A disposable, single use, press-fit lid made from compostable press molded fibers for use with disposable beverage cups with or without an annular rim. The lid has a circular peripheral rim (11) with an extending edge to provide positional contact with the beverage cup rim. The circular peripheral rim (11) is connected to a primary lower platform (21) through a cup engaging wall (10). A secondary central raised platform (8) rises at an angle from the primary lower platform (21) from the lower end of the raised platform (19) distal to a drinking spout, up to the drinking spout which is at level with or slightly above the peripheral rim (11c). This central raised platform (8), includes two constrictions (15) referred to as finger holds that are positioned mid slope, diagonally from one another, between the lower end of the raised platform and the drink spout opening (9). These finger holds allow the easy manipulation of the lid during use. At least one vent (14) is positioned on the central raised platform equidistant to and adjacent to the finger holds (15). Located at the highest point of the central raised platform, in front of the finger holds (15), is the drinking spout (9). Generally rectangular in shape with rounded edges, a drinking spout proximal edge (17) extends along the width of the central raised platform at its highest point, adjacent to the outer peripheral rim (11). The proximal edge (17) curves to an angle perpendicular to itself to form a drink spout side edge (18), which further extends through the outer peripheral rim (11c) of the lid to produce an open drinking spout and a comfortable, compostable drinking experience.
LOW PROFILE PRESS-FIT COMPOSTABLE BEVERAGE LID

CROSS-REFERENCE TO RELATED APPLICATIONS


FEDERALLY SPONSORED RESEARCH

Not applicable

SEQUENCE LISTING OR PROGRAM

Not applicable

BACKGROUND OF THE INVENTION

This invention relates to cup lids, specifically to an improved compostable single use, drink through lid, for a beverage cup.

PRIOR ART

Most disposable beverage cup lids in use and under patent today are designed to be produced from plastic. Over the past 20 years plastic has been so prevalent and generally accepted as a disposable use product that the design and invention of a compostable, disposable drinking cup lid has few precedents.

U.S. Pat. No. 4,589,569 is common disposable lid made from plastic. The design utilizes a “snap lid” closure and to work effectively, the receiving cup must have a dependant outer lip of specific dimension.

U.S. Pat. No. 5,385,255 (1995) shows a biodegradable (& compostable) disposable container lid made from paper. In addition to utilizing a snap lid closure, the lid has no opening for dispensing or drinking.

U.S. Pat. No. 6,138,899 (2000) shows an inserted or “press fit” paper lid. This box lid is produced through 2 piece composite construction with a dependently arc shaped wall structure at the contact region between the lid and the receiving box. The lid is also without an opening for dispensing or drinking.

U.S. Pat. No. 5,749,491 (1998) shows a press fit lid for a re-usable beverage container with a dispensing hole. The lid is designed to be constructed by “dual-plastics injection molding”. A combination of rubber and hard plastic is required to achieve the patent’s intended design and function.

U.S. Pat. No. 4,027,776 (1977) shows another press-fit closure, but the lid requires a specifically designed container to achieve closure.

Of the prior art searched and listed above, none present a compostable, disposable, single use lid that combines compostable material construction with an effective drink through design and a convenient internally located finger hold structure, for use with a non-specialized straight edge disposable cup.

OBJECTS AND ADVANTAGES

One advantage of my invention is that compared to snap lid designs in Plastic or paper, it does not use a locking ring as its primary method of closure. Instead, the invention is inserted and pressed into place to create a friction fit between the outer vertical/near vertical wall of the compostable lid and the inner vertical/near vertical wall of the cup. Using this type of closure permits the lid to be used with a broad range of disposable cups, including but not limited to cups with an annular ring.

Resealable container lids that use a press-fit insertion commonly require the use of specifically designed edges of the receiving containers to achieve closure. The advantage in my invention is further seen in that my invention is designed to work with any vertical or near vertical walled cup of appropriate diameter.

Furthermore, unlike most prior art for disposable cup lids, my invention is intended to be produced from biodegradable and compostable materials including, but not limited to, bagasse fibers. The overall design of my invention allows for simple, single piece, manufacture by compression moulding common to bagasse container production. Unlike multiple piece assembled construction, compression moulding is an energy efficient and cost effective manufacturing process for compostable, plant fiber based materials.

