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(71) Applicant *(for all designated States except US)*: **INSULAIR, INC.** [US/US]; 35275 Welty Rd, Vernalis, CA 95385-9732 (US).

(74) Agent: **PRESSMAN, David**; 1070 Green Street, #1402, San Francisco, CA 94133-5418 (US).

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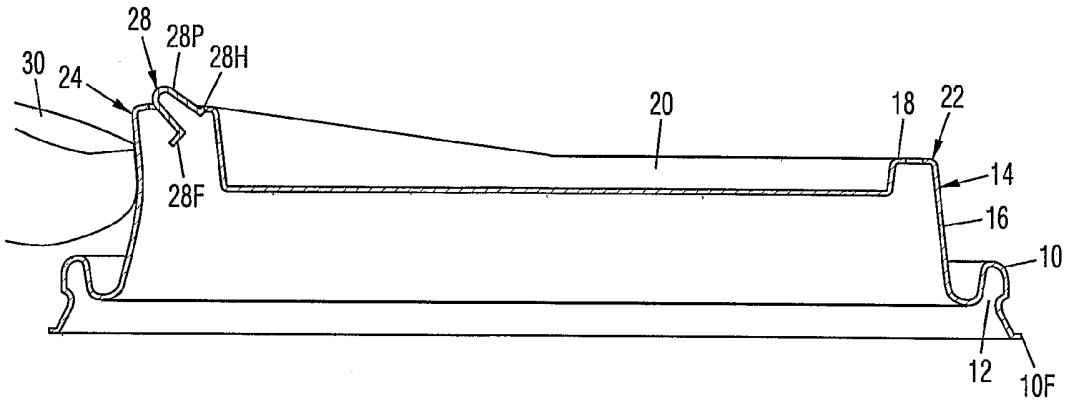
(54) Title: LID WITH BISTABLY VALVED DRINKING SPOUT



(57) Abstract: A lid with a raised drink-through spout (24) has a hinged flap valve (28) covering a drink opening (26') formed in the surface of the spout. The user opens the valve by pushing the top of a post (28P) on the flap (28F) down. A hinge (28H) holding the flap urges the flap to return to its closed and horizontal orientation, but the top edge of the post will catch under a catch edge of the opening opposite the hinge. This holds the flap open. The user can then drink from the spout. To re-close the valve, the user applies inward force to the outer sidewall (16) below the catch edge. This causes the wall to deflect inwardly and the catch edge to distort outwardly, widening the hole. This releases the post, allowing it to move upwardly so that the flap can spring back to its horizontal and closed position.

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Patent Application Of

CLAUS E. SADLIER

For

TITLE: LID WITH BISTABLY VALVED DRINKING SPOUT

BACKGROUND—CROSS-REFERENCE TO RELATED APPLICATION

This patent issued from an application that is a continuation-in-part of application Ser. Nr. 10/944,387, filed 2004 Sep 17, now abandoned.

BACKGROUND--FIELD OF INVENTION:

This invention relates generally to drinking containers, specifically to valved lids for such containers.

BACKGROUND—PRIOR ART

Fast food restaurants, beverage shops, and other food-service establishments serve hot beverages in disposable cups with lids or covers. The lids keep the cup's contents hot and prevent the liquid from spilling. Many lids have openings so the user can drink the beverage from the cup below without removing the lid. Some lids have raised drink-through spouts that allow the user to place both lips around the spout to more easily and safely sip the beverage.

For example patent 4,589,569 to Clements (1986) discloses a dome lid with a raised and wide drink-through spout. An open drink hole is cut out of the top of the spout.

Patent Des 417,845 to Sadlier (the present inventor) et al. (1999) also discloses a dome lid with a wide raised drink-through spout having an open drink hole in the top of the spout.

Both of the above lids have been commercially accepted in the market--many millions are sold each week. Despite their success, one disadvantage is that the drink hole is always open. This is problematic to people that want to purchase a beverage and then take it somewhere else, such as their office, to be consumed. The beverage can splash out from the open drink hole while the cup is carried. Additionally, heat readily escapes from the open drink hole before the user is ready to consume their drink. As a result, some beverage shop owners have resorted to placing a piece of tape over the hole so that beverage and heat do not escape until the user is ready to enjoy their drink. This solution is time consuming, messy, and unsanitary.

In order to address this problem inventors have come up with solutions such as disclosed in patents 4,899,902 to DeMars (1990) and 6,644,490 to Clarke (2003). These patents disclose lids with raised drink-through spouts having open drink holes. The lids further include a flexible arm

portion connected to the lid with a closure plug at the end of the arm. When a user or vendor wants to close the drink opening, they insert the plug-end of the arm into the open drink hole. When they want to open the lid again, they remove the plug from the drink hole. While an improvement over non-closable raised drink spout lids, these lids have not gained widespread use because the attached flexible arm is awkward and can interfere with the user when they attempt to drink from the cup. After the plug is removed from the drink hole it is often wet with the beverage, which tends to drip from the plug onto the user's clothing. Also, this type of lid uses more material and lid more difficult to make than a standard raised drink-through spout lid. The operation of opening and closing the hole is cumbersome and requires two hands. The lids are produced and boxed with the hole initially open; therefore the server must manually insert the plug into the lid at the time the beverage is served to the consumer. This takes more labor time at the service counter. Because of these deficiencies, these types of lid have not gained widespread commercial acceptance or use.

Patent 6,732,875 to Smith et al. (2004) and published patent application 2002/0,011,494 to Lukacevic show other two-piece reclosable lids with raised drink-through spouts. These lids have two parts: an external cover having the raised drink through spout with an open drink hole, and an internal rotatable disk having a drink-hole-closing member. The movable disk also has a post that extends up through a slot in the external cover. By moving the post from one side of the slot to the other, the disk can be rotated to open and close the drink hole. While a functional improvement over the lids mentioned above, the two-piece construction is expensive to make. Additional plastic material is required to form both the external cover and the internal movable disk, and additional machinery processing is required to fasten the two parts together. Thus these lids have a significant cost disadvantage over the other prior-art lids discussed above.

Herbst, in patent 4,925,051 (1990), and Albert, in patent 4,186,842 (1980), shows a normally closed lid in which access slits are formed by downward force.

Zoellick, in patent 4,081,103 (1978), Schaefer, in patent 5,799,814 (1998), and Warden et al., in patent 5,398,843 (1995), show a lids with a normally closed flap that can be depressed for drinking.

Schutz, in patent 3,860,162 (1975), shows a lid with a slit that is sealed by a normally closed valve that can be opened by a user's upper lip.

Yamazaki, in patent 4,113,135 (1978), Galloway et al., in patent 4,345,695 (1982), Boller, in patent 5,911,331 (1999), and Amberg et al., in patent 4,184,604 (1980), show lids with drinking-hole-sealing flaps that can also be opened by a user's lip.

