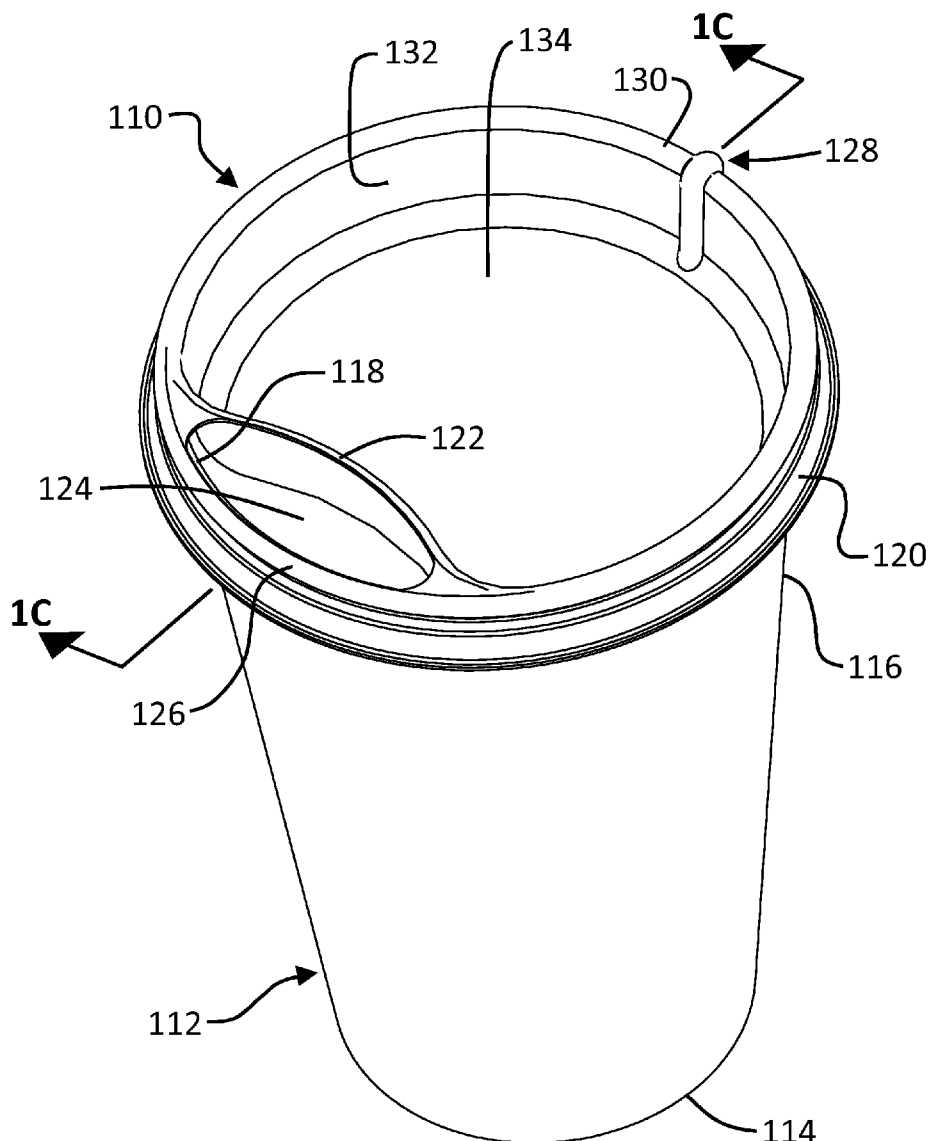




US 20120000923A1

(19) **United States**(12) **Patent Application Publication**
Powell(10) **Pub. No.: US 2012/0000923 A1**(43) **Pub. Date: Jan. 5, 2012**(54) **RAPID-FLOW AND SMOOTH-SPOUTED
CONTAINER LID**(52) **U.S. Cl. 220/780; 220/367.1**(76) **Inventor: Wade Antoine Powell, Lexington,
KY (US)**(57) **ABSTRACT**(21) **Appl. No.: 12/830,283**

A lid (110) is provided for attaching to the rim (118) of the open end (116) of a container (112). The lid includes a large content discharge opening (124) in a smooth spout (122) around which the lips of a user can form a seal. The lid further includes a small vent opening (128) through the lid, or between the lid and the container. The large opening in the smooth spout and the small vent opening in the lid allow for unobstructed and rapid dispensing of the contents of the container, such as a liquid beverage, in a controlled and spill-free manner during consumption.

(22) **Filed: Jul. 2, 2010****Publication Classification**(51) **Int. Cl.**
B65D 41/16 (2006.01)
B65D 51/16 (2006.01)

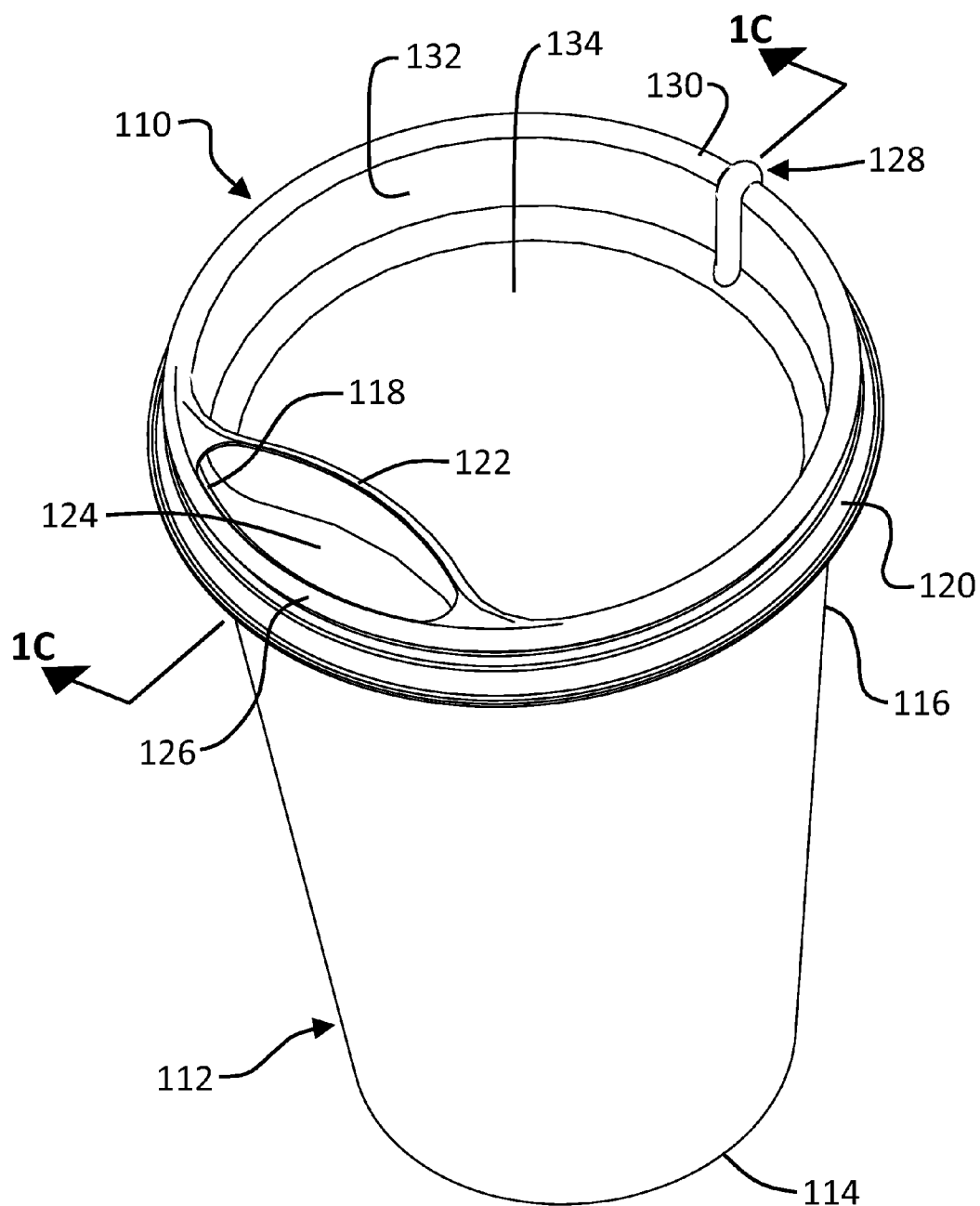
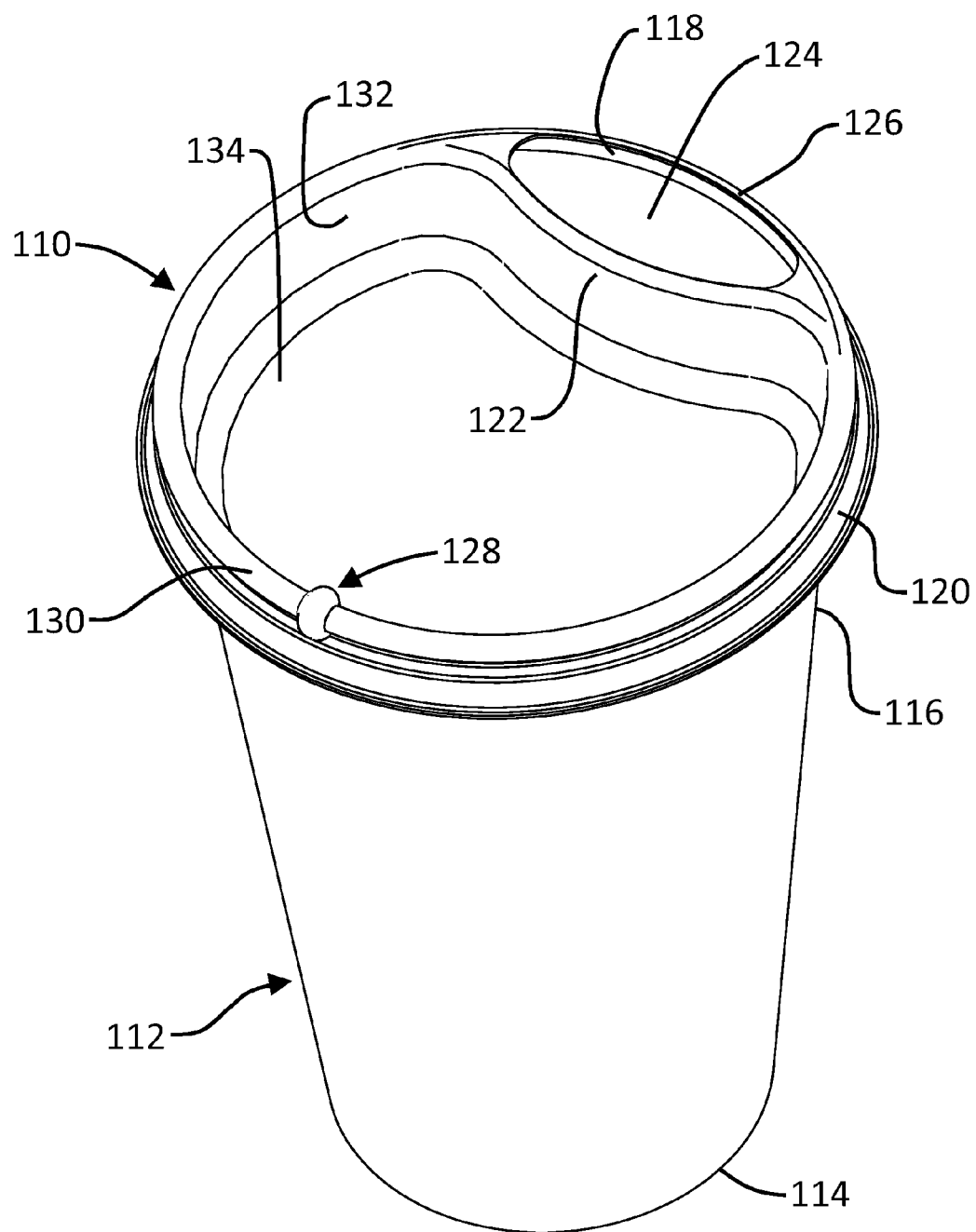


