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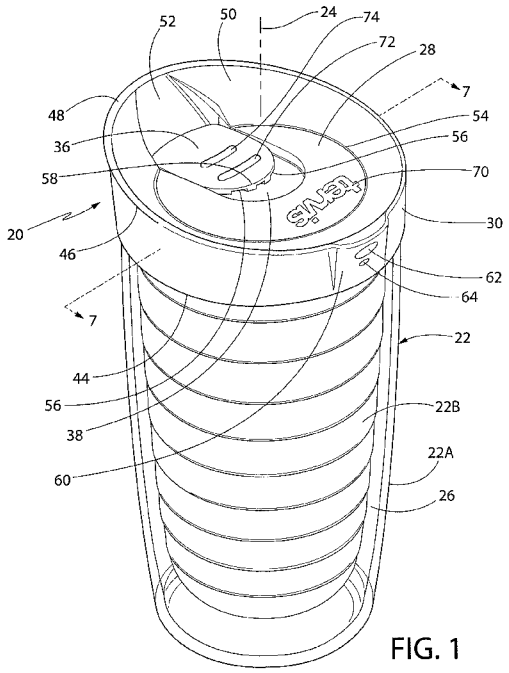


FIG. 1

(57) Abstract: A lid assembly (120, 20) for a hollow drinking vessel (22) for holding a hot beverage (10) is disclosed. The lid assembly (120, 20) includes a body having a top wall (28), a port (34) in the top wall (28), a cover (36), a peripheral sidewall (30), anda vent. The cover (36) is slidable with respect to the port (34) to either close or open it. Portions of the peripheral sidewall (30) and the top wall (28) merge to form a crevice (54) providing a path for the beverage (10) to flow into the port (34). The port(34) includes an elastomeric seal to form a fluid-tight interface when the cover (36) is closed. The peripheral sidewall (30) includes a ramp like projection (60) to enable the user to apply upward pressure thereto to facilitate the removal of the lid assembly (120, 20) from the vessel (22A, 22B, 22). The vent is configured to enable steam (12) within the vessel (22A, 22B, 22) to exit the ambient atmosphere to thereby reduce the build-up of pressure within the vessel (22A, 22B, 22), which could result in hot liquid sputtering out of the port (34) when the slidable cover (34, 36) is opened.

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LID ASSEMBLIES FOR DRINKING VESSELS AND DRINKING VESSELS INCLUDING THE SAME

CROSS-REFERENCE TO RELATED APPLICATION

This PCT application claims the benefit under 35 U.S.C. §119(e) of Provisional Application Serial No. 62/135,963 filed on March 20, 2015 entitled Lid Assemblies for Drinking Vessels and Drinking Vessels Including the Same and United States Non-Provisional Application Serial No. 15/063,681, filed on March 08, 2016 entitled Lid Assemblies For Drinking Vessels and Drinking Vessels Including the Same. The entire disclosure of the provisional application and non-provisional application are incorporated by reference herein.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

"Not Applicable"

INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISK

"Not Applicable"

FIELD OF THE INVENTION

This invention relates generally to drinking vessels and more particularly to lids for insulated vessels for holding hot beverages.

BACKGROUND OF THE INVENTION

Many double walled drinking vessels are commercially available from various sources, including Tervis Tumbler Company, the assignee of this invention. Such vessels typically are formed of an inner vessel located within and spaced from outer vessel by an annular air or vacuum space to thermally insulate the inner vessel from the ambient atmosphere. A lid is commonly provided for releasable mounting on the vessel to seal the contents of the hot beverage within the vessel. One common type of lid includes a slidable cover that when opened enables a user to drink the beverage through the lid or pour the beverage through the lid when desired.

While prior art lids, such as those provided by the assignee of this invention and others, are generally suitable for their intended purposes, they nevertheless leave something to be desired from various standpoints, e.g., ease of mounting, dismounting, ease of use, resistance to accumulation of liquids on the top of the lid,

and the potential for abrupt splashing or sputtering of hot liquid when the lid assembly is opened due to the build-up of steam pressure within the vessel. The subject invention addresses those needs.

SUMMARY OF THE INVENTION

In accordance with one aspect of this invention there is provided a lid assembly for releasable mounting on a drinking vessel having a hollow body bounding an internal cavity configured for receipt of a beverage to enable a user to drink or pour the beverage through the lid assembly. The hollow body has an annular rim at a top edge thereof. The lid assembly comprises a generally convex crowned top wall, a peripheral sidewall extending about the top wall, and an annular recess. The crowned top wall includes a port configured for communication with the internal cavity when the lid assembly is mounted on the vessel. A slidable cover is provided at the top wall and is configured to be slid between a closed position and an open position and vice versa. When in the closed position the slidable cover seals the port and when in the open position exposes the port. The peripheral sidewall has a top edge located above the crowned top wall and an inner surface tapering downward from the top edge to the crowned top wall. The inner surface merges with the crowned top wall to form a crevice providing a path for any beverage that may become located on the crowned top wall to flow into the port. The annular recess is configured for receipt of the annular rim of the vessel to releasably mount the lid assembly on the vessel.

In accordance with another aspect of this invention there is provided a lid assembly for releasable mounting on a drinking vessel having a hollow body bounding an internal cavity configured for receipt of a hot beverage to enable a user to drink or pour the beverage through the lid assembly. The hollow body has an annular rim at a top edge thereof. The lid assembly comprises top wall, at least one vent, a peripheral sidewall extending about the top wall, and an annular recess. The top wall includes a port and a slidable cover. The port is located adjacent a portion of the peripheral sidewall from which the user can drink or pour the beverage. The slidable cover is configured to be slid between a closed position and an open position, and vice versa. The slidable cover when in the closed position seals the port and when in the open position exposes the port. The annular recess is configured for receipt of the annular rim of the vessel to releasably mount the lid assembly on the vessel. The at least one vent is configured to direct any steam from

a hot beverage within the internal cavity away from the portion of the peripheral sidewall to which the port is adjacent.

In accordance with another aspect of this invention there is provided the combination of a lid assembly and a drinking vessel. The drinking vessel has a hollow body bounding an internal cavity configured for receipt of a beverage. The hollow body has an annular rim at a top edge thereof. The lid assembly is configured to enable a user to drink or pour the beverage through the lid assembly and comprises a generally convex crowned top wall, a peripheral sidewall extending about the top wall, and an annular recess. The crowned top wall includes a port configured for communication with the internal cavity when the lid assembly is mounted on the vessel. The crowned top wall includes a slidable cover configured to be slid between a closed position and an open position, and vice versa. When the slidable cover is in the closed position it seals the port and when in the open position it exposes the port. The peripheral sidewall has a top edge located above the crowned top wall and an inner surface tapering downward from the top edge to the crowned top wall. The inner surface merges with the crowned top wall to form a crevice providing a path for liquid therein to flow into the port. The annular recess is configured for receipt of the annular rim of the vessel to releasably mount the lid assembly on the vessel.

In accordance with another aspect of this invention there is provided the combination of a lid assembly and a drinking vessel. The drinking vessel has a hollow body bounding an internal cavity configured for receipt of a hot beverage. The hollow body has an annular rim at a top edge thereof. The lid assembly is configured to enable a user to drink or pour the beverage through the lid assembly and comprises a top wall, at least one vent, a peripheral sidewall extending about the top wall, and an annular recess. The top wall includes a port and a slidable cover. The slidable cover is configured to be slid between a closed position and an open position, and vice versa. The slidable cover when in the closed position seals the port and when in the open position exposes the port. The annular recess is configured for receipt of the annular rim of the vessel to releasably mount the lid assembly on the vessel. The at least one vent is configured to direct any steam from a hot beverage within the internal cavity away from the portion of the peripheral sidewall to which the port is adjacent.

DESCRIPTION OF THE DRAWING

Fig. 1 is an isometric view of one exemplary lid assembly constructed in accordance with this invention shown mounted on an insulated drinking vessel holding a hot beverage therein and including a slidable cover having a vent to enable steam to exit from the interior of the vessel;

Fig. 2 is a bottom plan view of the lid assembly of Fig. 1;

Fig. 3 is a top plan view of the lid assembly of Fig. 1;

Fig. 4 is an enlarged cross-section view taken along line 4 – 4 of Fig. 3;

Fig. 5 is a reduced exploded isometric view of the components making up the lid assembly and vessel shown in Fig. 1;

Fig. 6 is an enlarged isometric view of the underside of a slidable cover which constitutes one component of the lid assembly of Figs. 1 – 5;

Fig. 7 is an isometric view of the lid assembly sectioned along line 7 – 7 of Fig.1;

Fig. 8 is vertical cross-sectional view of the lid assembly and insulated drinking vessel of Fig.1, wherein the vessel is illustrated tilted to enable its hot beverage contents to flow out of the vessel through the lid, while enabling steam to exit from the vessel through the lid.

Fig. 9 is a top plan view of another exemplary lid assembly constructed in accordance with this invention, which lid assembly is configured to be mounted on an insulated drinking vessel holding a hot beverage therein and with the lid assembly including a vent to enable steam to exit from the interior of the vessel;

Fig. 10 is a bottom plan view of the lid assembly of Fig. 9;

Fig. 11 is a greatly enlarged partial longitudinal sectional view taken along line 11 – 11 of Fig. 9;

Fig. 12 is a greatly enlarged partial transverse sectional isometric view taken along line 12 – 12 of Fig. 9;

Fig. 13 is another greatly enlarged partial sectional isometric view of the vent;

Fig. 14 is still another greatly enlarged partial sectional isometric view of the vent; and

Fig. 15 is vertical cross-sectional view of the lid assembly of Fig. 9 shown mounted on an insulated drinking vessel holding a hot beverage, wherein the vessel

is illustrated tilted to enable its beverage contents to flow out of the vessel through the lid, while enabling steam to exit from the vessel through the lid.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the various figures of the drawing wherein like reference characters refer to like parts, there is shown at 20 in Fig. 1 a first exemplary embodiment of a lid assembly constructed in accordance with this invention. In Fig. 9 there is shown a second exemplary embodiment of a lid assembly 120 constructed in accordance with this invention. Both embodiments 20 and 120 are configured for releasable securement on an insulated drinking vessel 22 holding a hot beverage, and include an openable port to enable the user of the vessel to drink or pour the hot liquid through the lid assembly. Moreover, as will be described later, both embodiments include at least one vent to enable steam within the vessel to vent to the ambient atmosphere to thereby reduce the build-up of pressure within the vessel, which pressure build-up could result in hot liquid sputtering out of the port when the port is opened. It should be pointed out at this juncture that the lid assemblies 20 and 120 are merely exemplary. Thus, other lid assemblies can be constructed in accordance with this invention. Moreover, the drinking vessel 22 shown and described hereinafter is exemplary of numerous vessels with which the lid assembly of the subject invention can be used.