Montemerano, in patent 4,333,583 (1982), and Ryan et al., in published patent application 2004/0,094,549, show lids with a spout that has a cover that can be opened for drinking.

Coy, in patent 4,782,975 (1988), shows a lid with a spout with a valve in the spout. The valve can be opened by lip pressure.

Kick, in patent 5,894,950 (1999), and Van Melle, in patent 6,089,397 (2000), show lids with a flap with a frangible attachment so that it can be broken away from the rest of the lid to open it to allow drinking.

Bruce et al., in patent 6,419,105 (2002), shows a lid with a partial spout or funnel (of a non-drink through variety) and a cylindrical portion below the spout that can be deformed to open or close it in a bistable manner. The operation of this lid does not allow for a drink-through type drink spout popular with consumers and food-service operators alike.

Hundley et al., in patent 6,612,456 (2003), and Schmidtner et al., in published patent application 2003/0,218,017, show lids with a drinking hole and a hinged valve comprising a hollow raised tab that can be depressed to open the hole.

These lids all have one or more disadvantages, including complexity, unreliability, costliness, difficulty of use, awkwardness, high cost, etc.

Thus, all present lids with raised drink-through spouts have various disadvantages: the beverage can to splash out and lose heat, tape is awkward to use and is not resealable, sealing plugs interfere with the user's drinking, drip the beverage within when opened, use a relatively large amount of material, and require excess time and labor to use, two-part lids are 74expensive to make and require excess material, and other lids are complex, unreliable, expensive, difficult to use, and awkward.

--ADVANTAGES

Therefore several advantages of the present invention are to provide a drinking cup lid with a drinking orifice that (1) improves upon prior-art lids, (2) does not require the use of tape to close

the drink hole, (3) is resealable, (4) does not interfere or hinder with the user's drinking, (5) does not have any part that drips when opened, (6) uses a relatively small amount of material, (7) requires little time, materials, and labor to use, (8) is simple, reliable, economical, and facile to use.

Other advantages are to provide a lid with a closure member that (9) covers the drink opening completely until it is opened by the user, (10) once opened remains in a stable open position until closed by the user, (11) can be re-closed by the user, (12) is made from a single piece of material, (13) can be opened and closed with a one-hand operation, (14) is sanitary, (15) is integrated into a standard style of lid with a raised drink through spout configuration, (16) the user can more easily use for drinking through the lid, and (17) is more resistant to splashing when the drink hole is open.

Further advantages will become apparent from a consideration of the drawings and ensuing description.

SUMMARY

According to the invention, a new and improved lid has a raised drink-through spout with a valved drink opening. The lid is formed from one piece of material. The lid has a mounting portion at its base which includes a resilient annular gripping groove configured to grip the bead on the top of the cup. An annular outer sidewall or turret, preferably frusto-conical in shape, extends upward and inward from the mounting portion and has an annular top surface or rim having a generally circular periphery at the top of the outer sidewall. The turret has a central recess portion which forms a center panel of the lid. The rim is higher and wider at one side, thereby forming a raised drinking spout.

The drink-through valve in the drinking spout comprises a rectangular flap in the top surface or ridge of the rim. The flap has an integrally formed upward protrusion or post. The flap is defined by a cut line along the front edge, a curved cut line on each side edge, and a hinge along the back edge. The hinge line preferably is a "living" or integral hinge at the inner edge of the top wall.

The user opens the valve applying downward force to the top of the post, forcing the flap to bend downwardly along the hinge line so that the flap extends downwardly at an angle from the ridge or surface of the rim. The hinge of the flap has a spring action that urges the flap to return to its closed and horizontal orientation. However, when the top edge of the post is pushed past the cut

front or catch edge of the top wall, it will catch under this edge and lock the flap in an open position. This will preventing the flap from returning and hold the flap--and hence the valve--in an open position to create a drink-through opening. The user can then simply drink from the lid as normal by placing their lips around the raised drink spout.

To re-close the valve, the user applies inward force to a point on the outer sidewall below the cut front edge. When such force is applied at this release point, it causes the front wall to deflect inwardly and the cut front edge of the drink hole to distort outwardly, widening the hole. This releases the top edge of the post, allowing it to move upwardly so that the flap can spring back to its horizontal and closed position.

DRAWINGS—FIGURES

Fig 1 is a perspective view of a prior-art domed drink-through lid.

Fig 2A is a perspective view of a domed drink through lid with a drink-spout valve in a closed position, according to the invention.

Fig 2B is a plan view of the lid of Fig 2A.

Fig 2C is a side sectional view of the lid of Fig 2A taken along the line 2C—2C of Fig 2B.

Fig 3A is a perspective view of the domed drink through lid if Fig 2A with the drink-spout valve in the open position.

Fig 3B is a detailed plan view of the lid of Fig 3A.

Fig 3C is a detailed sectional view of the portion the lid of Fig 3A taken along line 3C—3C of Fig 3B.

Fig 4 is a side sectional view of the lid of Fig 3A showing the valve returning to its closed position.

Fig 5 is a partial side-sectional view of an alternative arrangement where the valve is closed but its flap is positioned below its seat.

Fig 6 is a partial side-sectional view of an alternative arrangement where the valve is hinged to the outside edge of the opening with the valve returning to its closed position.

Fig 7 is a partial side-sectional view of an alternative arrangement with the valve positioned just below the lid (as in Fig 5), but where the valve is hinged to the outside edge of the opening.

—REFERENCE NUMERALS

10 annular bottom rim

10F flange at bottom

12 annular cup-rim-gripping groove
14 turret or domed portion
16 annular vertical wall
18 horizontal, annular top surface or ridge
20 recess
22 annular upper rim
24 drinking portion or spout
26 drink opening
26A air-relief hole
28 valve
28F hinged flap
28P upstanding post
28H living hinge
30 finger

DETAILED DESCRIPTION—FIG 1—PRIOR-ART LID

Fig 1 shows a perspective view of a prior-art drink-through domed cup lid similar to the lid shown in the Sadlier et al. design patent, supra. This lid has an annular, bottom rim 10 which has a slight flange 10F extending out from its bottom. The underside of rim 10 forms a downwardly facing annular cup-rim-gripping and sealing groove 12 (best seen in Fig 2C). A turret or domed portion 14 extends up from inside of groove 12; turret 14 has a truncated conical shape and has an annular vertical wall 16. Turret 14 has an annular top horizontal surface, or ridge 18 that extends in from the top of wall 16, and a recess 20 that is surrounded and below ridge 18. Thus wall 16, ridge 18, and recess 20 form an annular upper rim 22. Stated differently, rim 22 is the top portion of turret 14 and encircles and defines recess 20. The front half of rim 22 slopes upwardly and then levels off to form a raised or higher and wider drinking portion or spout 24 at the front. Spout 24 has a drink opening 26 which is cut out of ridge 18. A small air-relief hole 26A is also cut in ridge 18, opposite opening 26.