FIG. 1A

**FIG. 1B**

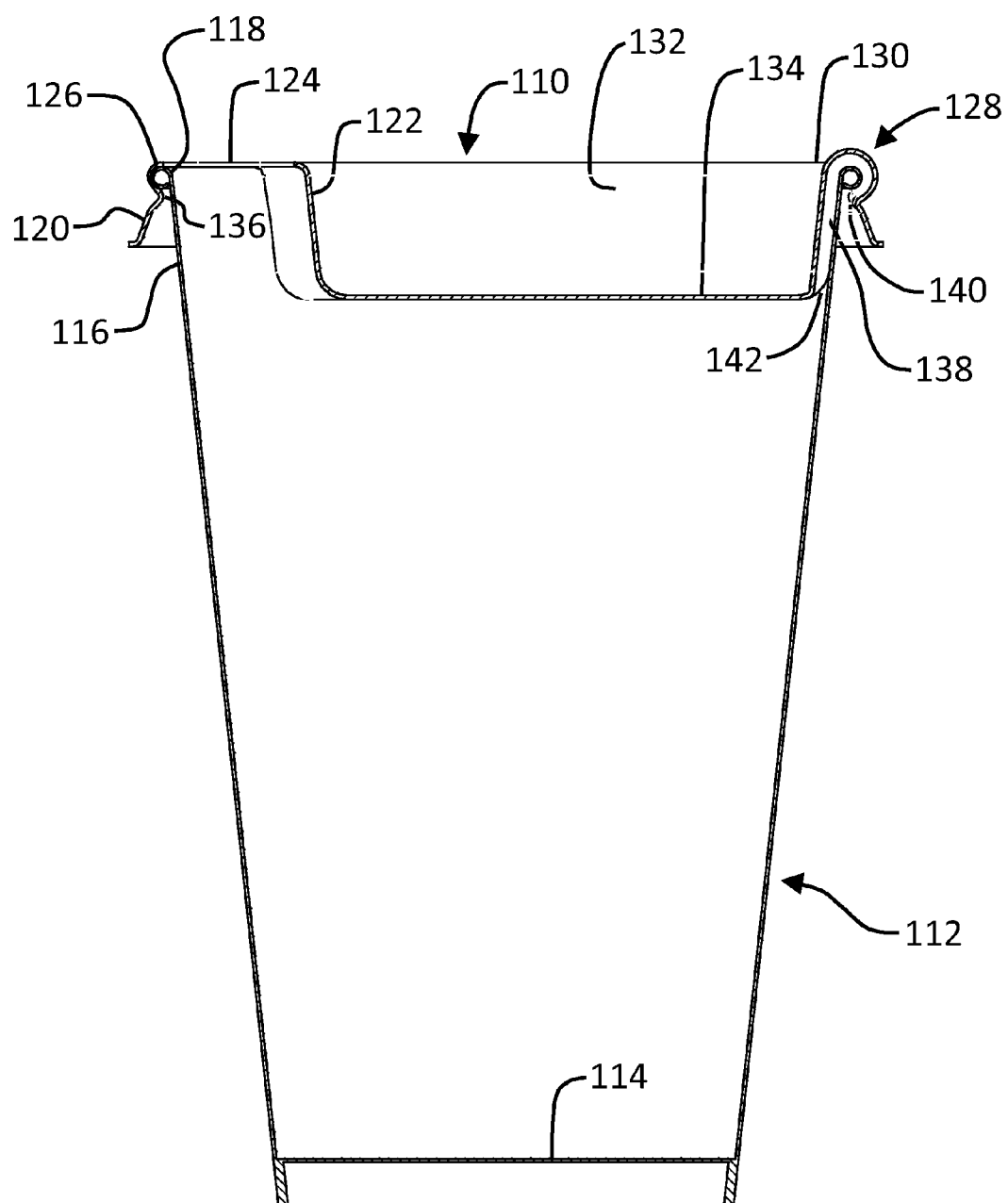


FIG. 1C

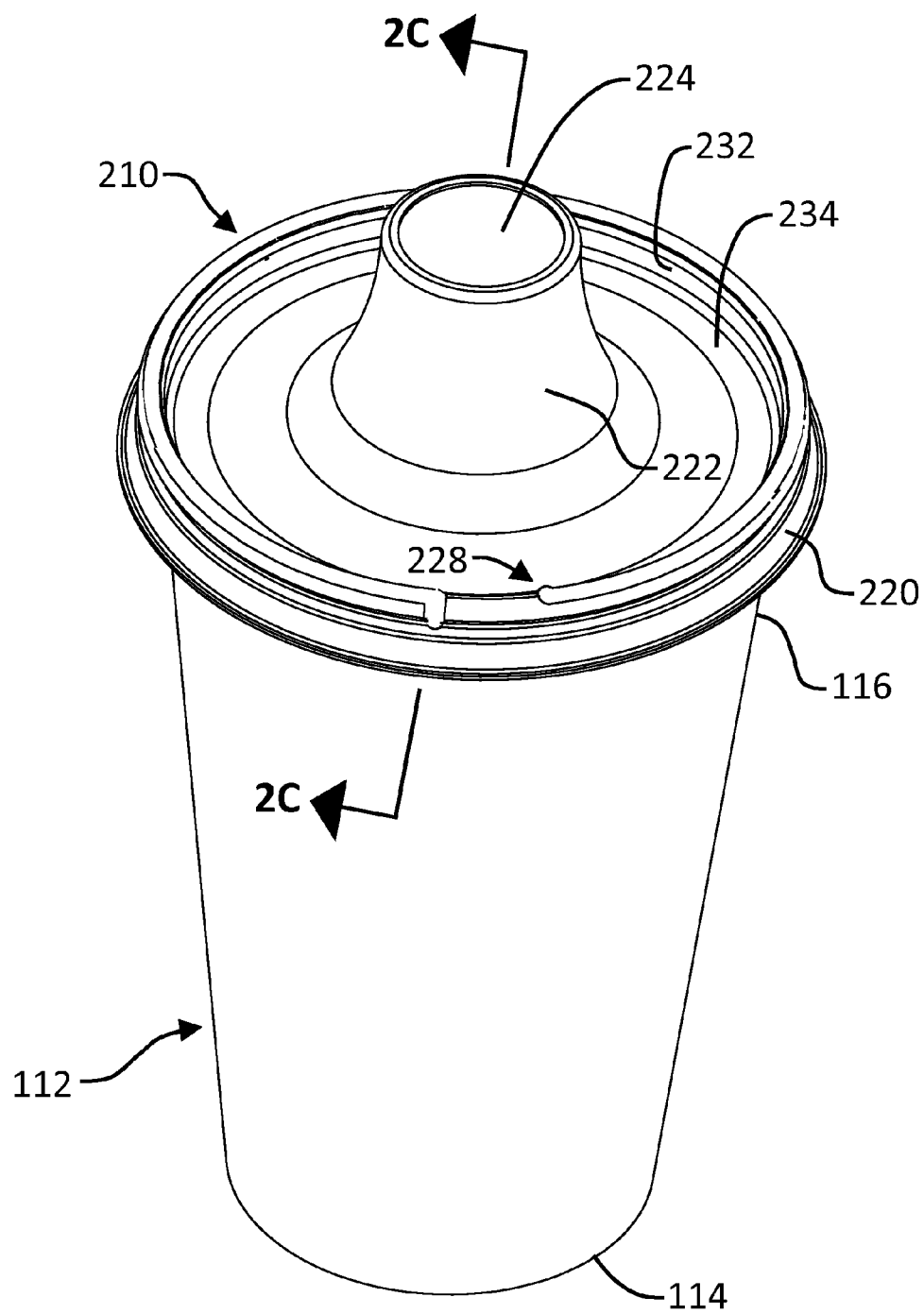


FIG. 2A

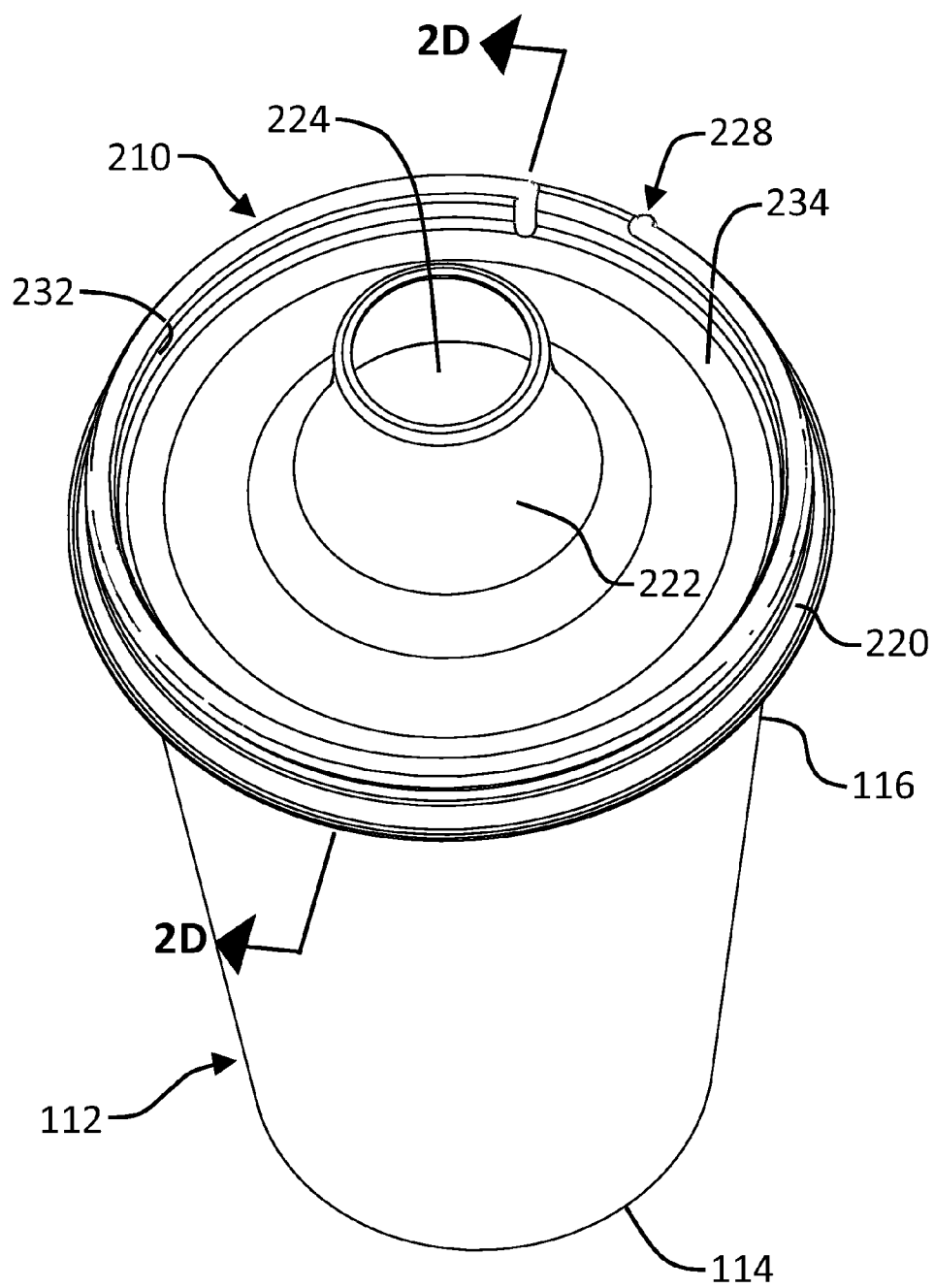


FIG. 2B

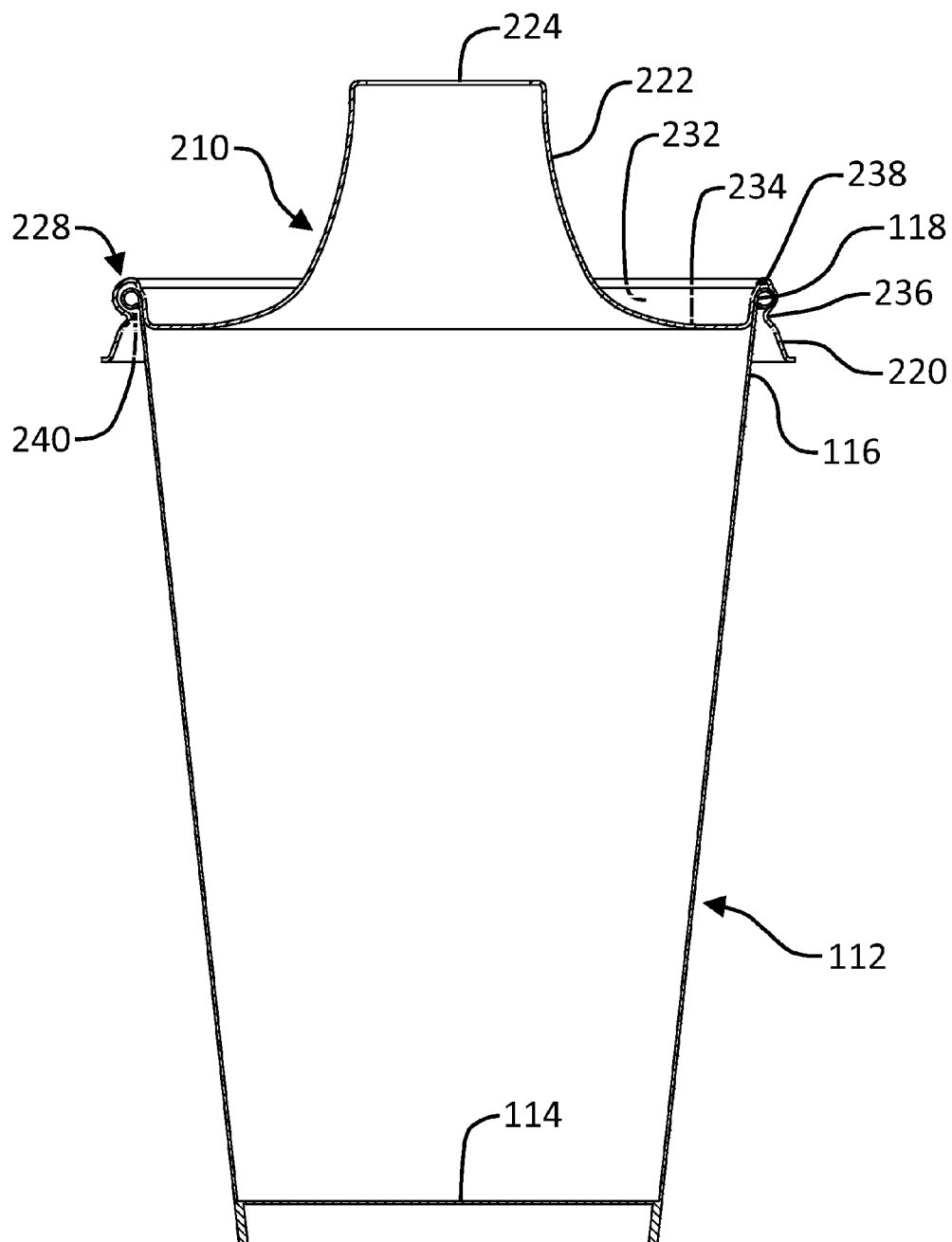


FIG. 2C

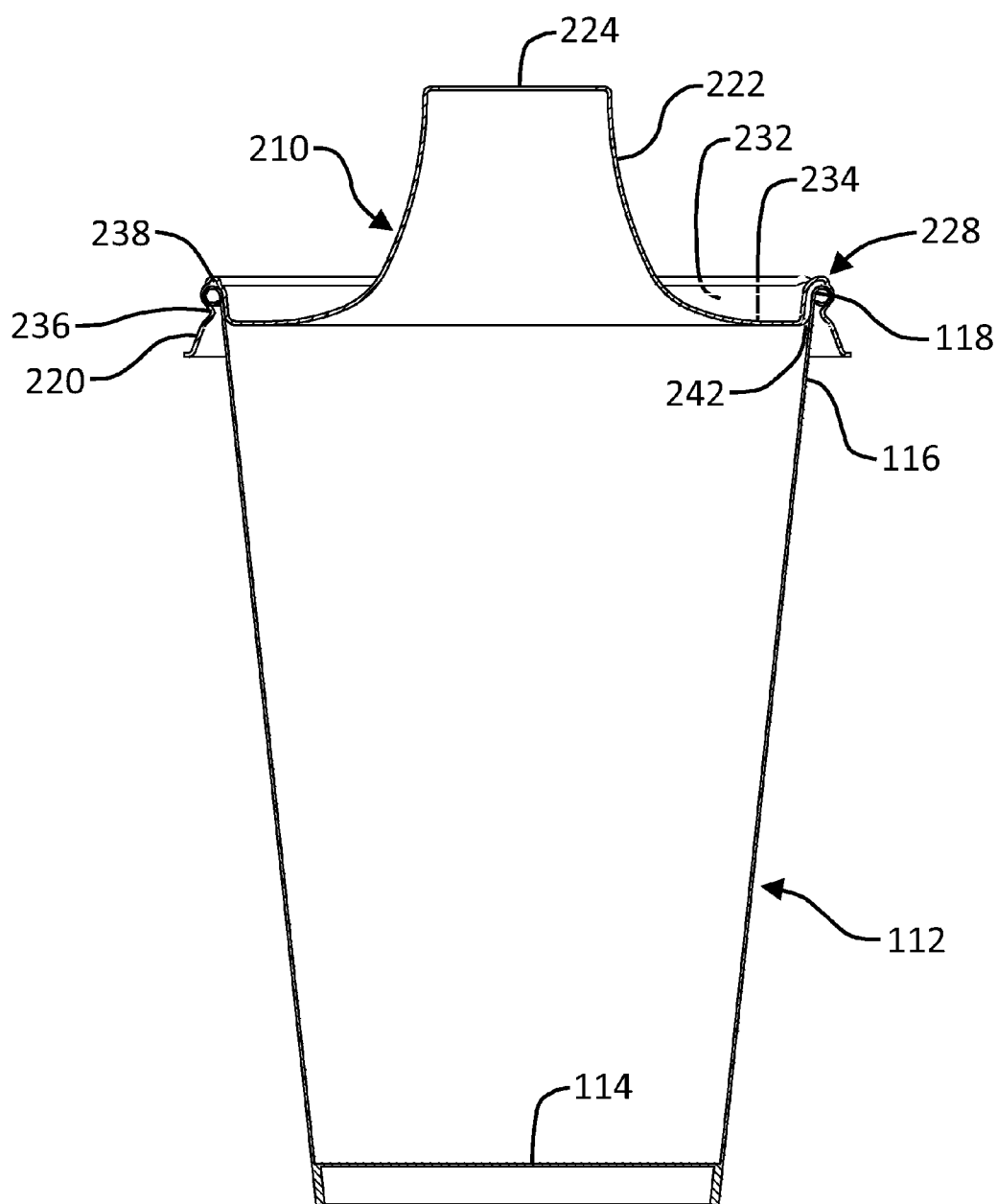


FIG. 2D

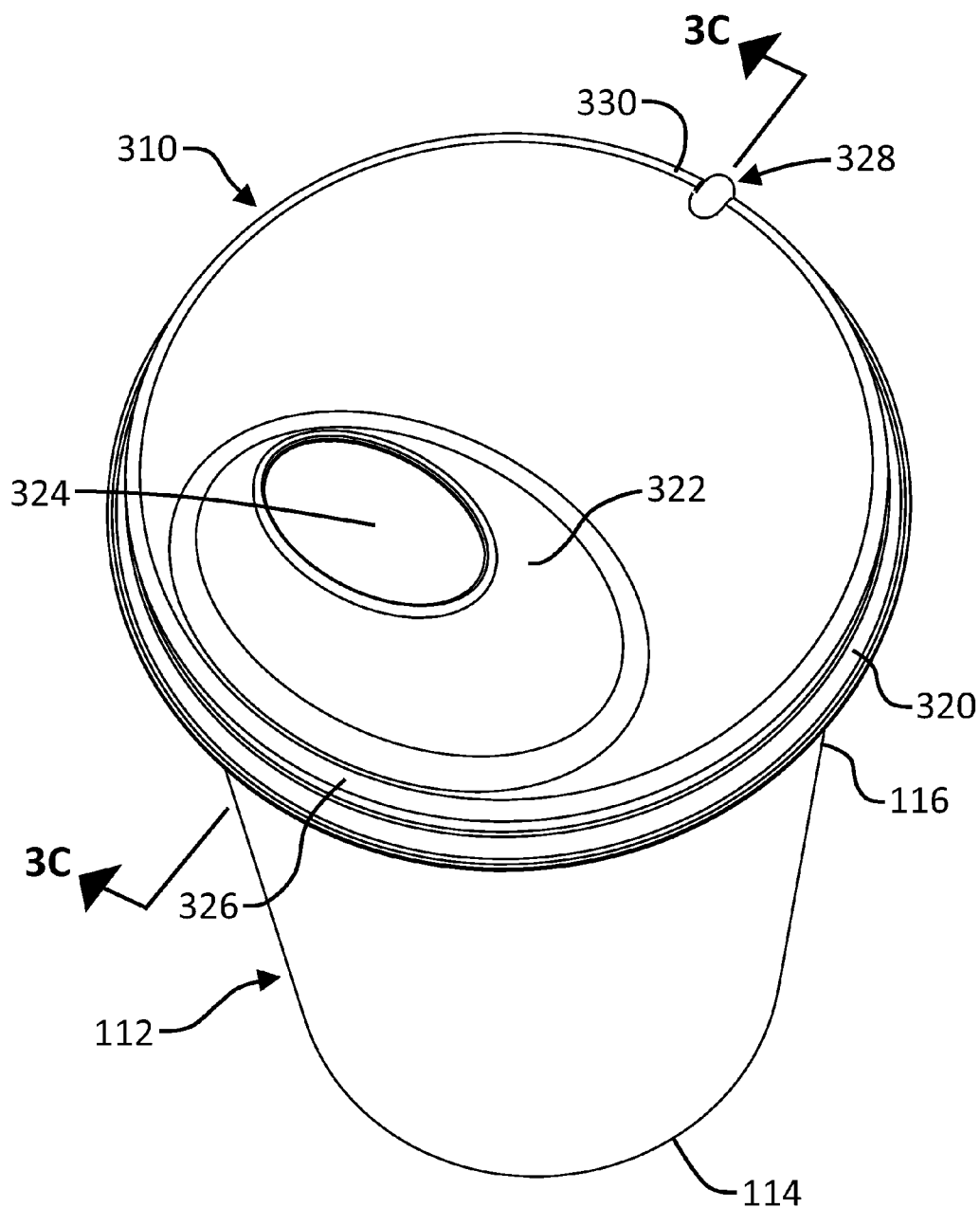


FIG. 3A

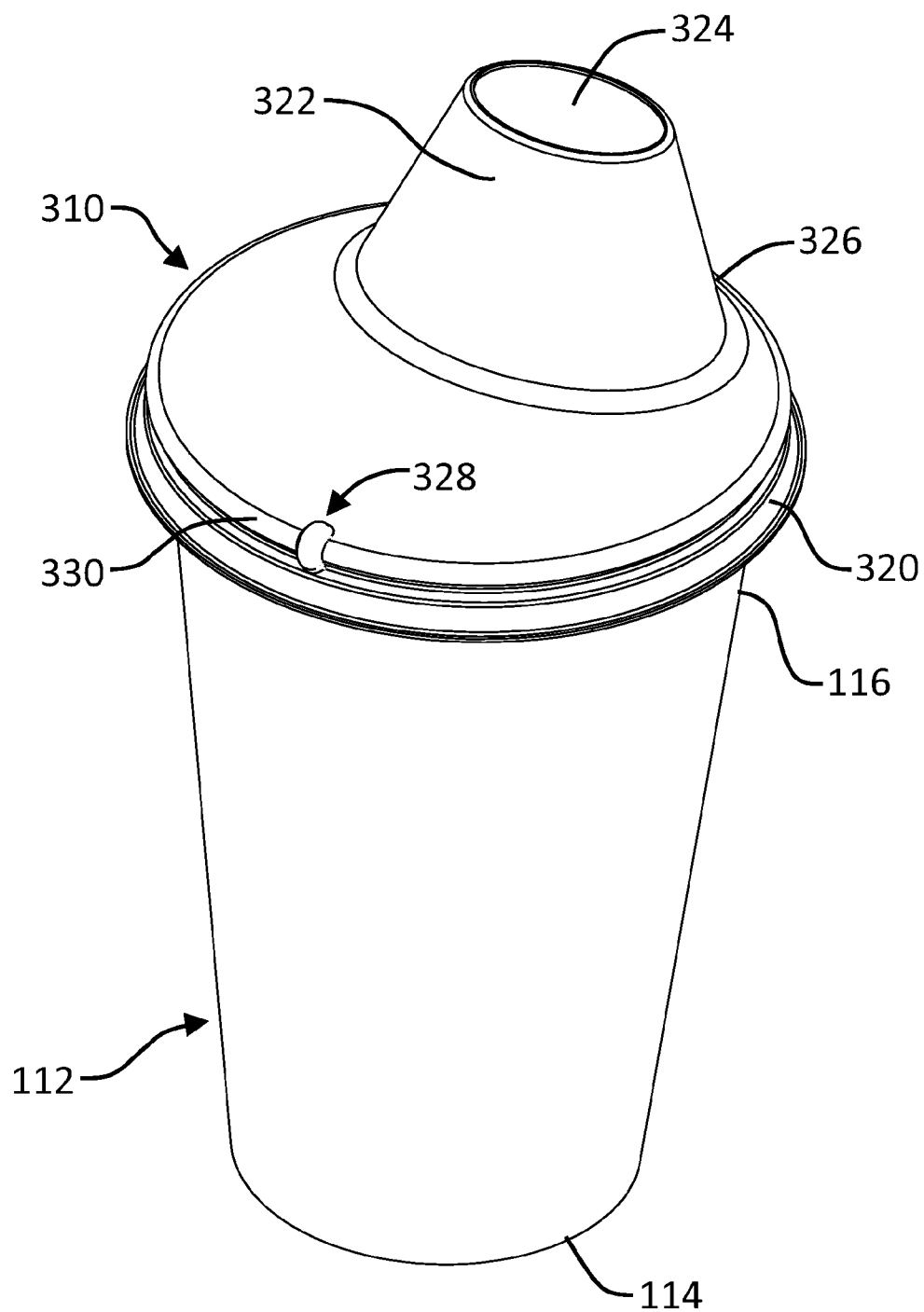


FIG. 3B

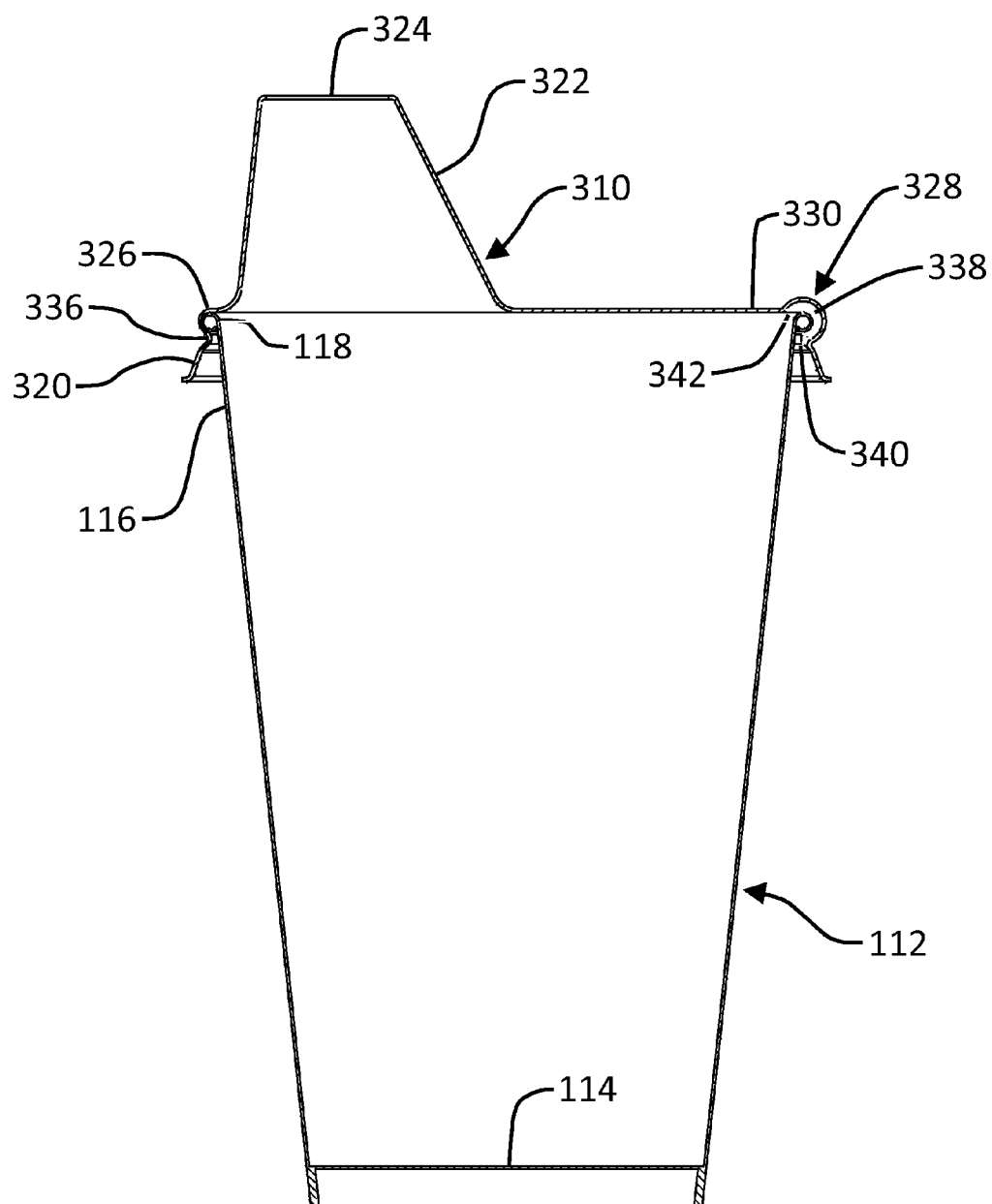


FIG. 3C

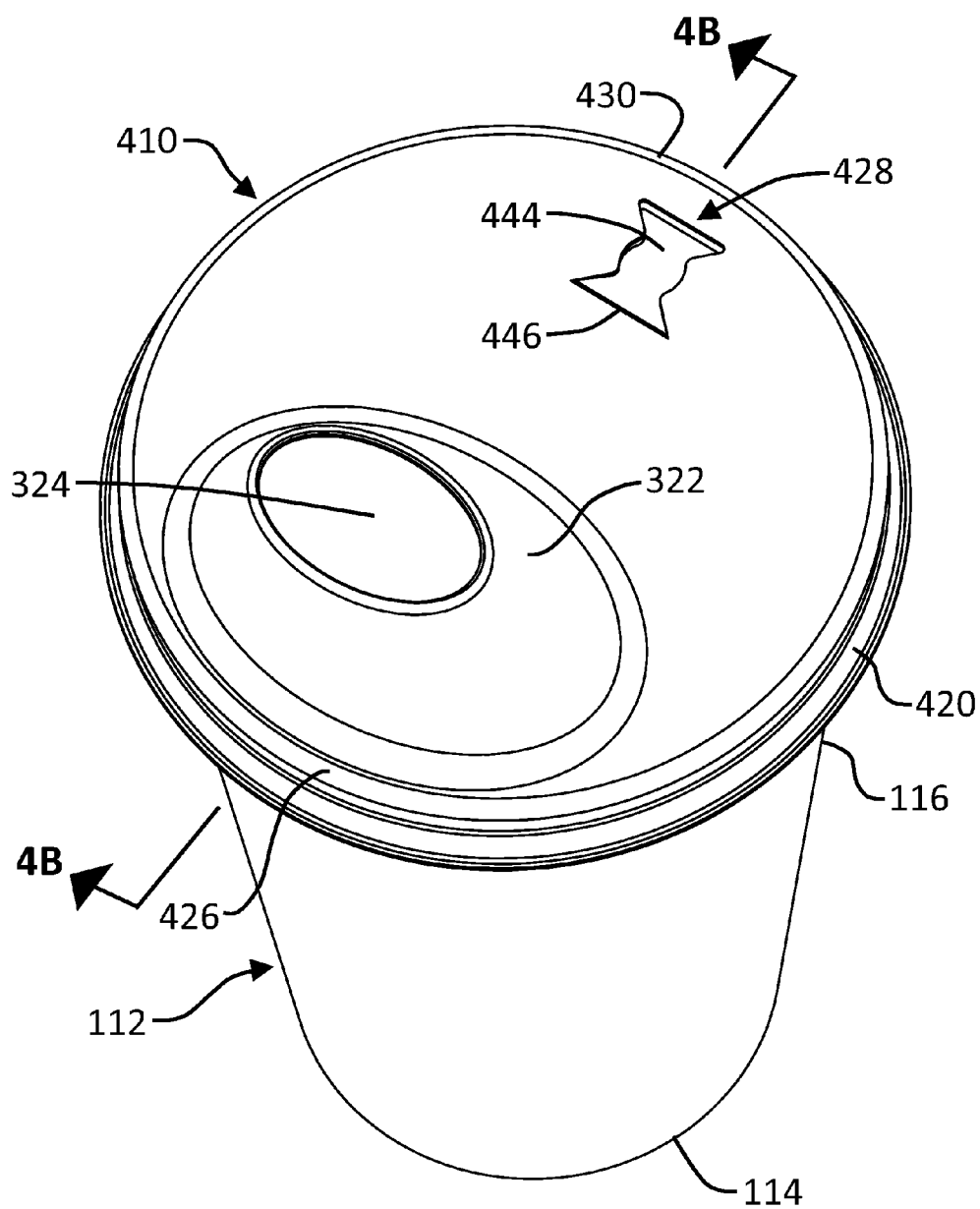


FIG. 4A

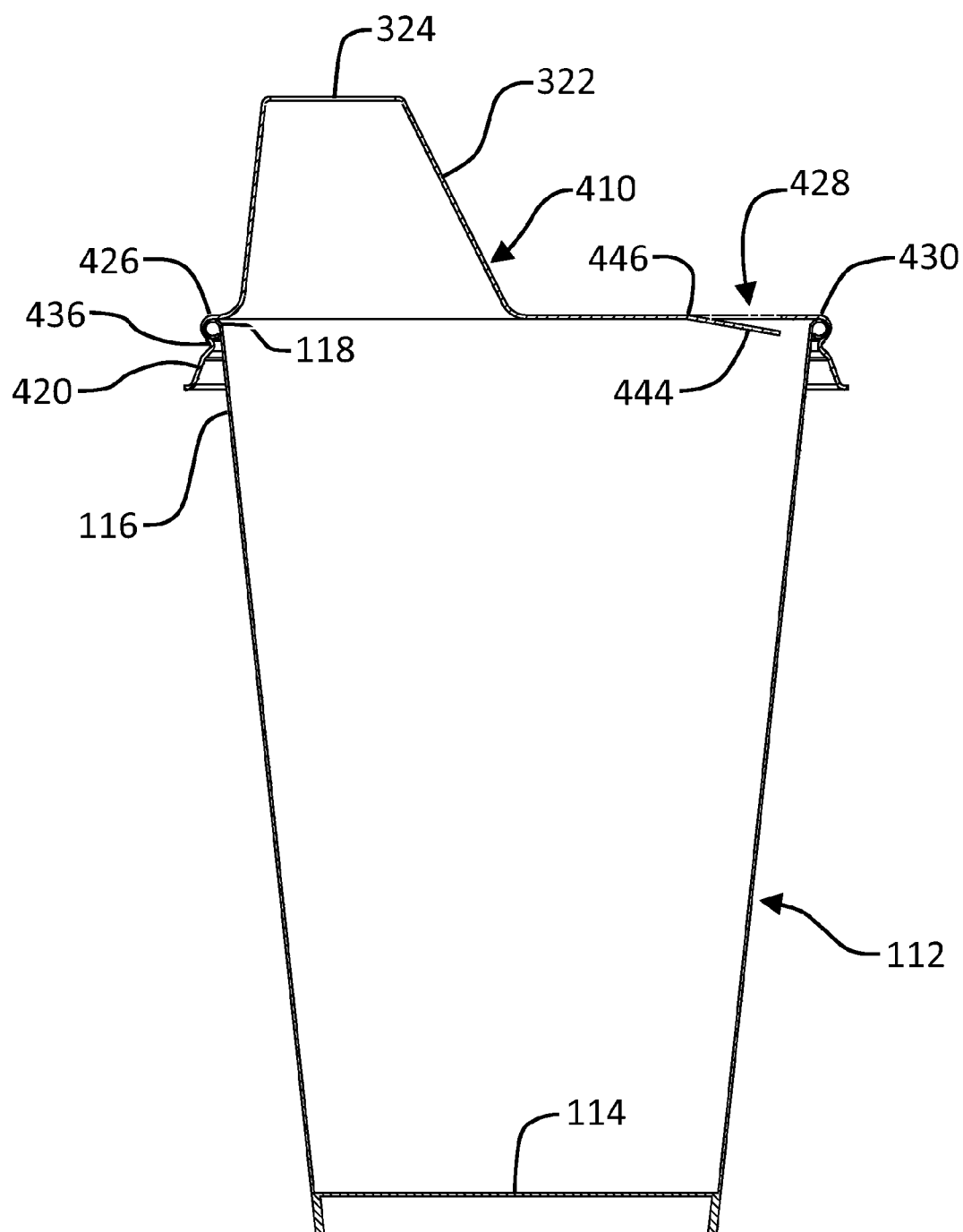


FIG. 4B

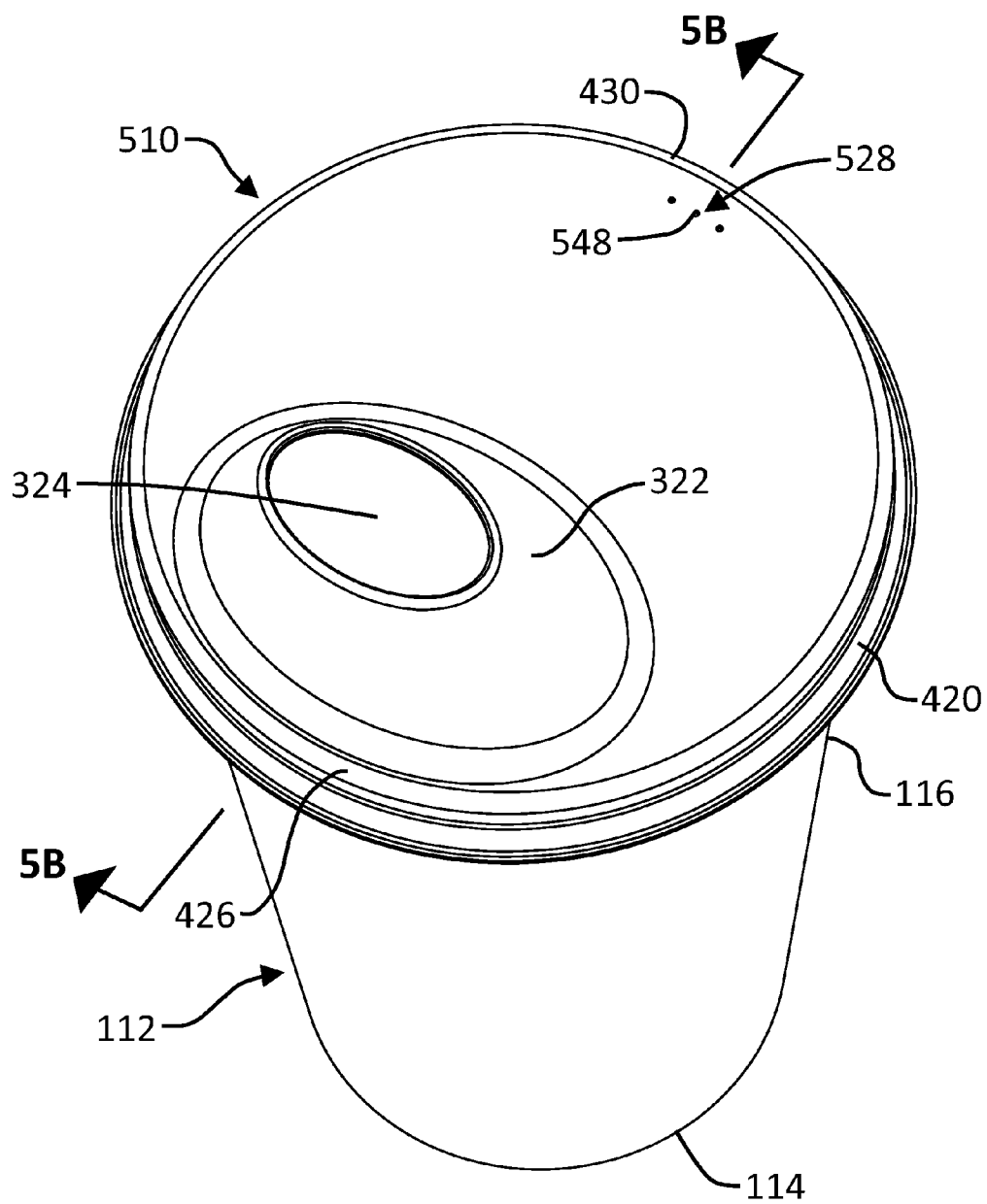


FIG. 5A

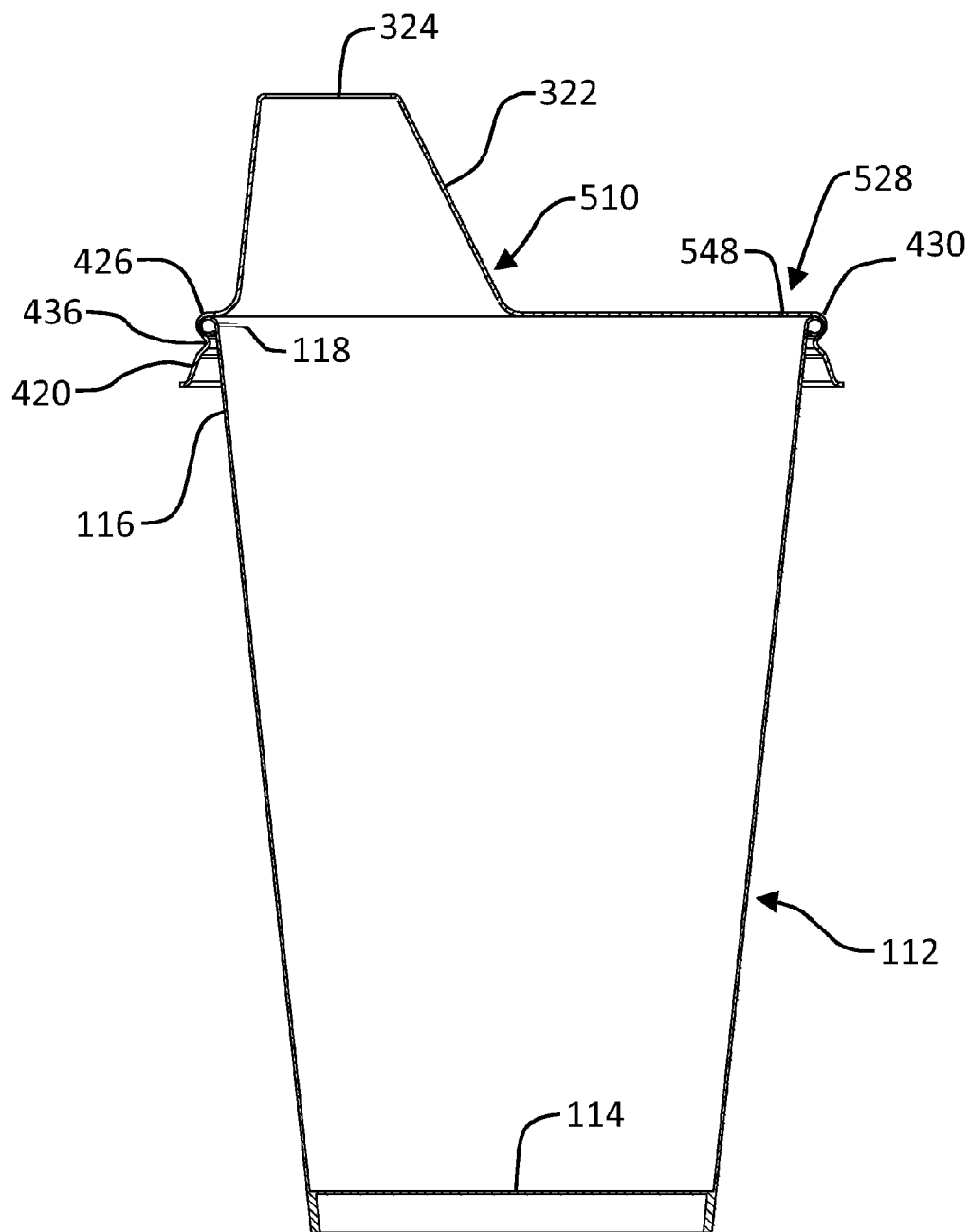


FIG. 5B

RAPID-FLOW AND SMOOTH-SPOUTED CONTAINER LID

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] This invention relates to container lids, and more particularly relates to lids that allow for unobstructed and rapid dispensing of the contents of the container in a controlled manner. The invention is particularly suitable for individuals desiring to drink a beverage rapidly without spilling the liquid, such as runners who need to hydrate quickly while in motion. The invention is also suitable for any individual whose situation or circumstance makes the controlled and rapid dispensing of the contents of the container challenging or difficult.

[0003] 2. Discussion of Related Art

[0004] There are many variations of lids for containers. Many container lids include one or more holes for the purpose of pouring or drinking of the contents of the container. Many lids have a primary purpose of preventing spillage of the contents when the user is not drinking from the container through the lid, but these lids generally contain small flow-inhibiting openings or other features, such as valves, doors, levers, and the like, that prevent unobstructed and rapid dispensing of the contents of the container. There are many situations or circumstances where an individual would desire to dispense the contents of a container rapidly and in a controlled manner in order to prevent spillage of the contents, especially when drinking.

[0005] One such circumstance is especially present for runners of long-distance races. During strenuous physical activities, especially those involving distance races of 10 kilometers or more, a runner's body can become dehydrated, unless the lost fluid is replaced. To maintain the body's physical capabilities, it is essential that fluids and nutrients be provided in a timely and appropriate manner. In marathon races, there may be as many as twenty aid or fluid stations spaced at convenient intervals throughout the race course where volunteers typically hand out to the runners plastic or paper containers filled with water or other suitable fluids. Some runners reluctantly feel compelled to come to a complete stop to