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(54) **TRAINER CUP ADAPTER LID FOR A BEVERAGE CAN**

Publication Classification

(76) Inventors: **Christopher M. Flink**, Menlo Park, CA (US); **Lauren H. Reeves**, Menlo Park, CA (US)

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Correspondence Address:
Langlotz Patent Works, Inc.
Bennet K. Langlotz
Patent Attorney
P.O. Box 759
Genoa, NV 89411 (US)

(57) **ABSTRACT**

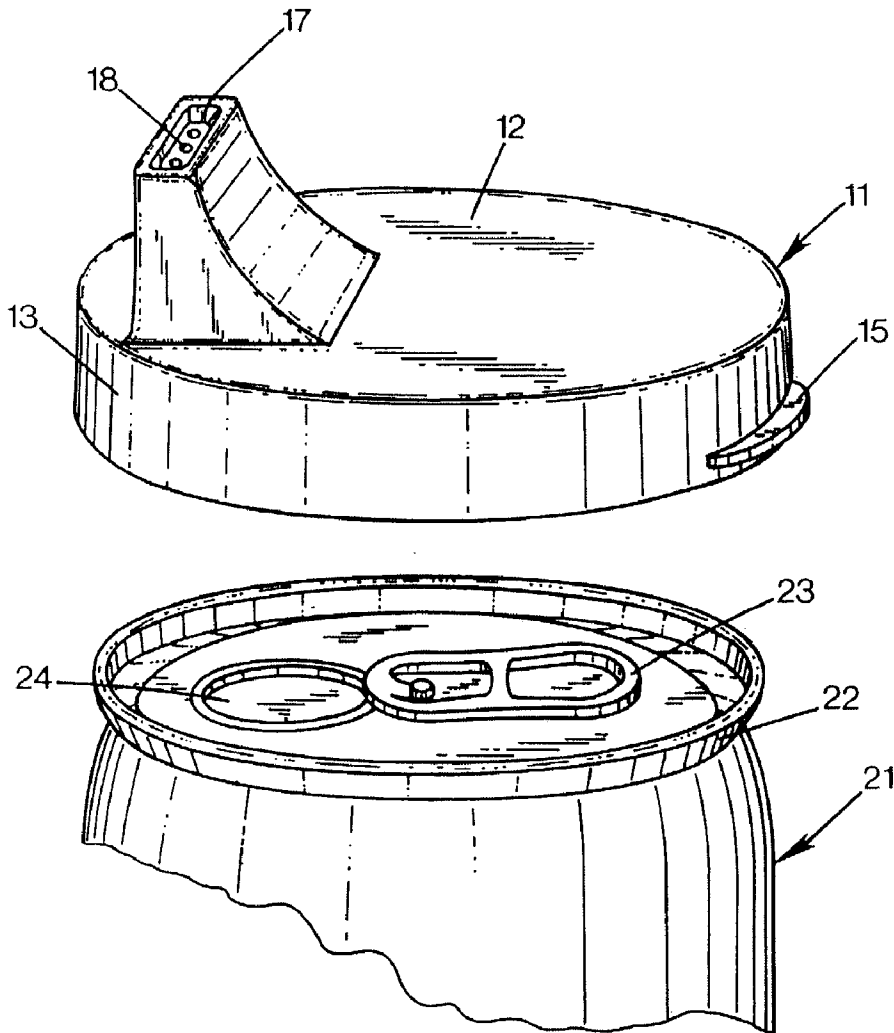
A lid for a rimmed beverage container. The lid has a body with a circular periphery. A lower wall depends from the periphery of the body portion in a first direction, and has an interior wall surface defining a sealing feature operable to sealably engage the rim of the container. A spout extends in a second direction from the body portion, and defines a flow limiting facility to permit passage of beverage fluids under suction, and to limit passage of fluids under gravity. The flow limiting facility may be one or more apertures of limited size, or a valve in the spout, and the wall may include several different diameter sealing features, such that different size containers may be used.

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Related U.S. Application Data

(60) Provisional application No. 60/391,755, filed on Jun. 26, 2002.



