chambers are attached to prevent the loss of individual containers. A need further exists for a multi-chamber food storage device capable of serving the food items in a stable and aesthetically pleasing manner.

BRIEF SUMMARY OF THE INVENTION

[0005] In one aspect, a dual volume storage device is provided that includes: a first container with a first base and a first top; a second container with a second base and a second top; and a hinge connecting the first top and the second top. The first container and the second container may be situated side by side with the first base and the second base in a coplanar alignment when the device is in an opened configuration. The first container may be inverted about the hinge to contact the first top with the second top opposite to the second base when the device is in a folded configuration.

[0006] In this aspect, the device may also include a

latch that includes a first interlocking element attached to the first top and a second interlocking element attached to the second top. The first interlocking element and the second interlocking element may reversibly interlock mechanically to maintain the device in a folded configuration. The latch may be selected from a hook, a hasp, or a clip.

[0007] Also in this aspect, the device may include a handle attached at a handle fitting to either the first container or the second container. The handle may be free to rotate between a deployed position and a stowed position. The handle may be in the deployed position when the device is in a closed configuration, and the handle may be in the stowed position when the device is in the opened configuration. The handle may be attached to the first container at the handle fitting on the first base; and the handle may fit within a receptacle formed within the first base when the handle is in the stowed position. The handle may be attached to the second container at the handle fitting on the second top, the handle may be situated above the first base when the handle is in the deployed position; and the handle may be situated beside the second base when the handle is in the stowed position.

[0008] Additionally in this aspect, the first container may also include a first lid reversibly sealing a first opening formed within the first top and a second lid reversibly sealing a second opening formed within the second top. The first container and the first lid may enclose a first volume, and the second container and the second lid may enclose a second volume. The first lid may also include a first edge seal that interacts with a corresponding first receptacle formed within the first opening. The first lid may reversibly seal the first volume when the first lid is inserted within the first opening. The second lid may further include a second edge seal that interacts with a corresponding second receptacle formed within the second opening. The second lid may reversibly seal the second volume when the second lid is inserted within the second opening. The first edge seal and the second edge seal may be independently selected from: a threaded edge, a gasket edge, and a force-fit edge. The first receptacle and the second receptacle may be independently selected from: a threaded receptacle, a gasket receptacle, a force-fit receptacle. The first receptacle and second receptacle may be matched to the first edge seal and the second edge seal, respectively. The first container and the second container may form water-tight seals.

[0009] The first lid and/or the second lid may further include at least one vent forming a vented passage through the first lid and/or the second lid from an outer lid surface to an inner lid surface. The vent may be configured to equalize an internal pressure within the first container and/or second container to an ambient pressure if the internal pressure falls below the ambient pressure. The first lid and/or the second lid may further include an accessory retention fitting formed within the first lid

and/or second lid to retain one or more additional accessories comprising cutlery, seasonings, condiments, dressings, toppings, and any combination thereof.

[0010] The first container and/or the second container may be at least partially constructed from a transparent material. The first container and/or the second container may be constructed from thermally insulated materials.

[0011] The first container may also include a first collar attached over the first top and the hinge may be attached to the first collar at one end. The second container may further include a second collar attached over the second top, wherein the hinge is attached to the second collar at another end opposite to the first collar. A latch that includes a first interlocking element attached to the first collar and a second interlocking element attached to the second collar may reversibly interlock mechanically to maintain the device in the folded configuration.

[0012] In an additional aspect, a dual volume storage device is provided that includes: a first container with a first base and a first top; a second container with a second base and a second top; and a hinge connecting the first container and the second container. The first container and the second container may be situated side by side with the first base and the second base in a coplanar alignment when the device is in an opened configuration. The first container may be inverted about the hinge to situate the first top adjacent to the second top when the device is in a folded configuration. The device may further include a latch that includes a first interlocking element attached to the first top and a second interlocking element attached to the second top. The first interlocking element and the second interlocking element may reversibly interlock mechanically to maintain the device in a folded configuration. The device may also include a handle attached at a handle fitting to either the first container or the second container. The handle may be free to rotate between a deployed position and a stowed position. The handle may be in the deployed position when the device is in a closed configuration, and the handle may be the stowed position when the device is in the opened configuration.

[0013] In another aspect, a dual volume storage device is provided that includes: a first container, a second container, a hinge connecting the first top and the second top, a latch, and a handle. The first container includes: a first base; a first top opposite to the first base; a first collar attached over the first top, and a first lid reversibly sealing a first opening. The first collar may include a first lid receptacle defining the first opening. The first container may enclose a first volume when the first lid seals the first opening. The first lid may include: a first edge seal that may reversibly seal to the first lid receptacle when the first lid is inserted within the first opening; and an accessory retention fitting formed within the first lid to retain a cutlery accessory.

[0014] In this other aspect, the second container may include: a second base; a second top opposite to the second base; a second collar attached over the second

top, and a second lid reversibly sealing a second opening. The second collar may include a second lid receptacle defining the second opening and a pair of handle receptacles. The second container may enclose a second volume when the second lid seals the second opening. The second lid may include a second edge seal that reversibly seals to the second lid receptacle when the second lid is inserted within the second opening.

[0015] Also in this other aspect, the hinge may be attached to the first collar and to the second collar at opposite ends of the hinge. The latch may include a first interlocking element attached to the first collar and a second interlocking element attached to the second collar. The first interlocking element and the second interlocking element may reversibly interlock mechanically to maintain the device in a folded configuration. The handle may include a central grip situated between two handle arms. Each handle arm may end in a handle fastener opposite the central grip. The handle fasteners may be attached to the second container at the handle fittings of the second collar. Additionally in this other aspect, the first container and the second container may be situated side by side with the first base and the second base in a coplanar alignment when the device is in an opened configuration. The first container may be inverted about the hinge to contact the first collar with the second collar when the device is in the folded configuration. The handle may be configured to reversibly rotate about the handle fittings to permit movement of the central grip between a first grip position situated vertically above the first base when the device is in the folded configuration and a second grip position beside the second base when the device is in the opened configuration.

[0016] While multiple embodiments are disclosed, still other embodiments of the present disclosure will become apparent to those skilled in the art from the following detailed description, which shows and describes illustrative embodiments of the disclosure. As will be realized, this disclosure is capable of modifications in various aspects, all without departing from the spirit and scope of the present disclosure. Accordingly, the drawings and detailed description are to be regarded as illustrative in nature and not restrictive.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] The following figures illustrate various aspects of the disclosure.

FIG. 1 is a front view of a dual chamber storage container in a folded configuration in one aspect.

FIG. 2 is a right side view of a dual chamber storage container in a folded configuration in one aspect.

FIG. 3 is a left side view of a dual chamber storage container in a folded configuration in one aspect.

FIG. 4 is a top view of a dual chamber storage container in a folded configuration in one aspect.

FIG. 5 is a bottom view of a dual chamber storage container in a folded configuration in one aspect. 5

FIG. 6 is a front view of a dual chamber storage container in an opened configuration in one aspect.

FIG. 7 is a front view of a dual chamber storage container tilted slightly forward in an opened configuration in one aspect. 10

FIG. 8 is a front view of a dual chamber storage container tilted slightly forward in an opened configuration with lids removed in one aspect. 15

FIG. 9 is an exploded isometric view of a dual chamber storage container in one aspect. 20

FIG. 10 is an exploded isometric view of a first collar and a second collar of a dual chamber storage container in one aspect.

FIG. 11 is an isometric view of an interlocked first collar and a second collar of a dual chamber storage container in one aspect. 25

FIG. 12 is a front view of a dual chamber storage container in a folded configuration in another aspect. 30

FIG. 13 is a left side view of a dual chamber storage container in a folded configuration in another aspect.

FIG. 14 is a right side view of a dual chamber storage container in a folded configuration in another aspect. 35

FIG. 15 is a front view of a dual chamber storage container in an opened configuration in another aspect. 40

FIG. 16 is a front view of a dual chamber storage container tilted slightly forward in an opened configuration in another aspect. 45

FIG. 17 is a front view of a dual chamber storage container tilted slightly forward in an opened configuration with lids removed in another aspect.

FIG. 18A is a top view of a lid for a dual chamber storage container tilted slightly forward in another aspect. 50

FIG. 18B is a top view of a lid for a dual chamber storage container tilted slightly forward with a folding spoon stowed within a fitting formed in the lid in another aspect. 55

FIG. 19A is a bottom view of a lid for a dual chamber storage container in one aspect.

FIG. 19B is a bottom view of a lid for a dual chamber storage container that includes a vacuum relief valve in one aspect.

FIG. 20A is a cross-sectional view of the lid for a dual chamber storage container in another aspect that includes a vacuum relief valve taken at 20A-20A of FIG. 19B.

FIG. 20B is an exploded view of the lid for a dual chamber storage container illustrated in FIG. 20A.

FIG. 21A is a cross-sectional view of the lid for a dual chamber storage container that includes a vacuum relief valve in an additional aspect.

FIG. 21B is an exploded view of the lid for a dual chamber storage container illustrated in FIG. 21A view from above.

FIG. 21C is an exploded view of the lid for a dual chamber storage container illustrated in FIG. 21A view from below.

[0018] Corresponding reference characters and labels indicate corresponding elements among the views of the drawings. The headings used in the figures should not be interpreted to limit the scope of the claims.

DETAILED DESCRIPTION

[0019] Various aspects of the present disclosure include a dual chamber storage device that includes two reversibly sealable containers. The tops of the two containers are joined by a hinge in one aspect such that the two containers may assume a folded configuration in which one container is inverted such that the top of the one container rests upon the top of the other container. The two containers may also be rotated away from each other and rest side by side upon a planar surface such as a table in an opened configuration. The dual chamber storage device may further include a handle to conveniently carry the dual chamber storage device in the folded configuration, as well as a latch to hold the containers in the folded configuration during transportation and/or storage.

[0020] The containers may each include reversibly sealable lids that may be unsealed to access the contents of each container as needed when the device is in an opened configuration. For example, the one container may contain a cold food item such as a salad and the other container may contain a hot food item such as a soup. Depending on the intended use, each container may independently configured. One or both containers may be at least partially constructed using a transparent

material to provide the capability of visually identifying the contents of one or both containers in one aspect. In another aspect, one or both containers may include insulative materials to maintain the desired temperature of the contents of one or both containers. The containers may be identically configured or each container may include a unique combination of transparency, insulation, as well as additional design features described herein below.

[0021] Detailed descriptions of various aspects of the dual chamber storage container are provided herein below.

I. Dual Chamber Storage Device

[0022] FIG. 1 is a side view of the dual chamber storage device 100 in one aspect. The device 100 may include a first container 102 and a second container 108 connected by a hinge 114. The first container 102 includes a first top 106 and a first base 104, and the second container 108 includes a second top 112 and a second base 110. In a folded configuration, as illustrated in FIG. 1, the first container 102 is inverted such that the first top 106 contacts the second top 112. In this folded configuration, the containers 102 and 108 are situated in a compact arrangement, thereby reducing the space occupied by the device 100 during transportation and storage. The device 100 may further include a hinge 114 connecting the first top 106 and the second top 112, as well as a latch 116 reversibly attaching the first top 106 and the second top 112 to maintain the device 100 in the folded configuration.

[0023] The first container 102 and the second container 108 may be constructed out of any suitable material without limitation including, but not limited to, wood, metal, plastics, ceramics, glass, and any other suitable material known in the art. In one aspect, at least a portion of the first container 102 and/or the second container 108 may be constructed from a transparent or opaque material including, but not limited to, a clear or tinted plastic material, enabling a user to view the contents of the first container 102 and/or the second container 108.

[0024] In other aspects, the first container 102 and/or the second container 108 may include insulative materials and/or insulative elements. Any known insulative material or insulative element may be used within limitation. Non-limiting examples of insulative materials include Styrofoam, fiberglass, thermally non-conductive polymers such as silicone, and any other suitable known insulative material. Non-limiting examples of insulative elements include double walls enclosing an evacuated volume, double walls enclosing an insulative material, and any other suitable insulative element known in the art.

[0025] FIG. 2 is a right side view of the dual chamber storage device 100 illustrated in FIG. 1. The hinge 114 may include a first hinge element 114A attached to the first top 106 and a second hinge element 114B attached to the second top 114B. Any known hinge device may

be used without limitation. In various aspects, the hinge 114 permits rotation of the first container 102 relative to the second container 108 about a hinge line 115 aligned with a portion of the first top 106 and the second top 112.

In these various aspects, the hinge 114 may permit rotation of the first container 102 relative to the second container 108 within a range corresponding to the rotation needed to transition the device 100 from the folded configuration as illustrated in FIG. 2 to an opened configuration as illustrated in FIG. 6. The opened configuration is characterized by a side by side arrangement with the first base 104 and the second base 110 situated in an essentially coplanar alignment. In various aspects, the first base 104 and second base 104 of the device 100A in this aspect may each include a relatively large flattened region as illustrated in FIG. 15. As a result, the first container 102 and second container 108 are relatively stable when situated on an essentially planar surface such as a table top during use in the opened configuration.

[0026] Referring again to FIG. 2, the hinge 114 in one aspect may be a barrel hinge. In this aspect, the hinge 114 may include a first hinge element 114A attached to the first top 106 and a second hinge element 114B attached to the second top 112. The first hinge element 114A and the second hinge element 114B may be cylindrical sections that include gaps that permit the intermeshing of the hinge elements 114A and 114B and subsequent joining by a fastening element (not shown). The first hinge element 114A and the second hinge element 114B may have any number of gaps and cylindrical segments without limitation in this aspect. In one non-limiting example, the first and second hinge element 114A and 114B may each include a single segment with no gaps. In another non-limiting example, the first hinge element 114A may include a single cylindrical element meshing between a corresponding pair of cylindrical elements making up the second hinge element 114B, as illustrated in FIG. 2.

