



(22) Date de dépôt/Filing Date: 2008/12/15

(41) Mise à la disp. pub./Open to Public Insp.: 2010/06/15

(45) Date de délivrance/Issue Date: 2014/07/08

(51) Cl.Int./Int.Cl. *B65D 43/03* (2006.01),
B65D 43/04 (2006.01), *B65D 47/06* (2006.01)

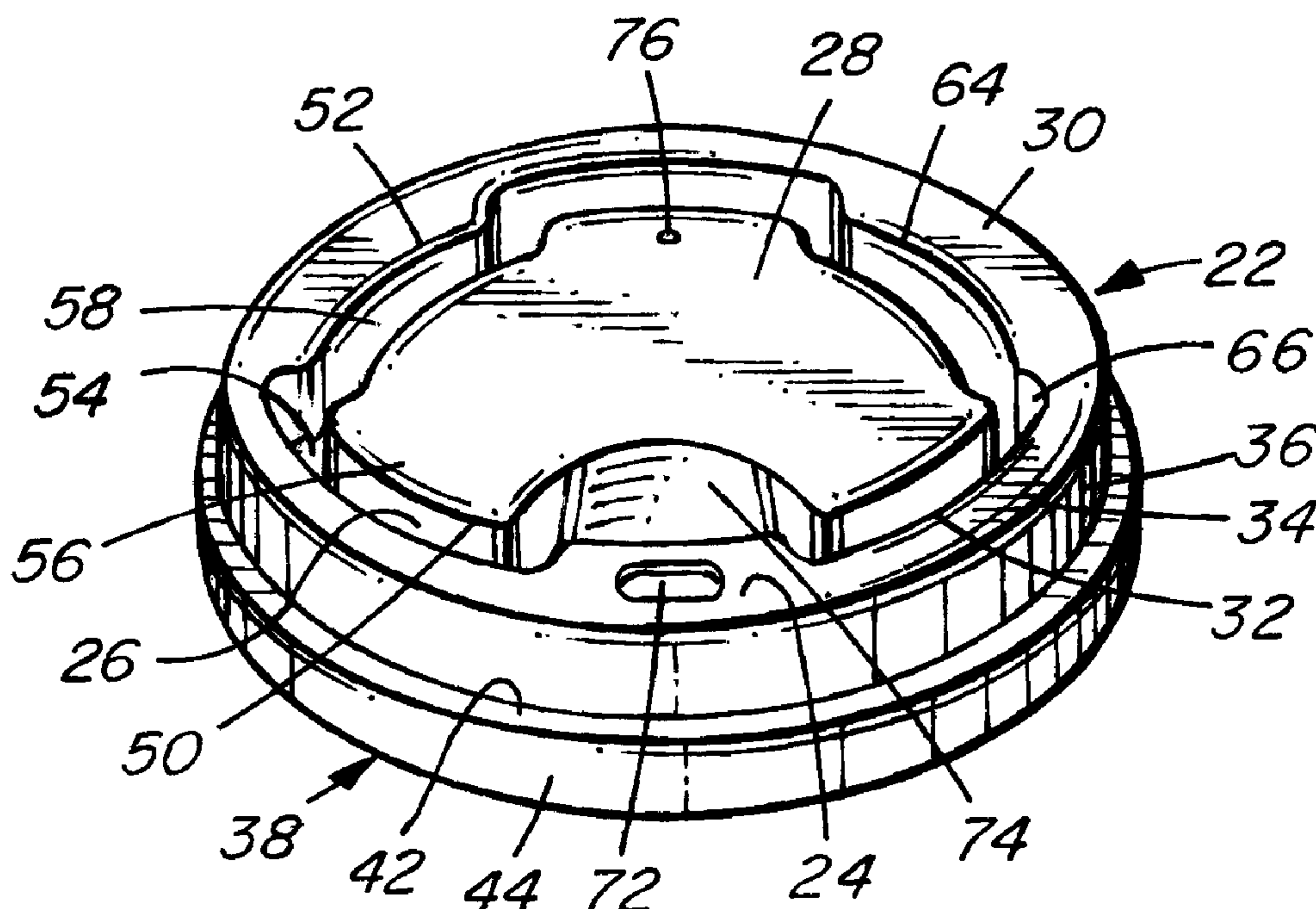
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(54) Titre : COUVERCLES POUR Gobelets EMPILABLES

(54) Title: LIDS FOR STACKING CUPS



(57) Abrégé/Abstract:

A lid for a cup that permits cups of a variety of sizes to be securely stacked thereon. The lid has an upper surface, an exterior sidewall depending from the upper surface, and a mounting portion for sealingly engaging a first cup. The lid has an annular channel in its upper surface dimensioned to receive a bottom rim of a second cup. The annular channel has inner and outer sidewalls, with projecting lobes defining recesses on each of the inner and outer sidewalls. The bottom rim of a relatively smaller cup may be securely retained by engagement with the projecting lobes on the inner sidewall of the annular channel. The bottom rim of a relatively larger cup having a bottom rim diameter larger than that of the relatively smaller cup may be alternatively securely retained by engagement with the projecting lobes on the outer sidewall of the annular channel.

Abstract of the Disclosure

5 A lid for a cup that permits cups of a variety of sizes to be securely stacked thereon. The lid has an upper surface, an exterior sidewall depending from the upper surface, and a mounting portion for sealingly engaging a first cup. The lid has an annular channel in its upper surface dimensioned to receive a bottom rim of a second cup. The annular channel has inner and outer sidewalls, with projecting lobes defining recesses on each of the inner and outer sidewalls. The bottom rim of a relatively smaller cup may be securely retained
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LIDS FOR STACKING CUPS

Technical Field

5 [0001] This invention relates to lids for cups and, in particular to lids for cups which allow cups of different sizes to be vertically stacked. The cups may be disposable cups, and the lids may also be disposable.