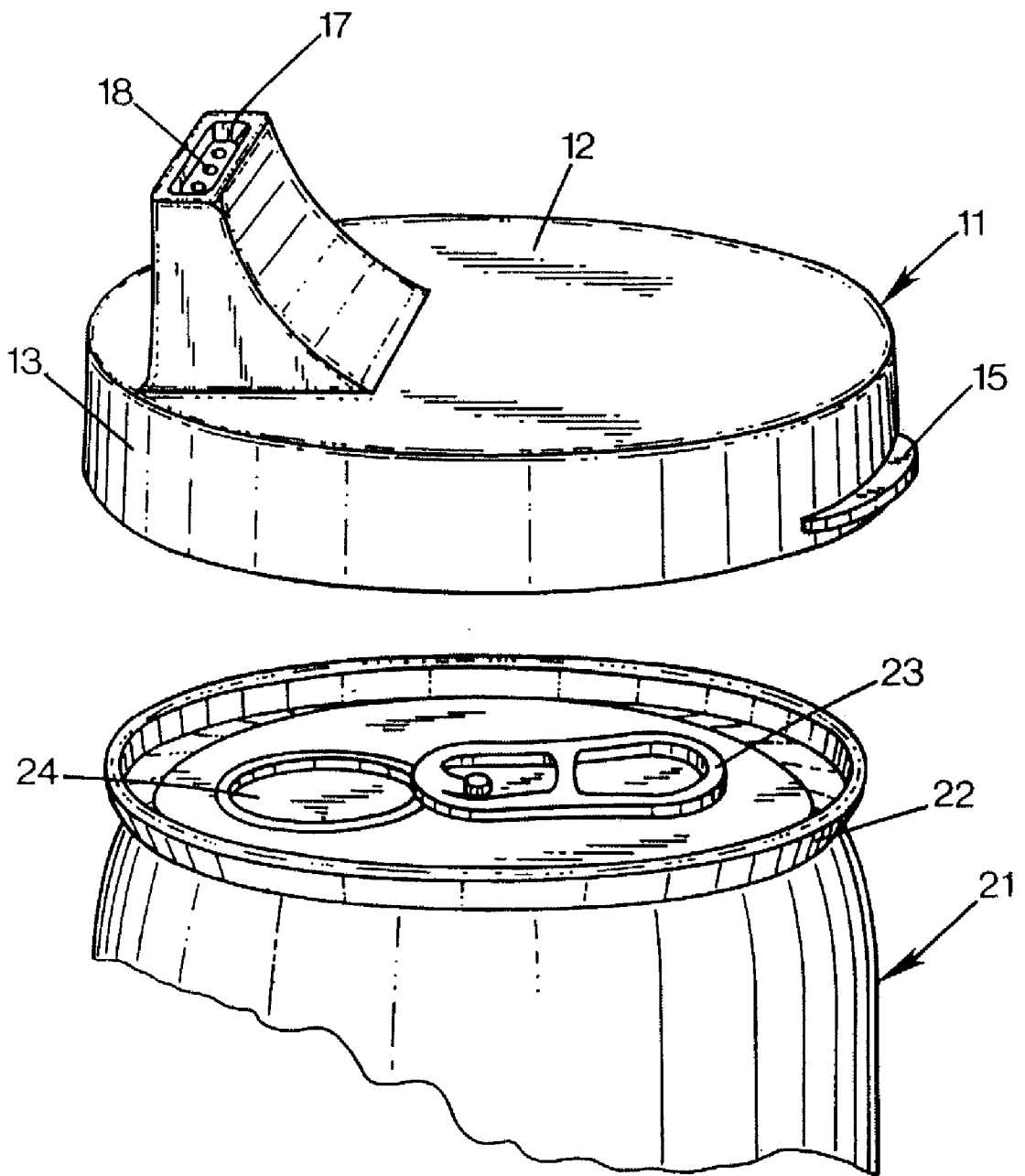


FIG. 1

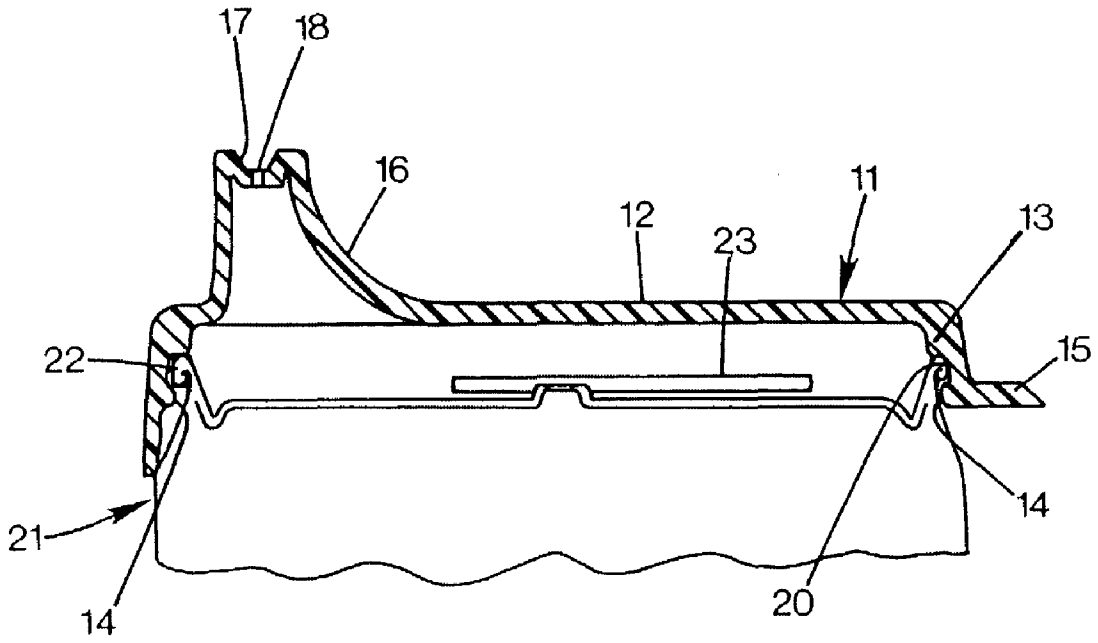


FIG. 2

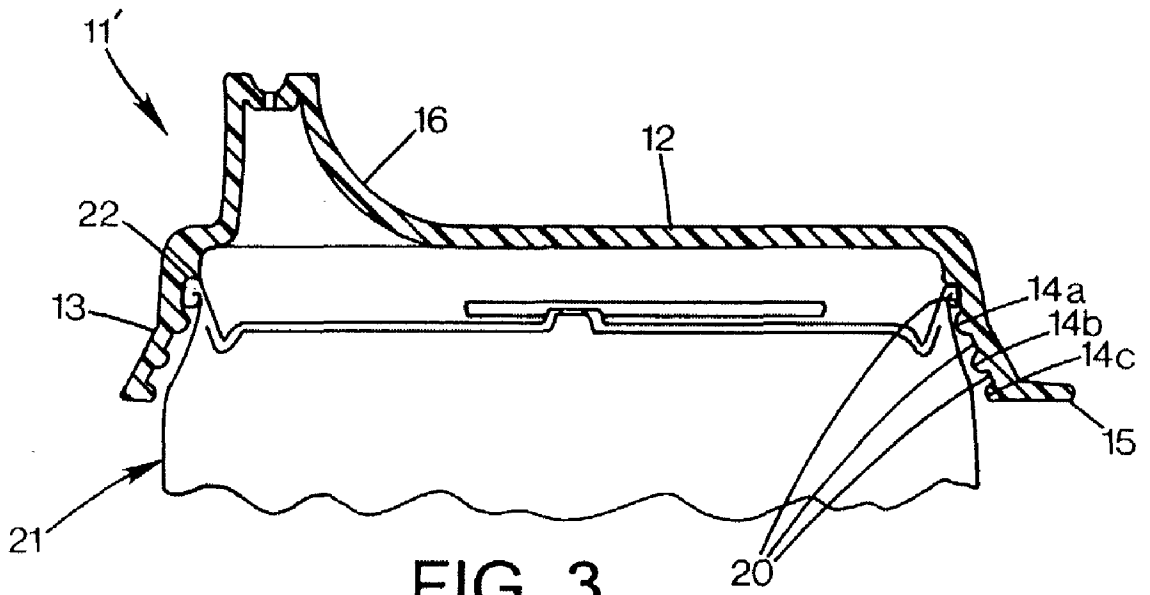


FIG. 3

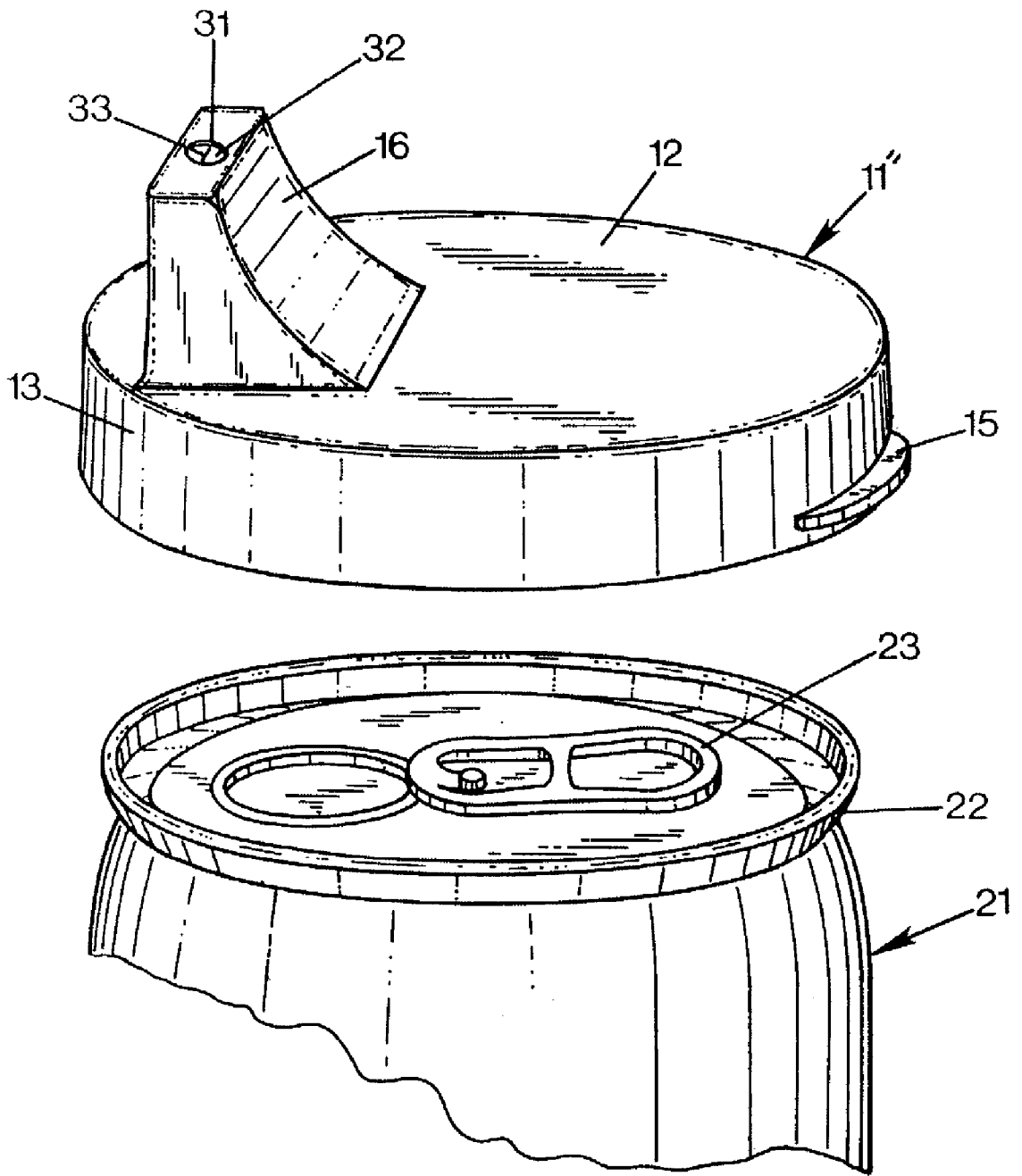


FIG. 4

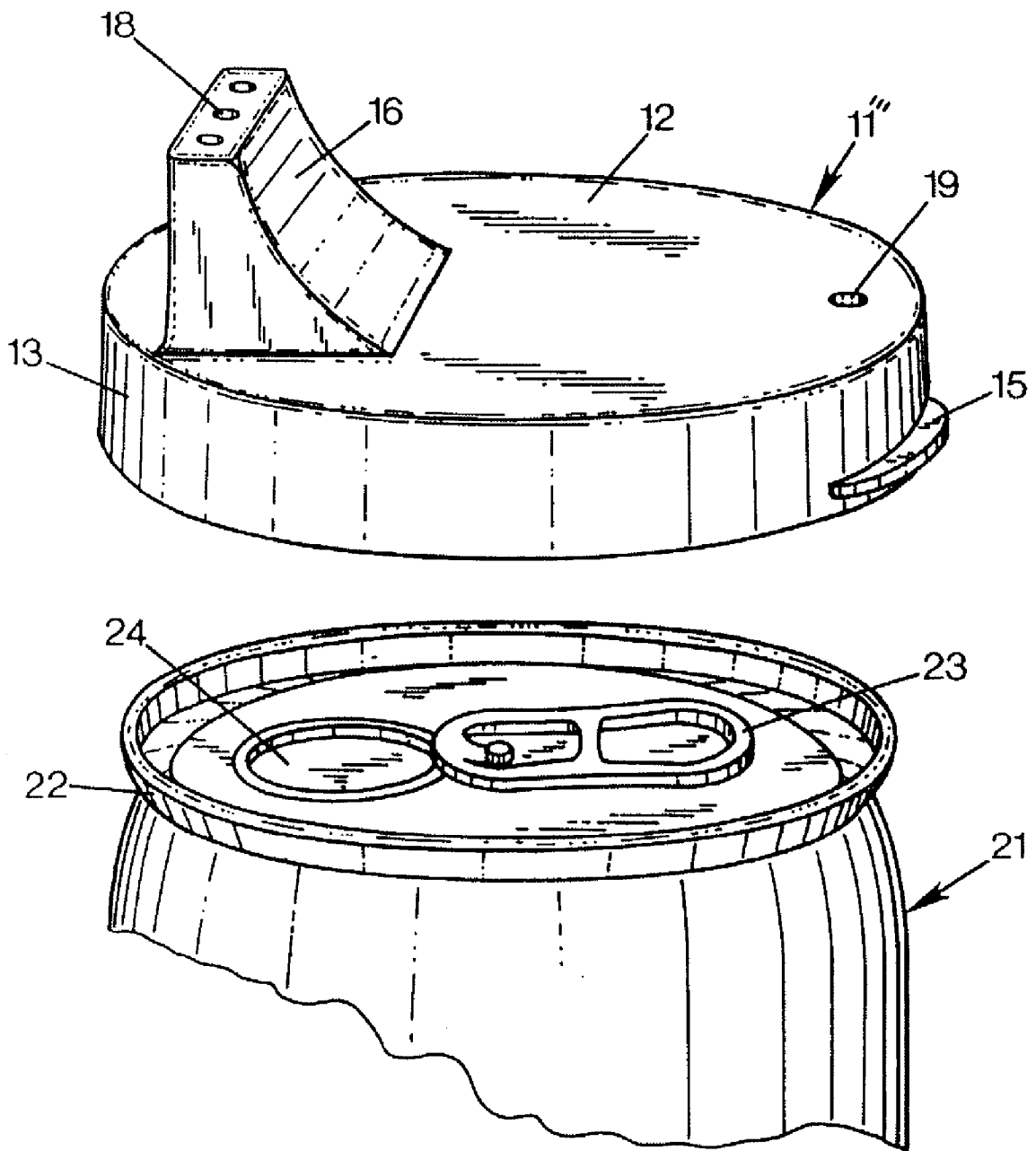


FIG. 5

TRAINER CUP ADAPTER LID FOR A BEVERAGE CAN

REFERENCE TO RELATED APPLICATION

[0001] This is a non-provisional application based on provisional application No. 60/391,755, filed Jun. 26, 2002.

FIELD OF THE INVENTION

[0002] The present invention is directed to spill-resistant drinking vessels, and to accessories for beverage containers.

BACKGROUND AND SUMMARY OF THE INVENTION

[0003] The present invention relates generally to a lid for use in combination with an aluminum beverage can, and specifically to such a lid which permits beverage to be consumed with the lid in place, while at the same time being constructed to resist spillage of the beverage when the can is tipped, jostled or dropped.