[0027] Any known hinged fastening element may be used to join the cylindrical sections 114A and 114B without limitation, so long as the hinged fastening element permits the rotation of the hinge about the hinge line 115. In one example, the fastening element may be a hinge pin inserted through the aligned lumens within the cylindrical sections 114A and 114B. In another non-limiting example, the fastening element may include protrusions from one cylindrical section 114A including, but not limited to cylindrical or hemispherical protrusions that fit closely within corresponding depressions formed within the other cylindrical element 114B.

[0028] In yet another aspect, the hinge 114 may comprise one or more continuous strips of flexible material (not illustrated) extending from the first container 102 to the second container 108 that deform to allow the rotation of the first container 102 relative to the second container 108. In one aspect, the continuous strip may be formed from a highly flexible material including, but not limited

to, a fabric such as nylon or canvas, or a polymer. In another aspect, the continuous strip may be formed as a thicker strip with a reduced-thickness section situated along the hinge line 115 to permit the preferential bending of the strip at the reduced-thickness section.

[0029] FIG. 3 is a left side view of the device 100 illustrated in FIG. 1 and FIG. 2, providing a frontal view of the latch 116. In various aspects, the latch 116 may include a first interlocking element 116A attached to the first top 106 and a second interlocking element 116B attached to the second top 112. The first locking element 116A and second interlocking element 116B may include reversibly intermeshing features that enable the latch 116 to reversibly fasten the first top 106 to the second top 112 to maintain the device 100 in the folded configuration. These reversibly intermeshing features may also reversibly release the first top 106 and the second top 112 from one another to permit the rotation of the first container 102 relative to the second container 108 about the hinge 114 to transition the device 100 from the folded configuration to the opened configuration.

[0030] The latch 116 may include any known latching device without limitation including, but not limited to: a hasp, a sliding bolt, a hook, Velcro strips, magnets, clips, and any other latching device known in the art. In one aspect, the latch 116 may be a deformable clip as illustrated in FIG. 3. In this aspect, the deformable clip 116 may include a clip 116A containing a feature such as a projection, a depression, or a hole as illustrated in FIG. 3. The clip 116A may be attached to the second top 112 or to the first top 106, as illustrated in FIG. 3. The feature of the clip 116A may mechanically interlock with a corresponding feature 116B including, but not limited to, a depression or a projection shaped to mechanically interlock with the feature of the clip 116A. The corresponding feature 116B may be attached to the first top 102 or the second top 112 as illustrated in FIG. 3.

[0031] FIG. 4 is a top view of the device 100 illustrated in FIG. 1. The first base 104 may include at least a portion that is essentially planar in one aspect to allow the first container 102 to rest on a planar surface, such as a table top, when the device 100 is in an opened configuration. FIG. 5 is a bottom view of the device 100 illustrated in FIG. 1. As illustrated in FIG. 5, at least a portion of the second base 110 may include a relatively flat region 502 in this one aspect to contact the essentially planar surface such as a table top during storage or use of the device 100 in either the opened configuration (see FIG. 6) or the folded configuration (see FIG. 1).

[0032] FIG. 6 is a front view of the device 100 illustrated in FIG. 1, with the device 100 in an opened configuration. As illustrated in FIG. 6, the first container 102 may be rotated relative to the second container 108 to situate the containers 102 and 108 in a side by side arrangement with the first base 104 and the second base 110 situated in an essentially coplanar alignment. This coplanar alignment allows the containers 102 and 108 to rest on an essentially planar surface, such as a table top, in a rela-

tively stable manner. The containers 102 and 108 remain attached at the hinge 114 in the opened configuration.

[0033] The first container 102 and the second container 108 may incorporate the first top 106 and second top 112 as an integrated structure with the rest of the containers 102 and 108, or the first top 106 and second top 112 may be provided in the form of a first collar 904 and second collar 908 as illustrated in FIGS. 9 - 11. In these various aspects, the first collar 904 may fit over a collar fitting 906 formed at the upper end of the first container 102. Similarly, the second collar 908 may fit over a second collar fitting 912 formed at the upper end of the second container 108. In these aspects, the collars 904 and 908 may define the tops 106 and 112 of the containers 102 and 108, respectively. In addition, the elements of the hinge 114 and the latch 116 may be attached to the collars 904 and 908, as illustrated in FIG. 10 and FIG. 11.

[0034] FIG. 7 is a front view of the device 100 in an opened configuration as illustrated in FIG. 6, with the device tilted slightly forward to view the first top 106 and the second top 112. In an aspect, the first top 106 and the second top 112 may further include a first lid 702 and a second lid 704. The first lid 702 may fit within a first opening 806 formed within the first top 106, illustrated in FIG. 8. The second lid 704 may fit within a second opening 808 formed within the second top 112, also illustrated in FIG. 8. The first container 102 and first lid 702 resealably enclose a first volume 802 and the second container 108 and second lid 704 resealably enclose a second volume 804. FIG. 16 is an illustration of the device 100A in the opened configuration in another aspect illustrating the first lid 702 and the second lid 704 sealing the first volume 802 and second volume 804, respectively. The first volume 802 and second volume 804 in this other aspect are illustrated in FIG. 17. Any known means of sealing a container may be included in the first container 102 and first lid 702 as well as the second container 108 and the second lid 704. In FIG. 9, an exploded view of the device 100 illustrated in FIG. 1, the first lid 702 may include a first edge seal 906 and the second lid 704 may include a second edge seal 910 that interact with corresponding features within the first opening 806 and the second opening 808, respectively. The edge seals 906 and 910 may be any known sealing edge without limitation including a threaded edge, a gasket edge, or a force-fit edge. The openings 806 and 808 may include sealing features corresponding to the sealing edges 906 and 910. In one aspect, the sealing edges 906 and 910 may be selected independently.

[0035] In various aspects, the seals formed between the lids 702 and 704 and the containers 102 and 108 may be water-tight to minimize leakage of the contents of the containers 102 and 108 during use. In an aspect, the first container 102 and/or second container 108 may be sealed in an airtight manner depending on the intended use of the device 100.

[0036] In one aspect, illustrated in FIG. 9, the first sealing edge 906 may be a threaded edge that meshes with

corresponding threads formed within the first opening 806. In another aspect, the first sealing edge 906 may be a gasket edge that fits within a depression formed within the first opening 806 to effectuate a seal when the first lid 702 is inserted within the first opening 806. In yet another aspect, the first sealing edge 906 may be a force-fit edge contoured to fit closely with the corresponding contour within the first opening 806 to effectuate a seal when the first lid 702 is inserted within the first opening 806. In various aspect, the second sealing edge 910 may be independently selected from any of the aspects of the first sealing edge 906 described previously herein.

[0037] Referring to FIG. 18A the lid 702/704 may include access features including, but not limited to, inset handles 1804 to facilitate the sealing and unsealing of the first and second containers 102/108 (not illustrated) in various aspects. In various other aspects, the lids 702/704 may incorporate clips, pockets, compartments, and/or any other additional feature to retain additional accessories including, but not limited to, cutlery such as a fork, a knife, a spoon, and/or a spork as well as one or more seasonings, condiments, dressings, toppings, and any other accessory appropriate for use with the device 100. In one aspect, illustrated in FIG. 18B, the outer lid surface 1802 of the lid 702/704 may include an accessory retention fitting 1806 configured to retain a cutlery item including, but not limited to, a folding spork 1808.

[0038] In another aspect, the first lid 702 and/or second lid 704 may be unvented. Referring to FIG. 19A, the inner surface 1902 of the lid 702/704 may form a continuous surface extending across the entire extent of the opening 806/808 of the container 102/108. In an additional aspect, the first lid 702 and/or second lid 704 may be vented to equalize an internal pressure of the volume 802/804 within the container 102/108 with the ambient pressure outside of the container 102/108.

[0039] Referring to FIG. 19B, in this additional aspect the lid 702/704 may further include a vent 1904 situated within a bore 1906 formed in the inner lid surface 1902. In this additional aspect, the vent 1904 may form a valved passage from the outer lid surface 1802 (not shown) to the inner lid surface 1902. In one aspect, the vent 1904 may open to permit airflow into the volume 802/804 when the internal pressure within the volume 802/804 falls sufficiently below the ambient pressure. Ambient pressure, as used herein, refers to the atmospheric pressure typically present outside of the first container 102 and the second container 108. Without being limited to any particular theory, this equalization of internal pressure may reduce the amount of force need to remove the lid 702/704 from the opening 806/808 due to the reduction of any suction formed within the container 102/108.

[0040] Suction may form within the container 102/108 as a result of any one or more of a variety of mechanisms. In one aspect, the cooling of a heated food item stored within the sealed container 102/108 including, but not limited to, a soup or tea may decrease the vapor pressure of the heated food, thereby inducing a reduction in inter-

nal pressure within the container 102/108. In another aspect, the removal of the lid 702/704 prior to breaking the seal between the edge seal 906/910 lid and the openings 806/808 may increase the sealed inner volume 802/804 resulting in an internal pressure drop within the sealed container 102/108 that may create a suction.

[0041] In various aspects, the vent 1904 may incorporate any suitable design known in the art without limitation. The elements and relative dimensions of the vent elements may be selected using known physical principles to enable pressure equalization based at least one or more of a variety of factors including, but not limited to: temperature range of food to be stored in the container 102/108, the area of the inner lid surface 1902, the volume 802/804 of the container 102/108, and any other relevant factor.

[0042] FIG. 20A is a cross-sectional view through the lid 702/704 including the vent 1904 taken at 20A-20A of FIG. 19B. In this aspect, the vent 1904 may include a flexible cap 2002 placed over a support 2004. The support 2004 may be provided in the form of a central column in various aspects and may be of any cross-sectional profile including a solid cross section as illustrated in FIG. 21A or a tubular cross-section as illustrated in FIG. 20A. The flexible cap 2002 may enclose an intermediate chamber 2006 that is maintained at the ambient pressure surrounding the container 102/108 via a conduit 2008 opening at the outer lid surface 1802. In an aspect, the conduit 2008 may open to the surrounding ambient pressure through the outer lid surface 1802.

[0043] In use, as illustrated in FIG. 20A, the flexible cap 2002 is pressed against the support 2004 when the pressure within the bore 1906, which opens into the volume 802/804 within the container 102/108 (not shown), is higher than the ambient pressure within the intermediate chamber 2006, thereby sealing the contents of the container 102/108. However, when the pressure within the container 102/108 falls below ambient pressure outside of the container 102/108, the flexible cap 2002 deforms slightly away from the support 2004, permitting airflow into the container 102/108 to equalize the inner pressure with the ambient pressure outside of the container 102/108.

[0044] FIG. 20B is an exploded view of the vented lid 702/704 illustrated in FIG. 20A. In one aspect, the lid 702/704 may be assembled by placing the flexible cap 2002 over a support 2004 projecting from an inner portion 2012 of the lid 702/704. An outer portion 2010 containing the bore 1906 may be affixed over the inner portion 2012 such that the flexible cap 2002 and support 2004 project into the bore 1906, as illustrated in FIG. 20A.

[0045] FIG. 21A is a cross-sectional view of a vented lid 702/704 in another aspect. In this other aspect, the support 2004A of the vent 1904 is a solid central pillar rather than a tubular support 2004 as illustrated in FIG. 20A. FIG. 21B and FIG. 21C are exploded views of the vented lid 702/704 illustrated in FIG. 21A. As illustrated in FIGS. 21B and 21C, the lid 702/704 may be assembled

by situating the vent cap 2002 over the support 2004A and affixing the outer lid portion 2010 to the inner lid portion 2012 such that the vent cap 2002 and support 2004A are situated within the bore 1906 as illustrated in FIG. 21A.

[0046] In various aspects, the device 100 may further include a handle 120 attached to the first container 102 or the second container 108 to facilitate the transportation and/or use of the device 100. The handle 120 may be attached to any portion of the device 100 without limitation so long as the handle 120 may be repositioned to allow a user to transition the device 100 between the folded configuration and the opened configuration and vice-versa. In an aspect, the attached handle 120 may be configured to reversibly rotate between a deployed position and a stowed position. Referring to FIG. 14, the deployed position, which may be associated with the folded configuration of the device 100, is characterized by an upright position of the handle 120, enabling a user to pick up and/or carry the device 100 by the handle 120. Referring to FIG. 15, the stowed position, which is associated with the opened configuration of the device 100, is characterized by a position of the handle 120 that enables the user to reconfigure the device 100 from the folded configuration to the opened configuration and to access the contents of the first container 102 and/or second container 108 as needed. In various aspects, the particular characteristics of the deployed position and the stowed position of the handle 120 may vary depending on the particular location on the device 100 at which the handle 120 is attached.

[0047] Any handle design may be included in the device 100 without limitation. In one aspect, illustrated in FIG. 9, the handle 120 may be a strip of a material formed into an approximately half-circle profile fitted to a hand of a user during transport of the device 100. In another aspect, illustrated in FIG. 13, the handle 120 may be a U-shaped handle that may include a central grip 128 situated between a pair of handle arms 122A and 122B. In various aspects, the pair of handle arms 122A and 122B may each end in a corresponding pair of handle fasteners 124A and 124B (not illustrated). In one aspect, illustrated in FIG. 4 and FIG. 9, the handle fasteners 124A and 124B may be peg-like protrusions configured to fit within each corresponding handle fitting 118A and 118B. The handle 120 may be rotatably attached at each handle fastener 124A and 124B to each corresponding handle fitting 118A and 118B.

[0048] The handle fittings 118A and 118B may be any suitable attachment fitting that permits rotation of the attached handle 120 without limitation. In one aspect, each handle fitting 118 may be a hole shaped to receive the handle fastener 124 projecting from the handle arm 122, as illustrated in FIG. 4 and FIG. 9. Referring to FIG. 16, each handle fitting 118 may further be provided with one or more detents 126 or other mechanical stops to retain the handle 120 at one or more intermediate positions including, but not limited to, the stowed position and the

deployed position in an additional aspect. In this additional aspect, the one or more detents 126 of the handle fitting 118 may be configured to receive a corresponding protrusion (not illustrated) situated near a handle fastener 124 on a handle arm 122.