Background

10 [0002] A variety of beverages are sold and consumed in disposable cups. To prevent the beverage from spilling out of the cup, a disposable lid is placed over the opening of the cup and secured thereon. Disposable lids are available in many different designs but will typically include three main components: first, a top wall or surface to cover the opening of the cup; second, a mounting portion for engaging an upper rim of the
15 disposable cup; and third, an opening to allow a person to consume the beverage. Figures 1 and 2 depict a prior art disposable lid 10 having a top wall 12, a mounting portion 14 and an opening 16.

[0003] In some situations, a person may wish to carry two or more
20 disposable cups having the lids secured thereon. It would also be desirable if a person could carry more than one cup in a single hand to allow the person to have a free hand to do other things, such as opening a door. One way to do this would be to use a tray. In the absence of a tray, a person can only carry a single cup in each hand for a total of two cups and
25 the person will not have a free hand. This is because the top wall of most disposable lids is generally planar and does not permit a second cup to be securely stacked and carried on top of a first cup. For example, the top wall 12 of the prior art lid 10 includes a central flat portion 18 which may support a second cup on top of a first cup having a lid 10 secured thereon.
30 The lid 10 relies on a slightly raised sidewall 20 to retain the second cup on top of the lid 10. In most cases, if a person attempts to carry two such vertically stacked cups, a slight bump or jolt will cause the second cup to fall off the lid 10.

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[0004] There are other disposable lids that have attempted to improve the stackability of disposable cups. For example, US Patent No. 6,679,397 Smith et al. describes a lid having a ridge located at the base of a side wall and proximate a center portion. The ridge, side wall and center portion facilitate the stacking of multiple cup and lid combinations. Although this lid relies on a center portion and a ridge, in addition to a sidewall, to secure a second cup on top of a lid, the second cup is still not securely affixed to the lid of the first cup. A bump or jolt will still result in the second cup falling off of the lid of the first cup.

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[0005] There remains a need for a lid that will allow multiple cups having lids secured thereon to be vertically stacked and carried in a secure manner. Additionally, there is a need for a lid that will permit multiple cups of different sizes having lids secured thereon to be vertically stacked and carried in a secure manner.

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Summary

[0006] The invention provides a lid for a cup that allows secure stacking of a second cup thereon. The lid has a top wall, an exterior sidewall depending from an outer peripheral edge of the top wall, an annular mounting portion for sealingly engaging an upper rim of a first cup extending from a base of the exterior sidewall, and an annular channel formed in the top wall configured to receive a bottom rim of a second cup. The channel has inner and outer sidewalls with a plurality of rim-engaging members on both the inner and outer sidewalls.

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[0007] In some embodiments, the rim-engaging members are projecting lobes. The rim-engaging members on the inner sidewall are positioned to securely engage an inner surface on a bottom rim of a cup. The rim-engaging members on the outer sidewall are positioned to alternatively securely engage an outer surface on a bottom rim of another,

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relatively larger cup. The bottom rim of the relatively larger cup has a diameter that is larger than the diameter of the bottom rim of the relatively smaller cup.

- 5 [0008] In addition to the exemplary aspects and embodiments described above, further aspects and embodiments will become apparent by reference to the drawings and by study of the following detailed descriptions.

10 Brief Description of Drawings

[0009] Figure 1 is a top plan view of a prior art disposable lid.

[0010] Figure 2 is a cross-sectional side view of the Figure 1 disposable lid taken along line 2-2 of Figure 1.

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[0011] Figure 3 is a perspective view of an embodiment of a lid according to the invention.

[0012] Figure 4 is a top plan view of the lid illustrated in Figure 3.

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[0013] Figure 5 is a bottom plan view of the lid illustrated in Figure 3.

[0014] Figure 6 is a cross-sectional view of the lid illustrated in Figure 3 taken along line 6-6 with the inner projecting lobes engaged with a disposable cup.

[0015] Figure 7 is a cross-sectional view of the lid illustrated in Figure 3 taken along line 7-7 with the outer projecting lobes engaged with a disposable cup.

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Description

[0016] With reference to Figures 3 to 5, a lid 22 has an upper surface 24 with an annular channel 26 defined therein. The annular channel 26 divides the upper surface 24 into a central portion 28 and an outer portion 30. The outer portion 30 is generally annular, and may be planar with the central portion 28, or may alternatively be at a slightly different elevation than the central portion 28. The outer portion 30 has an inner peripheral edge 32 and an outer peripheral edge 34. The outer portion 30 includes an exterior sidewall 36, which depends downwardly and outwardly from the outer peripheral edge 34.

[0017] A mounting portion 38 is provided at the base of the exterior sidewall 36, so that the lid 22 may be attached to an upper rim 46 of a cup 40. The mounting portion 38 includes an outwardly projecting rib 42 and an annular skirt 44 that extends outwardly from the base of the mounting portion 38 (Figures 6 and 7). The rib 42 has an arcuate vertical cross-section and is adapted to sealingly engage an upper rim 46 of a cup 40. The cup 40 may be a disposable cup, and the lid 22 may likewise be disposable.

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[0018] The annular channel 26 is dimensioned to receive a bottom rim 48 of cups having a variety of sizes, as discussed below. The annular channel 26 has an inner sidewall 50, an outer sidewall 52, and a base wall 54. The inner sidewall 50 includes inner projecting lobes 56 and inner recesses 58 defined therebetween.

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[0019] With reference to Figure 6, the inner projecting lobes 56 are dimensioned so as to engage and securely retain the inner surface 60 of the bottom rim 48 when a small cup 62 having a bottom rim 48 of a small diameter is stacked on the lid 22. Preferably, the inner projecting lobes 56 will be spaced evenly around the circumference of the inner sidewall 50,

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to allow the inner projecting lobes **56** to securely and evenly retain the bottom rim **48** of the small cup **62**, although the position and spacing of the inner projecting lobes **56** may be varied or uneven.