As stated, the lid of Fig 1 has been commercially accepted in the market and many millions are sold each week. Despite its success, one disadvantage is that opening 26 is always patent or open. This is problematic to people that want to purchase a beverage and then take it somewhere else, such as their office, to be consumed. A beverage inside the cup below (not shown) can splash out from the lid while the cup is being carried. Additionally, heat readily escapes from the open hole before the user is ready to consume their drink. As a result, some beverage shop owners have resorted to placing a piece of tape over the hole for the customer so that beverage and heat do not escape until the user is ready to enjoy their drink. This solution is time consuming, messy, and not sanitary.

As also stated, valved lids are known that prevent splashing and reduce heat loss, but these have many disadvantages, including interference with the user's drinking, dripping of the beverage

within when the valve is opened, use of a relatively large amount of material, excess time and labor to use, high expense to make, a large amount of material to fabricate, complexity, unreliability, difficulty and awkwardness to use, and an inability to stay in an open configuration until closed by a user.

FIG 2A—LID WITH VALVE—OVERALL DESCRIPTION

Fig 2A shows a lid with a valve according to the invention. The lid is similar to that of Fig 1, and bears all of the same reference numerals except that in lieu of a patent or open drinking hole 26, it has a valve 28. Valve 28 comprises a generally rectangular hinged flap 28F that has an integral upstanding post or protrusion 28P. Flap 28F has curved sides and a straight front edge and a back edge that is hinged to top surface 18 by a living or natural hinge 28H. I.e., hinge 28H is at the inner, hinge edge of the hole (now designated 26'). The hinge is formed along the inner or back edge of the annular top surface adjacent the recess. In order to assist in the hinging function, a section of the hinging edge can be made straight. Alternatively the hinge can be designed as part of the top surface by forming a groove where flap 28F is intended to bend. When flap 28F is coplanar with ridge or top surface 18 as shown, the valve is closed, but it can easily be opened by depressing flap 28F, as will be described, to provide a drinking opening.

The lid of Fig 2A preferably is made by thermoforming, but can also be made by any of a variety of manufacturing processes, such as injection molding, and/or vacuum forming. Preferably it is made from a plastic such as polystyrene (preferred), polypropylene, polyethylene, or any other suitable plastic material. Post 28P preferably is an integral part of flap 28F and is made by thermoforming so that the material of the post is stretched out of the body of the flap. In one embodiment, the lid was sized to mate with a paper cup (not shown) having a 90 mm diameter rim that was 3 mm wide. Flap 28F was 14 mm by 4 mm and post 28P was 4 mm high and 3 mm in diameter. The rest of its dimensions were sized proportionately.

As will be shown, valve 28 improves upon prior-art lids since, inter alia, it is easily resealable, does not interfere or hinder with the user's drinking, prevents the beverage in the cup from splashing out, and keeps the beverage warmer.

FIGS 2B AND 2C—TOP AND SIDE-SECTIONAL VIEWS

Figs 2B and 2C show top and side sectional views of the lid, with Fig 2C taken as indicated by section lines 2C—2C in Fig 2B. As shown in Fig 2B, recess 20 is in the center of the lid and is surrounded by rim 22 with its ridge 18. Spout 24 includes valve 28 with flap 28F and its post

28P. Note that flap 28F has an elongated rectangular shape with curved side edges, similar to the shape of hole 26 of Fig 1 or hole 26′ of Fig 2B.

Fig 2C shows bottom rim 10 and groove 12 in section; groove 12 is forced over the top rim of a paper cup (not shown) so that the groove will hold the lid tightly to the cup. Wall 16 extends up inside rim 10 to form turret or domed portion 14. Ridge 18 of turret 14 has raised portion or spout 24 and the top portion of the turret forms upper rim 22 that forms and encircles recess 20. Note that the portion of upper rim 22 comprising spout 24 is slightly wider than the rest of upper rim 22.

FIGS 3A, 3B, AND 3C—PERSPECTIVE, TOP-ENLARGED, AND PART-SIDE-SECTIONAL VIEWS OF LID WITH OPEN VALVE

Fig 3A shows a perspective view of the lid with valve 28 pushed down and open to form drinking aperture or hole 26′. Hole 26′ is similar to hole 26 of Fig 1, except that flap 28F extends down from the inner edge of the hole. Post 28P is also pushed down below the adjacent portion of ridge 18.

Fig 3B shows an enlarged plan view of the lid of Fig 3A. Note that flap 28F is bent down at living hinge 28H, creating a patent or open hole 26′. I.e., one side of the flap is attached to the back or hinge side of hole 26′ at living hinge 28H. The tip of post 28P is locked under the opposite, front, or catch edge of hole 26′. If the tip of the post were not locked under the catch edge of the hole, hinge 28H would tend to cause the flap to return to its closed, horizontal position. However since the post is locked under the catch edge, the flap is bistable, i.e., it has two stable positions: open and closed. The post is sized so that when the flap is rotated so that it extends down at an acute angle to top surface 18 of the spout, and the post is subtended by top surface 18 and flap 28F, the tip of the post will contact the catch edge of hole 26′, so that the flap will remain in the open position.

Fig 3C shows a side, sectional, detailed view of the portion of the lid containing valve 28 as taken along line 3C—3C of Fig 3B. Again note that flap 28F is bent down at living hinge 28H, creating hole 26′. Note also that the tip of post 28P is locked under the front or catch edge of hole 26′.

FIG 4—PART-SIDE-SECTIONAL VIEWS OF LID WITH CLOSING VALVE

Fig 4 is a side sectional view of the lid of Fig 3A showing the valve returning to its closed position. When a user pushes in on wall 16 with a finger 30 as indicated, the portion of the wall contacted by finger 30 is deformed or pushed in as indicated. This causes the top portion of the wall above the finger and the adjacent part of ridge 18 including the catch edge of hole 26′ to be deformed outwardly as indicated. This will allow the tip of post 28P to slip up past the catch edge as also indicated. Flap 28F is shown in the process of rotating back to its horizontal or closed position. Living hinge 28H will cause the flap to rotate or spring back until it is substantially closed and coplanar with ridge 18, as shown in Figs 2A to 2C.

OPERATION

Valve Closed: The inventive lids are supplied with their valves 28 in the closed state (Fig 2A). Valve flap 28F is coplanar with its seat, which is part of upper rim 22. The flap will normally have this position, or bent or rotated slightly upwardly to a position just above its seat (not shown) after it is cut in the punching die. If after punching it is rotated to a position just above the seat, it can be pushed down in the die so that it is coplanar with its seat as shown in Fig 2A; this will enable the user to push down the flap to open the valve more easily. (It can also be pushed lower, as discussed infra in connection with Fig 5.)

