



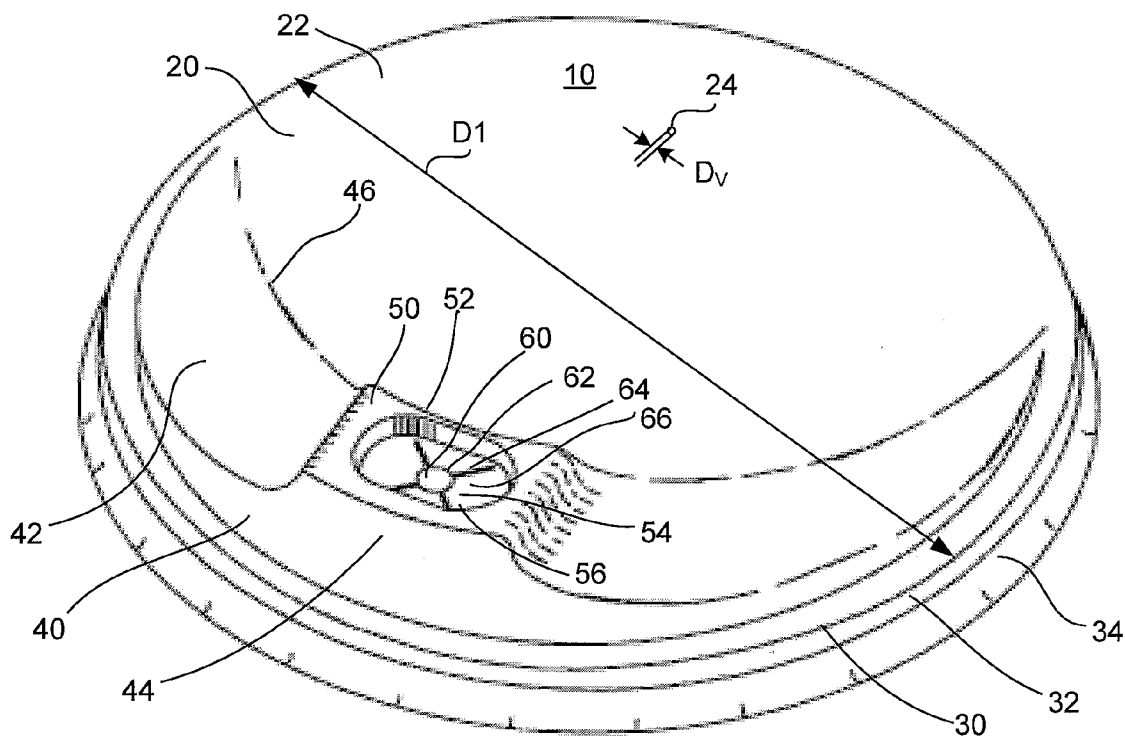
US 20090308882A1

(19) **United States**(12) **Patent Application Publication**  
**Hundley**(10) **Pub. No.: US 2009/0308882 A1**(43) **Pub. Date: Dec. 17, 2009**(54) **STRAW-RECEPTIVE DRINK-THROUGH CUP LID****Publication Classification**(51) **Int. Cl.**  
**A47G 19/22**

(2006.01)

(52) **U.S. Cl.** ..... **220/712**(57) **ABSTRACT**

A beverage cup lid is disclosed. Such a lid may include a central cover portion and a raised spout portion extending from the central cover portion. The raised spout portion may define a drinking opening therethrough. The drinking opening may have a circular perimeter. The raised spout portion may be adapted to allow liquid to flow through the drinking opening in response to a sucking force applied to the raised spout portion, and to receive a drinking straw through the drinking opening. The raised spout portion may define a plurality of flaps disposed about the perimeter of the drinking opening. The flaps may be defined between respective pairs of slots that extend from the perimeter of the drinking opening.