[0049] Referring to FIG. 4 and FIG. 9, the handle 120 may be attached to the first base 104 at a pair of handle fittings 118 in one aspect. In this aspect, the handle 120 may be rotated at the handle fittings 118 into a stowed position, thereby reducing the profile of the device 100 during use in the opened configuration and/or during storage in the folded configuration. In various aspects, the device 100 may be provided with depressions or other receptacles to receive the handle 120 to reduce the profile of the device 100 when the handle 120 is in a stowed position to facilitate transportation, storage, and/or use of the device 100. As illustrated in FIG. 4, the first base 104 may further include an inset element 402 within which a handle 120 may fit to enable the stowed position. The inset element 402 may further include a retention element (not illustrated) to retain the handle 120 in the stowed position within the inset element 402 in one aspect. Any known suitable retention element may be used in this aspect including, but not limited to: a clip configured to receive at least a portion of the handle 120, a contoured region matched to a corresponding contour of at least a portion of the handle 120, and any other known retention mechanism.

[0050] Referring to FIG. 12, FIG. 13, FIG. 14, and FIG. 15, the handle 120 may be attached to the second top 112 in another aspect. FIG. 12, FIG. 13, and FIG. 14 illustrate the handle 120 in the deployed position. In the deployed position, the grip 128 of the handle 120 may be positioned above the first base 104 when the device 100 is in the folded configuration to provide a user-accessible means of grasping and carrying the device 100. As illustrated in FIG. 15, the handle 120 may be moved into the stowed position by repositioning the grip 128 to one side of the second base 110, thereby providing clearance to rotate the first container 102 about the hinge 114 to transition the device 100 from the folded configuration to the opened configuration and to further enable access to the first and second containers 102 and 108 when the device 100 is used in the opened configuration. In an aspect, the grip 128 may include a flat portion 130 that may rest upon the flat substrate along with the first base 104 and the second base 110, thereby providing additional stability during use of the device 100 in the opened configuration. FIG. 17 illustrates the handle fittings 118 used to attach the handle 120 (not shown) to the second top 112 of the second container 108. As illustrated in FIG. 17, the detents 126 may retain the grip 128 of the handle 120 in the deployed position above the first base 104 and/or in the stowed position to one side of the second base 110.

[0051] In another additional aspect, the handle 120 and handle fittings 118 together may provide an additional latching function to the device 100. In this aspect, the

handle 100 may be attached to the second top 112 as illustrated in FIG. 12. In addition to handle fittings 118 situated upon the second top 112 as illustrated in FIG. 16, the device 100 may additionally include a secondary latch element (not shown) situated upon the first top 106. By way of non-limiting example, a portion of the handle arm 122 adjacent to the first container 102 may include a secondary locking element (not shown) that mechanically interlocks with the secondary latch element when the handle 120 is placed in the deployed position as illustrated in FIG. 14. When the handle 120 is placed in a stowed position as illustrated in FIG. 15, the secondary locking element may rotate free of the mechanically interlocked engagement with the secondary latch element, thereby freeing up the first container 102 to be rotated into the opened configuration. In one aspect, the secondary locking element may be a curved ridge configured to be received by the secondary latch element, which may be provided in the form of a curved channel.

[0052] In yet another aspect, the handle 120 may include a means of fastening the device 120 to another item including, but not limited to, a backpack or a briefcase when the device is in the folded configuration. Non-limiting examples of suitable means of fastening the device 120 to another item include a carabineer, a VELCRO loop, a hook, a reversibly closed webbing loop fastened by a buckle, snap, or VELCRO fastener, and any other suitable means of fastening the device 120 to another item. In an additional aspect, the means of fastening the device 120 to another item may be attached to a different portion of the device 100 including, but not limited to, the first base 104.

[0053] The foregoing merely illustrates the principles of the disclosure. Various modifications and alterations to the described embodiments will be apparent to those skilled in the art in view of the teachings herein. It will thus be appreciated that those skilled in the art will be able to devise numerous systems, arrangements and methods which, although not explicitly shown or described herein, embody the principles of the disclosure and are thus within the spirit and scope of the present disclosure. From the above description and drawings, it will be understood by those of ordinary skill in the art that the particular embodiments shown and described are for purposes of illustrations only and are not intended to limit the scope of the present disclosure. References to details of particular embodiments are not intended to limit the scope of the disclosure.

Claims

1. A dual volume storage device comprising:

a first container comprising a first base and a first top;
a second container comprising a second base and a second top; and

a hinge connecting the first top and the second top;
wherein:

the first container and the second container are situated side by side with the first base and the second base in a coplanar alignment when the device is in an opened configuration; and
the first container is inverted about the hinge to contact the first top with the second top opposite to the second base when the device is in a folded configuration.

2. A dual volume storage device comprising:

a first container comprising a first base and a first top, the first top is opposite to the first base;
a second container comprising a second base and a second top, the second top is opposite to the second base; and
a hinge connecting the first container and the second container;
wherein:

the first container and the second container are situated side by side with the first base and the second base in a coplanar alignment when the device is in an opened configuration; and
the first container is inverted about the hinge to situate the first top adjacent to the second top when the device is in a folded configuration.

3. The device of claim 1 or claim 2, further comprising a latch, the latch comprising a first interlocking element attached to the first top and a second interlocking element attached to the second top, wherein the first interlocking element and the second interlocking element reversibly interlock mechanically to maintain the device in the folded configuration and optionally or preferably wherein the latch is selected from a hook, a hasp, or a clip.

4. The device of any preceding claim, further comprising a handle attached at a handle fitting to either the first container or the second container, wherein:

the handle is free to rotate between a deployed position and a stowed position;
the handle is in the deployed position when the device is in a closed configuration; and
the handle is in the stowed position when the device is in the opened configuration.

5. The device of claim 4, wherein:

- the handle is attached to the first container at the handle fitting on the first base; and the handle fits within a receptacle formed within the first base when the handle is in the stowed position. 5
6. The device of claim 4, wherein:
- the handle is attached to the second container at the handle fitting on the second top; the handle is situated above the first base when the handle is in the deployed position; and the handle is situated beside the second base when the handle is in the stowed position. 10
7. The device of any preceding claim, wherein:
- the first container further comprises a first lid reversibly sealing a first opening formed within the first top, wherein the first container and the first lid enclose a first volume; and the second container further comprises a second lid reversibly sealing a second opening formed within the second top, wherein the second container and the second lid enclose a second volume. 15 20 25
8. The device of claim 7, wherein:
- the first lid further comprises a first edge seal that reversibly forms a seal with a corresponding first receptacle formed within the first opening, wherein the first lid reversibly seals the first volume; and the second lid further comprises a second edge seal that reversibly forms a seal with a corresponding second receptacle formed within the second opening, wherein the second lid reversibly seals the second volume when the second lid is inserted within the second opening. 30 35 40
9. The device of claim 8, wherein the first edge seal and the second edge seal are independently selected from: a threaded edge, a gasket edge, and a force-fit edge. 45
10. The device of claim 8 or claim 9, wherein the first receptacle and the second receptacle are independently selected from: a threaded receptacle, a gasket receptacle, a force-fit receptacle, wherein the first receptacle and second receptacle are matched to the first edge seal and the second edge seal, respectively. 50
11. The device of any one of claims 9 to 10, wherein the first container and the second container form watertight seals. 55
12. The device of any one of claims 8 to 11, wherein the first lid, the second lid, or both the first and second lids further comprise at least one vent forming a vented passage through the first lid or the second lid from an outer lid surface to an inner lid surface, wherein the vent is configured to equalize an internal pressure within the first container or the second container to an ambient pressure if the internal pressure falls below the ambient pressure.
13. The device of any one of claims 7 to 13, wherein the first lid, the second lid, or both the first and second lids further comprise an accessory retention fitting formed within the first lid or second lid to retain one or more additional accessories comprising cutlery, seasonings, condiments, dressings, toppings, and any combination thereof.
14. The device of any preceding claim, wherein the first container, the second container, or both the first container and the second container are:
- at least partially constructed from a transparent material; and/or
at least partially constructed from thermally insulated materials.
15. The device of any preceding claim, wherein:
- the first container further comprises a first collar attached over the first top, wherein the hinge is attached to the first collar at one end; and the second container further comprises a second collar attached over the second top, wherein the hinge is attached to the second collar at another end opposite to the first collar.
16. The device of claim 15, wherein the device further comprises a latch, the latch comprising a first interlocking element attached to the first collar and a second interlocking element attached to the second collar, wherein the first interlocking element and the second interlocking element reversibly interlock mechanically to maintain the device in the folded configuration.
17. A dual volume storage device comprising:
- a first container comprising:
- a first base;
a first top opposite to the first base;
a first collar attached over the first top, the first collar comprising a first lid receptacle defining a first opening; and
a first lid reversibly sealing the first opening wherein the first container encloses a first volume when the first lid seals the first open-

ing, the first lid comprising:

a first edge seal that reversibly seals to the first lid receptacle

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when the first lid is inserted within the first opening; and

a second container comprising:

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a second base;

a second top opposite to the second base;

a second collar attached over the second

top, the second collar comprising a second

lid receptacle defining a second opening

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and a pair of handle receptacles; and

a second lid reversibly sealing the second

opening wherein the second container en-

closes a second volume when the second

lid seals the second opening, the second lid

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comprising a second edge seal that revers-

ibly seals to the second lid receptacle when

the second lid is inserted within the second

opening;

a hinge connecting the first top and the sec-

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ond top, wherein the hinge is attached to

the first collar and to the second collar at

opposite ends of the hinge;

a latch comprising a first interlocking ele-

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ment attached to the first collar and a sec-

ond interlocking element attached to the

second collar, wherein the first interlocking

element and the second interlocking ele-

ment reversibly interlock mechanically to

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maintain the device in a folded configura-

tion; and

a handle comprising a central grip situated

between two handle arms, each handle arm

ending in a handle fastener opposite the

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central grip, wherein the handle fasteners

are attached to the second container at the

handle fittings of the second collar;

wherein:

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the first container and the second container

are situated side by side with the first base

and the second base in a coplanar align-

ment when the device is in an opened con-

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figuration;

the first container is inverted about the hinge

to contact the first collar with the second col-

lar when the device is in the folded config-

uration; and

the handle is configured to reversibly rotate

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about the handle fittings to permit move-

ment of the central grip between a first grip

position situated vertically above the first

base when the device is in the folded con-
figuration and a second grip position beside
the second base when the device is in the
opened configuration.