5 **[0020]** The outer sidewall **52** includes outer projecting lobes **64** and outer recesses **66** defined therebetween. With reference to Figure 7, the outer projecting lobes **64** are dimensioned so as to engage and securely retain the outer surface **68** of the bottom rim **48** of a large cup **70** (i.e. a cup having a bottom rim **48** with a larger diameter than the diameter of the
10 bottom rim **48** of the small cup **62**) when a large cup **70** is stacked on the lid **22**. Because both the small cup **62** and the large cup **70** sit in the annular channel **26**, either the small cup **62** or alternatively the large cup **70** may be stacked on the lid **22**, but not both at the same time. The outer projecting lobes **64** are preferably spaced evenly along the diameter of the
15 outer sidewall **52**, to enable the outer projecting lobes **64** to securely and evenly retain the bottom rim **48** of the large cup **70**. However, the position and spacing of the outer projecting lobes **64** may likewise be varied and uneven.

20 **[0021]** It will be noted that the ability of the inner and outer projecting lobes **56**, **64** to engage with the small cup **62** or the large cup **70**, respectively, is dependent on the diameter of the bottom rim **48** of the cups **62**, **70**, and not on the volume of the cups **62**, **70**. Thus, while the terms "small" and "large" have been used herein to differentiate the cups
25 **62**, **70** as a matter of convenience, it will be apparent that the large cup **70** could actually have a smaller volume than the small cup **62**, but still engage with the outer projecting lobes **64** by reason of the larger diameter of the bottom rim **48** of the large cup **70**.

30 **[0022]** The recesses **58**, **66** permit air to escape from the underside of the cup **62** or **70** as it is being pushed into the annular channel **26**, and

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further serve to ease the fit of the bottom rim 48 into the annular channel 26.

5 [0023] The lid 22 has an opening 72 to permit a person to drink from the beverage cup 40 when the lid 22 is secured thereto. In the illustrated embodiment, the drinking opening 72 is positioned adjacent the outer peripheral edge 34. However, the drinking opening 72 may alternatively be formed in the exterior sidewall 36. Additionally, the drinking opening 72 could be formed in any desired shape.

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[0024] In some embodiments, the central portion 28 of the upper surface 24 has a recessed portion proximate to the drinking opening 72 to accommodate an upper lip of a person drinking from the cup 40. In the illustrated embodiment, the recessed portion is provided by a sloped ramp 15 74. Preferably, the sloped ramp 74 is located within an inner recess 58, such that full contact between all of the inner projecting lobes 56 and the bottom rim 48 of the cup 62 is achieved. While an exemplary configuration of a recessed portion has been described, other shapes or configurations are possible for the recessed portion, so long as it easily 20 allows a user's upper lip to be accommodated by the central portion 28 of the upper surface 24. Additionally, in some embodiments, there is no recessed portion, and the central portion 28 may be relatively planar across its entire surface. The central portion 28 may also be of convex or concave shape, or have other variations in shape, so long as the shape of a 25 cup intended to be supported on the lid 22 is formed to accommodate such a shape of the central portion 28.

[0025] The lid 22 may also have an aspiration hole 76, to allow for the equalization of pressure within the cup 40 as a user consumes its 30 contents. The positioning of the aspiration hole 76 is not critical, although it should be positioned such that fluid in the cup 40 will not contact the

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aspiration hole 76 when a person drinks the contents of the cup 40 through the drinking opening 72. The lid 22 may further include a drainage hole 78 formed through the base wall 54 of the annular channel 26, to allow any fluid captured in the annular channel 26 to drain back into the beverage cup 40. The drainage hole 78 may be positioned anywhere in the base wall 54 of the annular channel 26.

[0026] In one exemplary embodiment, the positions of the inner projecting lobes 56 and the outer projecting lobes 64 may be designed to be compatible with a series of cups of different sizes (referred to below as small, medium, and large, respectively, for the purposes of illustration). For example, the bottom rims 48 of the small and medium cups may be the same dimensions, even though the medium cup holds a larger volume than the small cup. The bottom rim 48 of the large cup may have a larger diameter than the diameter of the bottom rim 48 of the small and medium cups. The inner projecting lobes 56 of the lid 22 may be dimensioned so as to engage the inner surface 60 of the bottom rim 48 of both the small and medium cups. Outer projecting lobes 64 may be dimensioned to engage the outer surface 68 of the bottom rim 48 of the large cup. In this manner, any combination of small, medium, and large sized cups sealed with lids 22 may be stacked securely together. Other combinations of cup sizes, bottom rim diameters, and configurations of the inner projecting lobes 56 and the outer projecting lobes 64 may similarly be devised to provide the desired range of stackable cup sizes for the lid 22. For example, the small cup may have a bottom rim 48 of a relatively smaller diameter, while the medium and large cups may have a bottom rim 48 of the same, relatively larger, diameter.

[0027] To secure the lid 22 to a cup, the lid 22 is positioned over the upper rim 46 of a first cup 40. Downward force is applied to the lid 22, such that the rib 42 engages with the upper rim 46. A second cup may

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then be supported above the first cup 40 on the lid 22 by inserting the bottom rim 48 of the second cup into the annular channel 26 so that the bottom rim 48 rests on the base wall 54 of the annular channel 26. The inner projecting lobes 56 or the outer projecting lobes 64 will engage with
5 the bottom rim 48 as described above, to securely support the second cup above the first cup 40.