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**PHILADELPHIA, PA 19104-2891 (US)**(21) **Appl. No.:** **12/139,275**(22) **Filed:** **Jun. 13, 2008**

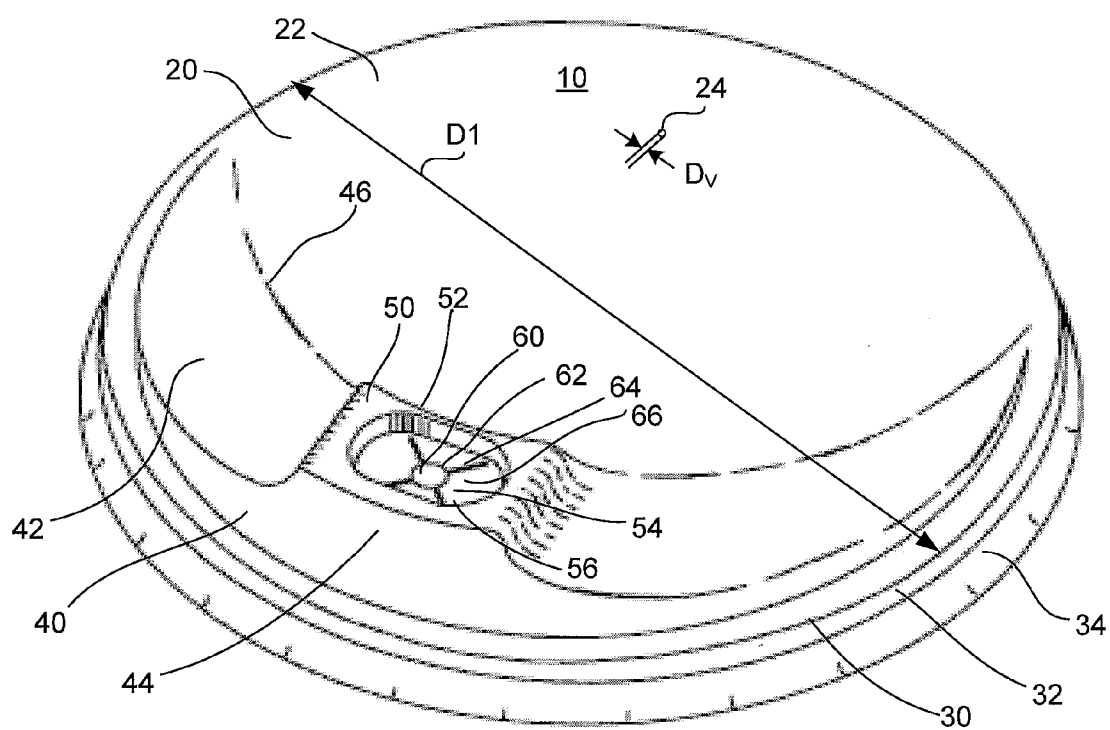


FIG. 1

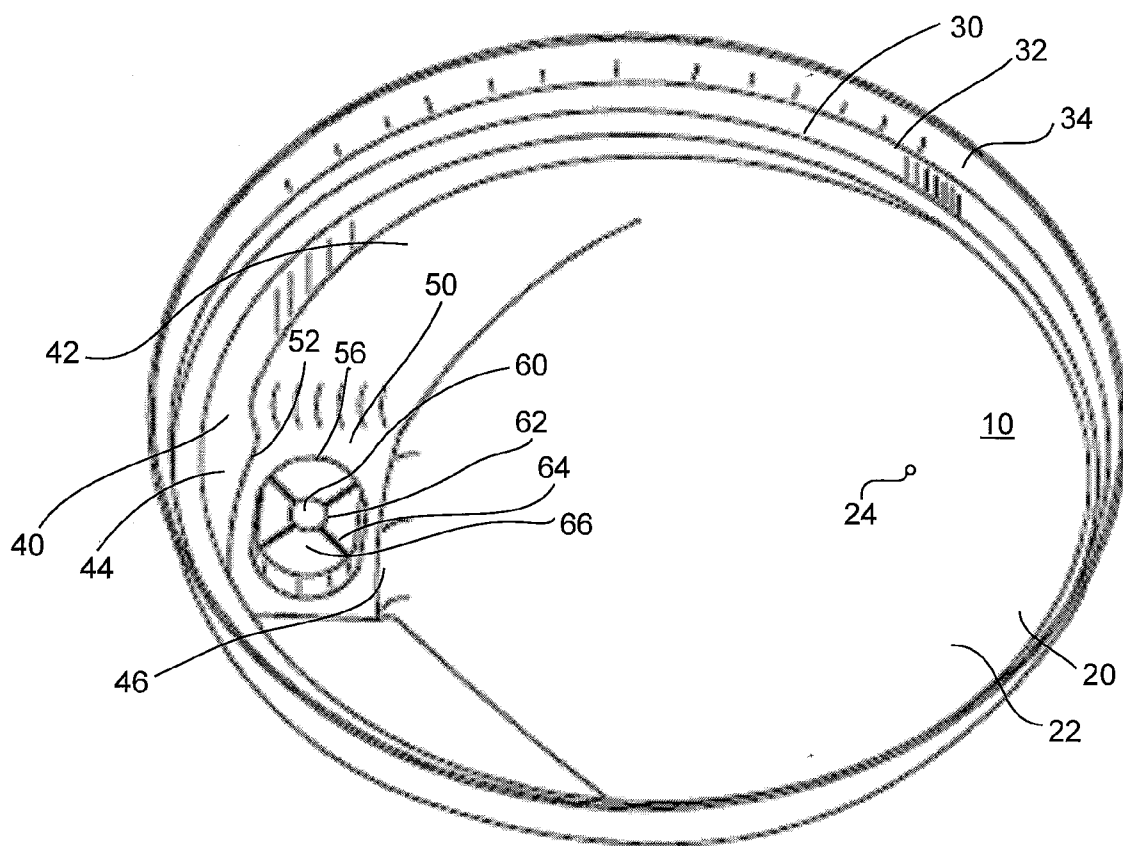