A cup (not shown) is filled with a beverage, either at a beverage store, a home, a vendor, etc. and the lid is snapped down over the rim of the cup. The user or drinker carries the lidded cup away, e.g., to a place of employment, a vehicle, a work site, etc. Since the valve is closed, the lid is substantially entirely closed so that the beverage within will not splash out, despite rough handling. Also, the escape of heat (or the entrance of heat if the beverage is chilled) will be reduced.

Valve Opening: To drink the beverage, the user merely pushes post 28P down with a finger or thumb (not shown), causing flap 28F to rotate downwardly on hinge 28H. When the flap rotates far enough, the tip of post 28P will snap past the front or catch edge of hole 26′ as shown in Figs 3A to 3C. While hinge 28H will urge flap 28F to re-close, the flap will not be able to do so and it will remain in the open position (Figs 3) since post 28P is locked below ridge 18 and the catch edge of hole 26′. The flap will thus remain stably in the open position. The user (not shown) now places their lips around spout 24 and drinks from the cup, through open hole 26′. The beverage will flow freely through hole 26′, past flap 28F and its post 28P, into the user's mouth.

As an added benefit, the valve provides splash resistance even when the drink hole is open. When the valve is open, as shown in Fig. 3B, hinged flap 28F and post 28P act as a splash guard on the inside of the lid to block some liquid from splashing through opening 26'.

Valve Closing: if the user wishes to interrupt their drinking before consuming all of the beverage in the cup, they can close valve 28 as follows: As shown in Fig 4, the user uses a finger 30 to push inwardly on wall 16, below ridge 18. This causes this portion of wall 16 to deflect inwardly as shown, which in turn causes the upper part of wall 16 and front and catch edge of hole 26' to distort outwardly far enough to allow the tip of post 28P to slip upwardly, past the front edge of hole 26' so that flap 28F closes and re-seals opening 26'. Thus the cup can now be carried and handled without its beverage splashing out and reducing the transmission of heat though hole 26'. The user removes their finger 30 from wall 16, allowing the wall to return to its normal, undistorted conformation and allowing hole 26' to return to its normal conformation.

I presently believe the following explanation is correct, but do not wish to be bound by it. I believe that the upper part of wall 16 and front and catch edge of hole 26' distort outwardly when the user pushes inwardly at the lower part of wall 16 because wall 16 acts as a lever whose fulcrum is between the point where force is applied and the top of the wall. The fulcrum is created by the stiffness of the lid due to its circular shape.

There are other ways to close hinged flap 28F, in addition to the method described above. Drink spout 24 can be squeezed or rolled between a finger and thumb. This will distort this portion of the lid and thereby release the post from the catch edge and allow the flap to close. Alternatively the user can remove the lid from the cup and push the underside of the flap up with a finger to close the flap. The user can then reattach the lid to the cup.

Valve Re-Opening When the user desires to drink again, they push post 28P down to open the flap again. Post 28P will again be locked under the catch edge of hole 26' since the hole has returned to its original conformation.

FIG 5—VALVE FLAP PUSHED BELOW SEAT

As stated, the lids may be formed with valve flap 28F coplanar with its seat as shown in Fig 2A, or just above its seat (not shown). However I have found that users find it easier to push down the flap to the open position (Fig 3C) if the lids are supplied with the flap bent down to a position just below the seat, or top surface of the spout, as shown in the fragmentary view of Fig 5. This

position can be created at the time the lid is formed in the punching die (not shown) by providing the female die with a spring-loaded stripper pin (not shown, but well-known to those skilled in the art) to push the flap slightly downward, below its seat after it is punched. The flap will self-rotate upwardly to this position after it is pushed down lower and released since its hinge 28H will rotate it upwardly until its edge contacts the edge of its seat, which will stop it.

When the lids are supplied with the flap in this position (Fig 5), the fluid within will not splash out since the valve is still closed. However the user can push it down to the open position (Fig 3C) very easily since it is already below its seat. The open valve can be closed and returned to the closed state of Fig 5 in the same manner discussed above.

FIGS 6 AND 7—FLAP HINGED TO OUTSIDE OF HOLE

In lieu of being hinged to the inner edge of drink opening or hole 26 (best shown in Fig 4), the flap can be hinged to the outer edge of opening 26, as shown in Figs 6 and 7. In Fig 6 an outer hinged flap 28′ is shown extending down and open, but returning to its closed position, as in Fig 4. However flap 28′ is hinged at hinge 28H′ to the outer edge of the opening so that the free or catch edge 28F′ of the flap is closer to the inner edge of the hole. I.e., the hinge edge of the opening is adjacent the outer edge of the lid and the catch edge of the opening is adjacent the center of the lid. In Fig 7 outer-hinged flap 28′ is closed but is positioned just below its seat, analogous to the embodiment of Fig 5.

CONCLUSION, RAMIFICATIONS, AND SCOPE

Accordingly the reader will see that, according to the invention, I have provided a drinking cup lid with a drinking orifice that (1) improves upon prior-art lids, (2) does not require the use of tape to close the drink hole, (3) is easily resealable, (4) does not interfere or hinder with the user's drinking, (5) does not have any part that drips when opened, (6) uses a relatively small amount of material, (7) requires little time, materials, and labor to use, (8) is simple, reliable, economical, and facile to use, (9) covers the drink opening completely until it is opened by the user, (10) once opened will remain in a stable open position until closed by the user, (11) can be re-closed by the user, (12) is made from a single piece of material, (13) can be opened and closed with a one-hand operation, (14) is sanitary, (15) is integrated into a standard style of lid with a raised drink through spout configuration, (16) the user can more easily use for drinking through the lid, and (17) is more resistant to splashing when the drink hole is open.

While the above description contains many specificities, these should not be construed as limitations on the scope of the invention, but as exemplifications of the presently preferred embodiments thereof. Many other ramifications and variations are possible within the teachings of the invention. For example, the material, size, and plastic forming method can be changed. The valve need not be on the top surface of the spout, but instead can be on a side surface. The post can be glued on, rather than being stamped from the flap. In lieu of the post, a nubbin, mound, or other protrusion can be used. The shape of the flap can be changed to oval, circular, triangular, rectangular, etc. The flap can be hinged to the outer edge of the hole, or a side edge, rather than the inner edge. In this case the release point would be on the inside or side surface of the spout. The flap can be larger than the drink-through opening so that when closed it will lie adjacent, either slightly above or below the top surface of the spout, but not coplanar with the top surface. The arrangement for attaching the lid to the cup can be changed to, e.g., screw-on, glue-on, etc. A recess in the lid need not be provided; instead the top of the lid can be flat with an upstanding valved spout. The lid can have shapes other than circular, such as oval, rectangular, triangular, polygonal, etc. The lid can be used for cold beverages and for containers for substances other than beverages, i.e., containers for non-potable liquid and particulate products. Embossed lettering, such as the word(s) "push" or "push down" can be embossed or debossed into the surface of the raised drink spout on either side of the valve to instruct the user on how to open the lid. Similarly embossed lettering such as the word(s) "push", "push here" or "push here to close" can be embossed or debossed into the front surface of the lid along wall 16 just below the value to educate the users on how to reclose the lid. In addition an embossed button, semi sphere, or bump can be formed at this location on wall 16 to facilitate closing of the flap more easily.