[0028] While a number of exemplary aspects and embodiments have been discussed above, those of skill in the art will recognize that certain
10 modifications may be made within the scope of the invention. For example, the lid 22 could be formed with two or more annular channels formed in the upper surface 24. Additionally, while the lid 22 has been described as being disposable, the lid may instead be a reusable lid. For example, the lid could be a reusable lid for use in combination with
15 reusable cups, such as travel mugs. Thus, the lid may be provided with other mechanisms for sealingly engaging a cup, such as screw threads for screwing the lid onto a cup or a recessed portion having a rubber seal for a friction fit insertion into a cup. It is therefore intended that the following appended claims and claims hereafter introduced are interpreted to include
20 all such modifications as are within their true scope.

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WHAT IS CLAIMED IS:

1. A lid for a cup, the lid comprising:
 - a top wall;
 - 5 an exterior sidewall depending from an outer peripheral edge of the top wall;
 - an annular mounting portion extending from a base of the exterior sidewall for sealingly engaging an upper rim of a first cup;
 - an annular channel formed in the top wall configured to receive a bottom rim of a second cup, the channel having inner and outer sidewalls;
 - 10 a plurality of rim-engaging members on both the inner and outer sidewalls; and
 - a plurality of recesses defined between adjacent rim-engaging members on both the inner and outer sidewalls,
 - 15 wherein the rim-engaging members on the inner sidewall project outwardly from the inner sidewall and are sized to securely engage an inner surface on the bottom rim of the second cup; and
 - the rim-engaging members on the outer sidewall project inwardly from the outer sidewall and are sized to securely engage an outer surface on a bottom rim of a
 - 20 third cup, the diameter of the bottom rim of the third cup being larger than the diameter of the bottom rim of the second cup.
2. A lid according to claim 1 wherein the rim-engaging members are projecting lobes.
- 25 3. A lid according to any one of claims 1 to 2 wherein the rim-engaging members on the inner sidewall alternate with the rim-engaging members on the outer sidewall.
4. A lid according to any one of claims 1 to 3 wherein the plurality of rim-engaging members comprise three rim-engaging members on the inner sidewall and three rim-engaging members on the outer sidewall.
- 30 5. A lid according to any one of claims 1 to 4 comprising a drinking hole adjacent the outer peripheral edge of the top wall.

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6. A lid according to any one of claims 1 to 5 comprising an aspiration hole in the top wall.
- 5 7. A lid according to claim 5 comprising a depression on the top wall adjacent the drinking hole for receiving a lip of a user of the cup.
8. A lid according to claim 7 wherein the depression is a sloped ramp.
9. A lid according to any one of claims 1 to 8 comprising a drainage hole in a base
10 wall of the annular channel.
10. A lid according to any one of claims 1 to 9 wherein the mounting portion
comprises a projecting rib extending outwardly from the base of the exterior
sidewall, the projecting rib having an arcuate vertical cross-section adapted to
15 sealingly engage the upper rim of the first cup and an outer skirt extending
outwardly from a base of the mounting portion.
11. A lid according to any one of claims 1 to 10 wherein the lid is disposable and is
adapted to engage disposable cups.

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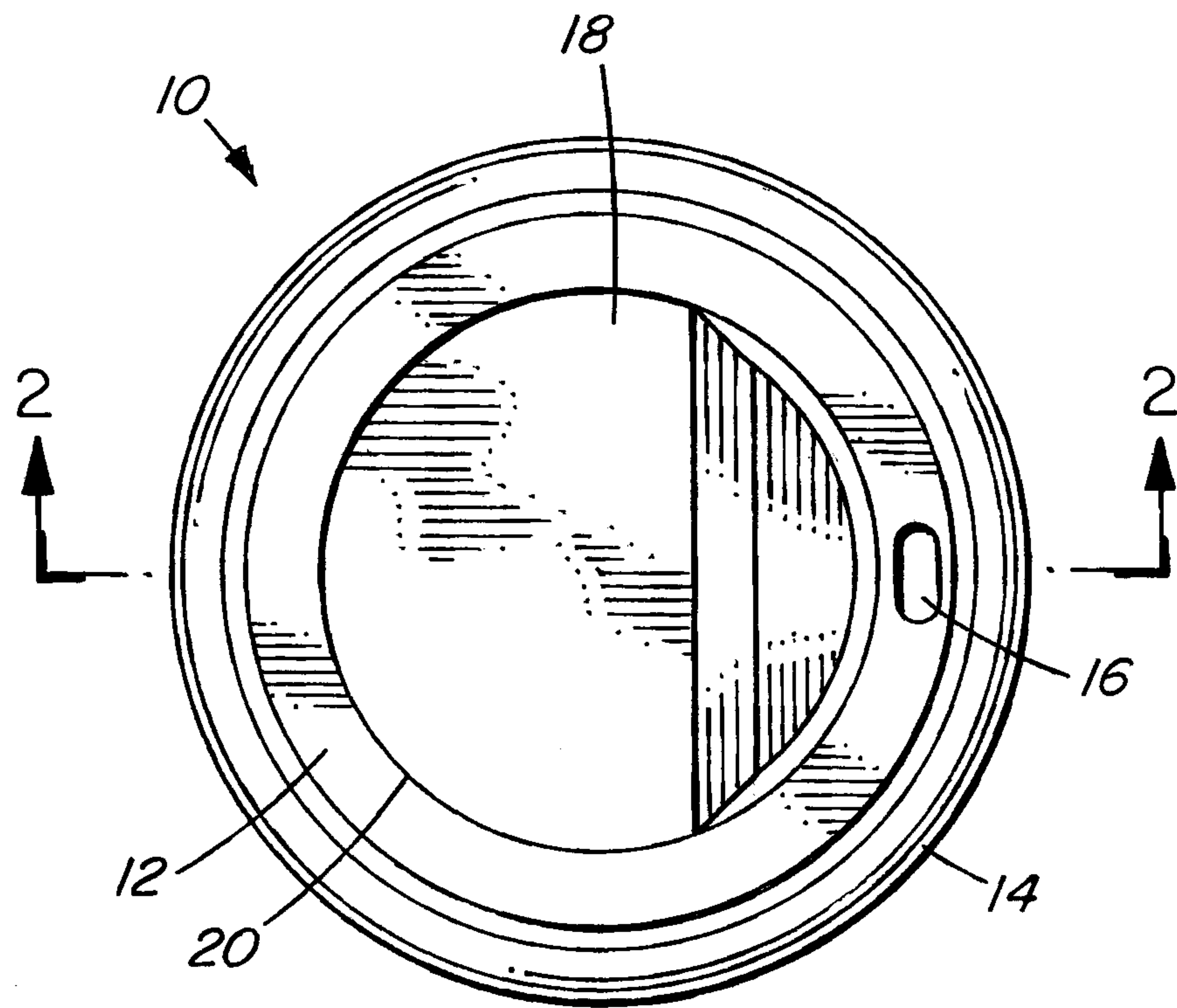