drink the fluids in an effort to prevent spillage and choking as the fluid is consumed from these open containers, thus sacrificing precious time in the race. Other runners attempt to maintain their pace as they pass these aid or fluid stations. As the runner takes the container and attempts to drink, much of the fluid is splashed and spilled. The fluid often is splashed or spilled up their nose, into their eyes, across their face, down their neck, onto their clothing, etc. If the liquid contains fruit sugars and electrolytes, the runner's skin and clothing become encrusted with sticky and crystalline residue which causes discomfort and irritation, and reduces concentration and efficiency. Many of these runners also frequently choke when attempting to drink from a conventional cup container. Sometimes the fluid is provided in a closed plastic bottle. In this situation, the runner may be able to prevent spillage by sealing their mouth around the top of the bottle, but upon drinking, a vacuum is created and the fluid flow is restricted until air is allowed back into the bottle through the drinking opening.

[0006] Another situation where the ability to drink rapidly and controllably is valued is when one is riding in a moving vehicle, such as in a car, train, airplane, etc. In these situations, the environment of the moving vehicle can make drinking fluids rapidly without spillage a challenge. Attempting to

drink rapidly from an open container can be very difficult during turns, on rough roads, during rapid accelerations or decelerations, during turbulence, etc.

[0007] Young children, the elderly, and those with physical impairments that limit their ability to control muscles involved in holding and positioning containers at one's mouth for drinking may also have difficulty drinking rapidly and in a controlled manner without spilling when drinking. Sometimes straws are used with or without lids on the containers to aid individuals like these. However, straws require suction and inherently limit the flow rate of the liquid. Straws usually are not attached to the container and typically move around freely, further complicating the task of drinking.

[0008] There are many other situations and circumstances, such as at fast-food restaurants, parties, public events, or other locations, where individuals are likely to be jostled or bumped by other people. The jostling and bumping can cause the liquid to spill out of the container and over the hands and clothing of the person using the container or over the clothing of persons in the vicinity of the user. The task of drinking without spilling is further complicated in these situations, and as such, there is value in providing a better solution for these drinking and container dispensing needs.