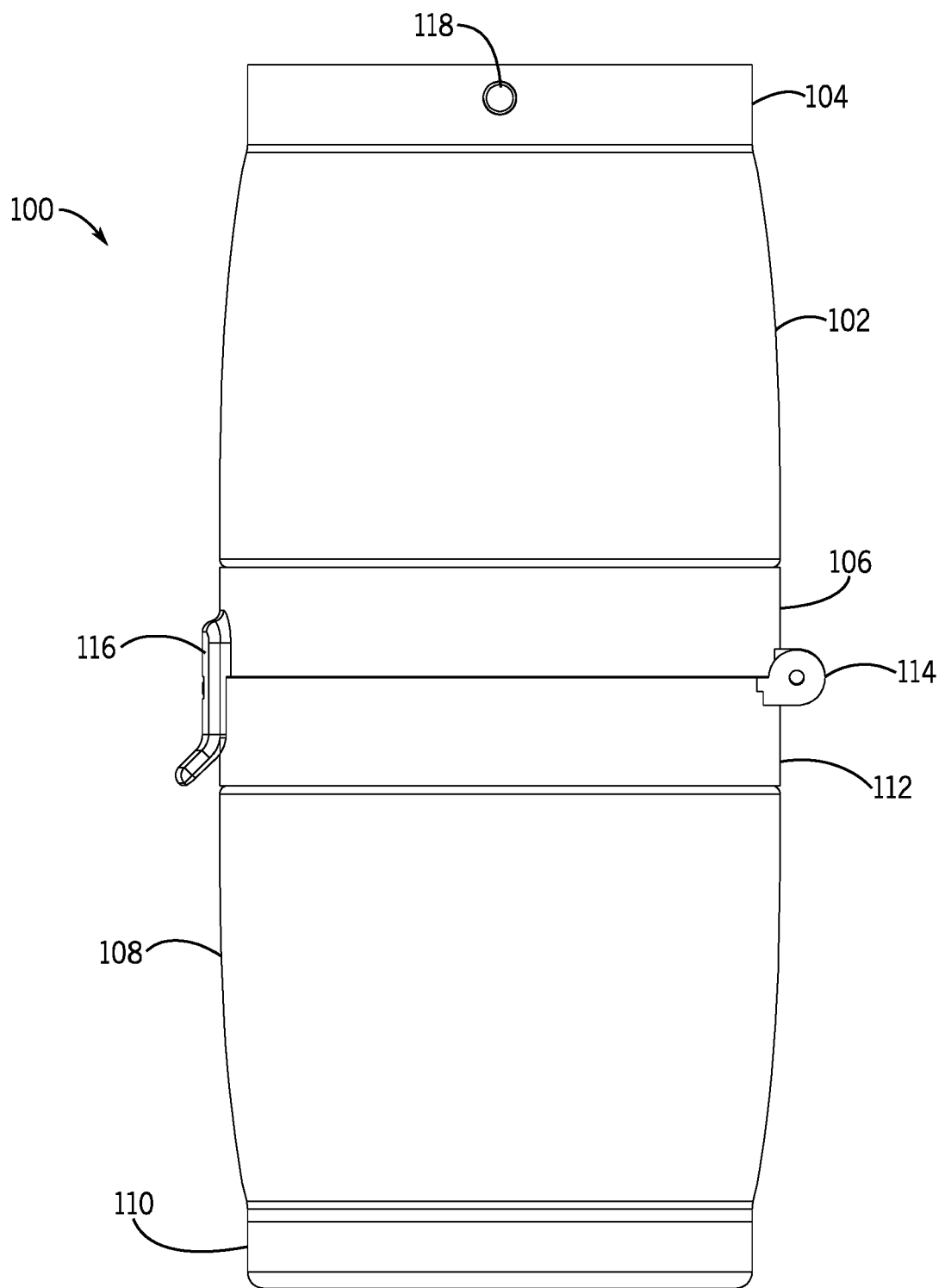


FIG. 1

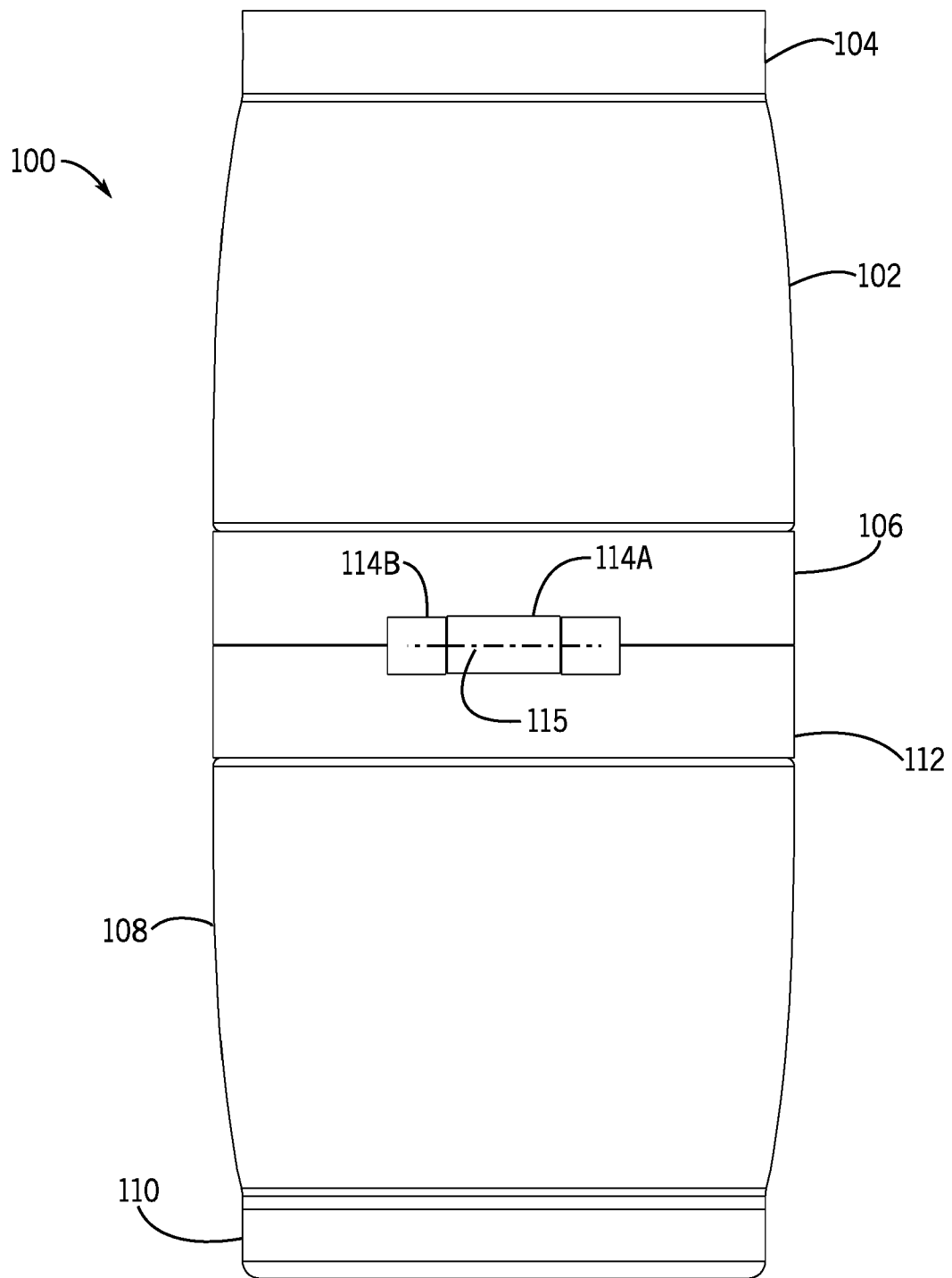


FIG. 2

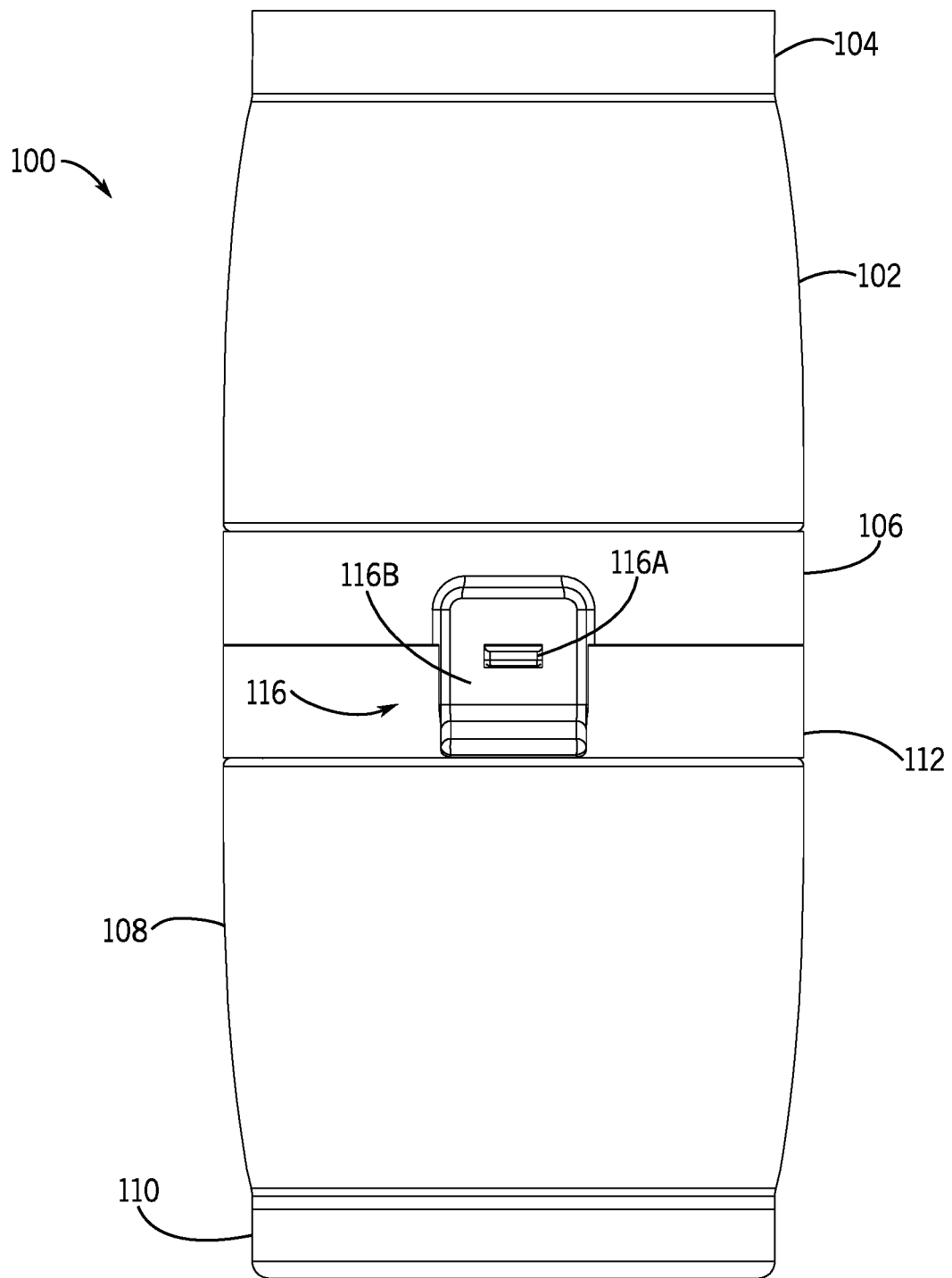
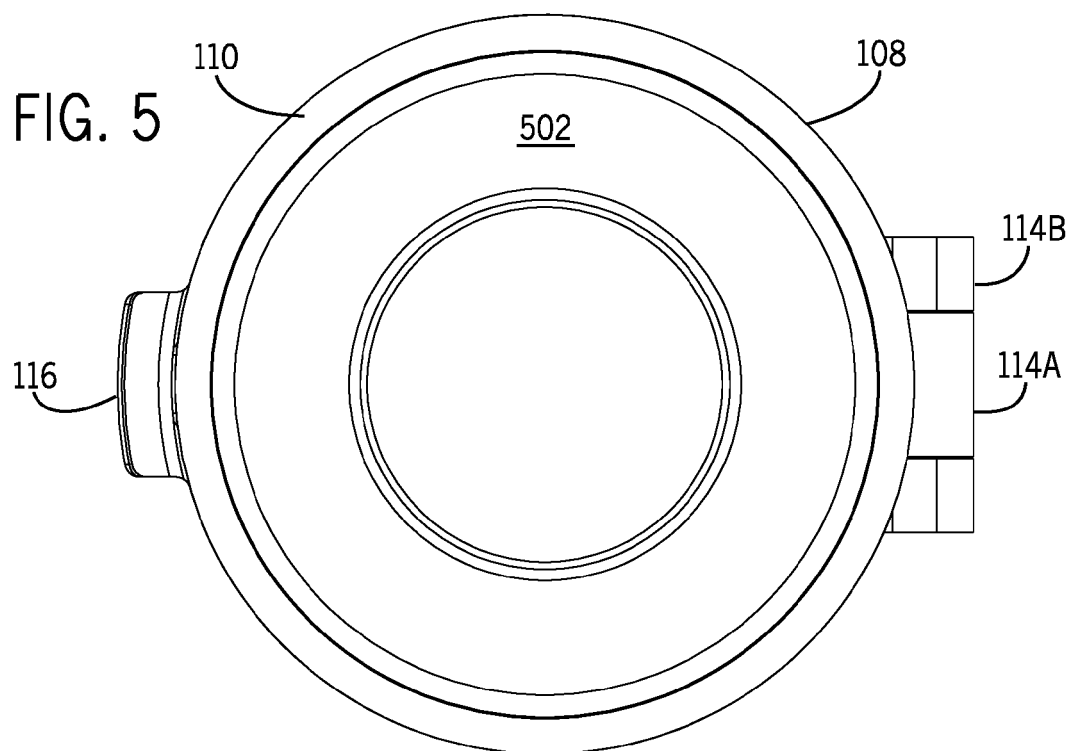
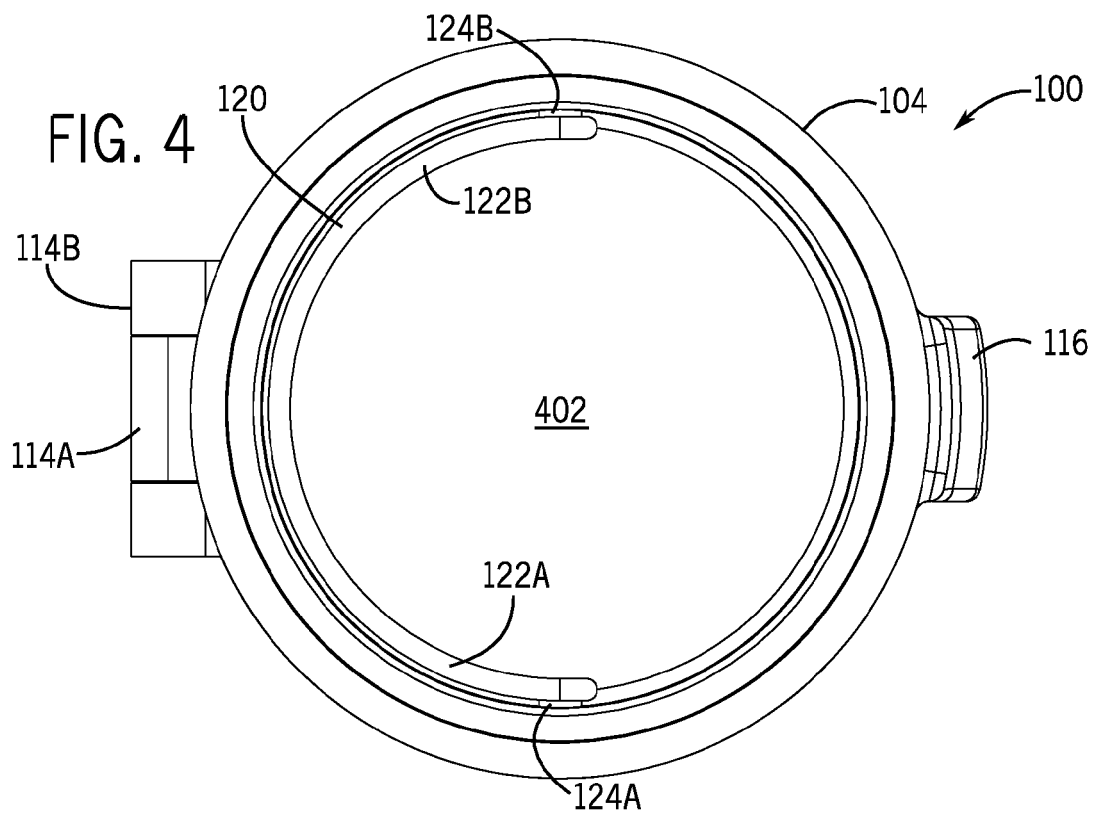