FIG. 1 PRIOR ART

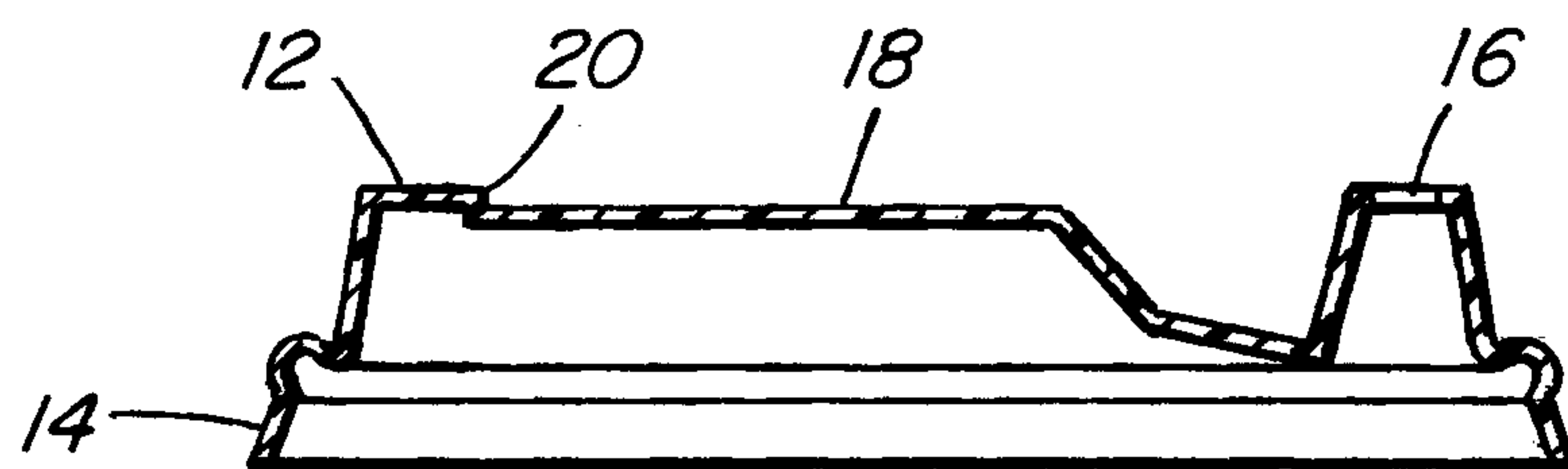


FIG. 2 PRIOR ART