[0009] Hayes Jr., U.S. Pat. No. 4,795,052, describes a spill-proof lid that includes a liquid chamber and a vent chamber formed within the lid itself whether manufactured as two separate pieces or in one single piece. The liquid chamber begins with a small mouthpiece on the top side of the lid, follows a curvilinear path, and ends on the bottom side of the lid in close proximity to the mouthpiece. The liquid chamber resembles a curved straw integral to the lid and requires suction to produce liquid through the chamber. In order to provide the spill-proof characteristics of this invention, the cross-sectional area of the liquid chamber must remain small, thus preventing rapid and unobstructed dispensing of the contents of the container.

[0010] Heath et al., U.S. Pat. No. 7,134,570 B1, describe a disposable lid that grips the inner and outer walls of the lip of a cup. Two surfaces of the disposable lid converge together to form a sharp edge. A small liquid discharge port is provided adjacent to the apex of the sharp edge. A slit in the shape of a cross in the lid is provided for insertion of a straw and as a vent opening to prevent creation of a vacuum in the cup during use with the lid. Liquid is unobstructed as it travels from the cup to the liquid discharge port. The sharp edge on the lid makes sealing of the lips around the liquid discharge port difficult. The small size of the described liquid discharge port prevents rapid flow of the liquid through the port without significant suction. The slit provided for the insertion of a straw requires enough suction through the liquid discharge port to bend the lid adjacent the slit to create a vent opening, thus impeding the free flow and rapid flow of the contents of the cup.

[0011] Dark, U.S. Pat. No. 7,168,589 B2, describes a spill-resistant container including a cup and a cap. The cap has a spout extending upward and a vent opening, wherein the opening of the spout and the vent opening correspond to two of several recesses in the ledge of the cup. The cap can be rotated relative to the cup to selectively open and close the spout and the vent. Because the spill-resistant container is designed to be closed, the opening of the spout is limited in size. Although the user can seal around the spout with their lips, the small size of the opening of the spout prevents rapid and unobstructed dispensing of the contents of the container.

[0012] Edelstein et al., U.S. Pub. No. 2008/0061069 A1, describe a drink cup lid for mounting over the open mouth of a beverage container. The lid includes an annular rim, a concentric and smaller annular channel, and a central hub. A small drink aperture is provided along the side wall of the annular channel. Because the small drink aperture is positioned in the annular channel, the user is not able to form a seal around the small drink aperture with their lips when drinking. The design of this drink cup lid does not prevent spillage while drinking and does not allow for unobstructed and rapid dispensing of the contents of the cup.