FIG. 3



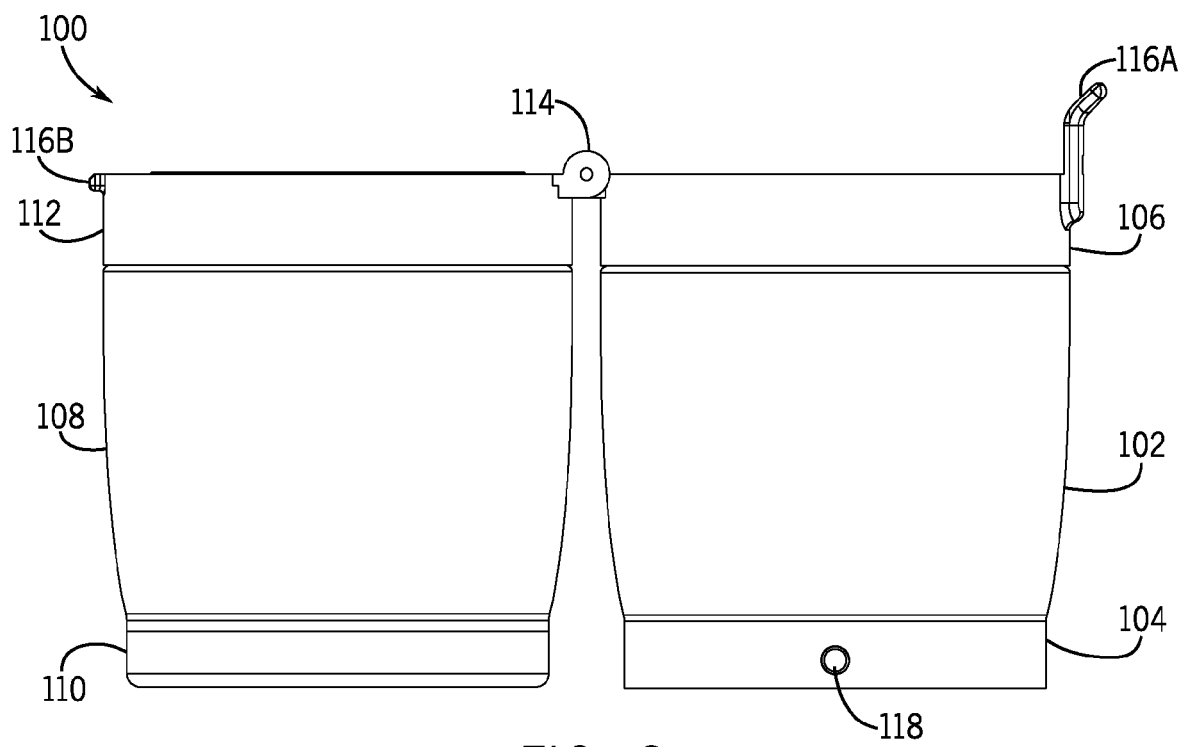


FIG. 6

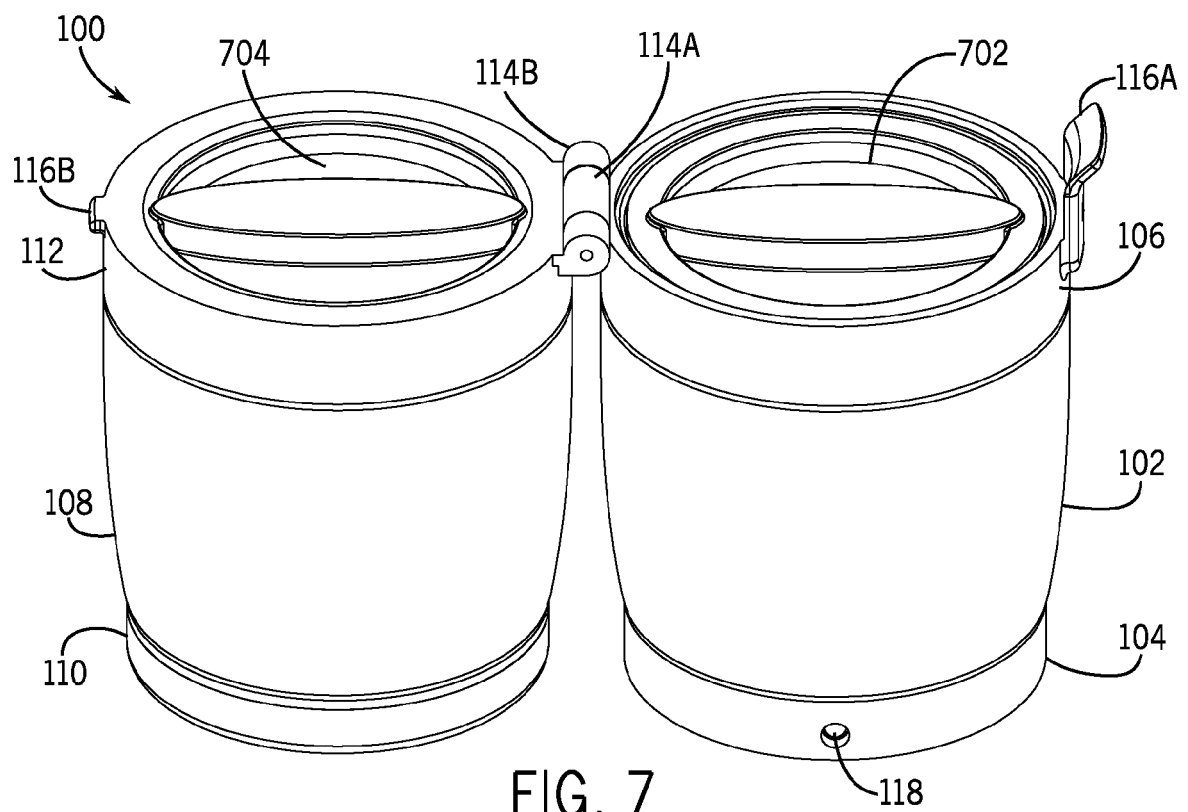


FIG. 7

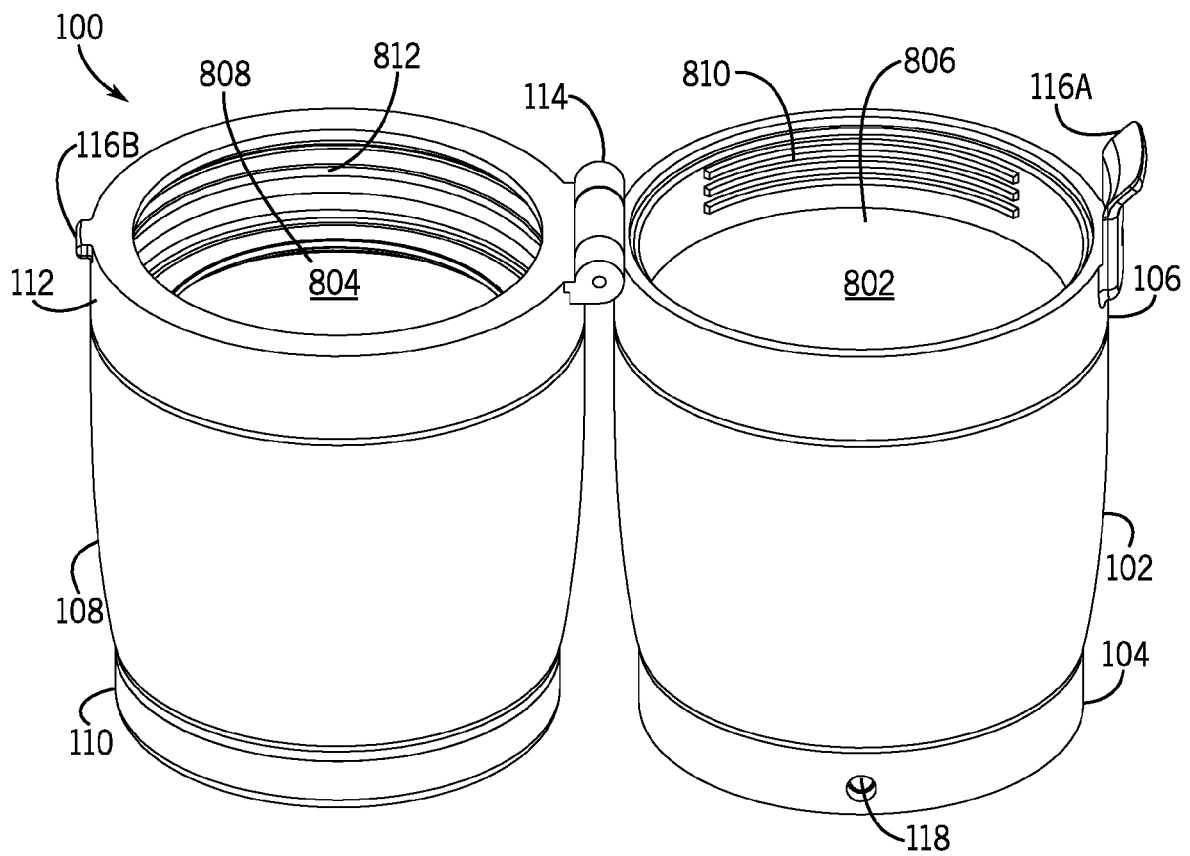
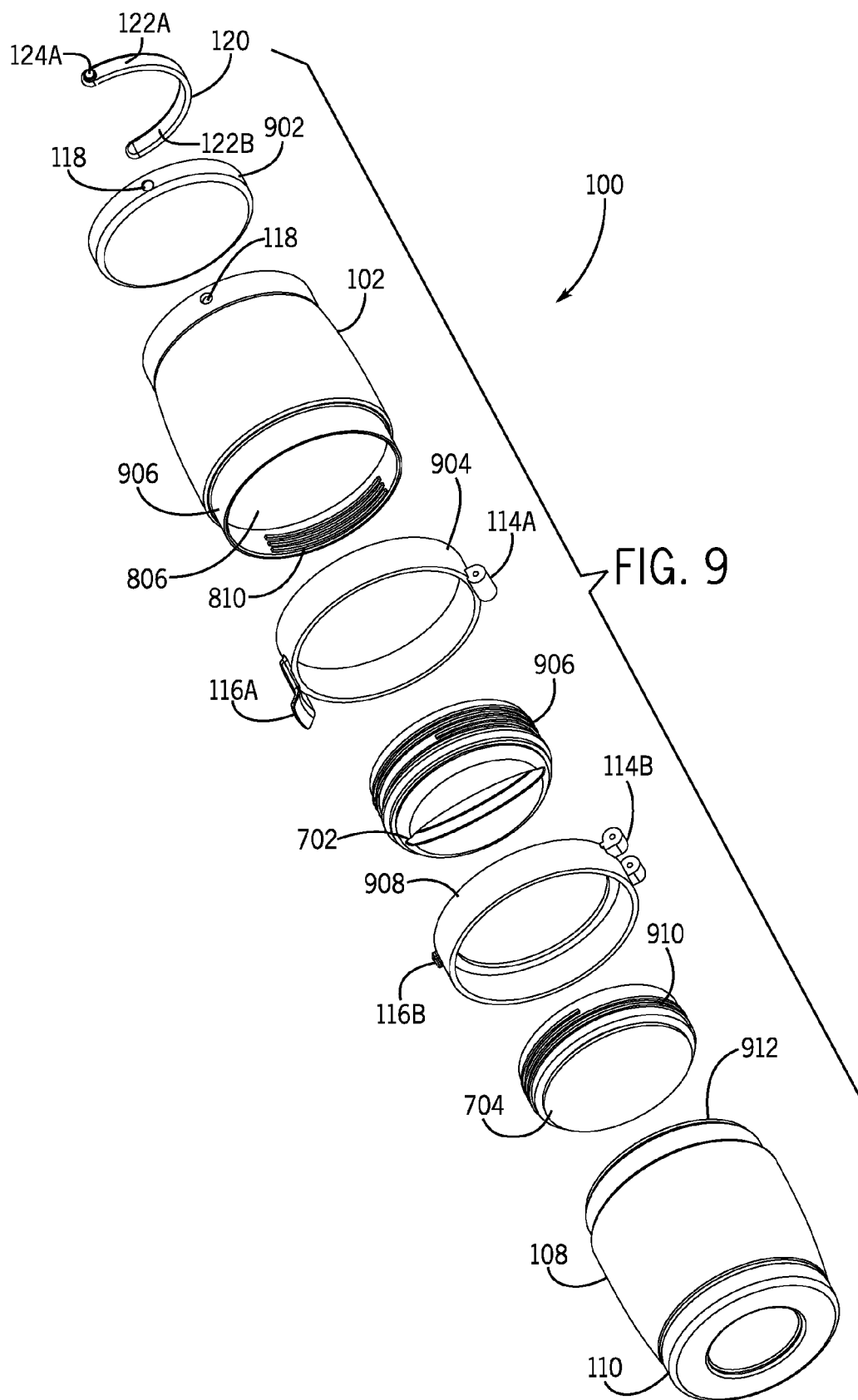
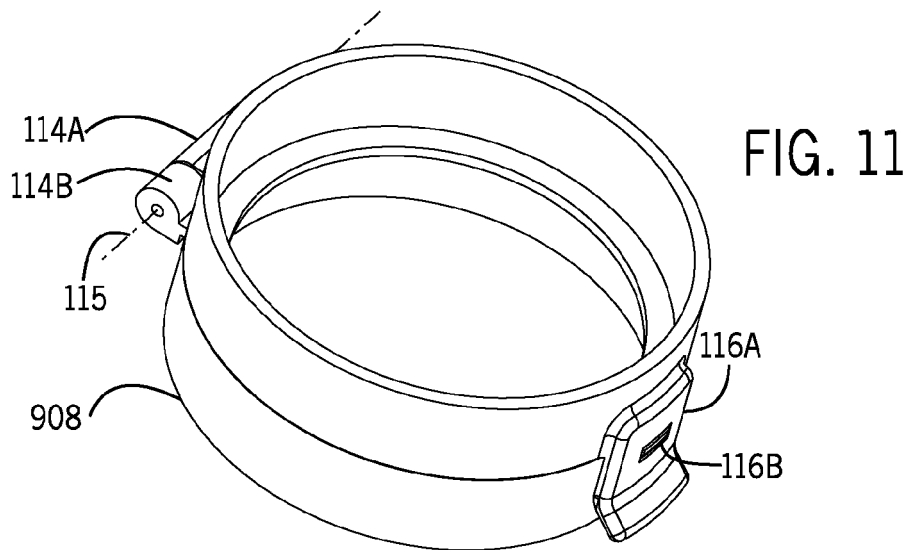
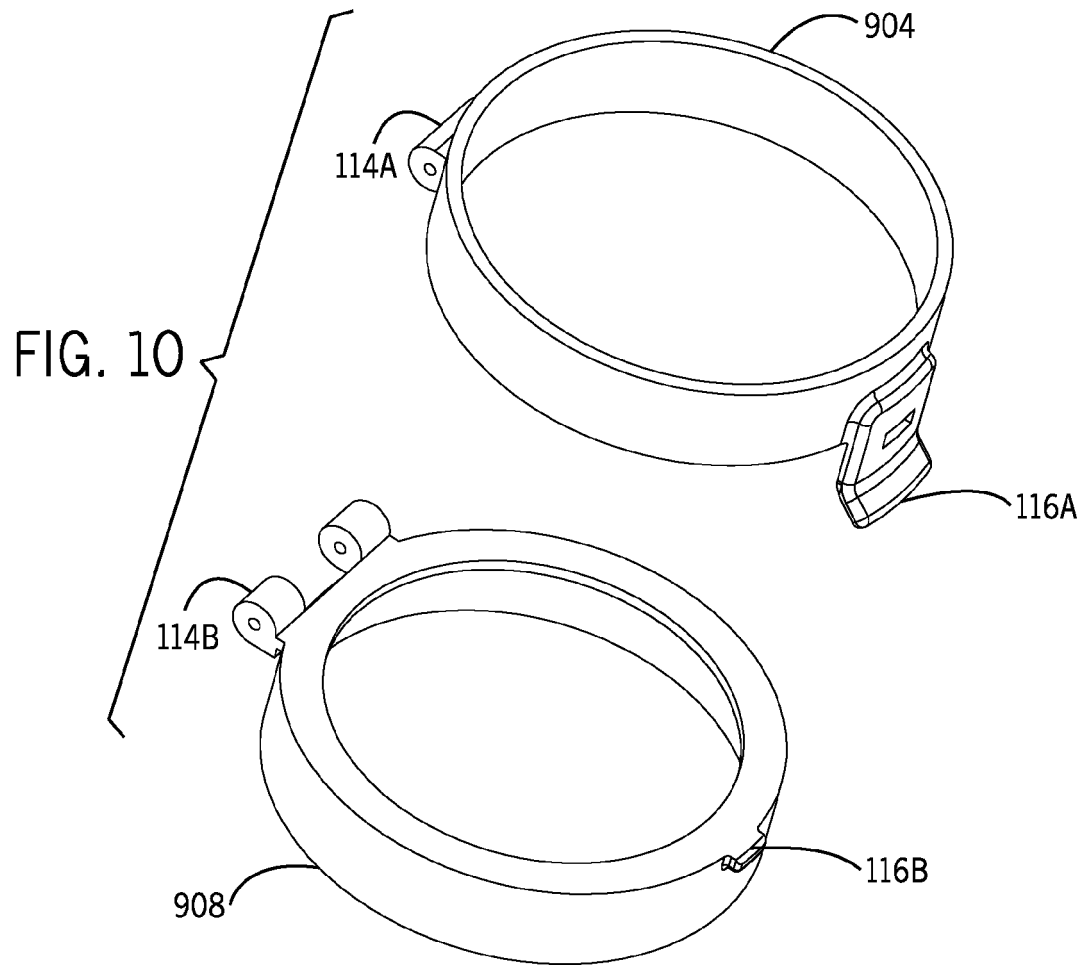