FIG. 2

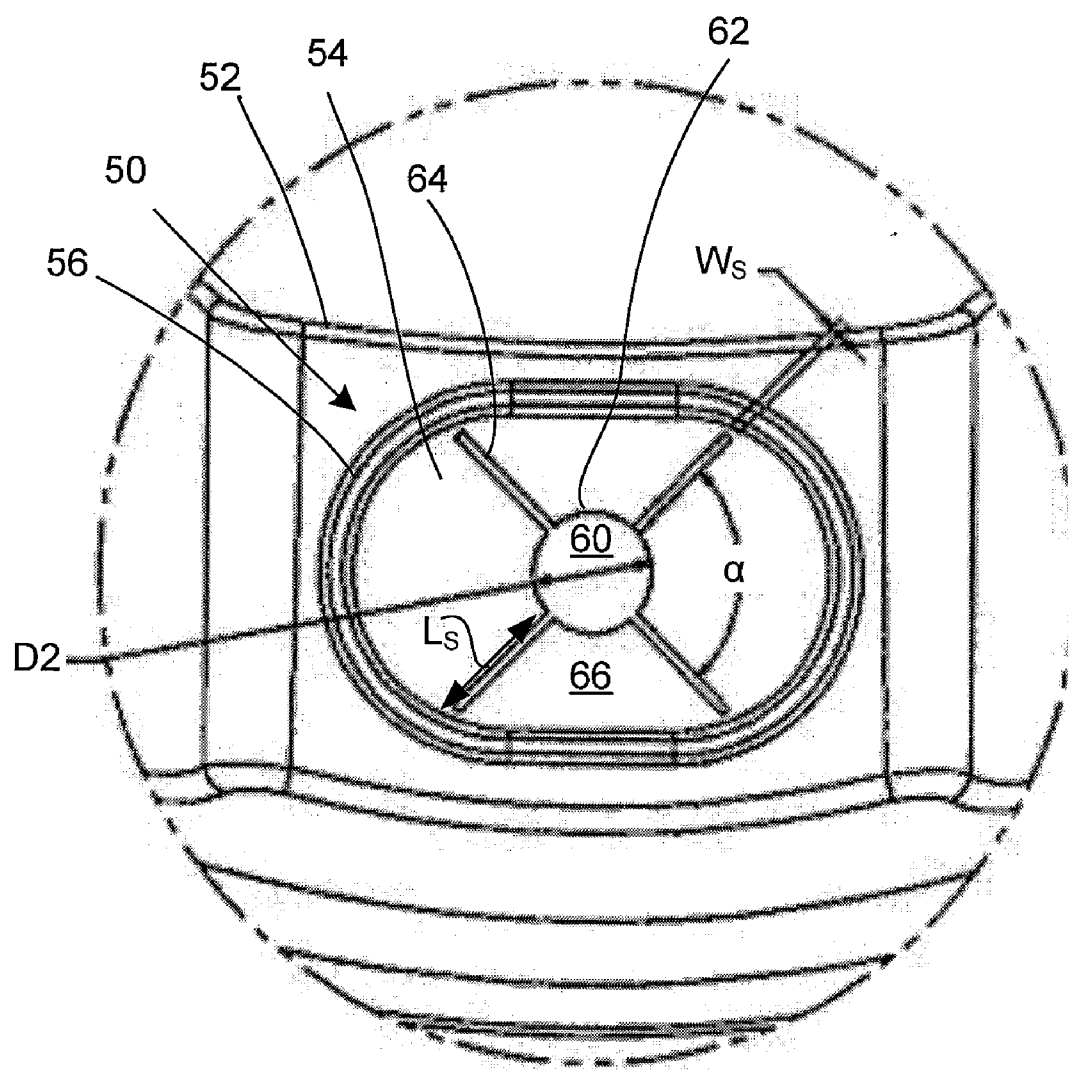


FIG. 3

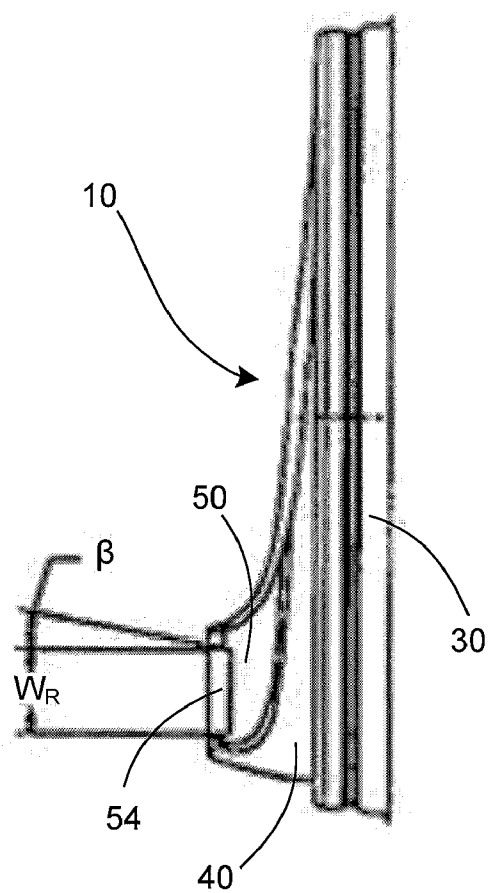


FIG. 4

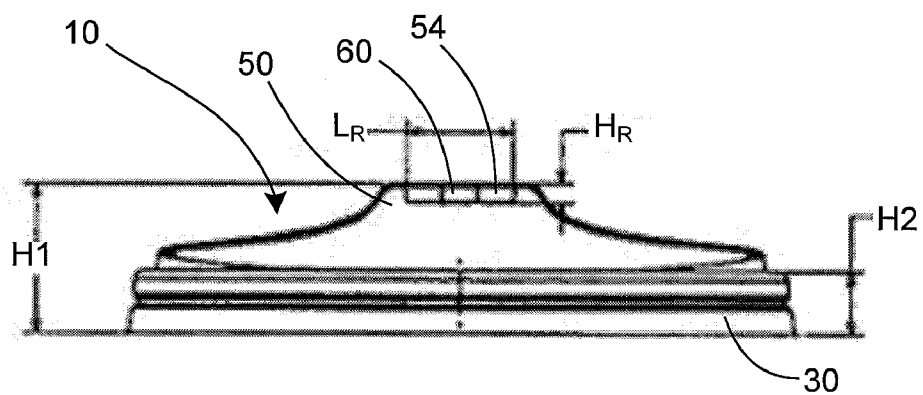


FIG. 5

## STRAW-RECEPTIVE DRINK-THROUGH CUP LID

### CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to U.S. design patent application no. (attorney docket WINC-0118, entitled “Straw-Receptive Drink-Through Cup Lid”), filed on even date herewith, the disclosure of which is hereby incorporated herein by reference.