[0013] Durdon, U.S. Pat. No. 7,175,042 B2, describes a disposable cup lid for placement onto the rim of a drinking cup. The cup lid includes a small drinking access port and a large condiment opening that can be closed with a sealing cap attached to the cup lid. The small drinking access port prevents unobstructed and rapid dispensing of the contents of the cup. In other embodiments, a fold-back tab and a tear tab are described which provide for rapid dispensing of the contents of the cup. Although the condiment opening, the fold-back tab, or the tear tab might provide for unobstructed and rapid dispensing of the contents of the cup, the cup lid does not allow the user to form a seal around the condiment opening, the fold-back tab, or the tear tab with their lips when drinking, and thereby could not provide for rapid flow without spillage.

[0014] Cai, U.S. Pub. No. 2008/0054005 A1, describes a hot cup lid providing alternating modes of access to the contents of a cup through a small sipping opening or an enlarged drinking opening selectively closed by a tear flap. In order to provide rapid dispensing of the contents of the cup, the tear flap must be opened and used to drink the contents. However, the cup lid described does not allow the user to form a seal around the enlarged drinking opening with their lips when drinking, and thereby does not provide for rapid flow without spillage.

[0015] The aforementioned inventions do not adequately meet the needs of those users described earlier. More specifically, cup lids like the lids in the aforementioned inventions are not being used with success by runners in long-distance races, nor are they being used with success to meet the needs of the other users described earlier. Therefore, it would be advantageous to have a container lid with a small vent opening and a large content discharge opening in a smooth spout around which the lips of a user can form a seal, thereby allowing for unobstructed and rapid dispensing of the contents of the container, such as a liquid beverage, in a controlled manner so that spillage is prevented during consumption.

SUMMARY OF THE INVENTION

[0016] In accordance with the present invention, a container lid is provided for attaching to the rim of the open end of a container. The lid includes a large content discharge opening in a smooth spout around which the lips of a user can form a seal. The lid further includes a small vent opening through the lid or between the lid and the container. The large opening in the smooth spout and the small vent in the lid allow for unobstructed and rapid dispensing of the contents of the container, such as a liquid beverage, in a controlled manner.