FIG. 8





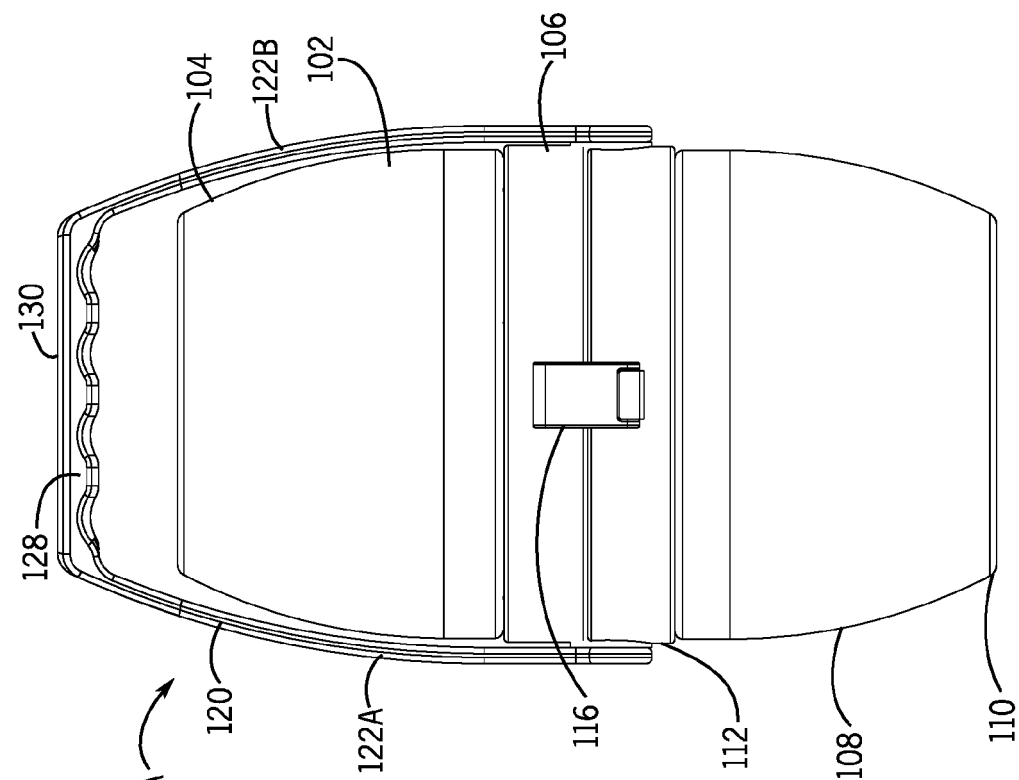


FIG. 12

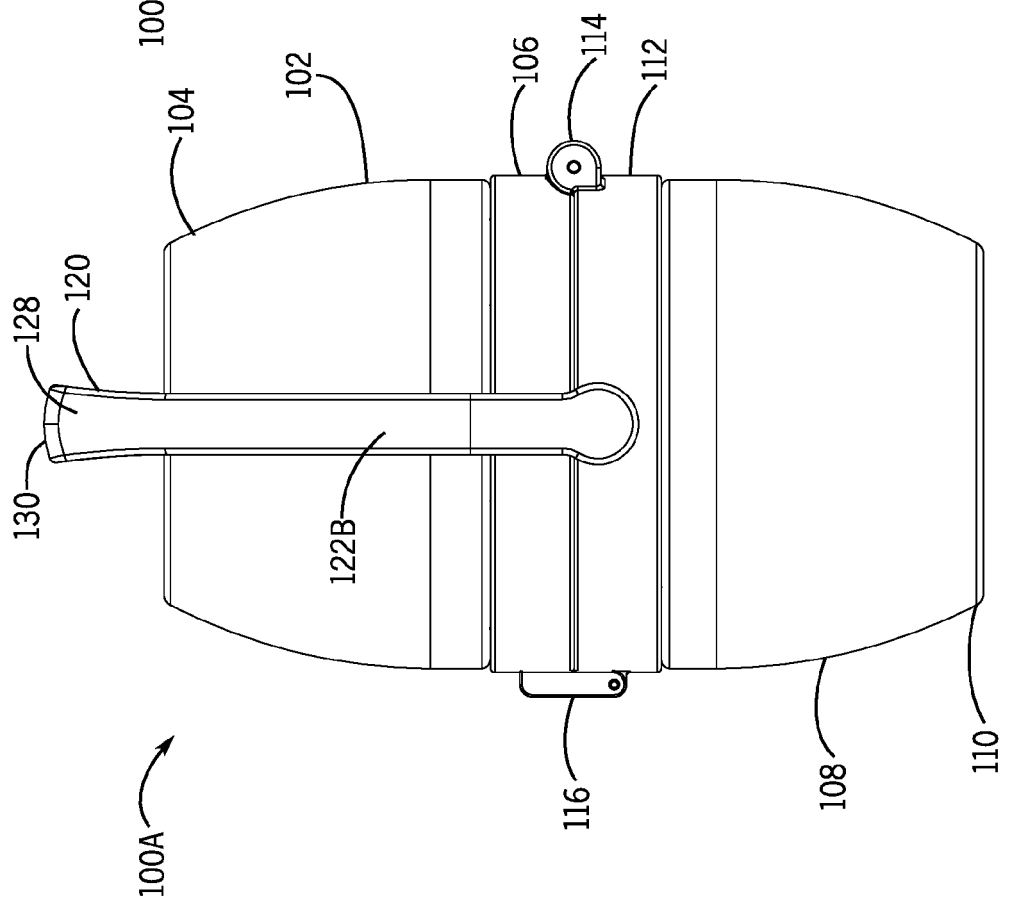


FIG. 13

FIG. 14

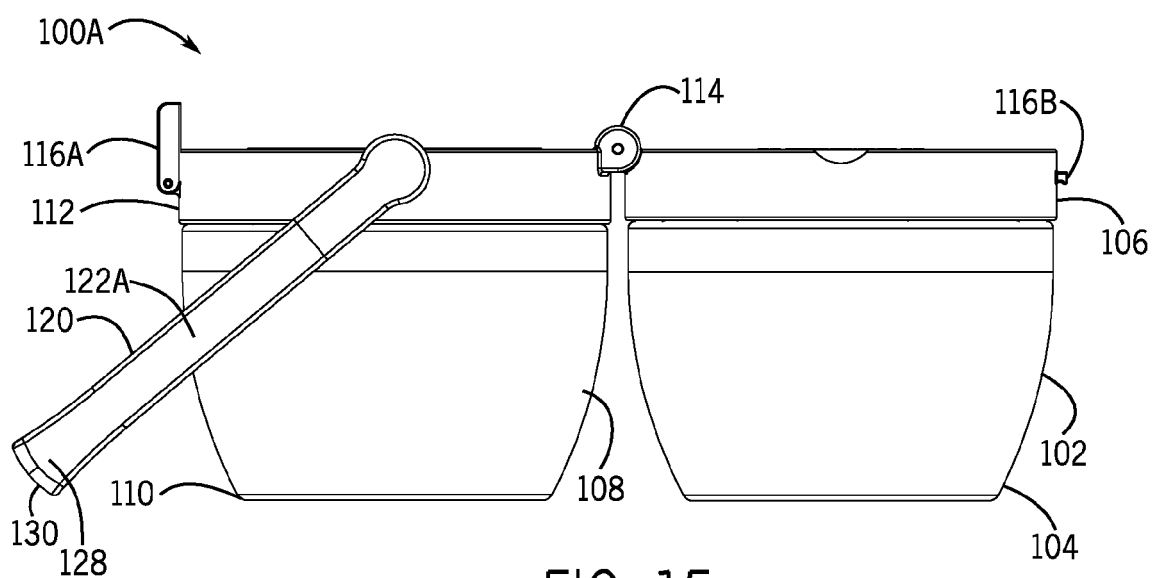
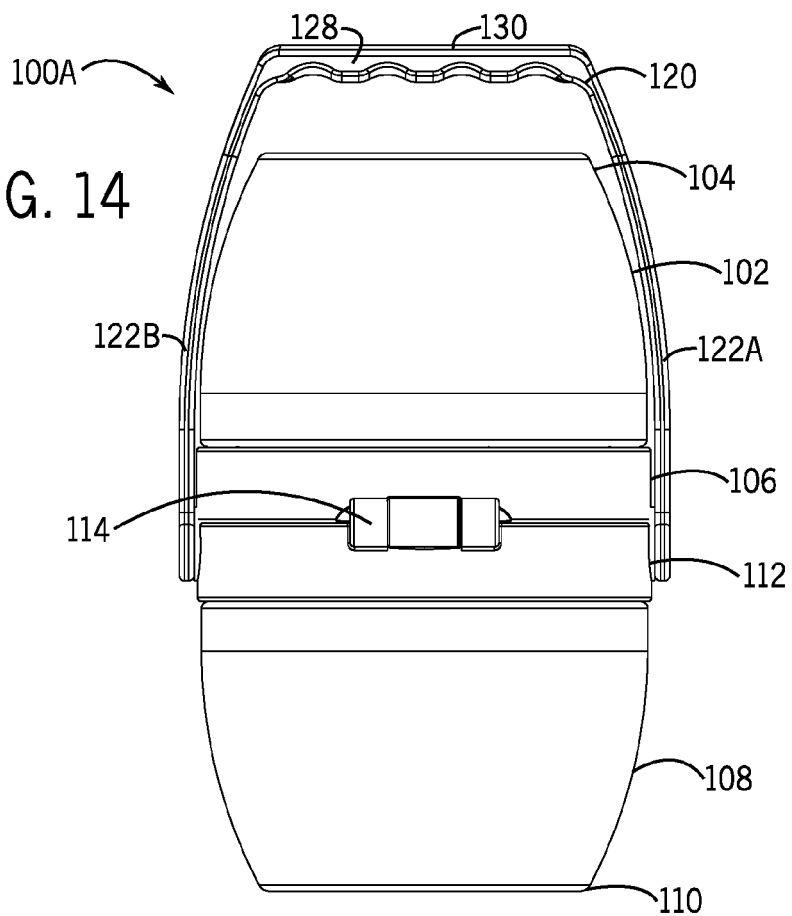