### BACKGROUND

[0002] Fast food restaurants, coffee shops, convenience stores, and the like, often distribute beverages to consumers in disposable, lid-covered, drinking cups. Older children and adults generally prefer a lid that is adapted to receive a straw. Smaller children, however, tend to prefer a “sippy” lid. Such a lid, which is commonly used with a so-called “sippy cup,” typically includes a raised spout portion through which the toddler can drink by sucking on the raised spout portion. An example of such a sippy lid is the “HEFTY ZOO PALS sip-style lid,” which is provided by Pactiv Corporation.

[0003] Consequently, such beverage distributors may be required to regularly stock two different types of lids—straw-receptive lids and sippy lids. It would be desirable, therefore, especially for provision to young children who may be transitioning from sippy lids to straw-receptive lids, if a single lid could be used as both a sippy lid and as a straw-receptive lid.

### SUMMARY

[0004] As described herein, a cup lid may include a central cover portion, a skirt peripheral to the central cover portion, and a raised spout portion extending from the central cover portion. The raised spout portion may define a drinking opening. The drinking opening may have a circular perimeter. The lid may be adapted to allow liquid to flow through the drinking opening in response to a sucking force applied to the raised spout portion, and to receive a drinking straw through the drinking opening.

[0005] The spout portion may define a plurality of flaps disposed about the drinking opening. The flaps may define the perimeter of the drinking opening. The spout portion may define a plurality of slots extending from the perimeter of the drinking opening. The flaps may be defined between respective pairs of slots that extend from the perimeter of the drinking opening.

[0006] The drinking opening may be adapted to allow liquid to flow therethrough in response to a sucking force applied to the spout portion. The flaps may be configured to deflect in response to a sucking force applied to the spout portion or in response to a force applied by a straw inserted into the drinking opening. The skirt may be adapted to matingly engage an upper peripheral edge of the drinking cup so as to removably maintain the lid in a covering relationship on the cup. The lid may be a single-piece lid formed of a thermoplastic material.

### BRIEF DESCRIPTION OF THE DRAWINGS

[0007] FIGS. 1 and 2 are top and bottom perspective views, respectively, of an example straw-receptive drink-through cup lid.

[0008] FIG. 3 is an enlarged view of the raised spout portion of the cup lid depicted in FIG. 1.

[0009] FIG. 4 is a partial cutaway view of the cup lid depicted in FIG. 1.

[0010] FIG. 5 is another partial cutaway view of the cup lid depicted in FIG. 1.

### DETAILED DESCRIPTION

[0011] FIGS. 1 and 2 are top and bottom perspective views, respectively, of an example straw-receptive drink-through cup lid 10. The lid 10 may be made of a thermoplastic material, such as a polystyrene, polypropylene, or polyethylene terephthalate (PET), for example. The lid 10 may be manufactured using conventional vacuum-forming and die-cutting techniques. The lid 10 may be formed as a single-piece lid.

[0012] As shown, the lid 10 may include a central cover portion 20 and a rim-engaging portion 30. A raised spout portion 50 may extend from the central cover portion 20. The lid 10 may include a ridge 40 that extends from the top portion 22 of the central cover portion 20. The ridge 40 may be semi-annular, and include a top portion 42, a front wall 44, and a rear wall 46. The spout portion 50 may extend from the top portion 42 of the ridge 40. The lid 10 may not include such a ridge, in which case the raised spout portion 50 may extend directly from the top portion 22 of the central cover portion 20.

[0013] FIG. 3 is an enlarged view of a spout portion 50. The spout portion 50 may define a drinking opening 60. The drinking opening 60 may be circular. That is, the drinking opening 60 may have a circular perimeter 62. The spout portion 50 may define a plurality of flaps 66 disposed about the drinking opening 60. The flaps 66 may define the perimeter 62 of the drinking opening 60.