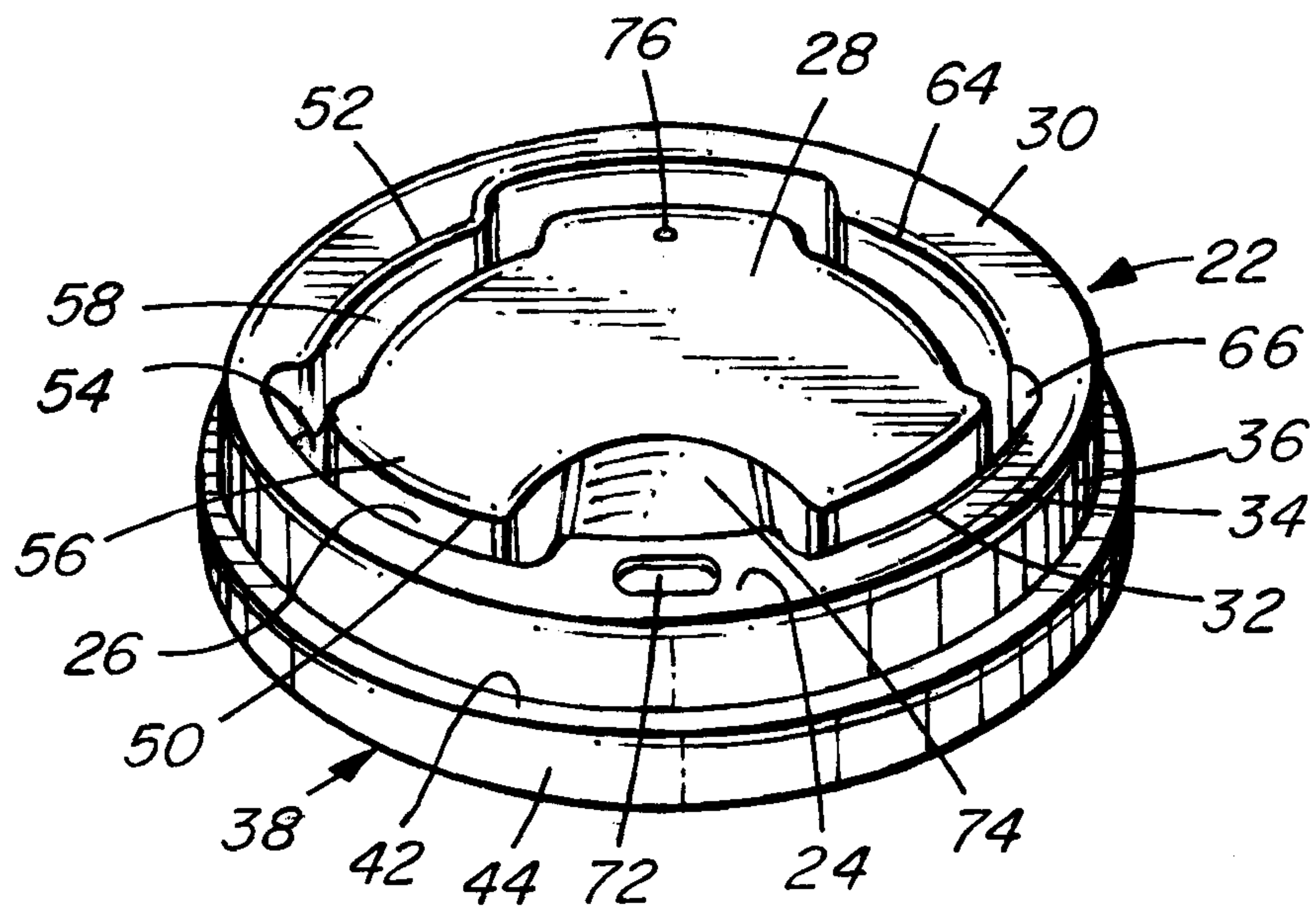


FIG. 3

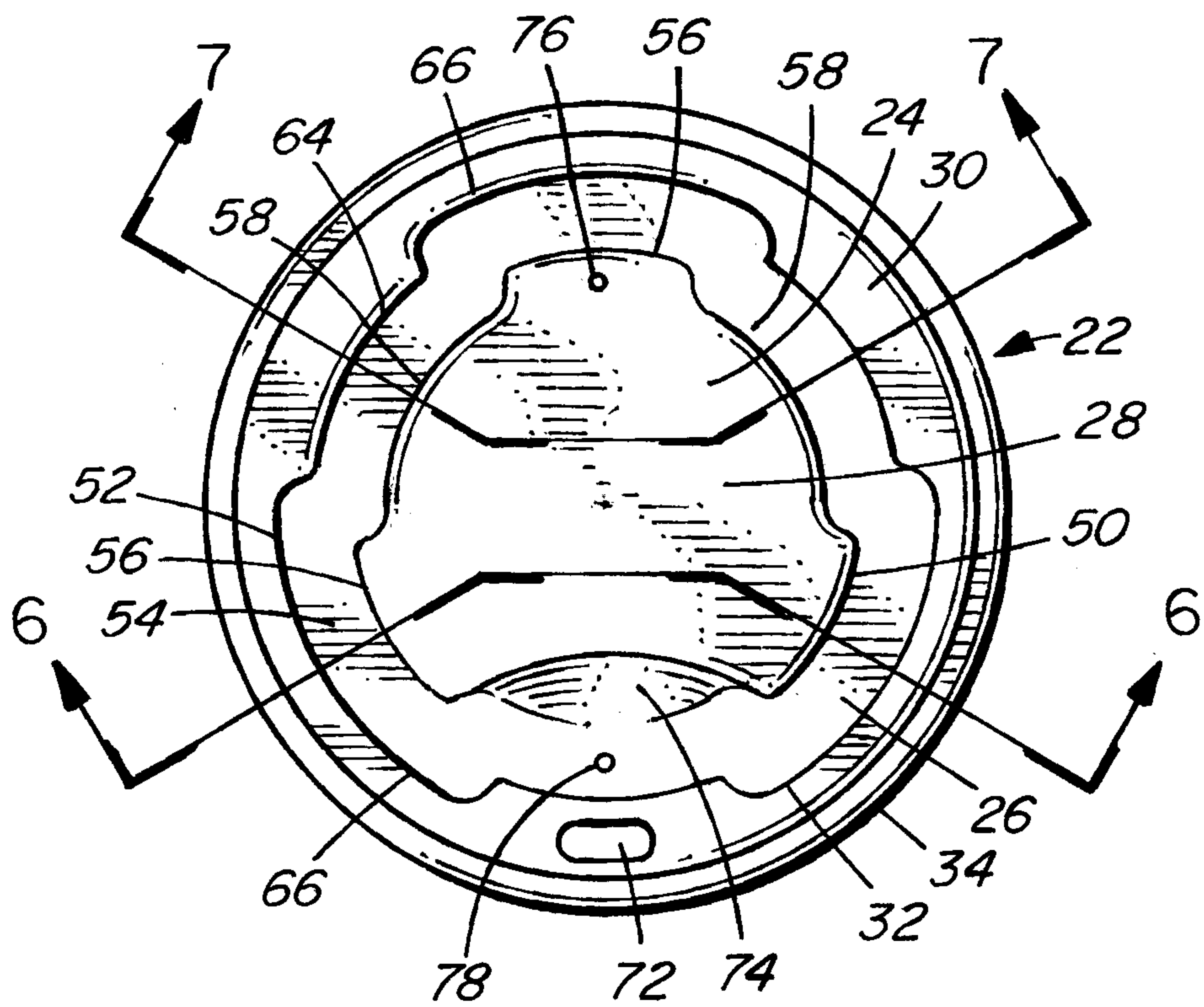