FIG. 15

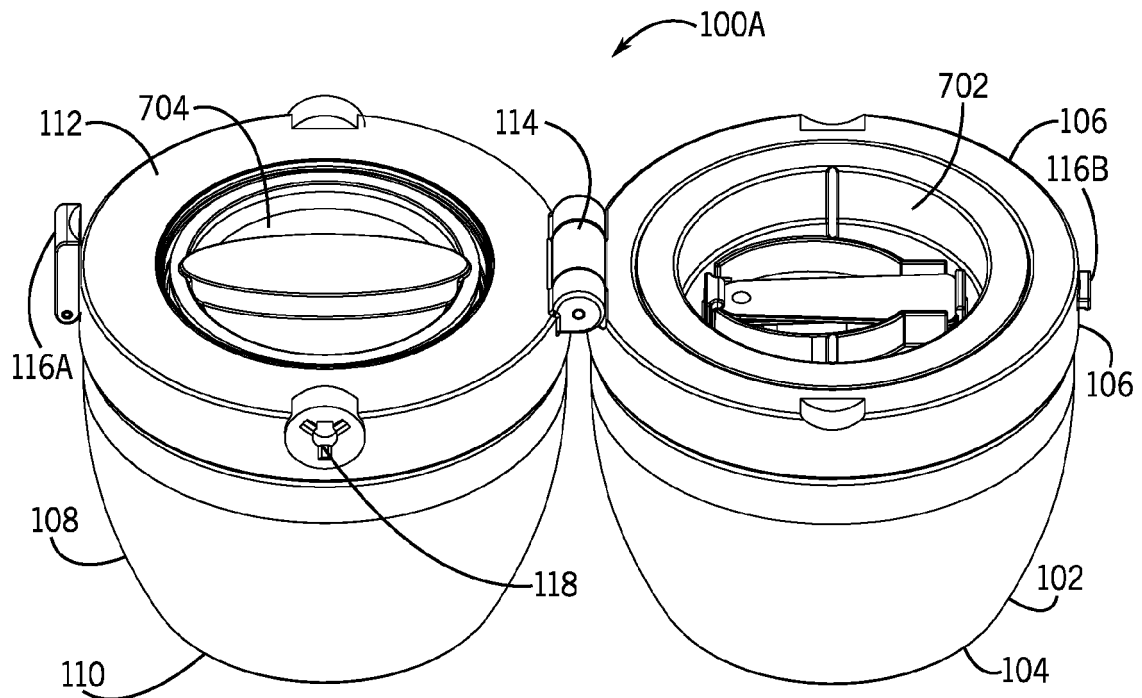


FIG. 16

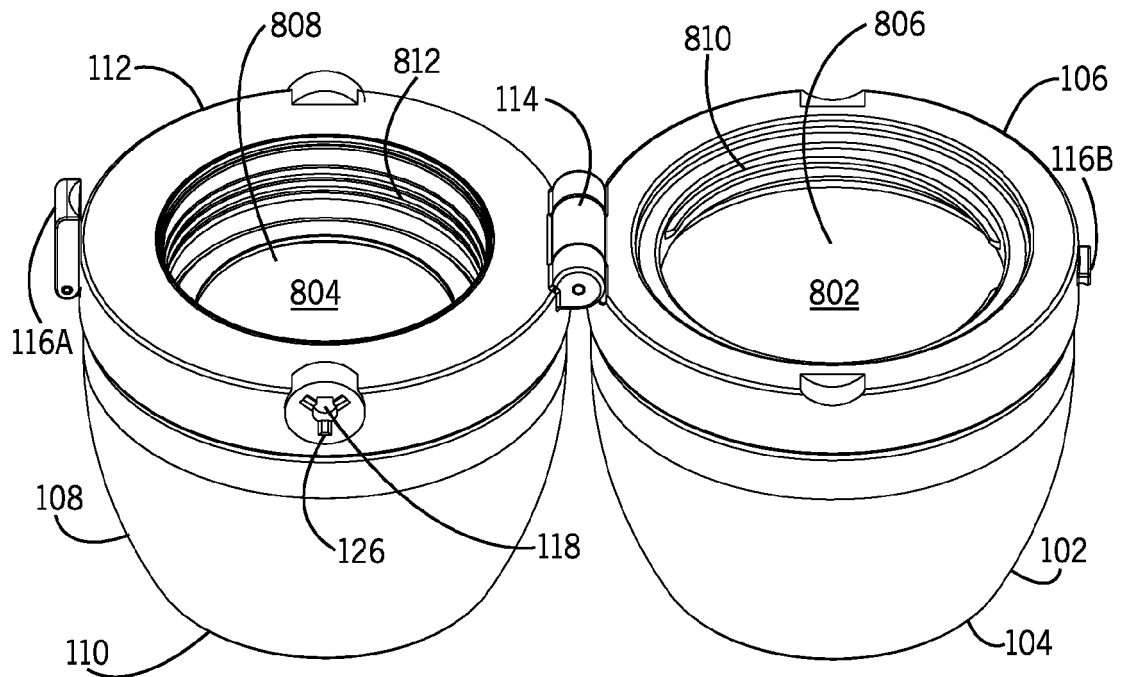


FIG. 17

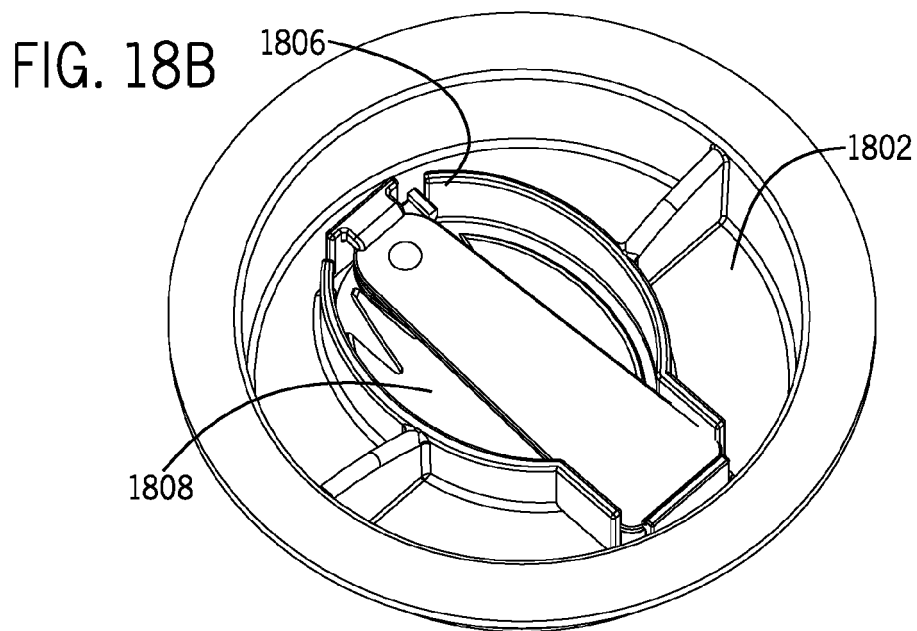
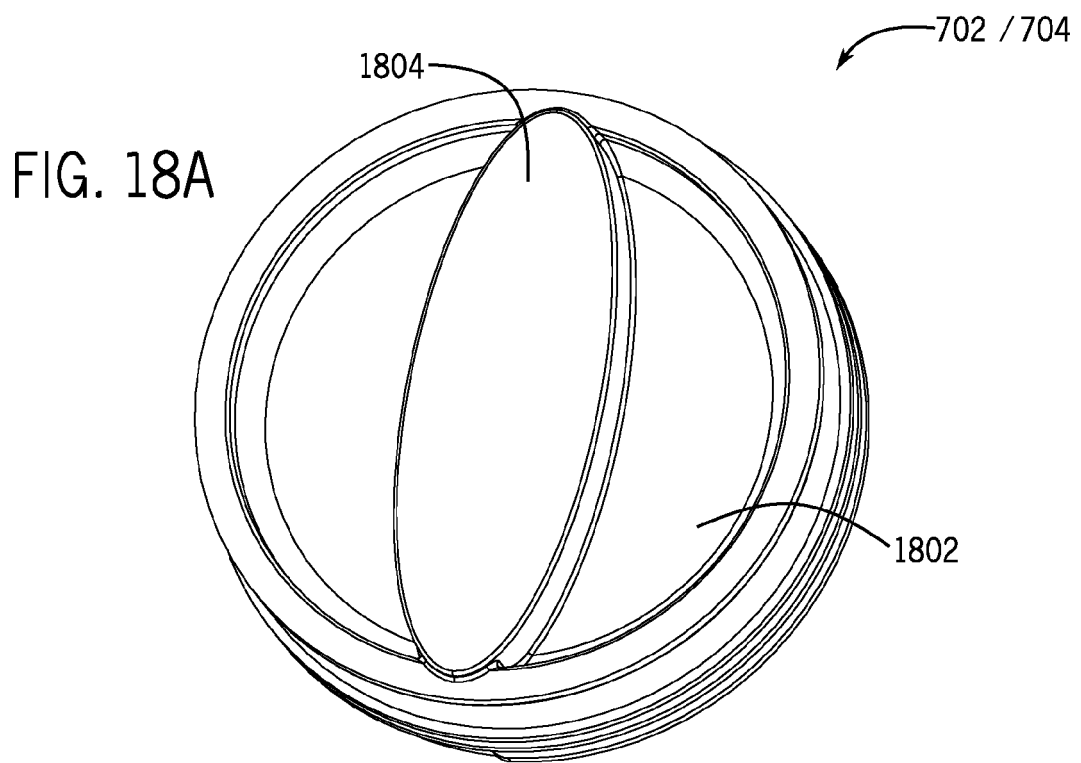