[0017] In a first embodiment of the present invention, the container lid includes a recess and a low-profile smooth spout, which limits the overall height of the combination of the lid and the container. The vent opening is provided between the lid and the container. In the event that any part of

the contents inadvertently spills out of the vent, the contents will be directed away from the face of the user. The recess also allows the user to drink comfortably without their nose coming in contact with the lid, and without having to tilt their head back further to dispense all of the contents.

[0018] In a second embodiment of the present invention, the container lid includes a raised and smooth spout located in the center of the lid. The central location of the smooth spout allows the user to dispense the contents without the need to orient the lid and container first. The vent opening is provided between the lid and the container and follows a long circular channel above the rim of the container. This circular vent opening allows air to flow freely into the container while the contents are being dispensed without the possibility for the contents to flow out of the vent opening. The prevention of spills through the vent opening is achieved in any orientation.

[0019] In other embodiments of the present invention, the container lid includes a raised and smooth spout located adjacent one edge of the lid and container. These embodiments allow for a larger volume of contents than the first embodiment, and allow for a shallower container tilting angle than the second embodiment. In these embodiments a variety of vent openings located on the opposite edge of the lid are provided, including a vent opening between the lid and the container, a vent opening with a tab through the container that allows for the flow of air or the insertion of a straw, and a vent opening with one or more small holes through the lid.

[0020] Each embodiment includes aspects that provide greater benefits to different groups of users depending upon the dispensing tasks they are trying to perform.

[0021] These and other advantages of one or more aspects will become apparent from a consideration of the ensuing description and accompanying drawings. It is expressly understood, however, that the drawings are for the purpose of illustration and description only, and are not intended as a definition of the limits of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] The accompanying drawings illustrate the present invention. In such drawings:

[0023] FIG. 1A is a perspective view of a first embodiment of a container lid in keeping with the present invention.