Thus, as can be seen in Figs. 1, 5, and 8 the vessel 22 is in the form of a tumbler 22 that is similar in construction to those conventional 16 oz. insulated decorative tumblers sold by the assignee of this invention. The tumbler 22 basically comprises an assembly of a hollow outer body or vessel 22A and a hollow inner body or vessel 22B which are fixedly secured together. The outer vessel 22A is a hollow member having a sidewall which is a body of revolution extending about a central longitudinal axis 24. The outer vessel can be formed in any manner, e.g., it can be blow molded or injection molded of any suitable plastic material. The hollow inner vessel 22B is also a hollow member having a sidewall which is a body of revolution extending about the central longitudinal axis 24. The inner vessel can also be formed in any manner, e.g., it can be blow molded or injection molded of any suitable plastic material (e.g., the same plastic material as the vessel 22A or some other material).

As best seen in Fig. 8 the top portion 22C of the sidewall of the inner vessel 22B is thickened to form the annular rim of the vessel 22 and is undercut on its outer

surface for engagement with the top edge of the outer vessel 22A when the inner vessel is located within the outer vessel. The inner and outer vessels are secured together by a welded, e.g., ultrasonically welded, joint at the interface where the undercut surface of the top portion 22C of the inner vessel meets the top surface of the outer vessel. While not shown in the drawing, the outer diameter of the outer surface of the portion 22C is slightly greater than the outer diameter of the top edge of the outer vessel to create a slight undercut surface thereat. This undercut surface is arranged to be engaged by a small annular ridge (to be described later) of the lid assembly to facilitate the releasable securement of the lid assembly on the vessel 22.

With the inner vessel 22A located within the outer vessel the outer surface of the inner vessel is disposed opposite and confronting the inner surface of the outer vessel, but is spaced slightly therefrom to form an annular thermally insulating space 26 therebetween. Thus, the inner vessel 22B, which is arranged to hold a hot beverage 10 (Fig. 14) in its internal cavity 22D, is thermally insulated from the ambient atmosphere. If desired, and if at least the outer vessel is transparent, like shown in Fig. 1 (or if the outer vessel includes a transparent window), a decorative wrap (not shown) or some other decorative item may be located within the insulating space 26 to be visible through the outer wall or window to enhance the aesthetically pleasing appearance of the vessel.

Turning now to Figs. 1 and 4, the details of the lid assembly 20 itself will now be described. As can be seen the lid assembly 20 basically comprises an integral unit in the form of a top wall 28, a peripheral sidewall 30 extending about the top wall, and an annular recess 32 (Fig. 4) located under the top wall 28 and within the bounds of the peripheral sidewall 30. The top wall 28 is of generally circular profile and is generally convex or crowned, whereupon its top surface bulges upward, while its undersurface is concave. The top wall 28 includes an opening or port 34 adjacent the front edge of the lid assembly. The port 34 is in fluid communication with the internal cavity 22D and serves to enable the hot beverage 10 to be poured out of the vessel through it or to be drank through it, as will be described later and as illustrated in Fig. 8.

In order to close off the port to keep the liquid beverage within the vessel until access to the beverage is desired, a slidable closure or cover 36 is provided. The cover 36 is located within a somewhat elongated recess 38 in the top wall 28. The cover is a somewhat elongated member having a front end 36A, a rear end 36B.

The outer or upper surface of the cover 36, like the top wall 28, is also generally convex or crowned so that it forms a continuous surface with the top surface of the top wall 28. The cover 36 is configured to be slid longitudinally along the recess 38 between an open position, like shown in Fig. 3, whereupon the port 34 is exposed, and a closed position, like shown in Fig.1, whereupon the port is covered or closed. As best seen in Fig. 6 the undersurface of the cover 36 adjacent its front end 36A is in the form of a thickened mesa 36C. The mesa is configured to engage a peripheral gasket or ring (to be described later), surrounding the port 34 to form a fluid tight interface between the cover 36 and the port 34 when the cover is in the closed position. It should be noted that the cover 36 can be located at any position longitudinal position within the recess 38 between the open and closed positions so that the port 34 can be partially closed to any extent desired.

The sliding of the cover within the recess is achieved by means of a pair tracks in the form of elongated linear slots 40 extending along the central portion of the recess 38 and which are centered with respect to the longitudinal (long) axis of the recess. Each slot is arranged to receive a respective tab 42 projecting downward from the undersurface of the cover 36, as can be seen in Fig. 6. In particular, each tab 42 projects downward from the undersurface of the cover through a respective one of the slots 40. Each tab 42 includes a cam surface 42A which enables the tab to be snap-fit within its associated slot 40 to prevent it from coming out of that slot, thereby preventing the cover from being accidentally disconnected from the recess 38.

As best seen in Figs. 1 and 4 the outer periphery of the peripheral sidewall 30 flares slightly outward from its bottom edge 44 to its top edge 46, and with the front portion of the peripheral sidewall flaring the most to form a drinking/pouring lip 48. The lip is undercut slightly below its top edge as shown clearly in Figs. 4 and 8 in the interest of ergonomics to facilitate closer engagement of the user's mouth with the lip when the user drinks from the vessel. Also, the portion of the surface of the peripheral sidewall 30 from its top edge 46 to the periphery of the top wall 28 tapers inward to form an inner funnel-shaped surface 50. A drinking/pouring channel 52 is located in the funnel shaped surface 50 at the location of the lip 48. The channel 52 communicates with the recess 38 and hence the port 34. Accordingly, when the cover 36 is either fully or partially open to expose the port 34 and the vessel 22 is tilted, the hot beverage 10 within the vessel 22 can flow out of the port 34 through

the contiguous portion of the recess 38 and into the channel 52, from which it can be drank by a user placing his or her mouth on the lip 48 or can be poured from the channel, such as shown in Fig. 8.

The funnel-shaped surface 50 merges with the periphery of the domed top wall 28 at a crevice 54. The portion of the crevice 54 which is located closely adjacent the port 34 is lower in height than the portion of the crevice located diametrically opposite the port. Moreover, the domed top wall 28 tilts downward in the direction toward the port. Accordingly, if any beverage 10 should gain access to the top wall it will flow down the crevice 54 back into the port, assuming that the cover is at least partially open. This action prevents puddling of any beverage on the lid assembly.

As mentioned earlier, the lid assembly 20 includes a vent to enable steam within the vessel to escape to the ambient surroundings when the slidable cover is in the closed position. By so doing, a build-up of steam pressure within the vessel will be avoided or minimized. This feature is of considerable importance to prevent hot liquid from sputtering or "burping" out of the port 34 when the slidable cover is opened due to a build-up of excess steam pressure within the vessel. In the exemplary embodiment 20 the vent forms a portion of the slidable cover. In particular, the slidable cover 34 includes a pair of slots or channels 56 in its undersurface on opposite sides of a central slot or channel 58. Each side channel 56 extends from the front edge 36A of the cover to the rear edge 36B of the cover. Moreover, each channel 56 includes a side opening 56A at the side of the cover to which the channel is adjacent. All of the channels are in fluid communication with one another. Moreover, the side channels 56 overlie the slots 40 in the recess 38 and are thus in fluid communication with those slots and hence the interior of the vessel 22 when the lid assembly is mounted on the vessel. Accordingly, any steam 12 within the vessel 22 can flow through the slots 40 and into the channels 56 of the cover, from whence the steam can flow down the channels to exit the channels at the rear end 36B of the cover when the cover is in the fully closed state. Some steam can also exit through the side openings 56A of the channels. Thus, if the user of the vessel, wishing to drink from the vessel brings the lip 48 of the lid assembly to his/her mouth, with the cover 36 being in the closed position, steam will be directed away from the user's face by the backwardly directed channels 56. When the user does slide the slidable cover to the open position to enable him/her to drink the

liquid through the port, there will be no sputtering or burping of liquid through the port, since excess steam will have been previous vented to the ambient atmosphere by the channels in the cover. Moreover, when the slidable cover is in the open position, steam passing through the slots 40 can flow down the channels 56 and 58 toward the front 36A of the slidable cover from whence such steam will merge with the any steam exiting through the now open port 34, such as shown in Fig. 8.

As mentioned earlier the lid assembly 20 includes an annular recess 32. That recess serves as the means for releasably mounting the lid assembly onto the rim 22C of the vessel 22. In particular, as can be seen in Fig. 4 the annular recess 32 includes a small annular ridge 32A extending thereabout from the outer surface of the annular recess. The ridge 32A is arranged to engage the slightly undercut outer surface of the vessel 22 below its rim 22C to enable the lid assembly 20 to be releasably snap-fit onto the rim of the vessel 22 when the rim of the vessel is within the annular recess 32.

As best seen in Fig. 1 – 4 the rear portion of the peripheral sidewall 30 includes a ramp-like projection 60. The projection 60 serves as a means for facilitating the removal of the lid assembly 20 from the vessel 22 when desired. In particular, the projection 60 includes an outer surface which flares outward from the bottom edge 44 of the peripheral sidewall to the top edge 46 of the peripheral sidewall. Two resilient, e.g., thermoplastic elastomer ("TPE"), nubs 62 and 64 project outward from the outer surface of the ramp-like projection and are arranged to be engaged by the thumb or finger of a user to apply upward pressure on the ramp-like projection, thereby lifting or pivoting the lid assembly 20 off of the vessel 22. The nubs provide as somewhat soft and non-slip surface for the user's thumb or finger to engage comfortably, yet effectively, to lift the lid assembly off of the vessel.