Other advantages of my invention over prior art for a biodegradable lid is that the prior art does not include design elements for a drinking spout, or special internally located structures for easier handling of the lid (specifically, a finger hold structure).

SUMMARY

This patent application describes the invention of a compostable, single use, drink through beverage lid. A press-fit insertion design is combined with an elevated drinking spout and a central finger hold apparatus to provide a pleasant drinking experience with easy handling and environmentally friendly disposal.

DRAWINGS

FIG. 1. A perspective view of the present invention from its side, attached to a cup

FIG. 2. A perspective view of the present invention from its side.

FIG. 3. Top view of the present invention showing major composite sections.

FIG. 4. A top view of the present invention showing cross sectional locations A through F.

FIG. 5. Cross sectional view of the present invention showing preferred and alternative embodiments of outer contact surface between the lid and different cup rings.

FIG. 6. Top view of the present invention showing alternative embodiment of the drink spout opening with a cover.

DRAWINGS—REFERENCE NUMERALS

8. Secondary central raised platform
9. Drink spout opening
9v. Removable cover
10. Cup-engaging outer wall
11. Peripheral surface rim
11a. Outer vertical edge
12. Central portion wall
13. Central portion angled planar surface
14. Vent hole
15. Finger hold structure
17. Drink spout proximal edge
The following description along with reference to the drawings indicated above, further describes a preferred embodiment of the present invention.

FIG. 1 shows a perspective view of the preferred embodiment attached to a disposable tapered walled cup 32. The illustrated cup 32 is one style of standard disposable cup that the invention can be used with; this one having a circular opening at its upper end and an annular cup lip 33 (FIGS. 4 & 5), that extends horizontally from the cup's opening and curves downward.

Referring to the preferred embodiment, my compostable press-fit lid consists of four main sections. These sections include, a peripheral surface rim 11, a cup engaging outer wall 10, a primary lower platform 21 (which includes element 20), a drink spout opening 9 (composed of elements 17, 18), and a secondary central raised platform 8 (composed of drink spout opening 9 plus elements 12, 13, 14, 15).

As illustrated in FIGS. 2-5, it is seen that the depending peripheral surface rim 11 extends outward from the top of the cup engaging outer wall 10. In the preferred embodiment the rim extends outward from the lid horizontally at a dependant distance, to cover the rim of a receiving cup. The rim then curves to the vertical position to form an outer vertical edge 11a. The cup engaging wall 10 consists of a depending, vertical/ near vertical wall that is substantial to the inner circumference of the beverage cup 33, and extends downwardly a depending distance toward the cup bottom 32. This depending wall is what forms the press-fit closure of the invention. At its lowest point, the cup engaging wall 10 turns horizontal and inward to form a primary lower platform 21 which includes a channel shaped rib 20, the lower platform 21 and it's channel shaped rib 20 are found to be generally U shaped of variable size and form, depending on proximity to the outer vertical wall 10 and an inner near-vertical/sloped wall 12. The inner sloped wall 12 extends upwardly from the primary lower platform 21 and the channel shaped rib 20, and flattens to produce a central portion, angled planar surface 13.

The angled planar surface 13 rises from the primary lower platform 21, to create the secondary central raised platform 8 that extends along the midline of the lid, from the lowest end of the secondary raised platform 19, located at the base of the proximal surface of the outer vertical wall 18 on the opposite side of the lid from the drink spout opening, through the drink spout opening 9 to terminate where drink spout side edge 18 meets the peripheral surface rim 11c (see FIG. 3). The length of the secondary central raised platform 8 includes two indents herein after referred to as, a finger hold structure 15, that are positioned directly opposite from one another, mid slope, between the lowest end of the raised platform 19 and drink spout opening proximal edge 17. The finger hold structure 15 allows for easy removal of the invention from the cup 32. At least one vent 14 is positioned on the central portion planar surface 13, equidistant to and adjacent to the finger hold structure 15. Located in front of the finger holds, at the highest point of the secondary raised platform is the drink spout opening 9. Generally rectangular in shape with rounded edges, the back of the drink spout is formed from the drink spout proximal edge 17. This back edge curves to an angle perpendicular to itself producing the drink spout side edge 18, extending to the edge of the lid along the edge of the central raised platform through the outer peripheral rim 11.