[0004] A trainer cup (also commonly referred to as a sippy-cup) is a cup or mug provided with a lid having a mouthpiece—usually a spout—associated therewith. These products are well known and have been designed to bridge the gap between the use of a baby's feeding bottle and the use of a normal cup or glass by a young child. A trainer cup will often be a child's first step in learning to feed itself.

[0005] A trainer cup typically comprises an open-mouthed generally cup-shaped container and a lid for the open-mouthed container. The lid has a spout associated with it, and the lid may be removably attached to the open-mouthed container. Some prior art arrangements of trainer cups include lids with a spout containing an opening typically in the form of a slot or a plurality of apertures. These openings provide a flow passage for withdrawal of the contained liquid and greatly reduce the amount of liquid that spills if the container is tipped or overturned. Another approach to the problem has been to provide a valved spout arrangement to further reduce the amount of liquid that may spill.

[0006] Trainer cups are particularly useful when on the go—such as when transporting a young child in an automobile, train, stroller, or airplane for a prolonged period of time. These mobile environments might become exceedingly messy were it not for spill-resistant trainer cups. However, existing trainer cups are easily forgotten, misplaced, lost, or made too dirty for continued use on a particular outing. Existing trainer cups are generally much too large to allow a parent to easily or comfortably keep a spare in a purse, coat pocket, pant pocket or automobile glove compartment.

[0007] Trainer cups may be filled with separately purchased fruit juice or other beverages. This is done by removing—often by unscrewing—the lid from the open-mouthed container and pouring a beverage therein before replacing and tightening the lid and offering the trainer cup to a young child. This process can seem frustratingly time-consuming when dealing with an upset young child.

[0008] Beverages such as apple, tomato, orange and other juices that would be suitable for young children to drink are commonly packaged in aluminum cans. Cans are an economical way to store and sell beverages and are thus rather

ubiquitous. Large varieties of canned beverages are readily available in grocery stores, gas stations, convenience stores, vending machines, street vendors, restaurants, and even on airplanes. The cans are inexpensive, portable, easily recycled, and don't pose the risk of shattering as glass bottles may.

[0009] Consumers enjoy the convenience beverage cans offer and commonly open and drink directly from such cans. Young children often wish to emulate older siblings and adults and may become fussy when offered a drink that does not closely resemble what others have. Parents, however, hesitate to give canned beverages to young children due to the risk of messy spillage and concerns that the metal edge of the opening in the top of the can may pose a hazard to the lips, gums or tongue of a young child who may be teething.