In order to establish a good fluid tight seal between the lid assembly 20 and the vessel 22, when the lid assembly is mounted thereon, to prevent leakage of the beverage, the lid assembly includes a resilient, e.g., a TPE, sealing ring 66 (Figs. 4 and 5). The ring 66 is located on the opposite surface of the annular recess 32 as the annular ridge 32A and is configured to tightly frictionally engage the inner surface of the rim 22C of the vessel when the rim is in place in the annular recess. This action provides a fluid-tight interface therebetween, thereby preventing any leakage of hot beverage out of the vessel through that interface.

As mentioned earlier the port 34 includes a gasket or seal to establish a good fluid-tight interface between the slidable cover 36 and the port 34, when the cover is in the closed position to thereby prevent the accidental egress of hot liquid from the port. In particular, a resilient, e.g., TPE, sealing ring 68 is provided about the periphery of the port and is arranged to be engaged by the mesa 36C on the underside of the slidable cover 36 when the cover is in the fully closed position.

In accordance with one exemplary preferred embodiment of the invention the TPE members 62, 64, 66 and 68 are formed as an integral unit, such as clearly shown in Fig. 5. In fact, in the exemplary embodiment shown that integral unit also includes the resilient letters 70 making up the word "Tervis" (a trademark of the assignee of the subject invention) which are located in a matingly shaped recess in the top wall 28.

In order to facilitate the sliding of the cover 36 between the closed and open position and vice versa, two resilient, e.g., TPE, ridges 72 and 74 project outward from the domed outer surface of the cover 36. Those ridges provide as somewhat soft and non-slip surface for the user's thumb or finger to engage comfortably, yet effectively, to slide the cover to any desired position.

As mentioned earlier the undersurface of the top wall 28 is concave. That concavity p rovides additional space under the lid assembly for accommodating foam, whipped cream or some other frothy material that may be on the surface of the beverage within the vessel.

Turning now to Figs. 9 - 15 there is shown an alternative embodiment 120 of a lid assembly constructed in accordance with this invention. The lid assembly 120 includes the same features as the lid assembly 20, except for the construction of the vent. Thus, in the interest of brevity the common features of the lid assemblies 20 and 120 will be given the same reference characters and the details of their construction, arrangement and function will not be reiterated.

The vent of the embodiment 120 is in the form of a pair of elongated slots 122. A similarly shaped slot 124 is located between the slots 122. The slots 122 extend through the portion of the funnel shaped surface 50 of the peripheral sidewall 30 where it merges with the top wall 28 at the rear of the lid assembly 120. As best seen in Fig. 11, each slot 122 has a front edge 122A and a rear edge 122B, with the front edge 122A of each slot forming an entryway for the slot and which is in fluid communication with the interior of the vessel 22 when the lid assembly 120 is

mounted on the vessel. Each slot 122 tapers from its front edge 122A to its rear edge 122B, with the rear edge 122B of each slot being flush with the funnel shaped surface 50. A pair of plates or baffles 124 is located below the slots, as shown in Figs. 13 and 14. In particular, each baffle 124 is disposed under a respective one of the slots 122. The baffles serve to direct t he steam within the vessel into the entryway of its associated slot, from whence the steam flows backwards, such as shown in Fig. 15. Moreover, the presence of the baffles prevents the accidental leakage of the hot liquid through the slots 122.

In the interest of aesthetics the slots 122 are of undulating or wavy shape to provide a visual clue to the user that they form a vent for steam from the vessel. The slot 124 is not in fluid communication with the interior of the vessel and thus does not form a vent. However, it is of the same size and shape as the vents 122 to add to the aesthetic appearance of the slots 122.

Without further elaboration the foregoing will so fully illustrate our invention that others may, by applying current or future knowledge, adopt the same for use under various conditions of service.

CLAIMS

We claim:

1. A lid assembly for releasable mounting on a drinking vessel having a hollow body bounding an internal cavity configured for receipt of a beverage to enable a user to drink or pour the beverage through said lid assembly, the hollow body having an annular rim at a top edge thereof, said lid assembly comprising a generally convex crowned top wall, a peripheral sidewall extending about said top wall, and an annular recess, said crowned top wall including a port configured for communication with said internal cavity when said lid assembly is mounted on the vessel, said crowned top wall including a slidable cover configured to be slid between a closed position and an open position and vice versa, said slidable cover when in said closed position sealing said port and when in said open position exposing said port, said peripheral sidewall having a top edge located above said crowned top wall and an inner surface tapering downward from said top edge to said crowned top wall, said inner surface merging with said crowned top wall to form a crevice providing a path for any beverage that may become located on said crowned top wall to flow into said port, said annular recess being configured for receipt of the annular rim of the vessel to releasably mount said lid assembly on the vessel.

2. The lid assembly of Claim 1 wherein said annular recess comprises an elastomeric member configured for engaging said annular rim to result in a fluid-tight interface between said lid assembly and said the vessel.

3. The lid assembly of Claim 1 wherein said port has a periphery and comprises an elastomeric seal about said periphery of said port, said elastomeric seal being configured to be engaged by said cover to form a fluid-tight interface therebetween when said cover is in said closed position.

4. The lid assembly of Claim 2 wherein said port has a periphery and comprises an elastomeric seal about said periphery of said port, said elastomeric seal being configured to be engaged by said cover to form a fluid-tight interface therebetween when said cover is in said closed position, said elastomeric member for frictionally engaging said annular ring and said elastomeric seal extending about said periphery of said port being an integral unit.

5. The lid assembly of Claim 1 wherein said peripheral sidewall includes a pouring channel located therein between a portion of said top edge and said port to enable a beverage in the vessel to be poured out of the vessel through said port.

6. The lid assembly of Claim 1 wherein said peripheral sidewall additionally comprises an undercut lip portion configured to be engaged by a user to enable the user to drink from the vessel when said lid assembly is releasably secured to the vessel and said cover is in said open position.

7. The lid assembly of Claim 5 wherein said peripheral sidewall additionally comprises an undercut lip portion configured to be engaged by a user to enable the user to drink from the vessel when said lid assembly is releasably secured to the vessel and said cover is in said open position, said undercut lip portion being located adjacent said pouring channel.

8. The lid assembly of Claim 1 wherein said lid assembly comprises a ramp-like projection extending out from said peripheral sidewall, said ramp-like projection being configured to be engaged by a user to apply upward pressure to said projection to facilitate the removal of said lid assembly from the vessel.

9. The lid assembly of Claim 8 wherein said ramp-like projection includes at least one elastomeric member configured for engagement by a user to facilitate the removal of said lid assembly from the vessel.

10. The lid assembly of Claim 4 wherein said lid assembly comprises a ramp-like projection extending out from said peripheral sidewall, said ramp-like projection including at least one elastomeric member, said at least one elastomeric member forming a portion of said integral unit and being configured to be engaged by a user to apply upward pressure to said projection to facilitate the removal of said lid assembly from the vessel.

11. The lid assembly of Claim 1 wherein said cover includes an outer surface having at least one elastomeric member configured for engagement by a user to facilitate the sliding of said cover between said closed and open positions.

12. The lid assembly of Claim 1 wherein said top wall includes a concave undersurface to provide additional volume for said internal cavity when said lid assembly is mounted on the vessel.

13. A lid assembly for releasable mounting on a drinking vessel having a hollow body bounding an internal cavity configured for receipt of a hot beverage to enable a user to drink or pour the beverage through said lid assembly, the hollow body having an annular rim at a top edge thereof, said lid assembly comprising top wall, a vent, a peripheral sidewall extending about said top wall, and an annular

recess, said top wall including a port and a slidable cover, said slidable cover being configured to be slid between a closed position and an open position and vice versa, said slidable cover when in said closed position sealing said port and when in said open position exposing said port, said port being located adjacent a portion of said peripheral sidewall, said annular recess being configured for receipt of the annular rim of the vessel to releasably mount said lid assembly on the vessel, said vent being configured to direct any steam from a hot beverage within the internal cavity away from said portion of said peripheral sidewall to which said port is adjacent.

14. The lid assembly of Claim 13 wherein said vent comprises at least one channel located in said slidable cover, said at least one channel terminating in an open end directed away from said port.

15. The lid assembly of Claim 13 wherein said cover includes at least one downwardly projecting tab and wherein said top wall includes at least one slot in which said tab is located, said tab being configured to hold said cover on said top wall while enabling said cover to be slid between said open and closed positions, said at least one channel of said cover being in communication with said at least one slot of said top wall whereby any steam within said internal cavity can flow through a portion of said slot and into said at least one channel of said cover.

16. The lid assembly of Claim 13 wherein said vent is located in said top wall and remote from said port.

17. The lid assembly of Claim 16 wherein said vent comprises a slot and wherein said lid assembly additionally comprises a baffle located below said top wall and under said at least one slot to direct any steam within the internal cavity out through said at least one slot and away from said portion of said peripheral sidewall to which said port is adjacent.

18. The lid assembly of Claim 17 wherein said vent comprises a plurality of undulating shaped slots.

19. In combination a lid assembly and a vessel, said vessel comprising a drinking vessel having a hollow body bounding an internal cavity, said hollow body having an annular rim at a top edge thereof, said lid assembly being configured to enable a user to drink or pour the beverage through said lid assembly, said lid assembly comprising a generally convex crowned top wall, a peripheral sidewall extending about said crowned top wall, and an annular recess, said crowned top wall including a port configured for communication with said internal cavity when said

lid assembly is mounted on said vessel, said crowned top wall including a slidable cover, said slidable cover being configured to be slid between a closed position and an open position and vice versa, said slidable cover when in said closed position sealing said port and when in said open position exposing said port, said peripheral sidewall having a top edge located above said crowned top wall and an inner surface tapering downward from said top edge to said crowned top wall, said inner surface merging with said crowned top wall to form a crevice providing a path for liquid therein to flow into said port, said annular recess being configured for receipt of said annular rim of the vessel to releasably mount said lid assembly on the vessel.