FIG. 4

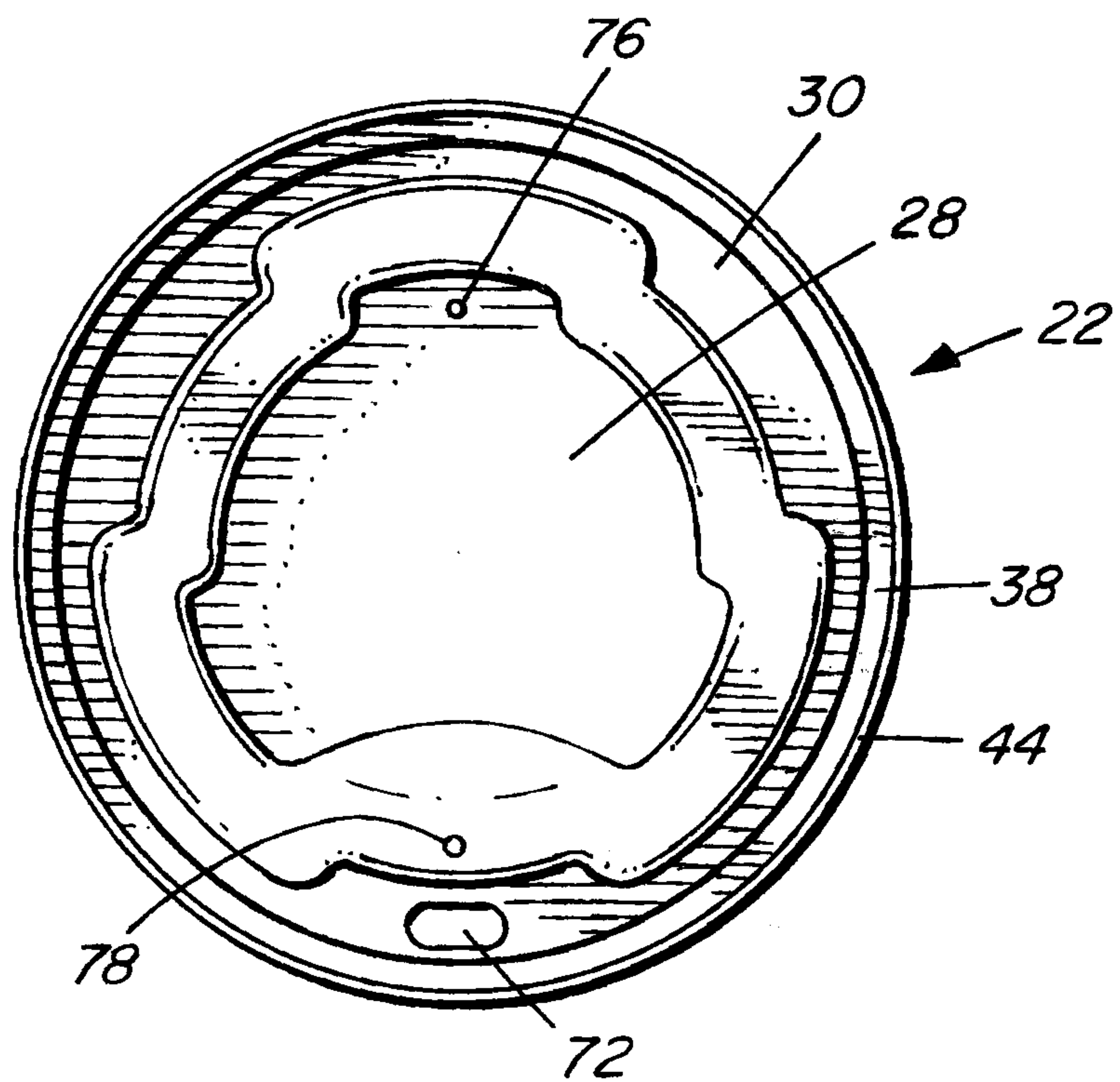


FIG. 5