[0014] The spout portion 50 may define a plurality of slots 64 extending from the perimeter of the drinking opening 60. Each of the slots 64 may be defined between a respective pair of adjacent flaps 66. Conversely, each flap 66 may be defined between a respective pair of adjacent slots 64. The slots 64 may extend all of the way through the lid 10, or they may be “scored” into the lid. In other words, the slots may extend into the lid only to a depth that is adapted to break all of the way through the lid 10 under the insertion force of a typical straw.

[0015] The slots 64 and flaps 66 may be arranged circumferentially around the perimeter 62 of the drinking opening 60. The combination of drinking opening 60, slots 64, and flaps 66 may be configured to cooperate to receive a straw (not shown) having a typical outer diameter. The flaps 66 may be configured to exert a retaining force on a straw received through the drinking opening 60. The diameter D2 of the drinking opening 60 may be less than the outer diameter of a typical straw that is expected to be received into the drinking opening 60.

[0016] The drinking opening 60 may be configured to allow for different possible rates of beverage removal via sucking or different degrees of allowable spillage, say when the cup is knocked over. The diameter D2 of the drinking opening 60 may be chosen to allow, or prevent, the flow of liquid therethrough under certain conditions.

[0017] For example, the drinking opening 60 may be configured to allow liquid to flow therethrough in response to a sucking force applied to the spout portion 50. In which case, the drinking opening 60 may be sufficiently large to allow liquid to flow therethrough in response to such a sucking force.

[0018] It should be understood that the drinking opening 60 may be configured to allow liquid to flow therethrough even

in the absence of such a sucking force. For example, the drinking opening 60 may be sufficiently large that liquid may be allowed to flow therethrough even in the absence of such a sucking force.

[0019] It should also be understood that the drinking opening 60 may be configured to allow liquid to flow therethrough only in response to a sucking force applied to the spout portion 50. For example, the drinking opening 60 may be sufficiently small to prevent liquid from flowing therethrough in the absence of such a sucking force, yet sufficiently large to allow liquid to flow therethrough in response to such a sucking force.

[0020] The flaps 66 may be configured to deflect in response to a sucking force applied to the spout portion 50. The flaps 66 may be configured to deflect in response to a force applied by a straw inserted into the drinking opening 60. Thus, the raised spout portion 50 may be adapted to allow liquid to flow through the drinking opening 60 in response to a sucking force applied to the spout portion 50, and to receive a drinking straw through the drinking opening 60.

[0021] The spout portion 50 may define an outer perimeter 52, a recess 54, and a recess perimeter 56. The drinking opening 60 may be located at or near the center of the bottom of the recess 54, or the drinking opening 60 may be located off-center relative to the recess 54. The drinking opening 60 may extend through the lid 10 from a top side to an underside. The slots 64 may extend outwardly from the perimeter 62 of the drinking opening 60, toward the recess perimeter 56.

[0022] The central cover portion 20 may define a vent hole 24 in a top portion 22 thereof. The presence and diameter  $D_V$  of the vent hole 24 may affect the sucking force required to create enough of a pressure differential between the inside of the cup and the inside of a user's mouth to remove a beverage, either when the cup lid 10 is used as a sippy lid or as a straw-receptive lid.

[0023] The rim-engaging portion 30 may include an annular groove 32 and a circumferential, downwardly-depending, flared skirt 34 peripheral to the central cover portion 20. The skirt 34 may be configured to engage a drinking cup (not shown). For example, the skirt 34 may be adapted to matingly engage an upper peripheral edge of a drinking cup so as to removably maintain the lid 10 in a covering relationship on the cup.