20. The combination of Claim 19 wherein said vessel comprises a double walled insulated vessel.

21. The combination of Claim 19 wherein said annular recess comprises an elastomeric member configured for engaging said annular rim to result in a fluid-tight interface between said lid assembly and said the vessel.

22. The combination of Claim 19 wherein said port has a periphery and comprises an elastomeric seal about said periphery of said port, said elastomeric seal being configured to be engaged by said cover to form a fluid-tight interface therebetween when said cover is in said closed position.

23. The combination of Claim 19 wherein said lid assembly comprises a ramp-like projection extending out from said peripheral sidewall, said ramp-like projection being configured to be engaged by a user to apply upward pressure to said projection to facilitate the removal of said lid assembly from the vessel.

24. The combination of Claim 23 wherein said ramp-like projection includes at least one elastomeric member configured for engagement by a user to facilitate the removal of said lid assembly from the vessel.

25. The combination of Claim 19 wherein said cover includes an outer surface having at least one elastomeric member configured for engagement by a user to facilitate the sliding of said cover between said closed and open positions.

26. The combination of Claim 19 wherein said top wall includes a concave undersurface to provide additional volume for said internal cavity when said lid assembly is mounted on the vessel.

27. In combination a lid assembly and a drinking vessel, said drinking vessel having a hollow body bounding an internal cavity configured for receipt of a hot beverage, said hollow body having an annular rim at a top edge thereof, said lid

assembly being configured to enable a user to drink or pour the beverage through said lid assembly and comprising top wall, a vent, a peripheral sidewall extending about said top wall, and an annular recess, said top wall including a port and a slidable cover, said slidable cover being configured to be slid between a closed position and an open position and vice versa, said slidable cover when in said closed position sealing said port and when in said open position exposing said port, said annular recess being configured for receipt of the annular rim of the vessel to releasably mount said lid assembly on said vessel, said vent being configured to direct any steam from a hot beverage within said internal cavity away from said portion of said peripheral sidewall to which said port is adjacent.

28. The combination of Claim 27 wherein said vent comprises at least one channel located in said slidable cover, said at least one channel terminating in an open end directed away from said port.

29. The combination of Claim 27 wherein said cover includes at least one downwardly projecting tab and wherein said top wall includes at least one slot in which said tab is located, said tab being configured to hold said cover on said top wall while enabling said cover to be slid between said open and closed positions, said at least one channel of said cover being in communication with said at least one slot of said top wall whereby any steam within said internal cavity can flow through a portion of said slot and into said at least one channel of said cover.

30. The combination of Claim 27 wherein said vent is located in said top wall and remote from said port.

31. The combination of Claim 30 wherein said vent comprises a slot and wherein said lid assembly additionally comprises a baffle located below said top wall and under said at least one slot to direct any steam within said internal cavity out through said at least one slot and away from the face of the user when the user drinks the hot beverage from said vessel.