The preferred embodiment can be seen in detail in the cross section shown in FIG. 4. In this illustration, the depending peripheral rim 11, is shaped to rest on top of the upper surface of the cup lip 33, extending down to a vertical position 11a, but not conforming around the lip to enable the rim to serve as an orienting guide for maximum insertion of the compostable lid into the receiving cup 32.

FIG. 4 also shows the preferred embodiment for the angled surface 13, where in the angle of the surface is reduced from the drinking spout distal edge 17 to the vent 14, and is increased from the vent 14 to the primary lower platform 21 and its channel shaped rib 20.

Referring to FIG. 4B, the finger hold structure 15 is integrated into the secondary central raised platform 8. The individual finger holds in the structure 15 are preferably concave in shape when viewed from the top, but can be formed into any convenient shape to bring comfort to the finger when gripping onto the invention. As shown in this illustration, the two sides of the finger hold structure 15, are preferably equal in size formed from a concave indentation of the central portion wall 12, as illustrated in FIGS. 2 and 4F. The finger hold structure 15 can also be created in any convenient size to allow sufficient room for a thumb or finger. Referring to the cross section in FIG. 4F, it is seen that the depth of the finger hold structure 15, extends to the primary lower platform 21 and the channel shaped rib 20. This distance can also vary to allow for optimal gripping comfort. Referring again to FIG. 2, the vent 14 on the planar surface of the central planar surface 13, is preferably positioned equidistant to the finger holds, on the distal side of the finger holds from the drinking spout to allow for ventilation.

The drink spout opening 9 (elements 17, 18) in this invention allows for drink comfort. The preferred embodiment shows the lid in its drinkable form, without a cover or closure for the lid. FIG. 6 shows an alternative embodiment with a removable closure 9v. The drink spout opening 17 can vary in size to allow for optimal drinking comfort.

As my lid is intended to be composted followings its use, the preferred manufacturing material is bagasse fibre, but may include other compostable fibre blends. The invention will preferably be manufactured by the compression molding process, as this is a common method used for...
Operation—Preferred Embodiment

[0054] To install the lid on the cup 32 the bottom surface of the lid 20 should be positioned inside of the rim of the beverage filled cup 33. The cup engaging wall 10 should preferably be positioned inside of and parallel to the wall of the receiving cup 32 and inserted into the cup 32 in a downward position. With the user applying pressure on or near the secondary raised surface 8 and the peripheral rim 11 of the lid, the walls of the cup-engaging section 10 will engage with the inner wall of the cup 32, forming a friction seal. The user should continue to apply pressure on the planar surface 13 and the peripheral surface 11 until the underside of the peripheral rim 11 rests on top of the cup lip 33.

[0055] To remove the lid from the cup, the user holds the cup 32 in place with one hand and uses preferably their thumb and index finger on their other hand to grasp the fingers holds 15. Slightly squeezing the finger holds 15, the user will slowly and carefully twist and pull the lid in an upward position, to release the outer vertical wall of the lid 10 from the vertical wall of the cup 32.

[0056] For disposal, if the cup 32 is also compostable, the entire drinking cup and lid can be placed into a compost bin for composting.

Description, Additional Embodiment

FIGS. 5, 6

[0057] As noted, my compostable can be formed into any convenient shape to fit an appropriate receiving beverage cup. Alternative embodiments of the invention are illustrated in FIGS. 5 & 6. These illustrations show some possibilities for the invention based on different standard cups and for drink comfort.

[0058] Referring to FIG. 5, the invention can be applied to different styles of standard cups. Aside from the invention being used with cup 32, the invention can also be used with an alternative cup 32V. Instead of a rounded rim 33, the alternative cup 33V has a planar surface that extends slightly horizontal to the annular opening of the alternative cup 32V. When the alternative cup 32V is used with the invention, an alternative peripheral surface rim 11V will extend outward from the top of the cup-engaging section 33V. This alternative peripheral surface section 11V has a planar surface that extends beyond the planar surface of the alternative cup 33V and then extends slightly downwards at a depending distance 11V.