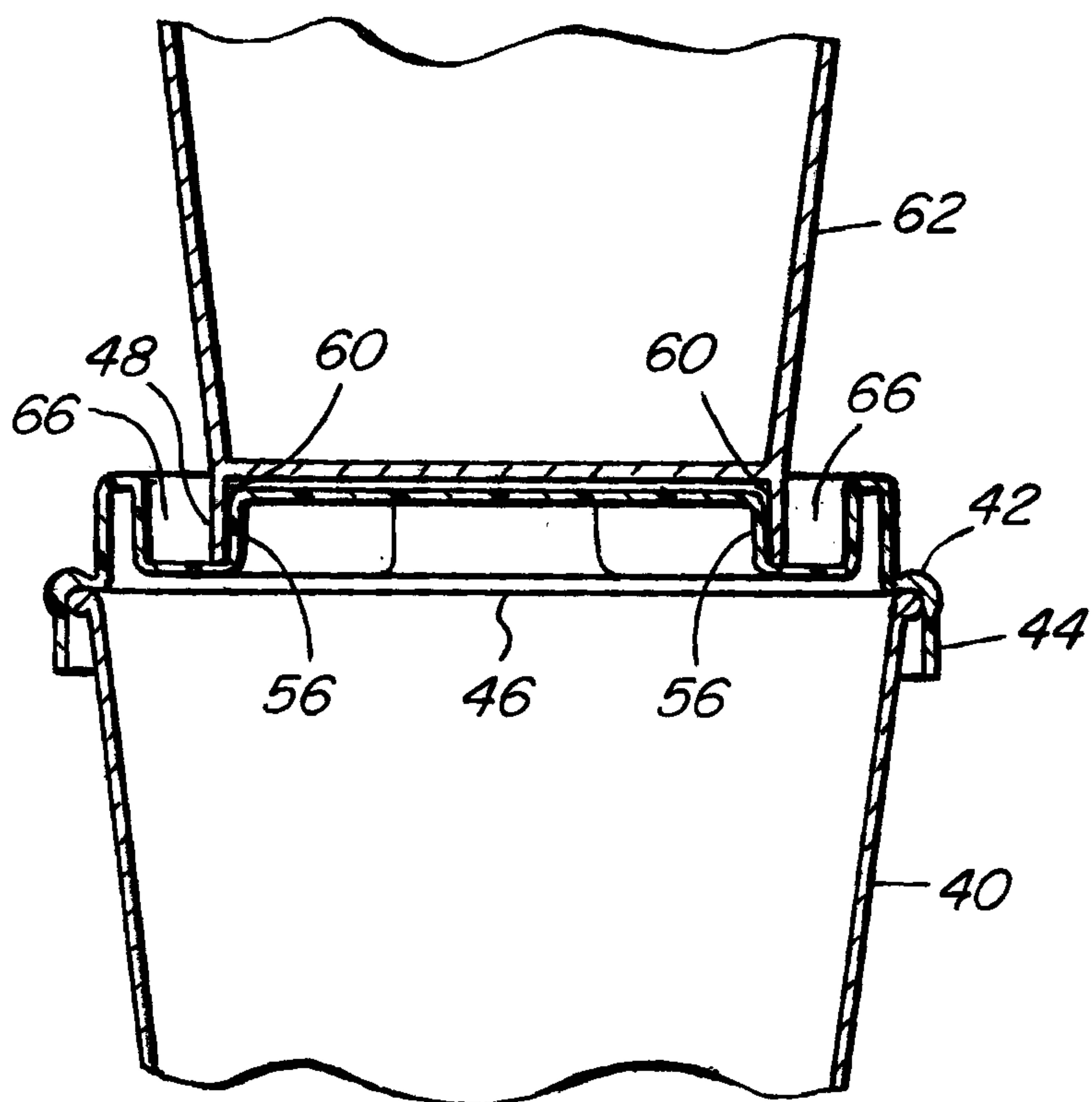


FIG. 6

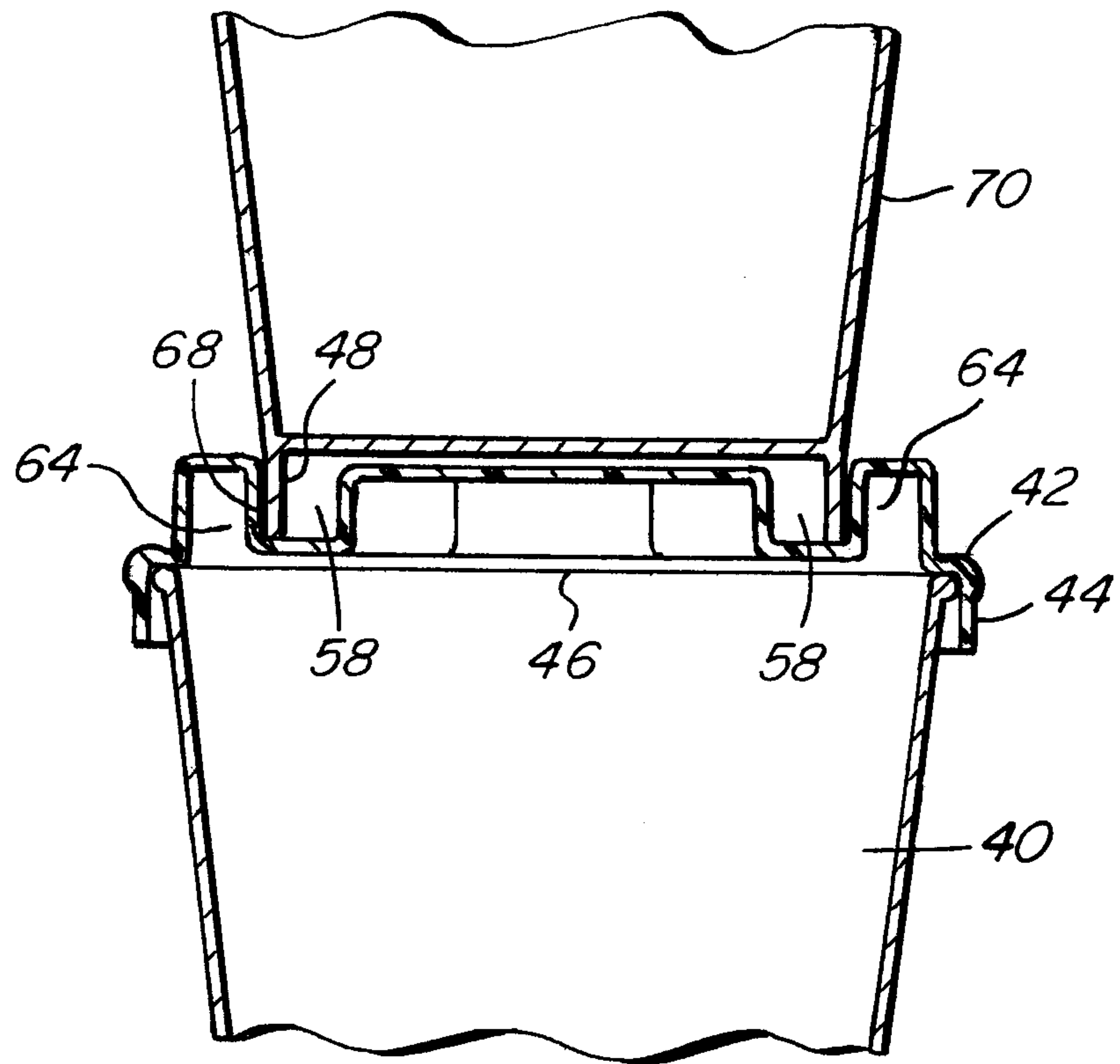


FIG. 7