32. The combination of Claim 31 wherein said vent comprises a plurality of undulating shaped slots.

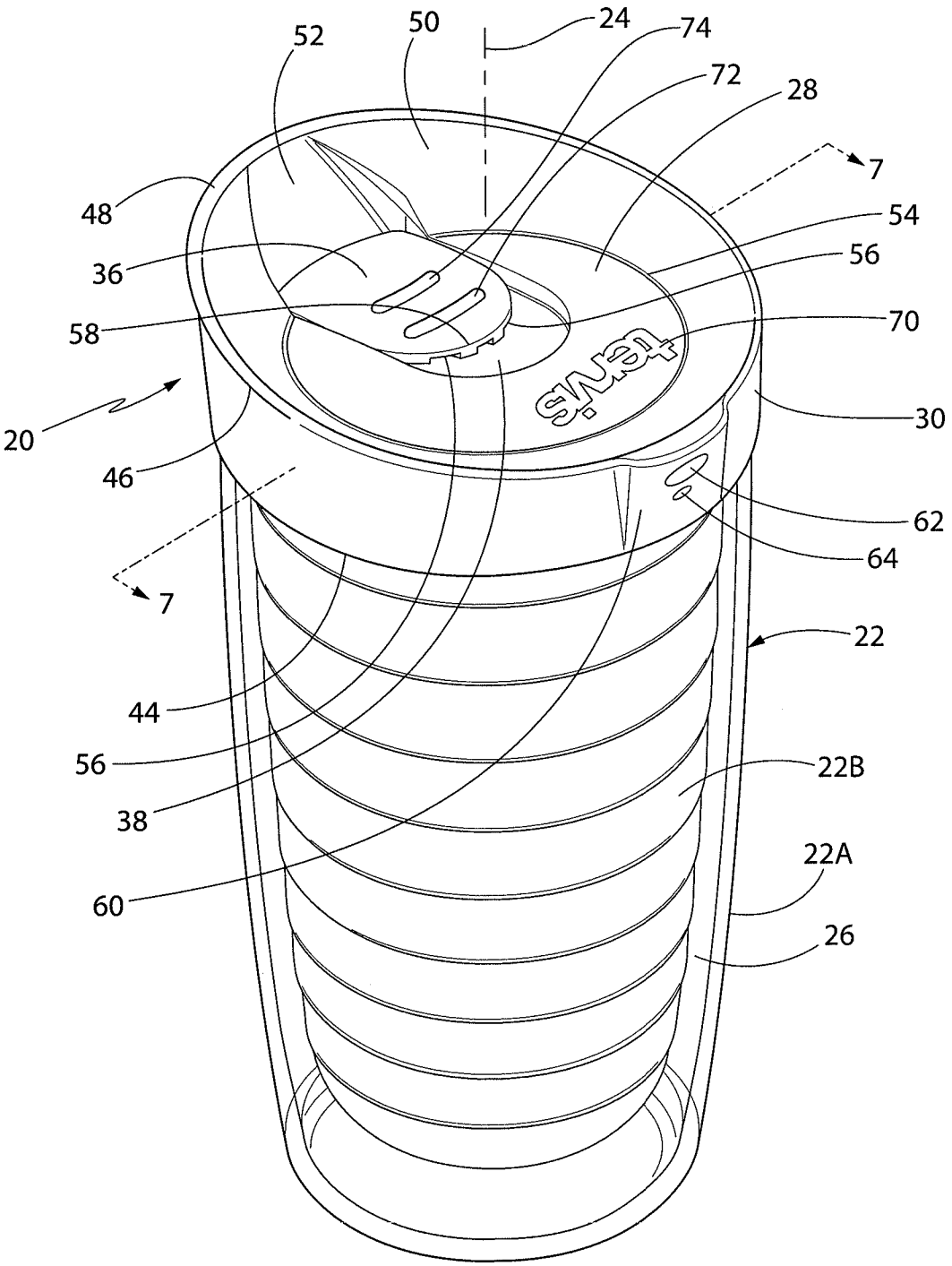

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FIG. 1

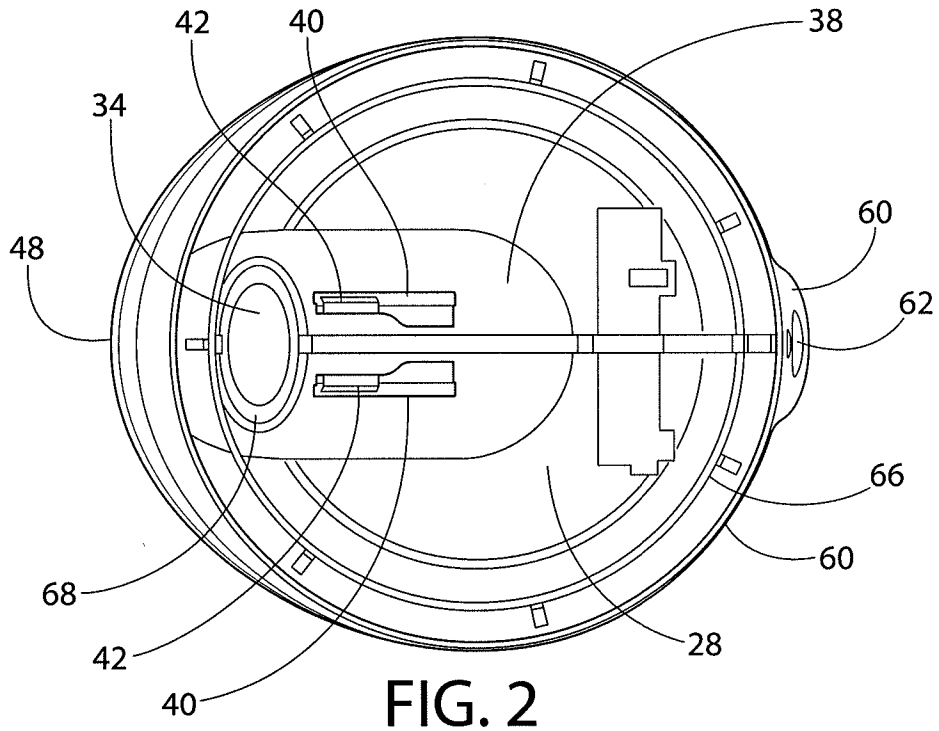

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FIG. 2

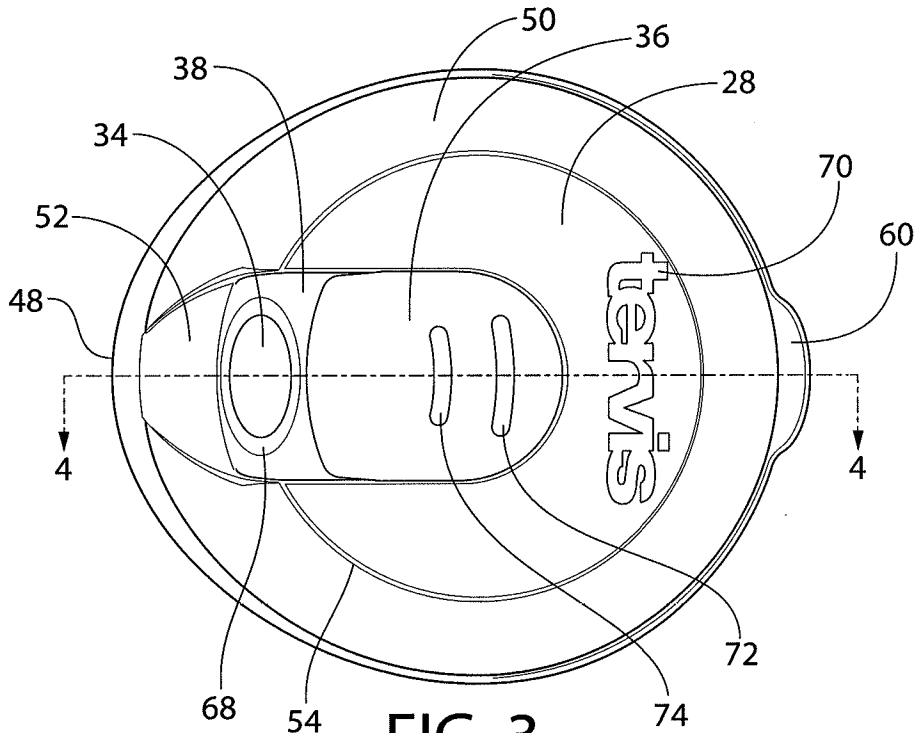

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FIG. 3

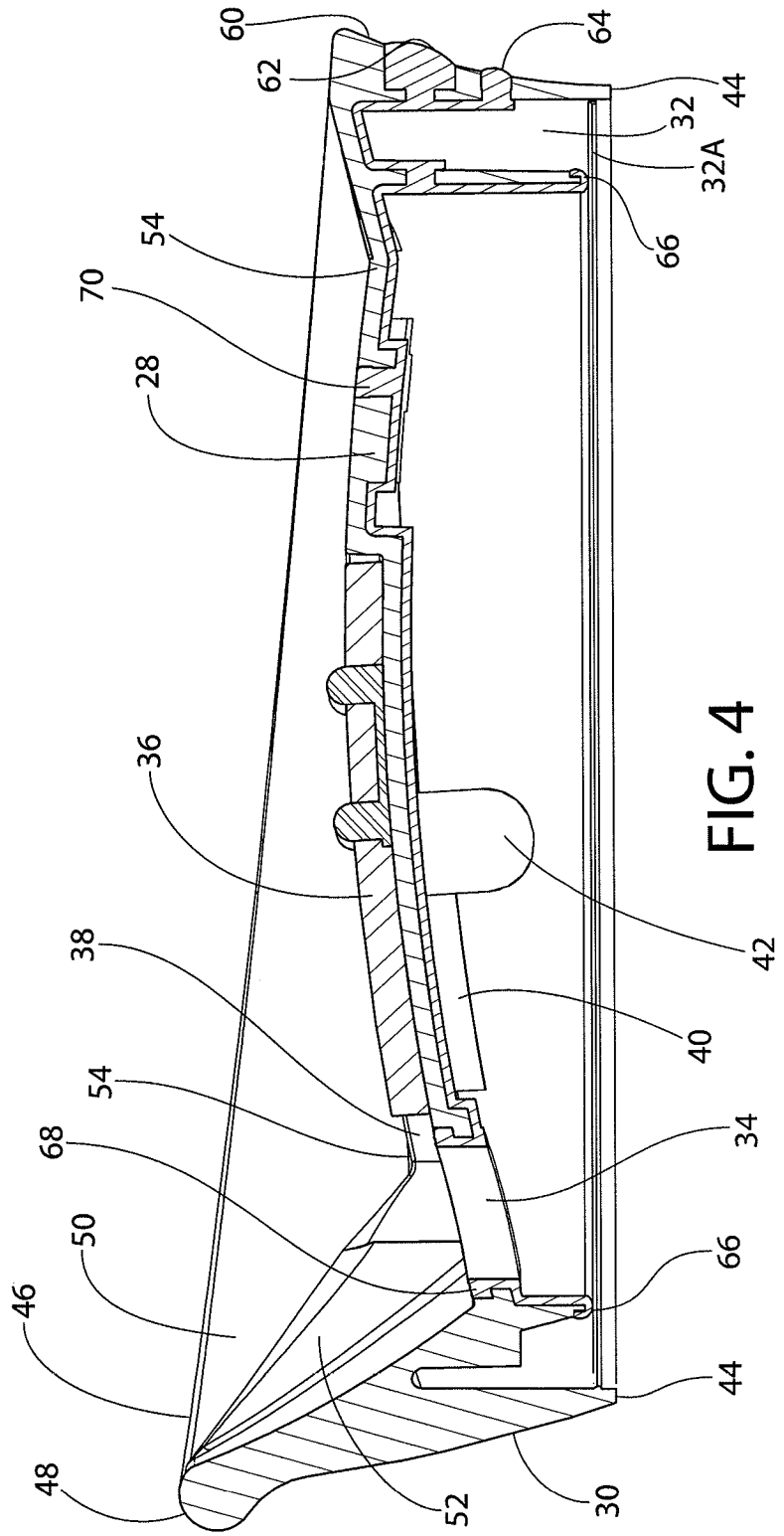


FIG. 4

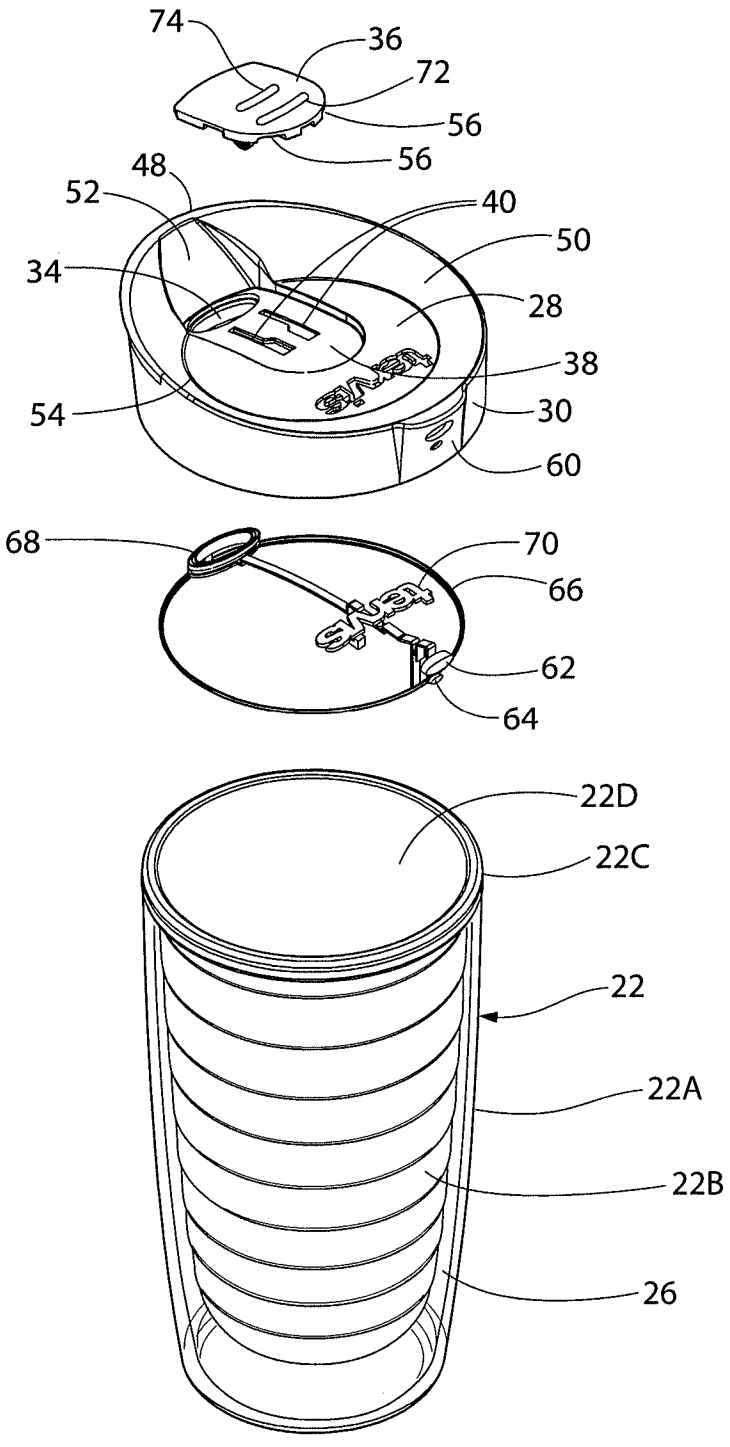

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FIG. 5

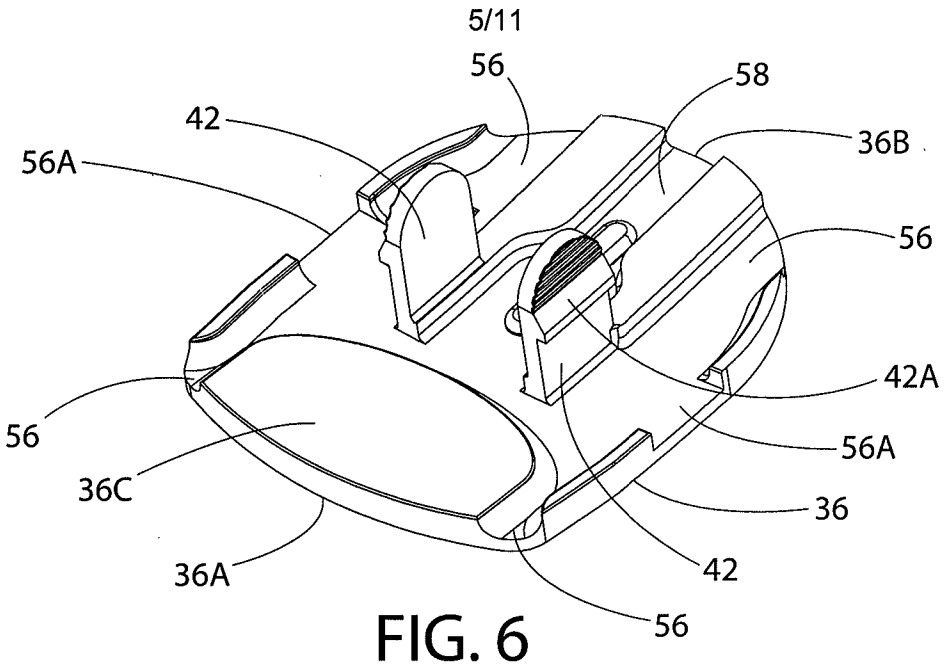

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FIG. 6

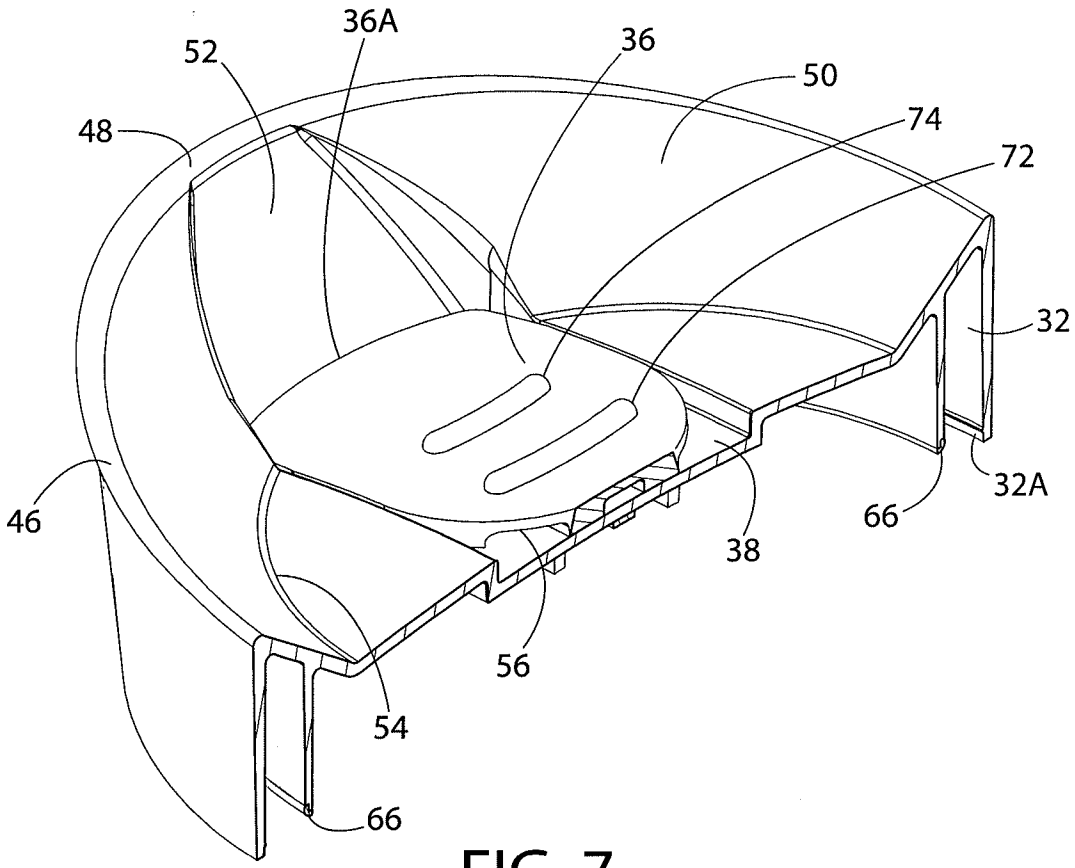

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FIG. 7

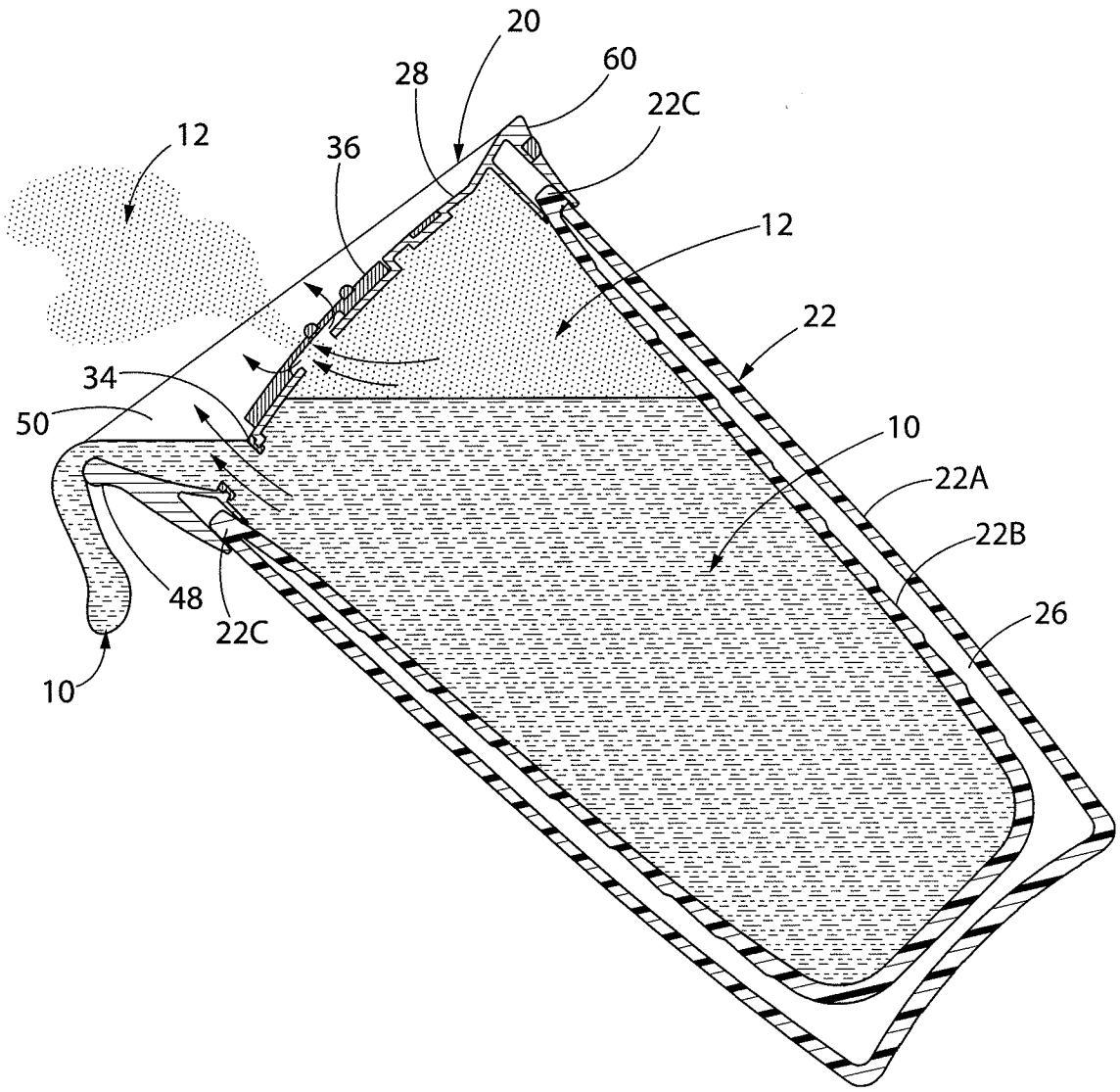


FIG. 8

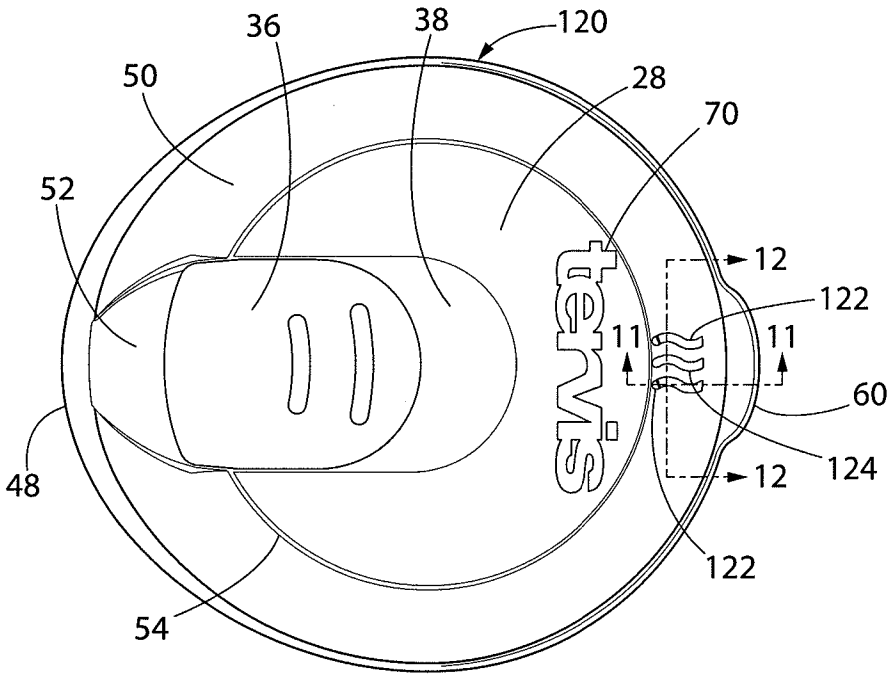

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FIG. 9