Thus the scope of the invention should be determined by the appended claims and their legal equivalents, and not by the examples given.

CLAIMS

1. For a beverage container, a lid that enables a user to drink a beverage from said cup through a hole in said lid, comprising:

a lid arranged to substantially cover an entire open upper end of a beverage container of a predetermined size,

said lid containing an attachment portion for sealingly attaching said lid to an upper rim of said beverage container,

said lid having a spout or drinking portion that extends up from the rest of said lid,

said spout having a top surface with a valve formed therein,

said valve comprising a flap having a hinge side connected to a portion of said spout along a hinge and a cut side opposite said hinge,

said flap positioned with its cut side adjacent said top surface of said spout,

said flap also arranged to expose a drink hole in said top surface when said flap is rotated downward along said hinge so that said valve is in an open position,

said flap containing a protrusion projecting therefrom, said protrusion being sized and positioned on said flap so that when said flap is rotated downward from said top surface, and said hinge urges said flap back to a coplanar orientation with said top surface, said protrusion will catch on a portion of said upper surface adjacent said drink hole so that said open position of said valve is stable.

2. The lid of claim 1 wherein said spout contains a release side connected to said top surface, said release side being deformable so that pressure on said release side will deform a portion of said spout and release said protrusion from said upper surface and allow said flap to return to a closed position.

3. The lid of claim 1 wherein said lid has a turret portion and said spout or drinking portion is an upwardly extending part of said turret portion.

4. The lid of claim 3 wherein said turret portion has (a) an upper surface with a central portion that is recessed, and (b) a rim that surrounds said central portion and extends up from said recess, said spout or drinking portion being a part of said rim.

5. The lid of claim 1 wherein said lid has a circular shape when seen from above and wherein said lid has a turret portion and said spout or drinking portion is an upwardly extending part of said turret portion.

6. The lid of claim 5 wherein said turret portion has (a) an upper surface with a central portion that is recessed, and (b) a rim that surrounds said central portion and extends up from said recess, said spout or drinking portion being a part of said rim.

7. The lid of claim 1 wherein said flap has substantially the same shape and size as said hole.

8. The lid of claim 1 wherein said flap is positioned with its cut side adjacent but below said top surface of said spout.

9. The lid of claim 1 wherein said drink hole in said lid has an outer edge adjacent an outer edge of said lid and an inner edge adjacent a center of said lid, and wherein said hinge side of said flap and said hinge to which said hinge side is connected is at said outer edge of said hole.

10. A lid for a beverage container wherein said lid has a drink-through hole that can be selectively opened, comprising:

a lid shaped and sized to seal an open top of a drinking cup of a predetermined size,

said drink-through hole being positioned in said lid so that a user can drink a beverage in said cup through said drink-through hole,

said drink-through hole being formed in a surface of said lid, said drink-through hole having a hinge side and a catch side,

a sealing flap attached to said hinge side of said drink-through hole by a hinge, said sealing flap having a hinge edge and a cut edge and being arranged to seal said drink-through hole when said sealing flap is in a closed condition adjacent said surface of said lid, said hinge arranged to urge said flap to said closed condition,

said sealing flap containing holding means arranged to hold said sealing flap in an open condition against said catch edge when said flap extends at a downward angle to said surface,

whereby said sealing flap can be stably positioned in said open condition.

11. The lid of claim 10 wherein said lid is made of a material which is deformable so that said catch edge can be moved to a position where it releases said holding means.

12. The lid of claim 10 wherein said lid has a turret portion and said drink through opening is located on an upwardly extending part of said turret portion.

13. The lid of claim 12 wherein said turret portion has (a) an upper surface with a central portion that is recessed, and (b) a rim that surrounds said central portion and extends up from said recess, said drink through opening being a part of said rim.

14. The lid of claim 10 wherein said lid has a circular shape when seen from above and wherein said lid has a turret portion and said drink through opening is located on an upwardly extending part of said turret portion.

15. The lid of claim 14 wherein said turret portion has (a) an upper surface with a central portion that is recessed, and (b) a rim that surrounds said central portion and extends up from said recess, said drink through opening being a part of said rim.

16. The lid of claim 10 wherein said sealing flap has substantially the same shape and size as said drink-through opening.

17. The lid of claim 10 wherein said holding means comprises a protrusion projecting from said sealing flap.

18. The lid of claim 17 wherein said protrusion is an upwardly extending post.

19. The lid of claim 10 wherein said flap positioned with its cut side adjacent but below said surface of said lid.

20. The lid of claim 10 wherein said hinge side of said drink-through hole in said lid is adjacent an outer edge of said lid and said catch side of said drink-through hole is adjacent a center of said lid.

21. A method of sealing a beverage container, comprising:

providing a cup-sealing lid with a drinking hole that can be selectively opened, said lid shaped and sized to seal an open top of a drinking cup of a predetermined size, said drinking hole being arranged so that a user can drink a beverage in said cup through said drinking hole, said drinking hole being formed in a surface of said lid, said drinking hole having a hinge side and a catch side,

providing said lid with a sealing flap attached to said hinge side of said drink-through opening by a hinge, said sealing flap having a free edge and being arranged to seal said drink-through opening when said sealing flap is in a closed condition with said free edge adjacent said catch side of said lid, said hinge arranged to urge said flap to said closed condition, said sealing flap containing holding means arranged to hold said sealing flap in an open condition against said catch side when said flap extends at a downward angle to said surface,

attaching said lid to a drinking cup with said sealing flap in said closed condition, and

opening said sealing flap by pushing said sealing flap to an open condition where said holding means holds said sealing flap in said open condition against said catch edge,

whereby said sealing flap can be stably positioned in said open condition.

22. The lid of claim 21 wherein said lid has a circular shape when seen from above and wherein said lid has a turret portion and said drink through opening is located on an upwardly extending part of said turret portion.

23. The lid of claim 22 wherein said turret portion has (a) an upper surface with a central portion that is recessed, and (b) a rim that surrounds said central portion and extends up from said recess, said drink through opening being a part of said rim.

24. The lid of claim 21 wherein lid contains a spout that contains said drink-through opening, said spout containing a release side connected to a top surface of said spout, said release side being deformable so that pressure on said release side will deform a portion of said spout and release said holding means from said catch edge and allow said flap to return to a closed position.

25. The lid of claim 21 wherein said sealing flap is positioned with its free edge adjacent but below said catch side of said lid.

26. The lid of claim 21 wherein hinge side of said drinking hole is adjacent an outer edge of said lid and said catch side of said drinking hole is adjacent a center of said lid.