[0024] The rim-engaging portion 30 may be adapted to engage the upper peripheral edge of a drinking cup (not shown) on which the lid 10 is mounted, and thus to retain the lid 10 on the drinking cup. The coupling of the lid 10 to a drinking cup may be accomplished by adapting the inside diameter of the annular groove 32 to be slightly smaller than the outer diameter of the upper peripheral edge of a drinking cup. The inwardly-directed bead formed complementarily to the groove 32 may be readily applied to, and removed from, a drinking cup several times without damage to either the cup or the lid. The groove 32 and complementary bead may be continuous. The annular groove 32 may be adapted to retainably engage the upper peripheral edge of a drinking cup. The groove 32 may be continuous around a periphery of the skirt 34.

[0025] The lid 10 may be coupled to a drinking cup by placing lid 10 over the opening of the cup and pressing downward on lid 10. The downward force of the inside of the annular groove 32 against the outside of the upper peripheral edge of the drinking cup may force the annular groove 32 to temporarily deflect outward and the upper peripheral edge of

the drinking cup to temporarily deflect inward. Once the lid 10 is properly engaged or "snapped" onto the drinking cup, the annular groove 32 may deflect back inward, and it may be located underneath the upper peripheral edge of a drinking cup, which may deflect back outward. In the engaged state, the inner diameter of the annular groove 32 may remain slightly smaller than the outer diameter of the upper peripheral edge of the drinking cup, so that a retention force acts to keep the lid 10 on the top of the drinking cup.

[0026] The lid 10 may be removed by exerting an upward force onto the skirt 34, which may force the annular groove 32 to temporarily deflect outwardly and the upper peripheral edge of the drinking cup to temporarily deflect inwardly, thereby allowing disengagement of the lid 10 from the drinking cup.

[0027] To draw a beverage out of the drinking cup in a sippy-style drinking scenario, a user's lips may be applied to the outer perimeter 52 of the spout portion 50. The outer perimeter 52 may be rectangular.

[0028] The recess 54 may define a depression in the raised spout portion 50. The perimeter 56 of the recess 54 may be a flattened oval shape, comprising two semi-circles separated by two line segments. The upper edge of the recess 54 may be rounded or may define an angle  $\beta$  relative to the lower edge of the recess 54. The recess perimeter 56 may vary in circumference (or other dimensional measures) from the top to the bottom of the recess 54. For example, the recess perimeter 56 may be longer and wider (having a greater circumscribed internal area) at the top edge than at the bottom edge. The outer perimeter 52 of the spout portion 50 may be adapted to be received comfortably between an average toddler's lips, with a user's lips able to create a seal around the outer perimeter 52 to allow a beverage to be sucked or poured into a user's mouth without leaking out of the mouth.

[0029] The lid 10 may be formed from a sheet of a thermoplastic material having a thickness that is between about 0.01" and 0.02". The lid 10 may have an overall diameter  $D_1$  of between about 3" and 5", and an overall height  $H_1$  of about 0.75". The vent hole 24 may have a diameter  $D_V$  of about 0.1". The drinking opening 60 may have a diameter  $D_2$  of about 0.125". The recess 54 in the raised spout portion 50 may have a length  $L_R$  of about 0.517", a width  $W_R$  of about 0.340", and a height  $H_R$  of about 0.1". Each slot 64 may have a width  $W_S$  of about 0.1" and a length  $L_S$  of about 0.125". The lid 10 may include four, radially extending slots 64, with a ninety (90) degree separation angle  $\alpha$  between adjacent slots. The lid 10 may include four flaps 66. The rim-engaging portion 30 may have a height  $H_2$  of about 0.320".

[0030] In operation, the drink-through lid 10 may be snap-mounted onto a complementary drinking cup (not shown), with the annular groove 32 of the lid engaging the upper peripheral edge of the cup. With the lid 10 properly engaging the cup, there are at least two ways in which a user may drink from the cup.

[0031] In a first sippy-style, strawless drinking scenario, the user may raise the cup to his mouth, and begin tilting the cup relative to his mouth so that the outer perimeter 52 of the raised spout portion 50 moves into engagement with the user's lips. In this position, the upper lip and lower lip of the user may contact and rest around outer perimeter 52, preferably creating a seal that will prevent the beverage from leaking out of the user's mouth during drinking. Depending on the size of the drinking opening 60 and the viscosity of the liquid contained in the cup, the liquid may flow freely through the

drinking opening 60 into the mouth of the user. The user may suck the beverage through the drinking opening 60.