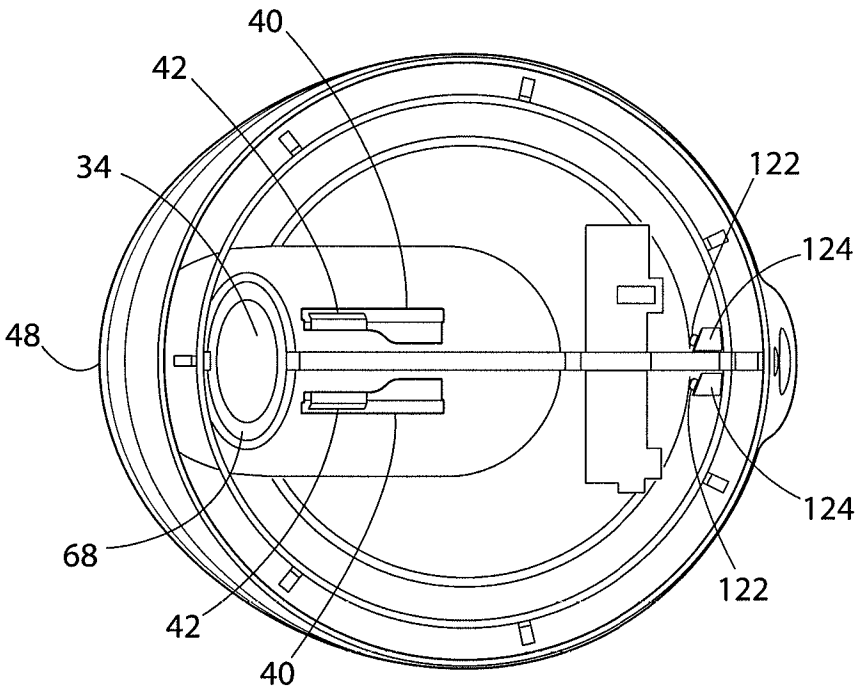

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FIG. 10

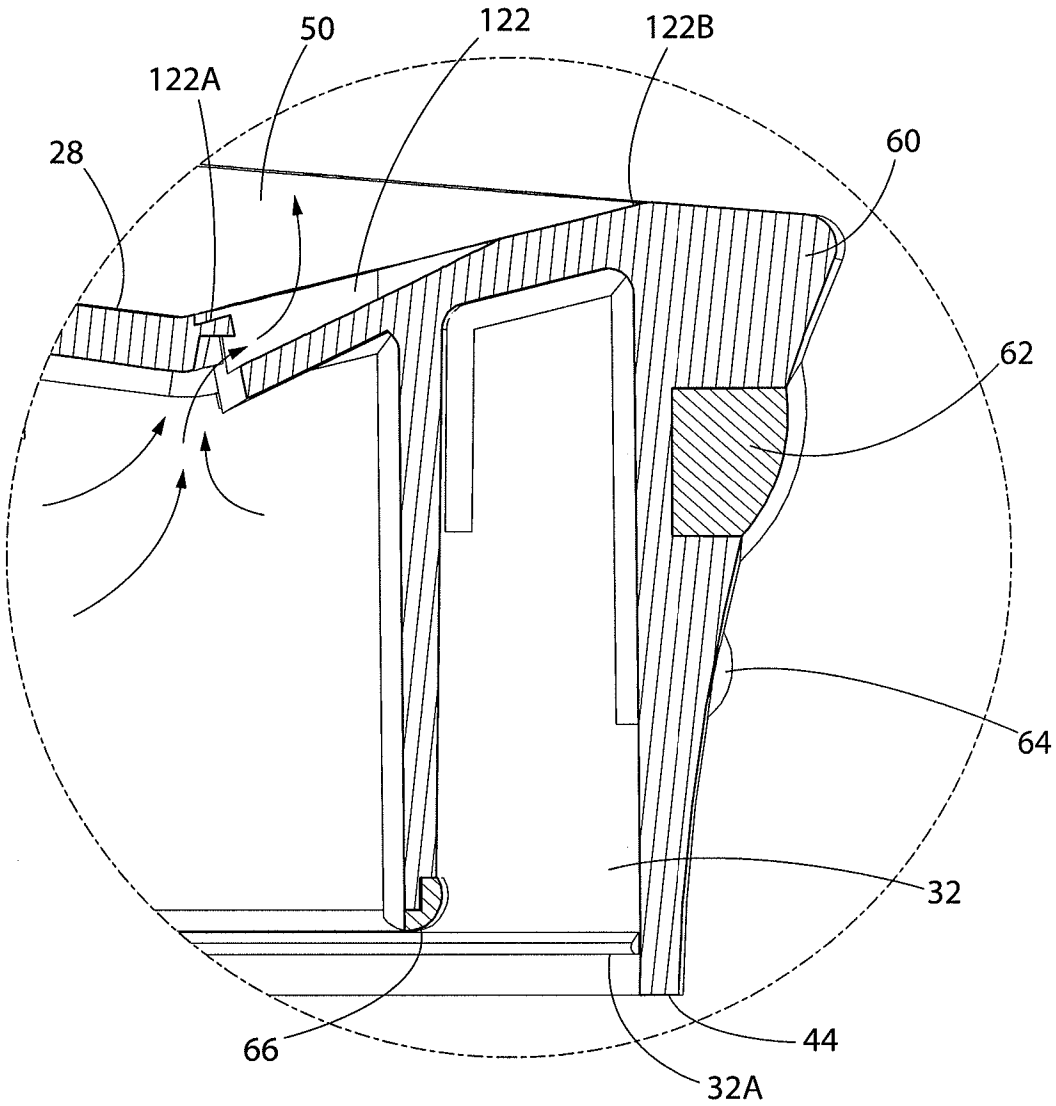


FIG. 11

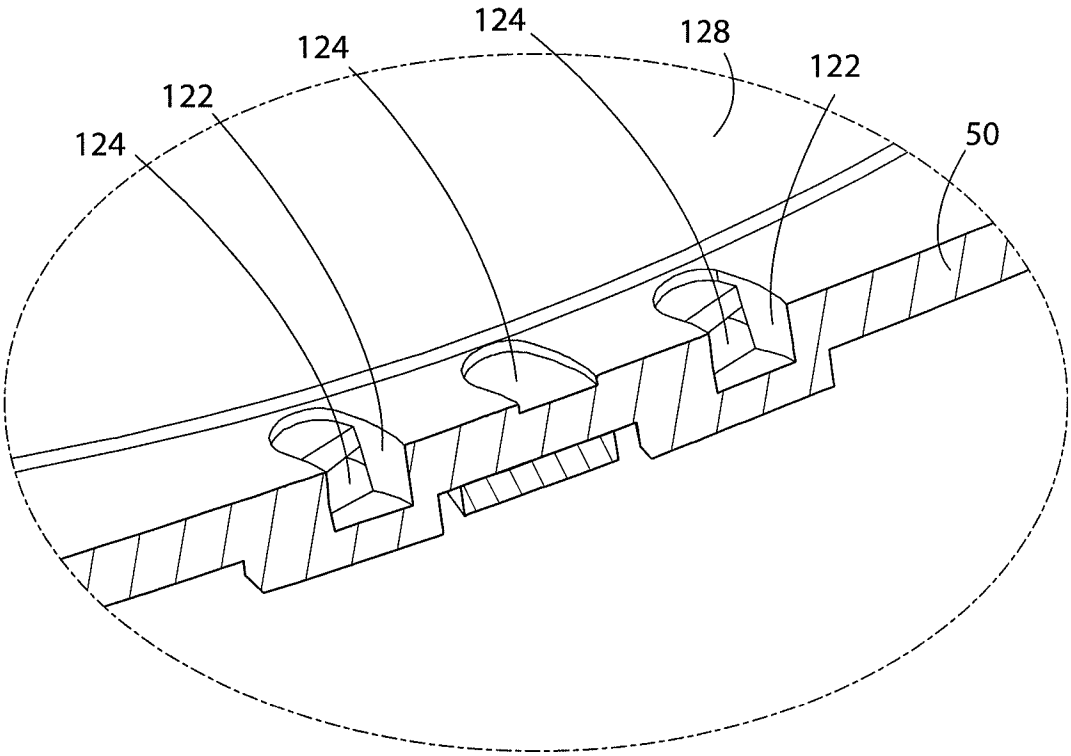


FIG. 12

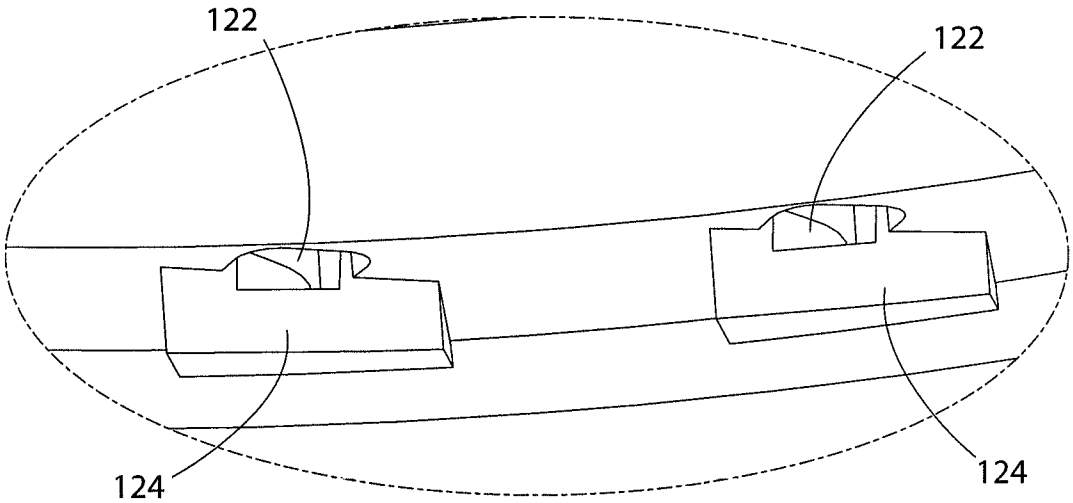


FIG. 13

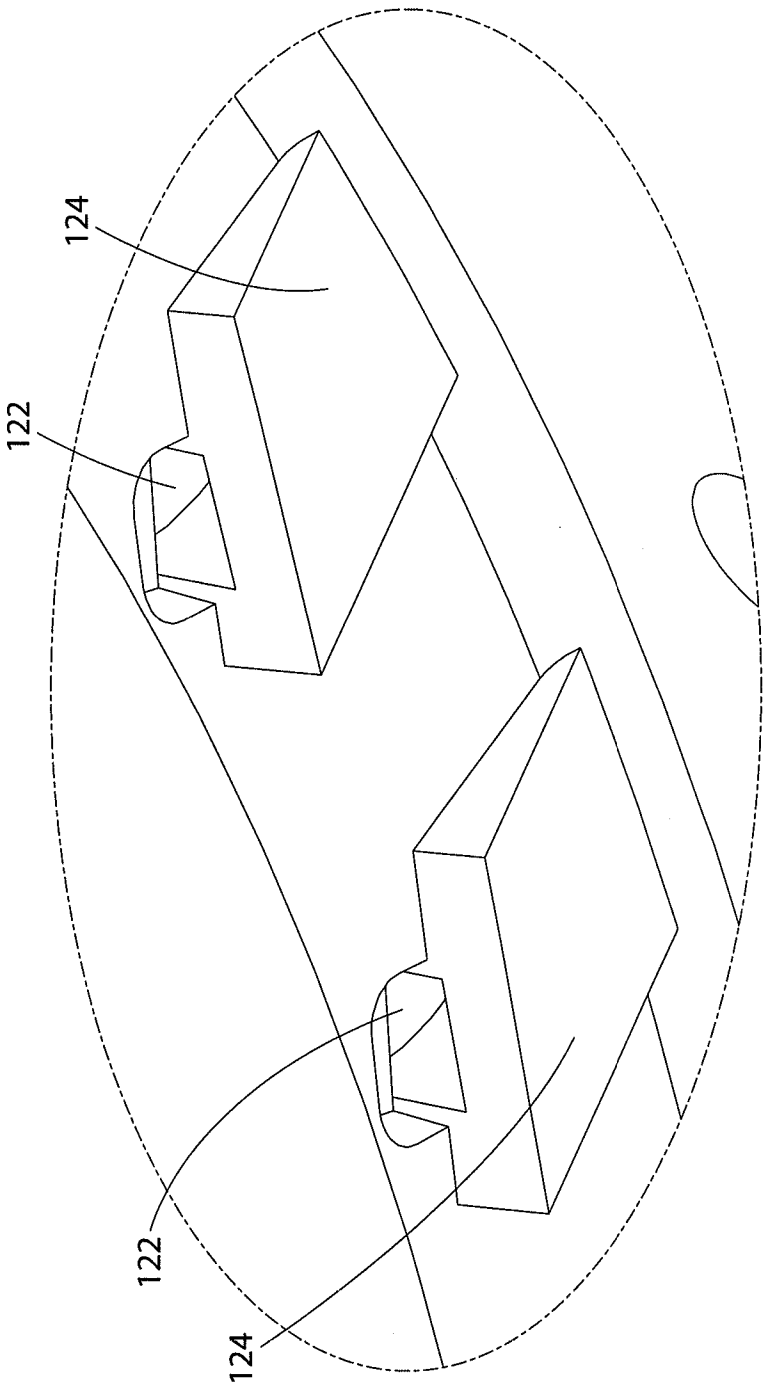


FIG. 14

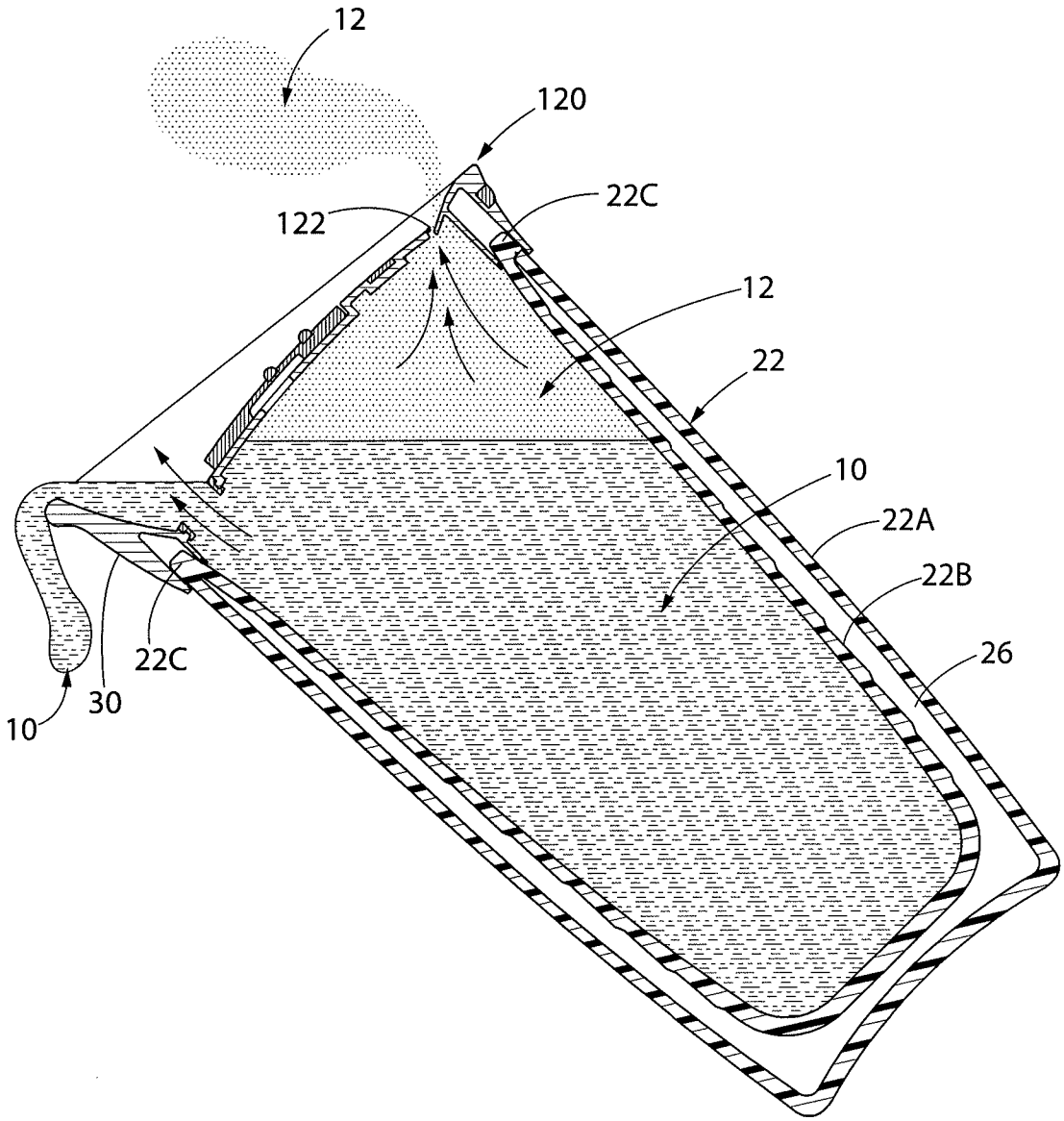


FIG. 15

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2016/021669

A. CLASSIFICATION OF SUBJECT MATTER
INV. A47G19/22 B65D47/28
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A47G B65D A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 299 05 195 U1 (SHEU JAMES [TW]) 2 June 1999 (1999-06-02) page 2, line 30 - page 5, line 17; figures -----	1-14,16, 19-28,30
X	US 6 752 287 B1 (LIN SHIN-SHUOH [US]) 22 June 2004 (2004-06-22) column 4, line 41 - column 6, line 36; figures -----	1-14,16, 19-28,30