[0024] FIG. 1B is another perspective view of a first embodiment of a container lid in keeping with the present invention.

[0025] FIG. 1C is a cross-sectional view of a first embodiment taken along line 1C-1C in FIG. 1A.

[0026] FIG. 2A is a perspective view of a second embodiment of a container lid in keeping with the present invention.

[0027] FIG. 2B is another perspective view of a second embodiment of a container lid in keeping with the present invention.

[0028] FIG. 2C is a cross-sectional view of a second embodiment taken along line 2C-2C in FIG. 2A.

[0029] FIG. 2D is a cross-sectional view of a second embodiment taken along line 2D-2D in FIG. 2B.

[0030] FIG. 3A is a perspective view of a third embodiment of a container lid in keeping with the present invention.

[0031] FIG. 3B is another perspective view of a third embodiment of a container lid in keeping with the present invention.

[0032] FIG. 3C is a cross-sectional view of a third embodiment taken along line 3C-3C in FIG. 3A.

[0033] FIG. 4A is a perspective view of a fourth embodiment of a container lid in keeping with the present invention.

[0034] FIG. 4B is a cross-sectional view of a fourth embodiment taken along line 4B-4B in FIG. 4A.

[0035] FIG. 5A is a perspective view of a fifth embodiment of a container lid in keeping with the present invention.

[0036] FIG. 5B is a cross-sectional view of a fifth embodiment taken along line 5B-5B in FIG. 5A.

DETAILED DESCRIPTION OF PRESENTLY PREFERRED EMBODIMENTS

[0037] FIGS. 1A and 1B are perspective views of a first embodiment of a container cap, closure, cover, or lid 110 and a cup, can, or container 112 having a bottom 114 and an open end 116. The lid 110 is shown attached to the container 112 at a lip or rim 118 of the open end 116 of the container 112 by means of an annular clamp or mounting skirt 120. The illustrated mounting skirt 120 is of the type typically incorporated into durable or disposable drink-through or pour-through lids, and is adapted to be press-fit onto the open end of a cup, can, or container and held in place by means of friction or snapped onto the open end of a cup, can, or container and held in place by means of a mechanical interlock. The structure of the mounting skirt may take any form without departing from the scope of the present invention, provided that it is suitable for securing the lid 110 to a durable or disposable container. The lid 110 itself may also be either durable or disposable.

[0038] The lid 110 comprises a mouthpiece or smooth spout 122 with an orifice, aperture, access port, or content discharge opening 124 located at a proximal end 126 and a vent chamber, vent path, or vent opening 128 located at a distal end 130. The distal end 130 of the lid 110 refers to the portion farthest away from the user when drinking through the lid 110, whereas the proximal end 126 refers to the portion of the lid 110 facing the user when drinking, generally adjacent to the smooth spout 122. The lid 110 further includes a sidewall 132 that is generally located adjacent to the inside portion of the open end 116 of the container 112, except at the proximal end 126 of lid 110, where the sidewall 132 forms a part of the smooth spout 122. The sidewall 132 allows the lid 110 to provide a recess 134 for the user to place the upper lip of their mouth around the smooth spout 122 or to place their nose when drinking. The recess 134 allows the user to drink more comfortably by tilting the container, as opposed to tilting their head backwards to uncomfortable angles.

[0039] FIG. 1C is a cross-sectional view of the first embodiment taken along line 1C-1C of FIG. 1A. FIG. 1C provides more detailed illustrations of the mounting skirt 120 and the vent opening 128 of the lid 110. A clasp feature, hooking feature, detent, or retention feature 136 of the mounting skirt 120 ensures that the lid 110 remains attached to the container 112 during use. The vent opening 128 comprises a channel 138 formed between the lid 110 and the wall at the open end 116 of the container 112, an inlet 140 located at an end of the channel 138 outside of the container 112, and an outlet 142 located at another end of the channel 138 inside of the container 112. When liquid stored in the container 112 is dispensed via the content discharge opening 124 of the smooth spout 122 of the lid 110, air may flow into the container 112 by entering at the inlet 140, passing through the channel 138, and exiting at the outlet 142 of the vent opening 128. The vent opening 128 prevents a flow-inhibiting vacuum condition within the container 112.

[0040] When using the lid 110 for drinking, the user grips and orients the container 112 so that the proximal end 126 and the smooth spout 122 point toward the user, places and seals their lips around the smooth spout 122, and tilts the container 112. When the container 112 is tilted towards the user, the contents stored in the container 112 flow into the smooth spout 122, through the content discharge opening 124, and into the user's mouth without spillage. The content discharge opening 124 is large enough to allow rapid flow of the contents of the container 112, and the smooth spout 122 is small enough to fit comfortably in the mouth of a user. As the contents of the container 112 flow into the user's mouth, air may flow into the container 112 via the vent opening 128 at the distal end 130 of the lid 110 to replace the volume of the contents that dispense into the user's mouth. The flow of air through the vent opening 128 prevents a flow-inhibiting vacuum condition within the container 112 and allows unrestricted drinking of the contents. The user then tilts the container 112 and lid 110 back to an upright position to cease the flow of the contents, such as a liquid beverage, and to return the remaining contents, if any, to the container 112.

[0041] When using the lid 110 for pouring, the user grips and orients the container 112 so that the proximal end 126 and the smooth spout 122 are at the lowest point as the container 112 is tilted. When the container 112 is tilted, the contents stored in the container 112 flow into the smooth spout 122 and out of the lid 110 through the content discharge opening 124. The large content discharge opening 124 allows for unobstructed and rapid dispensing of the contents of the container 112 in a controlled manner. As liquid contents of the container 112 flow through the content discharge opening 124 in the smooth spout 122, air may flow into the container 112 via the vent opening 128 at the distal end 130 of the lid 110 to replace the volume of liquid dispensed. The flow of air through the vent opening 128 allows for laminar flow of the liquid and prevents a flow-inhibiting vacuum condition within the container 112. The user then tilts the container 112 and lid 110 back to an upright position to cease the flow of the contents and to return the remaining contents, if any, to the container 112.

[0042] The contents can initially be placed in the container 112 before or after the lid 110 is attached to the container 112. When the lid 110 is already attached to the container 112, the contents can be poured into the container 112 through the large content discharge opening 124 in the smooth spout 122 of the lid 110. The large content discharge opening 124 also allows for additions of condiments, or other additives, to the existing contents of the container 112.

[0043] FIGS. 2A and 2B are perspective views of a second embodiment of a lid 210 and the container 112. The lid 210 is shown attached to the container 112 at the open end 116 of the container 112 by means of a mounting skirt 220. The lid 210 comprises a smooth spout 222 with a content discharge opening 224 located at the center of the lid 210 and a vent opening 228 located at the top of the mounting skirt 220. The lid 210 further includes a sidewall 232 that is generally located adjacent to the inside portion of the open end 116 of the container 112 and a recess 234 that is generally located between the smooth spout 222 and the sidewall 232. The lid 210 itself may be either durable or disposable.

[0044] FIG. 2C is a cross-sectional view of the second embodiment taken along line 2C-2C of FIG. 2A. FIG. 2D is a cross-sectional view of the second embodiment taken along line 2D-2D of FIG. 2B. FIGS. 2C and 2D provide more

detailed illustrations of the mounting skirt 220 and the vent opening 228 of the lid 210. A retention feature 236 of the mounting skirt 220 ensures that the lid 210 remains attached to the container 112 during use. The vent opening 228 comprises a channel 238 formed between the lid 210 and the rim 118 at the open end 116 of the container 112, an inlet 240 located at an end of the channel 238 outside of the container 112 (shown in FIG. 2C), and an outlet 242 located at another end of the channel 238 inside of the container 112 (shown in FIG. 2D). When liquid stored in the container 112 is dispensed via the content discharge opening 224 of the smooth spout 222 of the lid 210, air may flow into the container 112 by entering at the inlet 240, passing through the channel 238, and exiting at the outlet 242 of the vent opening 228. The vent opening 228 prevents a flow-inhibiting vacuum condition within the container 112.

[0045] When using the lid 210 for drinking, the user grips the container 112, places and seals their lips around the smooth spout 222, and tilts the container 112. The smooth spout 222 is centered on lid 210, and therefore, the container 112 does not need to be oriented prior to tilting. When the container 112 is tilted towards the user, the contents stored in the container 112 flow into the smooth spout 222, through the content discharge opening 224, and into the user's mouth without spillage. The content discharge opening 224 is large enough to allow rapid flow of the contents of the container 112, and the smooth spout 222 is small enough to fit comfortably in the mouth of a user. As the contents of the container 112 flow into the user's mouth, air may flow into the container 112 via the vent opening 228 of the lid 210 to replace the volume of the contents that dispense into the user's mouth. Because the inlet 240 and outlet 242 of the vent opening 228 are near one another, and because the channel 238 of the vent opening 228 wraps around the lid 210 substantially adjacent the rim 118 of the container 112, liquid will not flow from one end of the channel 238 to the other end when the container 112 is tilted. The flow of air through the vent opening 228 prevents a flow-inhibiting vacuum condition within the container 112 and allows unrestricted drinking of the contents. The user then tilts the container 112 and lid 210 back to an upright position to cease the flow of the contents, such as a liquid beverage, and to return the remaining contents, if any, to the container 112.

[0046] When using the lid 210 for pouring, the user grips and tilts the container 112 allowing the contents stored in the container 112 to flow into the smooth spout 222 and out of the lid 210 through the content discharge opening 224. The large content discharge opening 224 allows for unobstructed and rapid dispensing of the contents of the container 112 in a controlled manner. As liquid contents of the container 112 flow through the content discharge opening 224 in the smooth spout 222, air may flow into the container 112 via the vent opening 228 to replace the volume of liquid dispensed. The flow of air through the vent opening 228 allows for laminar flow of the liquid and prevents a flow-inhibiting vacuum condition within the container 112. The user then tilts the container 112 and lid 210 back to an upright position to cease the flow of the contents and to return the remaining contents, if any, to the container 112.

[0047] The contents can initially be placed in the container 112 before or after the lid 210 is attached to the container 112. When the lid 210 is already attached to the container 112, the contents can be poured into the container 112 through the large content discharge opening 224 in the smooth spout 222

of the lid 210. The large content discharge opening 224 also allows for additions of condiments, or other additives, to the existing contents of the container 112.

[0048] FIGS. 3A and 3B are perspective views of a third embodiment of a lid 310 and the container 112. The lid 310 is shown attached to the container 112 at the open end 116 of the container 112 by means of a mounting skirt 320. The lid 310 comprises a smooth spout 322 with a content discharge opening 324 located at a proximal end 326 and a vent opening 328 located at a distal end 330. The distal end 330 of the lid 310 refers to the portion farthest away from the user when drinking through the lid 310, whereas the proximal end 326 refers to the portion of the lid 310 facing the user when drinking, generally adjacent to the smooth spout 322. The lid 310 itself may be either durable or disposable.

[0049] FIG. 3C is a cross-sectional view of the third embodiment taken along line 3C-3C of FIG. 3A. FIG. 3C provides more detailed illustrations of the mounting skirt 320 and the vent opening 328 of the lid 310. A retention feature 336 of the mounting skirt 320 ensures that the lid 310 remains attached to the container 112 during use. The vent opening 328 comprises a channel 338 formed between the lid 310 and the rim 118 of the container 112, an inlet 340 located at an end of the channel 338 outside of the container 112, and an outlet 342 located at another end of the channel 338 inside of the container 112. When liquid stored in the container 112 is dispensed via the content discharge opening 324 of the smooth spout 322 of the lid 310, air may flow into the container 112 by entering at the inlet 340, passing through the channel 338, and exiting at the outlet 342 of the vent opening 328. The vent opening 328 prevents a flow-inhibiting vacuum condition within the container 112.