[0010] Accordingly, besides the objects and advantages of the trainer cups described above, several objects and advantages of my present invention are:

[0011] to provide an adapter lid that will permit a young child (or infirm adult) to drink from a conventional beverage can in the manner he/she would from a spill-resistant trainer cup;

[0012] to provide an adapter lid that in combination with a beverage can will provide trainer cup functionality, but that may be manufactured at significantly lower costs than a complete trainer cup assembly since no cup portion is needed;

[0013] to provide an adapter lid that is significantly more compact and portable than entire trainer cup assemblies so that it may be easily kept in a purse, pocket, glove compartment, etc. and be placed on a beverage can upon purchase of the can;

[0014] to provide an adapter lid that stacks in a nested fashion with identical adapter lids to minimize space needed at retail or in storage at home or in transit;

[0015] to provide an adapter lid that shields the user's mouth from the potentially sharp edges of the opening in the top of the aluminum beverage can;

[0016] to provide an adapter lid that covers the top of the beverage can to prevent a young child from accidentally breaking off the aluminum opening tab and accidentally swallowing or choking on it;

[0017] to provide an adapter lid that allows beverage to be drunk with the lid in place but that will keep stinging insects such as bees that might otherwise be accidentally swallowed out of the beverage;

[0018] to provide an adapter lid that in combination with a beverage can will provide trainer cup functionality, but that does not require the cleaning of a cup before reuse since the can may be recycled or otherwise disposed of;

[0019] to provide an adapter lid that in combination with a beverage can will provide trainer cup functionality and fit into typical cup holders within an automobile or other environment;

[0020] to provide an adapter lid that provides a means to help lift up on the aluminum opening tab on the

beverage can to assist in opening the beverage before attaching the adapter lid itself;

[0021] to provide an adapter lid that is so inexpensive and recyclable that it may be disposed of after a single use;

[0022] to provide an adapter lid that may be offered in a range of colors so that children may more easily identify which is their drink in a group setting such as a picnic or party;

[0023] to provide an adapter lid that provides a highly visible surface suitable for displaying advertising messaging.

[0024] Still further objects and advantages will become apparent from a consideration of the ensuing description and drawings.

[0025] The disclosed embodiments meet some or all of these objectives by providing a lid for a rimmed beverage container. The lid has a body with a circular periphery. A lower wall depends from the periphery of the body portion in a first direction, and has an interior wall surface defining a sealing feature operable to sealably engage the rim of the container. A spout extends in a second direction from the body portion, and defines a flow limiting facility to permit passage of beverage fluids under suction, and to limit passage of fluids under gravity. The flow limiting facility may be one or more apertures of limited size, or a valve in the spout, and the wall may include several different diameter sealing features, such that different size containers may be used.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] FIG. 1 is a perspective view of a preferred embodiment of the invention.

[0027] FIG. 2 is a section view of the embodiment of FIG. 1.

[0028] FIG. 3 is a section view of an alternative embodiment of the invention.

[0029] FIG. 4 is a perspective view of a further alternative embodiment of the invention.

[0030] FIG. 5 is a perspective view of a still further alternative embodiment of the invention.

DETAILED DESCRIPTION OF PREFERRED AND ALTERNATIVE EMBODIMENTS

[0031] FIG. 1 shows an adapter lid 11 constructed in accordance with the invention. It is shown positioned over a conventional aluminum beverage can 21 in combination with which it is intended to be used. The adapter lid includes a top portion 12 and a side portion or skirt 13. The top portion 12 has an aperture formed therethrough, and the side portion 13 extends downwardly from the top portion 12. The top portion is a circular panel, and the side portion is a downwardly depending rim that flares slightly outward as it depends from the periphery of the panel 12. The top portion and the side portion define a unitary construction having an inner side and an outer side. The adapter lid 11 may be constructed as a unitary molded plastic part. The lid is formed of a slightly flexible food-safe washable material such as polypropylene, with more flexible alternatives being

vinyl or rubber. The flexibility permits slight stretching of the rim to engage and disengage from containers, as will be discussed below.

[0032] As shown in FIG. 2, a rim-engaging annulus 14 is formed between the top portion 12 and the side portion 13 on the inner side. The annulus is essentially a rib that faces inward into the space defined by the side portion 13, and defines an inwardly-facing channel 20 above the annular rib. The rim-engaging annulus 14 is configured to be releasably engagable with the rim 22 of a beverage can 21. When installed on a can, the rib 14 resides below the rim 22, and the rim 22 resides within the channel 20.

[0033] A release lever 15 for aiding in the removal of the adapter lid from the beverage can extends from the side portion 13 on the outer side. The lever is a flat protrusion extending laterally from the lower edge of the side wall 13, in a common plane with the inner annular rib 14.

[0034] A mouthpiece spout 16 extends upwardly from the top portion 12 and communicates with the aperture formed through the top portion. The spout is positioned well off center on the lid, toward one edge opposite the lever 15. At the top of the mouthpiece spout 16 are a number of small mouthpiece apertures 18 that communicate with the interior of the lid, and through which beverage may be sipped. These mouthpiece apertures 18 may be set in a mouthpiece recess 17 as shown to further minimize drips.