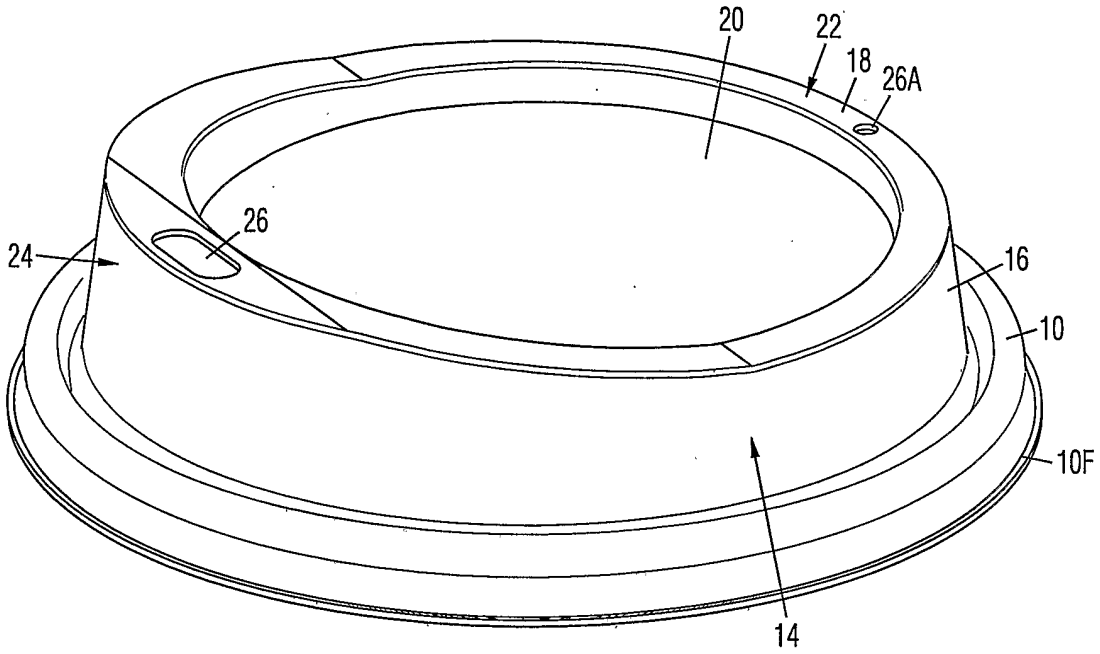


Fig. 1
Prior Art

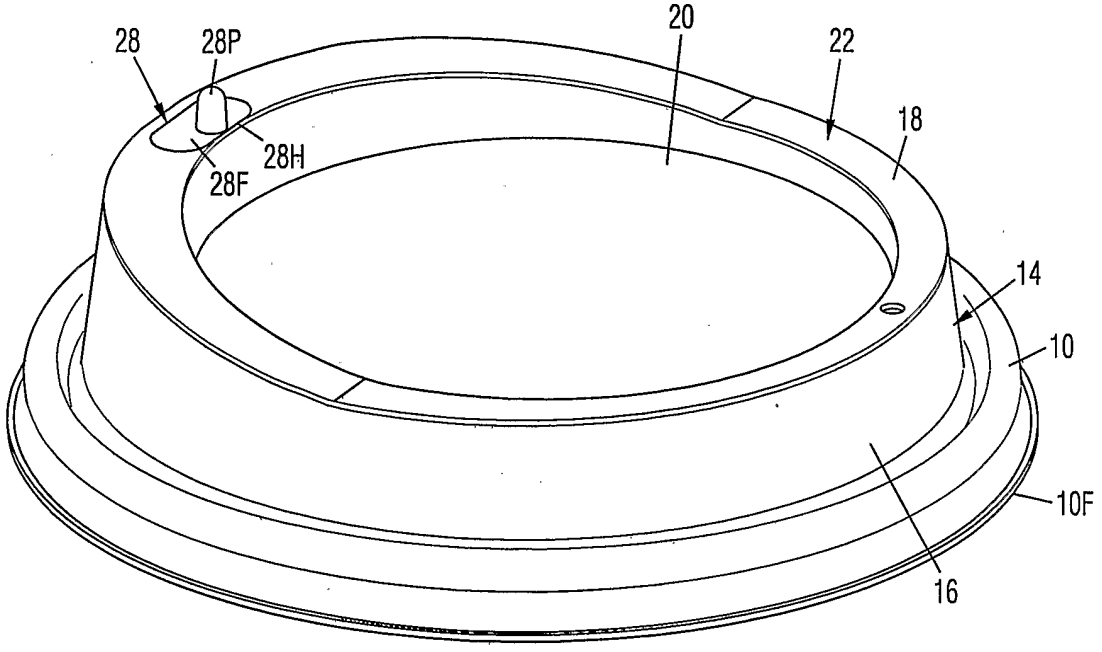
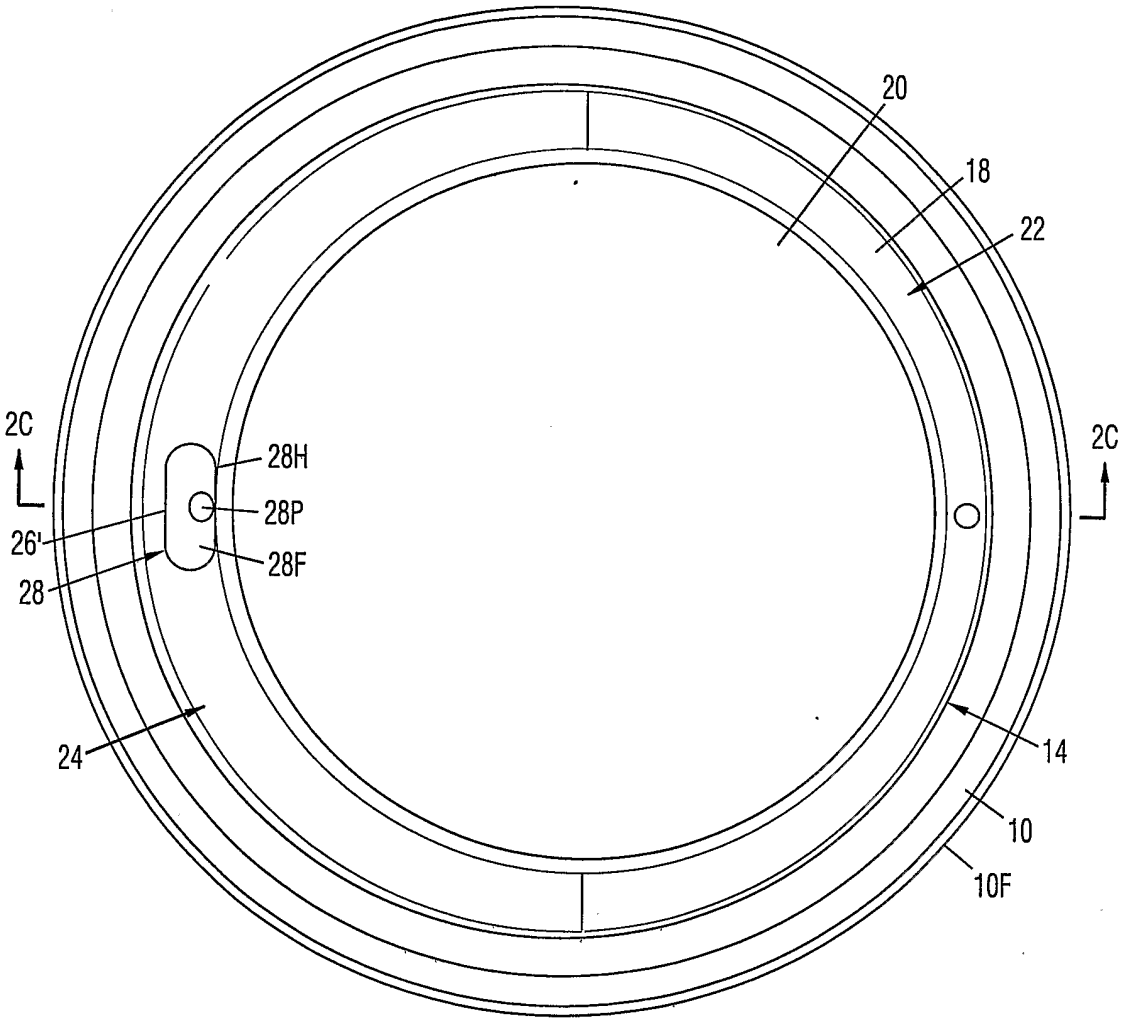