[0050] FIG. 4A is a perspective view of a fourth embodiment of a lid 410 and the container 112. The lid 410 is shown attached to the container 112 at the open end 116 of the container 112 by means of a mounting skirt 420. The lid 410 comprises the smooth spout 322 with the content discharge opening 324 located at a proximal end 426 and a vent opening 428 located at a distal end 430. The distal end 430 of the lid 410 refers to the portion farthest away from the user when drinking through the lid 410, whereas the proximal end 426 refers to the portion of the lid 410 facing the user when drinking, generally adjacent to the smooth spout 322. The lid 410 itself may be either durable or disposable.

[0051] FIG. 4B is a cross-sectional view of the fourth embodiment taken along line 4B-4B of FIG. 4A. FIG. 4B provides more detailed illustrations of the mounting skirt 420 and the vent opening 428 of the lid 410. A retention feature 436 of the mounting skirt 420 ensures that the lid 410 remains attached to the container 112 during use. The vent opening 428 comprises a vent flap or vent tab 444 formed by a cut in the lid 410 at the distal end 430 and bendable at a fold or hinge 446. When liquid stored in the container 112 is dispensed via the content discharge opening 324 of the smooth spout 322 of the lid 410, air may flow into the container 112 by entering through the lid 410 at the vent tab 444 and exiting into the container 112. The vent opening 428 prevents a flow-inhibiting vacuum condition within the container 112.

[0052] FIG. 5A is a perspective view of a fifth embodiment of a lid 510 and the container 112. The lid 510 is shown attached to the container 112 at the open end 116 of the container 112 by means of the mounting skirt 420. The lid 510 comprises the smooth spout 322 with the content discharge opening 324 located at the proximal end 426 and a vent

opening 528 located at the distal end 430. The lid 510 itself may be either durable or disposable.

[0053] FIG. 5B is a cross-sectional view of the fifth embodiment taken along line 5B-5B of FIG. 5A. FIG. 5B provides more detailed illustrations of the vent opening 528 of the lid 510. The vent opening 528 comprises one or more vent holes 548 that pass through the lid 510 at the distal end 430. When liquid stored in the container 112 is dispensed via the content discharge opening 324 of the smooth spout 322 of the lid 510, air may flow into the container 112 by entering through the lid 410 at one or more of the vent holes 548 and exiting into the container 112. The vent holes 548 prevent a flow-inhibiting vacuum condition within the container 112.

[0054] When using lid 310, lid 410, or lid 510 for drinking, the user grips and orients the container 112 so that the smooth spout 322 points toward the user, places and seals their lips around the smooth spout 322, and tilts the container 112. When the container 112 is tilted towards the user, the contents stored in the container 112 flow into the smooth spout 322, through the content discharge opening 324, and into the user's mouth without spillage. The content discharge opening 324 is large enough to allow rapid flow of the contents of the container 112, and the smooth spout 322 is small enough to fit comfortably in the mouth of a user. As the contents of the container 112 flow into the user's mouth, air may flow into the container 112 via vent opening 328, vent opening 428, or vent opening 528 of lid 310, lid 410, or lid 510, respectively, to replace the volume of the contents that dispense into the user's mouth. The flow of air through vent opening 328, vent opening 428, or vent opening 528 prevents a flow-inhibiting vacuum condition within the container 112 and allows unrestricted drinking of the contents. The user then tilts the container 112 and lid 310, lid 410, or lid 510 back to an upright position to cease the flow of the contents, such as a liquid beverage, and to return the remaining contents, if any, to the container 112.

[0055] When using lid 310, lid 410, or lid 510 for pouring, the user grips and orients the container 112 so that the smooth spout 322 is at the lowest point as the container 112 is tilted. When the container 112 is tilted, the contents stored in the container 112 flow into the smooth spout 322 and out of lid 310, lid 410, or lid 510 through the content discharge opening 324. The large content discharge opening 324 allows for unobstructed and rapid dispensing of the contents of the container 112 in a controlled manner. As liquid contents of the container 112 flow through the content discharge opening 324 in the smooth spout 322, air may flow into the container 112 via vent opening 328, vent opening 428, or vent opening 528 of lid 310, lid 410, or lid 510, respectively, to replace the volume of liquid dispensed. The flow of air through vent opening 328, vent opening 428, or vent opening 528 allows for laminar flow of the liquid and prevents a flow-inhibiting vacuum condition within the container 112. The user then tilts the container 112 and lid 310, lid 410, or lid 510 back to an upright position to cease the flow of the contents and to return the remaining contents, if any, to the container 112.

[0056] The contents can initially be placed in the container 112 before or after lid 310, lid 410, or lid 510 is attached to the container 112. If lid 310, lid 410, or lid 510 is already attached to the container 112, the contents can be poured into the container 112 through the large content discharge opening 324 in the smooth spout 322 of lid 310, lid 410, or lid 510. The

large content discharge opening 324 also allows for additions of condiments, or other additives, to the existing contents of the container 112.

[0057] The container 112 to which the different described embodiments may be attached may be of a variety of shapes, sizes, and materials, so long as it comprises a bottom 114, an open end 116, and a rim 118. Common materials for containers include paper, plastic, metal, and glass. A common shape for the rim of a container is circular, but may alternatively be substantially square, oval, or of another shape. Lid 110, lid 210, lid 310, lid 410, and lid 510 are thermoformed, or vacuum-formed, from extruded plastics sheet material, and then punched or stamped to create essential features. Those of ordinary skill in the art will recognize, however, that alternative materials and methods of manufacture could also be used, such as plastics that are injection molded, sheet metals that are punched and extruded, or papers that are formed to a mold and trimmed. The description of the current preferred embodiments should not be construed to limit the scope of the invention to any one particular material or method of manufacture. Rather, the scope of the invention should be considered only in reference to the claims, and should include alternative structures, materials, and elements that would be known to those of ordinary skill in the art.

[0058] Furthermore, at least one embodiment of the container lid allows individuals, such as runners, to easily and comfortably intake liquid refreshment in a controlled manner while in motion without spillage of the contents. The embodiments permit individuals to selectively intake measured quantities of fluids during any one swallow, thereby not requiring any gulping, which tends to increase the amount of air carried into the stomach cavity causing discomfort to the individual. The embodiments of the container lid allow individuals of varying age, ability, and circumstance to enjoy an unobstructed, non-turbulent, and rapid or free flow of the contents of the container through the smooth-spouted lid. The embodiments of the container lid also provide an effective way to drink liquids containing pieces of ice, as the spout of the container lid and the tongue of the user work in conjunction to hold back the ice while the liquid is channeled in a controlled manner into the user's mouth without spillage.

[0059] While the above description contains many specificities, these should not be construed as limitations on the scope, but rather as an exemplification of several embodiments thereof. Many other variations are possible. For example, the container and the lid can be permanently bonded to one another. The lid can be formed in alternative shapes to match the shape of the accompanying container, including shapes that are substantially square, oval, rectangular, etc. The lid can be scaled to different sizes and the essential elements of the lid can be adjusted to fit the required size. The lid can be provided in a variety of colors or patterns, or in various degrees of transparency or opacity. The specific elements of one embodiment may be used with the complementary elements of another embodiment, such as the spout of one embodiment and the vent opening of another embodiment.

[0060] Accordingly, the scope should be determined not by the embodiments illustrated, but by the appended claims and their legal equivalents.

What is claimed is:

1. A lid for placement onto the rim of a container at its open end, comprising:

- a. a mounting skirt having a retention feature suitable for securing said lid to said container,
 - b. a smooth spout having a content discharge opening large enough to allow rapid flow of the contents of said container and small enough to fit comfortably into the mouth of a user, allowing said user to form a seal with their lips around said smooth spout, and
 - c. a vent opening that allows air to enter into said container as contents are dispensed through said content discharge opening,
- whereby said lid allows for unobstructed and rapid dispensing of the contents of said container in a controlled manner.
2. The lid of claim 1, wherein said smooth spout is located at a proximal end of said lid.
3. The lid of claim 1, wherein said smooth spout is located at the center of said lid.
4. The lid of claim 1, wherein said vent opening includes a channel formed between said lid and the wall of said container at its open end, an inlet located at an end of said channel outside of said container, and an outlet located at another end of said channel inside of said container.
5. The lid of claim 4, wherein the channel of said vent opening wraps around said lid substantially adjacent to the rim of said container.
6. The lid of claim 1, wherein said vent opening is formed through said lid.
7. The lid of claim 6, wherein said vent opening is provided by a cut which forms a vent tab in said lid, and wherein said vent tab is bendable at a hinge.
8. The lid of claim 6, wherein said vent opening is provided by one or more holes through said lid.
9. A lid for placement onto the rim of a cup at its open end, comprising:
- a. a mounting skirt having a retention feature suitable for securing said lid to said cup,
 - b. a smooth spout having a content discharge opening large enough to allow rapid flow of liquid of said cup and small enough to fit comfortably into the mouth of a user, allowing said user to form a seal with their lips around said smooth spout, and
 - c. a vent opening that allows air to enter into said cup as liquid is dispensed through said content discharge opening,
- whereby said lid allows for unobstructed and rapid dispensing of the liquid of said cup in a controlled manner so that spillage is prevented during consumption.
10. The lid of claim 9, wherein said smooth spout is located at a proximal end of said lid.

11. The lid of claim 9, wherein said smooth spout is located at the center of said lid.

12. The lid of claim 9, wherein said vent opening includes a channel formed between said lid and the wall of said cup at its open end, an inlet located at an end of said channel outside of said cup, and an outlet located at another end of said channel inside of said cup.

13. The lid of claim 12, wherein the channel of said vent opening wraps around said lid substantially adjacent to the rim of said cup.

14. The lid of claim 9, wherein said vent opening is formed through said lid.

15. The lid of claim 14, wherein said vent opening is provided by a cut which forms a vent tab in said lid, and wherein said vent tab is bendable at a hinge.

16. The lid of claim 14, wherein said vent opening is provided by one or more holes through said lid.

17. A lid for placement onto the rim of a container at its open end, comprising:

- a. retention means for securing said lid to said container,
- b. dispensing means for allowing rapid flow of the contents of said container through said lid,
- c. sealing means for allowing a user to seal the lips of their mouth to said lid to prevent spillage of the contents of said container through said dispensing means when drinking, and
- d. venting means for allowing air to enter into said container as contents are dispensed through said dispensing means to prevent a flow-inhibiting vacuum condition within said container,

whereby said lid allows for unobstructed and rapid dispensing of the contents of said container in a controlled manner.

18. The lid of claim 17, wherein said retention means includes a retention feature, and wherein said retention feature forms a mechanical interlock between said lid and said container.

19. The lid of claim 17, wherein said dispensing means and said sealing means include a content discharge opening large enough to allow rapid flow of the contents of said container and a smooth spout small enough to fit comfortably into the mouth of said user of said lid.

20. The lid of claim 17, wherein said venting means includes a vent opening with a channel between said lid and said container or a vent opening with one or more holes through said lid.

* * * * *