[0035] In operation, one uses the adapter lid 11 in combination with a conventional beverage can 21. The user may convert a conventional beverage can into a spill-resistant trainer cup by assembling the adapter lid 11 to the top of the beverage can 21.

[0036] The can is preferably opened in a normal manner by lifting up on the pull-tab 23 to create the can opening 24. If the user is unable to easily grip the pull-tab (as is sometimes the case) or does not wish to risk breaking a long fingernail, the release lever means 15 may be employed to pry the pull-tab 23 up from the top surface of the can. This may be accomplished by sliding the free end of the release lever means 15 in between the pull-tab 23 and the top outer surface of the can. This action will provide better access to the pull-tab for the user's finger and will aid in the opening process.

[0037] Once the beverage can 21 has been opened, the adapter lid is pressed down over the top of the open can such that the rim-engaging annulus 14 snaps over and fully engages the groove below the can's rim 22 to create a seal. The flexibility of the lid allows slight stretching of the rim, and/or compression of the rib to allow it to pass over the can's rim. The lid should not be excessively flexible, because the seal and connection between the lid and the can should be tight enough to avoid unwanted removal by a child. The mouthpiece spout 16 and the can opening 24 should be substantially aligned for optimal performance.

[0038] The user may now drink beverage by sipping from the mouthpiece spout 16 and drawing the liquid through the mouthpiece apertures 18. The bottom of the can may be raised upwards as the user keeps the mouthpiece spout in his/her mouth (tilting the assembly so the beverage flows from within the can 21 into the mouthpiece spout 16). Suction created by the user's mouth draws liquid through the mouthpiece apertures 18 and into his/her mouth for con-

sumption. In between sips, air may flow through the mouthpiece apertures to equalize or nearly equalize pressure in the can. If the can **21** with adapter lid **11** on it is jostled or overturned during use or transport, very little (if any) beverage will be spilled due to the small spout apertures, and the closed container that resists fluid flow by vacuum forces.

[0039] In the preferred embodiment, the apertures **18** are each of limited size. This limits spillage because the surface tension of a beverage will cause the apertures of an upended container to seal the apertures against incursion of air. Thus, the vacuum lock serves to prevent spillage of more than a minimal amount of the beverage. Larger apertures may be suitable when a longer passage, such as a straw, or extended spout bore, is employed. The aperture must be smaller than a size that would allow fluid to be poured from the lidded container.

[0040] When the user has consumed the contents of the can, the adapter lid may be easily removed from the can **21** by an adult by pulling upward on the release lever **15** until the rim-engaging annulus **14** releases from the can's rim **22**. The empty can may now be recycled or otherwise disposed of. The adapter lid may be washed and stored for repeated usage or likewise recycled or disposed of.

[0041] FIG. 3 shows an adapter lid **11'** that is adapted for attachment to several different sizes of cans **21** with different sized rims **22**. This is accomplished by providing differently sized channel recesses **20** in the inner surface of the side portion **13**. The recesses **20** are concentric to each other but spaced from each other and occupy spaced apart planes parallel to the lid panel **12**. The recesses **20** are progressively large in diameter as they progress away from the panel, and as the side portion **13** flares outwardly. Each of the recesses has an inclined wall that is inclined outwardly and an associated rim-engaging annulus **14a, b & c**. Each channel is sided to accommodate a different convention beverage can size. For cans of significantly different sizes, different lids may be required.

[0042] In operation, one uses the FIG. 3 embodiment of adapter lid **11'** in combination with a conventional beverage can **21** in a nearly identical manner as one uses the preferred embodiment described above. The adapter lid is pressed down over the top of the open can such that one of the multiple rim-engaging annuli **14a, b, or c** snaps over and fully engages the can's rim **22** to create a seal. The adapter lid will seat lower on smaller diameter cans and higher on larger diameter cans. As conventional beverage cans may be offered in a few different diameters that may be close enough to one another to appear identical without careful inspection, the user may assemble this adapter lid **11'** to a beverage can without concern for the can's size. Other aspects of operation are identical to those described in detail above for the preferred embodiment.

[0043] FIG. 4 is a perspective view of a further alternative embodiment of an adapter lid **11"** constructed in accordance with the present invention. It has a mouthpiece spout **16** provided with a mouthpiece valve **31**, which comprises a membrane **32** of resiliently flexible material formed generally at its center with at least one slit or other piercing **33** which is normally sealed. The membrane **32** is dished inwardly of the mouthpiece spout, but when suction is applied, it is caused to invert to allow liquid to be drawn through its slit(s) **33**. The valve may be co-molded in place

or it may be assembled separately from the underside of the adapter lid. In alternative embodiments, the flow limiting facility may be any suitable means, including a bite valve such as found on water carrier backpacks for outdoor recreational use.