[0059] FIG. 4 shows the preferred embodiment for the angled surface 13, where in the angle of the surface is reduced from the drinking spout distal edge 17 to the vent 14, and is increased from the vent 14 to the primary lower platform 21 and its channel shaped rib 20. An alternative to this preferred embodiment is for the surface 13 to have a single slope along its length. When using a single slope, other elements may need to change in position to accommodate for this change.

[0060] FIG. 6 shows an alternative embodiment with a removable cover 22 for the drink spout opening 9. The closure results when the drinking spout form is cut into the lid during manufacturing, but is not removed, remaining in place by an uncut spout cover attachment 17V extending from the secondary central raised platform.

Operation, Additional Embodiment

[0061] The insertion operation of the alternative embodiment is the same as for the preferred embodiment. To install the lid on the cup 32V the bottom surface of the lid 20 should be positioned inside of the rim of the beverage filled cup 33V. The cup engaging wall 10 should preferably be positioned inside of and parallel to the wall of the receiving cup 32V and inserted into the cup 32V in a downward position. With the user applying pressure on or near the secondary raised surface 8 and the peripheral rim 11V of the lid, the walls of the cup-engaging section 10 will engage with the inner wall of the cup 32V, forming a friction seal. The user should continue to apply pressure on the planar surface 13 and the peripheral surface 11V until the underside of the peripheral rim 11V rests on top of the cup lip 33V.

[0062] To remove the lid from the cup, the user holds the cup 32V in place with one hand and uses preferably their thumb and index finger on their other hand to grasp the fingers holds 15. Slightly squeezing the finger holds 15, the user will slowly and carefully twist and pull the lid in an upward position, to release the outer vertical wall of the lid 10 from the vertical wall of the cup 32V.

[0063] For disposal, if the cup 32V is also compostable, the entire drinking cup and lid can be placed into a compost bin for composting.

[0064] Operation of the removable closure 22 of the drinking spout hole is achieved by holding the lid or lid and cup combination with one hand, and using the other hand, lifting and twisting the closure until it separates from the lid.

CONCLUSION, RAMIFICATIONS, AND SCOPE

[0065] This compostable, single use, drink through beverage lid described above effectively combines compostable press fit insertion lid with an elevated drinking spout and finger holds to provide a pleasant drinking experience with easy handling and environmentally friendly disposal. The designs of the lid has additional advantages in that

[0066] It can be manufactured from a range of compostable fibres;

[0067] It can be manufactured in a range of fibre thickness;

[0068] The central elongated planar surface can be adapted to include printing or embossing.

[0069] While my descriptions contain a number of specifications, these should not be construed on the limitations on the scope of the invention, but rather a description of preferred embodiment. Other variations are possible including changing the depth of the cup engaging surface; an increase or decrease in the slope of the central elongated planar surface; an increase or decrease in the depth, or change in the shape of the finger holds; or changing the size or configuration of the drinking hole. Accordingly, the scope of the invention should not be limited to the preferred embodiments and should be determined the appended claims and their legal equivalents.

I claim:

1. A single use compostable lid for a beverage cup, comprising a circular peripheral rim adjoining a near vertical cup engaging wall of substantial length, contiguous with a primary lower platform that contains within it a secondary
raised central platform with the means to provide both a raised drinking hole that adjoins the peripheral rim of the lid and a finger hold structure.

2. Said compostable lid of claim 1 is composed of Bagasse and other biodegradable/compostable fibers.

3. Said circular peripheral rim of claim 1 joins said primary recessed lower platform to produce a cup engaging wall of substantial depth, means to provide a friction seal between the lid and an intended cup.

4. Said secondary raised central platform of claim 1 is disposed along the mid line of the recessed lower platform, rising from the lower platform to join the peripheral rim at location of said raised drinking hole.

5. The raised platform of claim 4 is joined to said primary lower platform through a contiguous near vertical wall which is disposed with said finger hold structure composed of 2 constrictions, one on either side of the raised platform, at a point between the emergence of raised platform from the lower platform and said raised drinking hole.

6. The raised platform of claim 4 further includes a vent hole located mid line on the raised platform, adjacent to the finger holds.

7. Said raised drinking hole of claim 1 is located at the end of the raised platform at the height of the peripheral rim, effectively cut into the lid where the raised platform joins the peripheral rim.

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