Fig. 2A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2C
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Fig. 2B

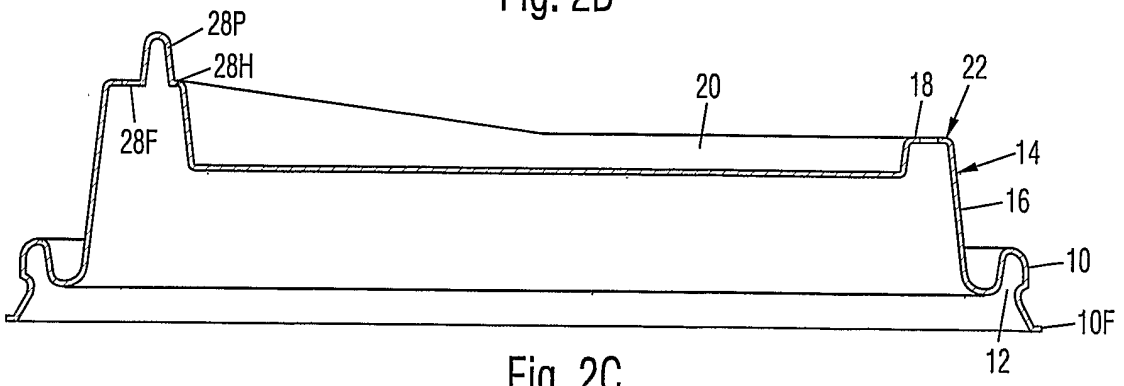
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Fig. 2C

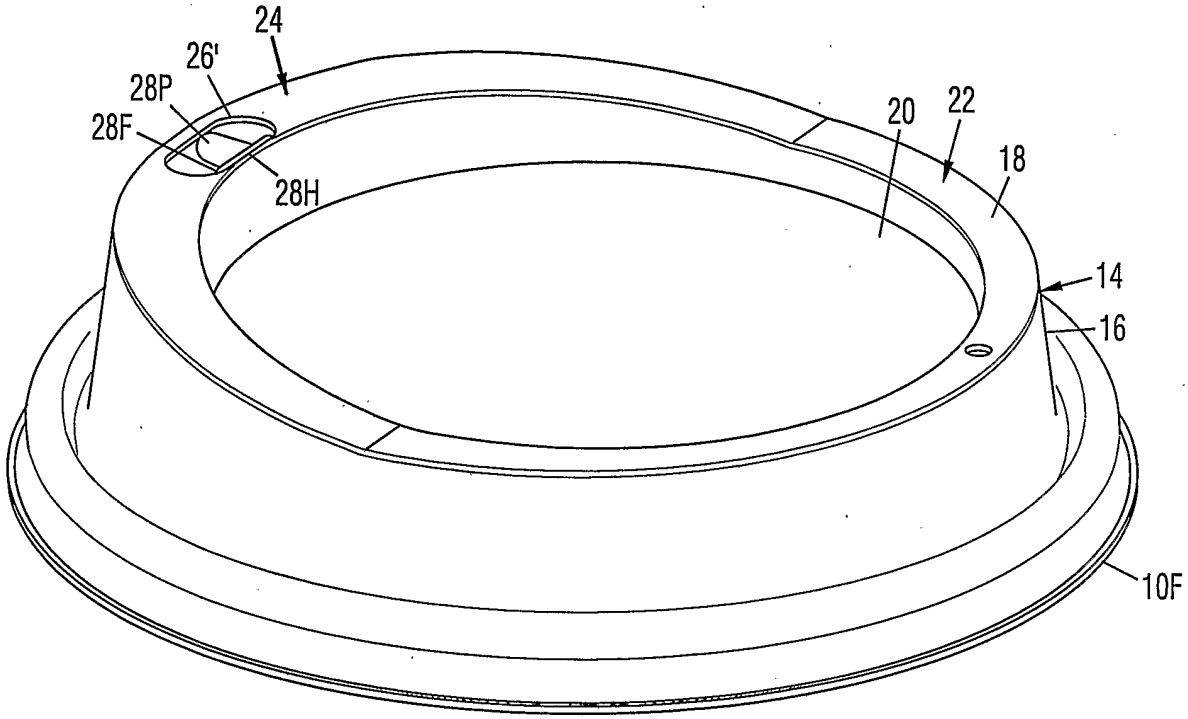
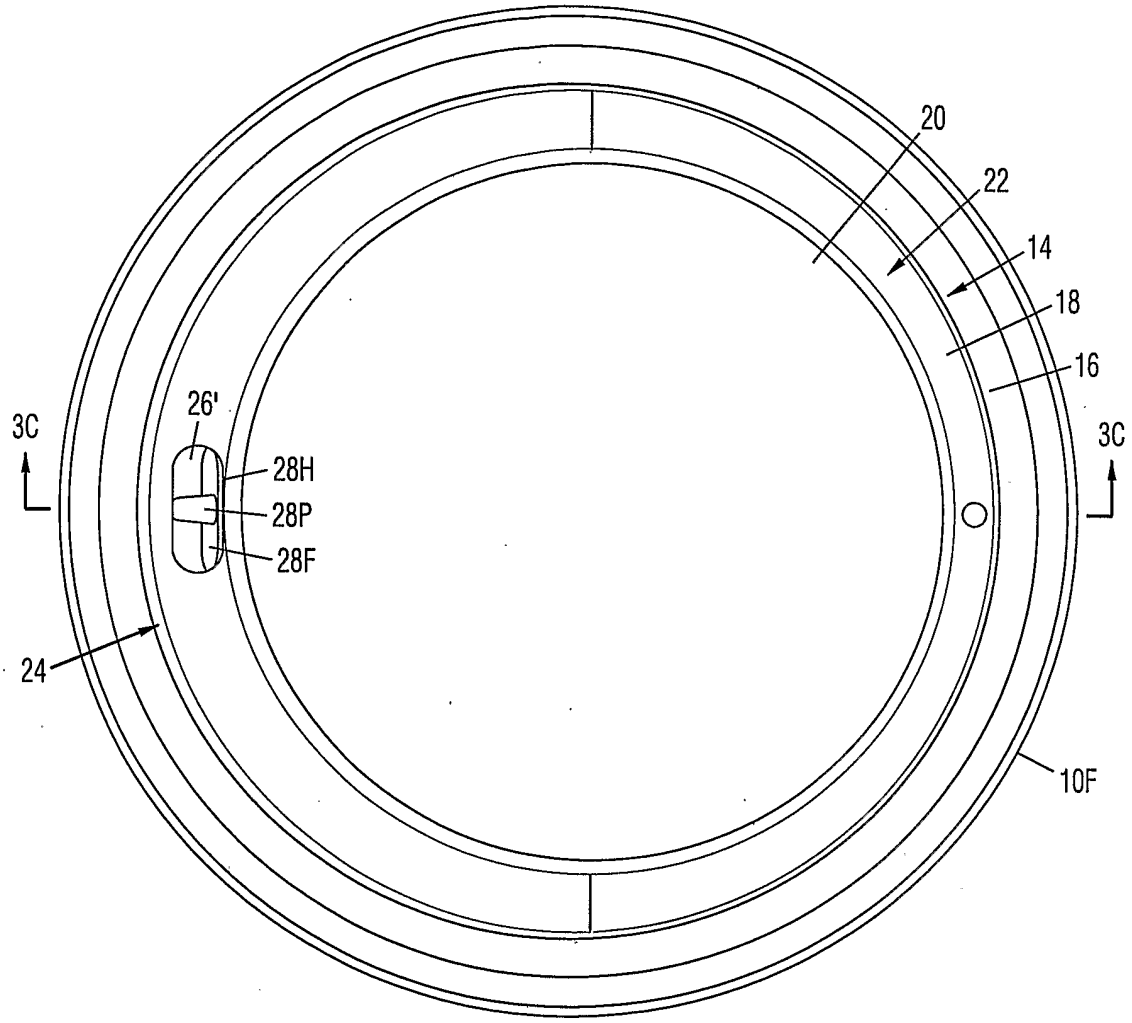