[0044] In operation, one uses this embodiment of adapter lid **11"** in combination with a conventional beverage can **21** in an identical manner as one uses the preferred embodiment described in detail above. The valve **31** is intended to provide an added degree of spill-resistance.

[0045] FIG. 5 shows a further alternative embodiment of an adapter lid **11'''**. This embodiment includes an air-intake aperture **19** through the top portion **12** to allow air to flow into the system to equalize or nearly equalize the pressure within the can **21** as beverage is drawn out of the mouthpiece apertures **18** of the adapter lid **11'''**. The air-intake aperture **19** is sized and positioned to minimize the likelihood of any liquid leaking out through it during use of the product, but a valved arrangement could alternatively be employed to further reduce any potential leakage.

[0046] In operation one uses this embodiment of adapter lid **11'''** in combination with a conventional beverage can **21** in a nearly identical manner as one uses the preferred embodiment described in detail above. The air-intake aperture **19** allows the user to sip from the mouthpiece apertures continually without a vacuum being created within the beverage can **21** as fluid is withdrawn. Air, which would otherwise need to flow into the can through the mouthpiece apertures which may be blocked during continual sipping, may enter through the air-intake aperture to equalize or nearly equalize pressure within the system. Other aspects of operation are identical to those described in detail above for the preferred embodiment.

[0047] Although the description above is provided in terms of preferred and alternative embodiments, these should not be construed as limiting the scope of the invention but as merely providing illustrations of some of the presently preferred embodiments of this invention. For example, the adapter lid could be constructed of other materials such as molded rubber, vinyl, waxed paper, or formed aluminum. The adapter lid could employ various other known means for providing spill-resistance such as a narrow slit or slot instead of small apertures in the mouthpiece spout, or a folding straw or folding integral tube arrangement instead of the mouthpiece spout. The adapter lid could be a plug that fits snugly into the can opening rather than engaging the can rim. The adapter lid could be formed of an elastic, resilient material that could stretch to fit over the top of different sizes of cans. The adapter lid could have walls that extend down from the top portion around or into the can opening to minimize the contact that the beverage makes with the outer surfaces (top) of the can during use. The adapter lid could employ a resiliently flexible O-ring to insure a tight seal between the adapter lid and can rim. The adapter lid could be formed without a mouthpiece recess. The adapter lid could be made in various sizes to accommodate all size cans including very small ones. The adapter lid could have a separate spill-proof valve assembly (as in known trainer cups) that may be assembled to the adapter lid under the mouthpiece spout and which can be disassembled for washing. The adapter lid may be produced in any color.

[0048] Thus the scope of the invention should be determined by the appended claims and their legal equivalents, rather than by the examples given.

1. A lid for a beverage container having a rim comprising:
 - a body portion having a circular periphery;
 - a lower wall depending from the periphery of the body portion in a first direction;
 - the lower wall having an interior wall surface defining a sealing feature operable to sealably engage the rim of the container;
 - a spout extending in a second direction from the body portion; and
 - the spout having a flow limiting facility operable to permit passage of beverage fluids under suction, and to limit passage of fluids under gravity.
2. The lid of claim 1 wherein the flow limiting facility is an aperture of limited size.
3. The lid of claim 1 wherein the flow limiting facility is a valve.
4. The lid of claim 1 wherein the lid is formed of a flexible plastic material.
5. The lid of claim 1 wherein the sealing feature is a rib sized to engage a gap below the rim of a can.
6. The lid of claim 1 wherein the spout protrudes from the body at a position away from the center of the body.
7. The lid of claim 1 wherein the spout defines multiple apertures.
8. The lid of claim 1 including a vent aperture defined in the body.

9. The lid of claim 1 wherein the lower wall is tapered, and defines a plurality of sealing features, such that several different sizes of beverage containers may be accommodated.

10. A lid for a beverage container having an opening comprising:

- a body portion having attachment means for removably sealably engaging the container about the opening; and
- the body portion having a flow limiting facility operable to permit passage of beverage fluids under suction, and to limit passage of fluids under gravity.

11. The lid of claim 10 wherein the flow limiting facility is a valve.

12. The lid of claim 10 wherein the flow limiting facility is an aperture with a width less than a selected threshold.

13. The lid of claim 10 wherein the aperture is defined in a spout portion protruding from the body.

14. The lid of claim 10 wherein attachment means includes a skirt having an inner rib operable to engage the rim of a convention beverage can.

15. The lid of claim 10 wherein the skirt is flared, and defines a plurality of ribs, such that several different sizes of beverage containers may be accommodated.

16. The lid of claim 10 wherein the spout protrudes from the body at a position away from the center of the body.

17. The lid of claim 10 wherein the wherein the body portion defines multiple apertures, such that fluid may flow readily under suction, but not in response to gravity.

18. The lid of claim 10 including a vent aperture defined in the body.

* * * * *