[0032] In a second, straw-reception drinking scenario, the user may push one end of a straw through the plurality of slots 64 and the plurality of flaps 66. The force applied to the flaps 66 by the user, via an end of the straw, may deflect the portion of the flaps 66 that are closest to the perimeter 62 of the drinking opening 60 inwardly (i.e., toward the interior of the cup). The flaps 66 may have sufficient resilience such that they yield to the force of the straw as it's being inserted, and yet exert a retention force against the inserted straw. Then, the user may draw the beverage out of the drinking opening 60 via the straw. Where the lid 10 is intended for a single-use application, the flaps 66 may be permanently (that is, plastically) deformed upon insertion of the straw.

What is claimed:

1. A beverage cup lid, comprising:  
a central cover portion;  
a skirt peripheral to the central cover portion, the skirt configured to engage a drinking cup; and  
a raised spout portion extending from the central cover portion, the spout portion defining a plurality of flaps disposed about a drinking opening,  
wherein the flaps define a perimeter of the drinking opening and are configured to deflect in response to a force applied by a straw inserted into the drinking opening.
2. The lid of claim 1, wherein the spout portion defines a plurality of slots extending from the perimeter of the drinking opening.
3. The lid of claim 2, wherein each of the slots is defined between a respective pair of flaps.
4. The lid of claim 1, wherein the drinking opening is adapted to allow liquid to flow therethrough in response to a sucking force applied to the spout portion.
5. The lid of claim 1, wherein the skirt is adapted to matingly engage an upper peripheral edge of the drinking cup so as to removably maintain the lid in a covering relationship on the cup.
6. The lid of claim 5, further comprising an annular groove adapted to retainably engage the upper peripheral edge of a drinking cup.
7. The lid of claim 6, wherein the groove is continuous around a periphery of the skirt.
8. The lid of claim 1, wherein the lid is a single-piece lid made of a thermoplastic material.
9. The lid of claim 1, further comprising a semi-annular ridge extending from the central cover portion, wherein the raised spout portion extends from the semi-annular ridge.

10. A beverage cup lid, comprising:

- a central cover portion;
- a skirt peripheral to the central cover portion, the skirt configured to engage a drinking cup; and
- a raised spout portion extending from the central cover portion, the raised spout portion defining a drinking opening and first and second slots extending from a perimeter of the drinking opening, the first and second slots defining a flap therebetween,  
wherein the flap is configured to deflect in response to a force applied by a straw inserted into the drinking opening.

11. The beverage cup lid of claim 10, wherein the flap is configured to deflect in response to a sucking force applied to the spout portion.

12. The beverage cup lid of claim 10, wherein the drinking opening allows liquid to flow therethrough in response to a sucking force applied to the raised spout portion.

13. The beverage cup lid of claim 10, wherein the lid is adapted to matingly engage the upper peripheral edge of a drinking cup so as to selectively maintain the lid in a covering relationship on the cup.

14. The beverage cup lid of claim 10, wherein the lid is a single-piece lid formed of a thermoplastic material.

15. The beverage cup lid of claim 10, further comprising a semi-annular ridge extending from the central cover portion, wherein the raised spout portion extends from the semi-annular ridge.

16. A beverage cup lid, comprising:

- a central cover portion; and
- a raised spout portion extending from the central cover portion, the raised spout portion defining a drinking opening therethrough,  
wherein the raised spout portion is adapted to allow liquid to flow through the drinking opening in response to a sucking force applied to the raised spout portion, and to receive a drinking straw through the drinking opening.

17. The beverage cup lid of claim 16, wherein the raised spout portion defines a plurality of flaps disposed about a perimeter of the drinking opening.

18. The beverage cup lid of claim 17, wherein the flaps are configured to deflect in response to a force applied by the drinking straw as it is received into the drinking opening, and in response to the sucking force applied to the spout portion.

19. The beverage cup lid of claim 18, wherein the flaps are defined between respective pairs of slots that extend from the perimeter of the drinking opening.

20. The beverage cup lid of claim 19, wherein the drinking opening is circular.

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