Fig. 3A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3C
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Fig. 3B

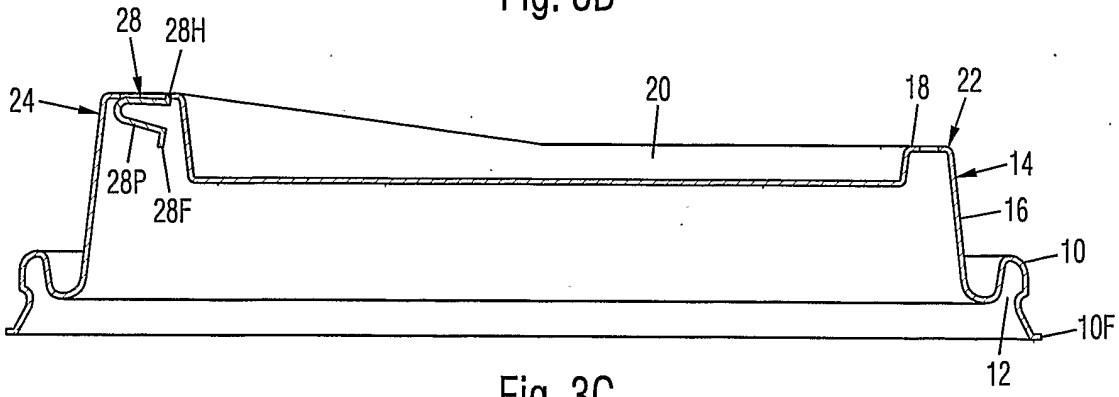
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Fig. 3C

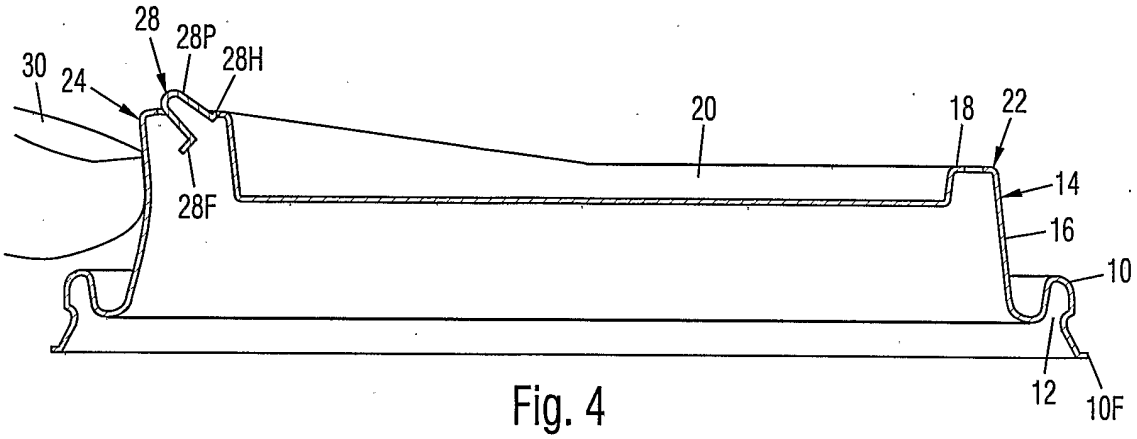

Fig. 4

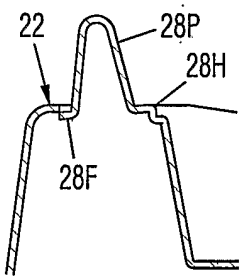

Fig. 5

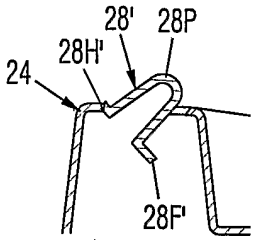

Fig. 6

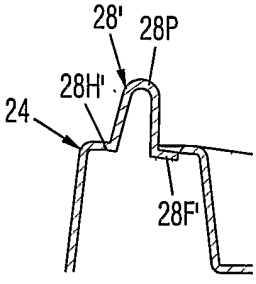

Fig. 7