A	US 6 216 903 B1 (HIROSE MASATO [JP] ET AL) 17 April 2001 (2001-04-17) column 11, line 31 - line 35; figures -----	1,19
X	US 4 057 167 A (LEE JIN KU) 8 November 1977 (1977-11-08) column 4, line 64 - column 7, line 65; figures -----	13,16, 27,30
	-/--	

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 August 2016	22/08/2016

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Vistisen, Lars

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Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/021669

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☒ No protest accompanied the payment of additional search fees.

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2015/041478 A1 (ABRAMS ALEX [US] ET AL) 12 February 2015 (2015-02-12) paragraph [0019] - paragraph [0055]; figures -----	13,16, 27,30
X	US 4 094 433 A (NUMBERS JODY L) 13 June 1978 (1978-06-13) column 2, line 50 - column 4, last line; figures -----	13,27

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/US2016/021669

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 29905195 U1	02-06-1999	NONE	
US 6752287 B1	22-06-2004	NONE	
US 6216903 B1	17-04-2001	CA 2266305 A1	27-09-1999
		JP 4154722 B2	24-09-2008
		JP H11278523 A	12-10-1999
		US 6216903 B1	17-04-2001
US 4057167 A	08-11-1977	NONE	
US 2015041478 A1	12-02-2015	US 2015041478 A1	12-02-2015
		US 2015297032 A1	22-10-2015
		WO 2015023548 A1	19-02-2015
US 4094433 A	13-06-1978	DE 2729588 A1	20-07-1978
		FR 2377337 A1	11-08-1978
		JP S5389585 A	07-08-1978
		SE 7704500 A	15-07-1978
		US 4094433 A	13-06-1978

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-12, 19-26

   A lid assembly possibly in combination with a vessel with details of the shape of the external surfaces of the lid.

   ---

2. claims: 13-18, 27-32

   A lid assembly possibly in combination with a vessel for hot liquids with details of a vent for releasing steam.