FIG. 19A

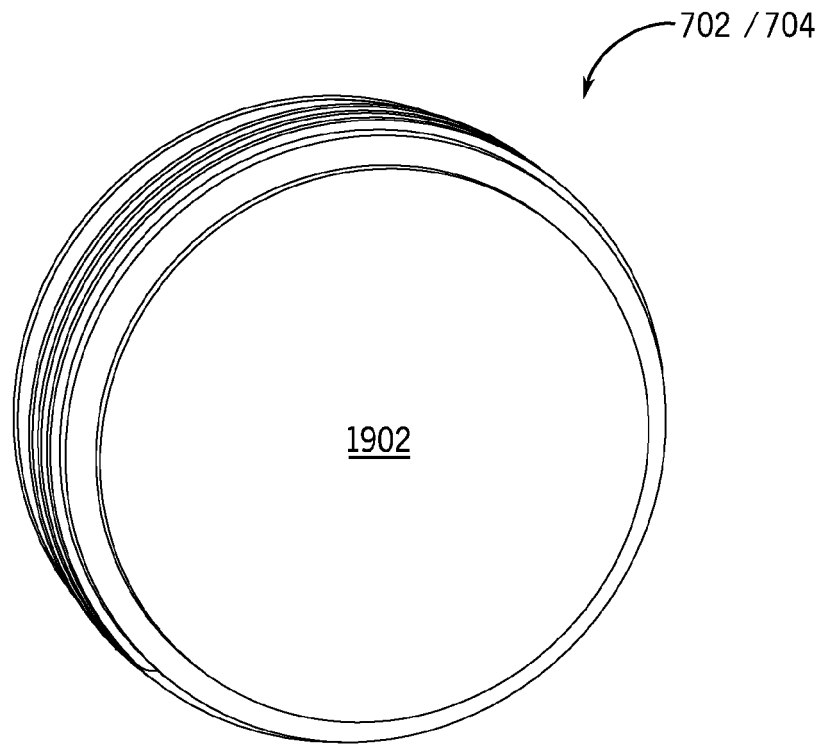
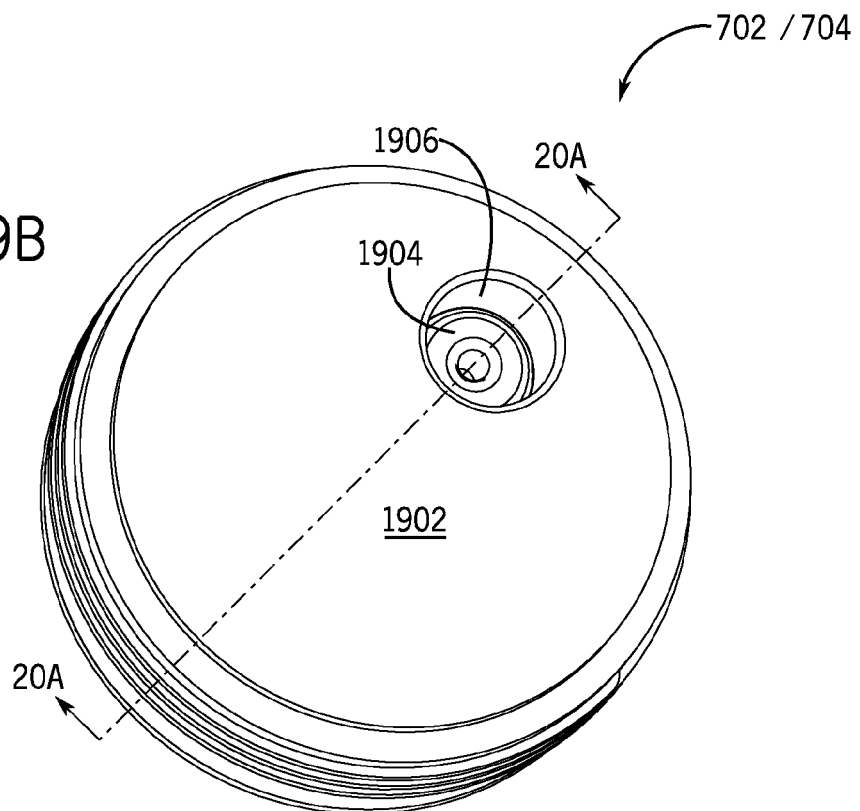
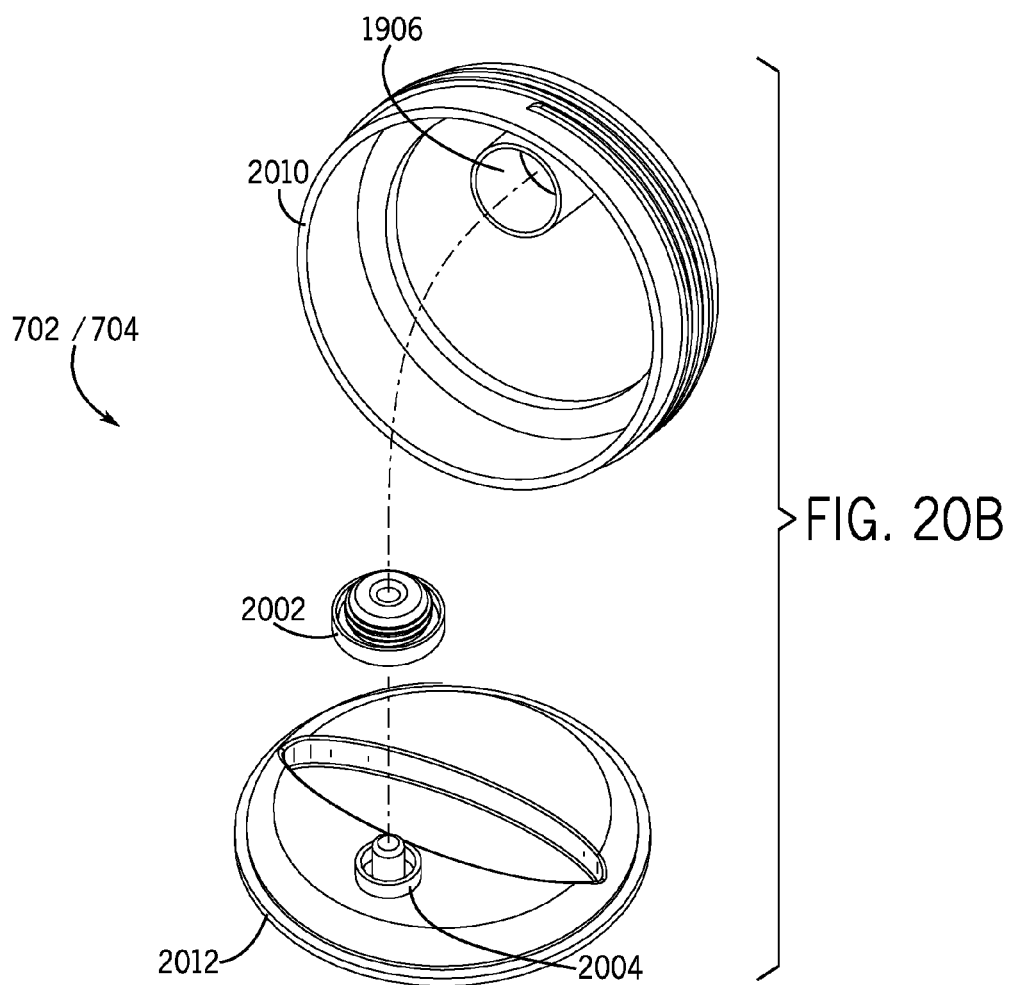
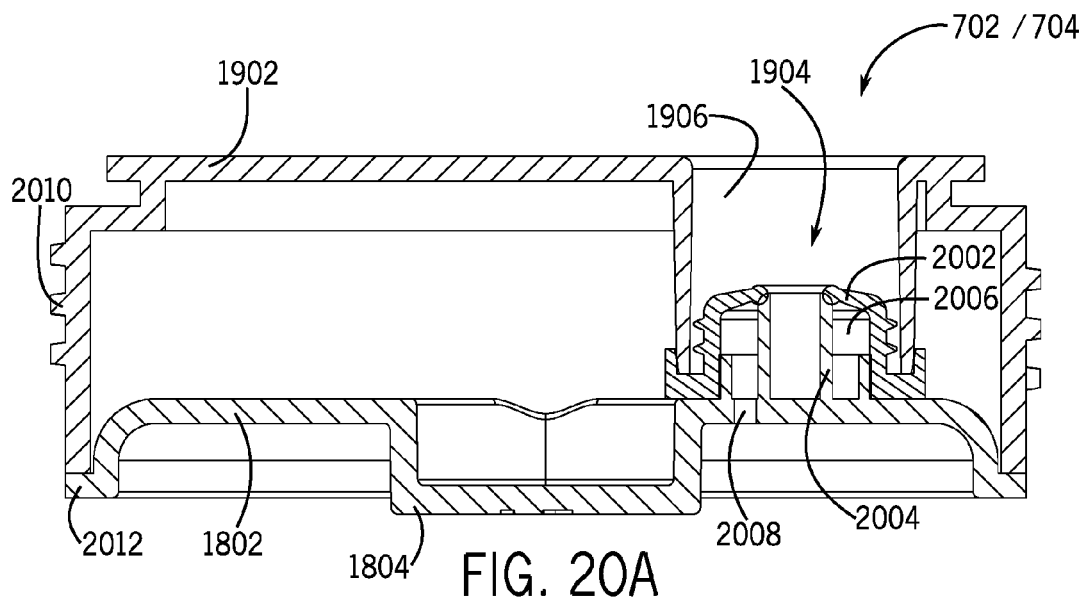
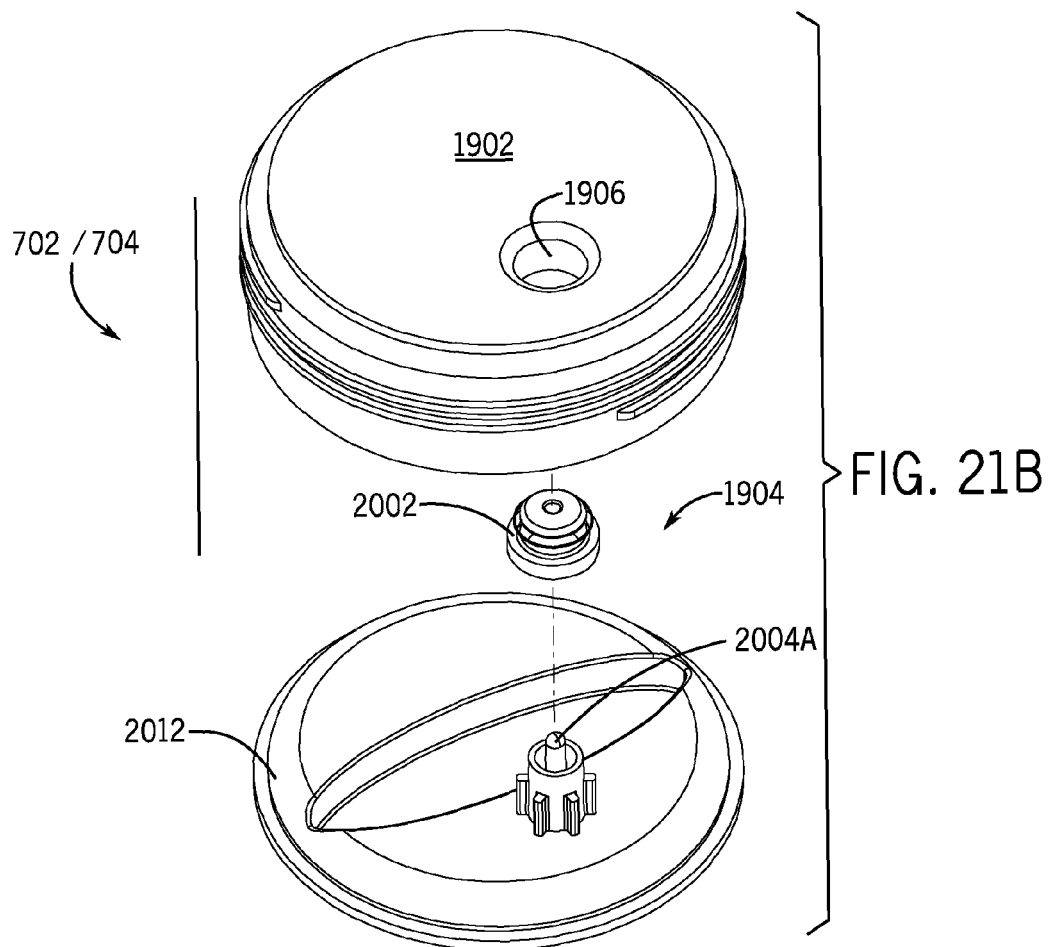
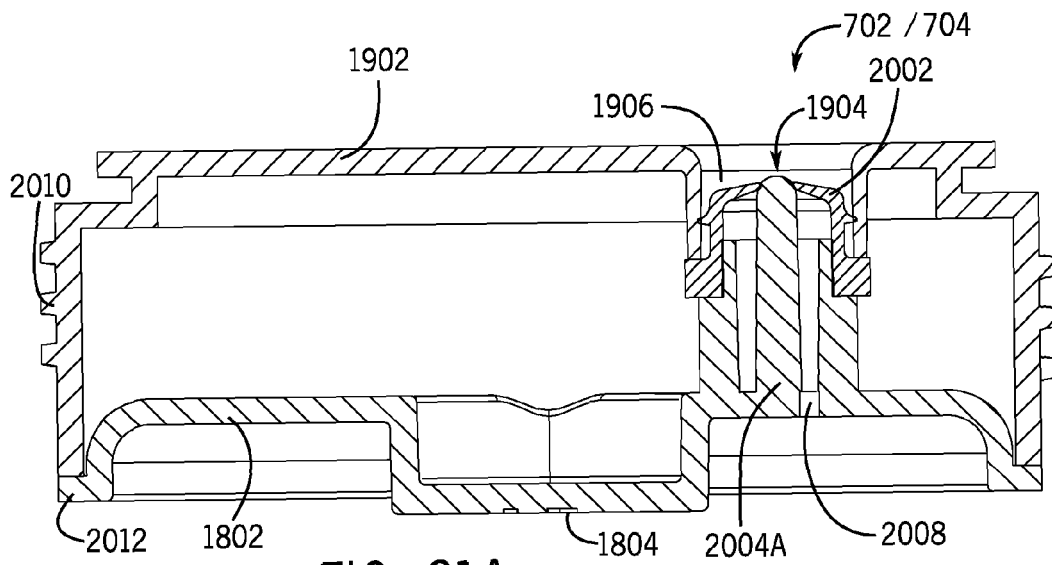
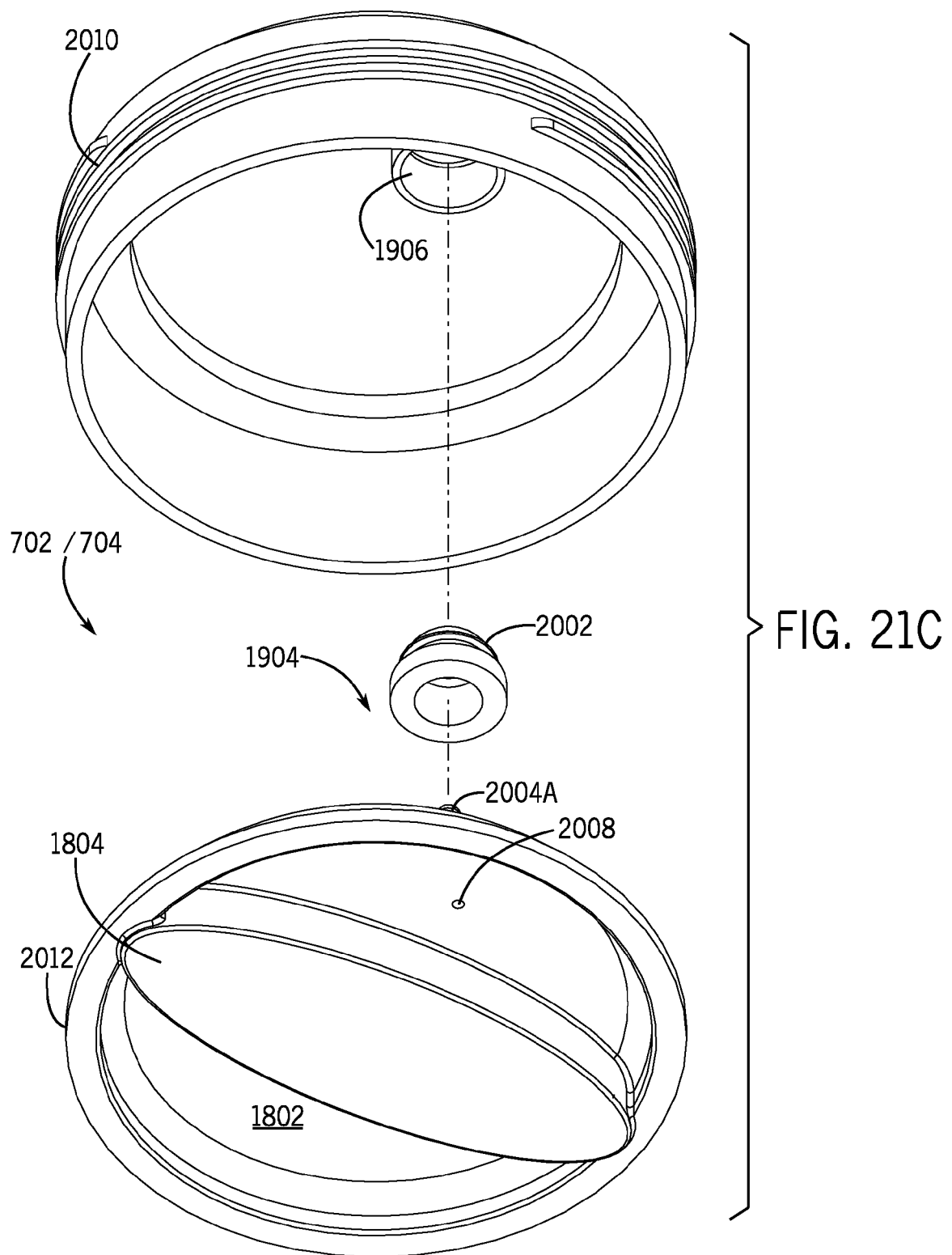


FIG. 19B









REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 61974341 A [0001]