ABSTRACT

A closure for a round top cup, the closure including a pair of gabled lid sections and a pair of curved lateral lid sections, the gabled lid sections oriented to be linearly aligned and abutting one another at the center of the cup in an end-to-end relationship and the lateral lid sections oriented to be linearly aligned with one another and abutting opposite sides of the gabled lid sections.
ROUND TOP CUP WITH FOLDING CLOSURE

CROSS-REFERENCE TO RELATED APPLICATION


FIELD

[0002] This disclosure relates to the field of disposable cups. More particularly, this disclosure relates to a disposable round top cup having a folding closure that effectively encloses the cup to inhibit leakage or spillage of the cup.

BACKGROUND

[0003] Improvement is desired in the construction of enclosable disposable drink cups. For example, coffee and other drinks are typically sold in round paper or plastic cups having a separate lid that is friction fit to the cup. The use of separate lids is undesirable for logistics and performance reasons, such as separate inventory of lids is required and the lids often fail to provide adequate protection against leakage or spillage. In many instances, the lid is not fully seated onto the cup when installed or does not remain fully seated simply grasping the cup when full will cause spillage. In the event the cup is dropped, the lid typically unseats and most if not all of the contents escape.

[0004] Accordingly, a need exists in the art for a disposable round top cup having an improved closure to inhibit leakage and spillage.

SUMMARY

[0005] The above and other needs are met in one aspect by a closure for a cup that substantially inhibits leakage or spillage of liquid contents from the cup.

[0006] The closure includes a pair of gabled lid sections and a pair of curved lateral lid sections. The gabled lid sections are oriented to be linearly aligned and abutting one another at the center of the cup in an end-to-end relationship and the lateral lid sections are oriented to be linearly aligned with one another and abutting opposite sides of the gabled lid sections.

[0007] In another aspect of the disclosure, a cup is provided that includes a sidewall having a substantially circular cross-section and a folding closure inhibiting leakage or spillage from the cup, the sidewall and the closure both formed from a one-piece blank. The folding closure is located adjacent an edge of the blank adjacent the sidewall and is configured to provide a substantially open passage in an unfolded orientation and to provide a substantially closed structure in a folded orientation that substantially inhibits leakage or spillage from the cup. The substantially closed structure includes a pair of gabled lid sections oriented to be linearly aligned and abutting one another in an end-to-end relationship, and a pair of lateral lid sections oriented to be linearly aligned with one another and abutting opposite sides of the gabled lid sections.

[0008] In another aspect, the disclosure provides a blank for making a cup. The blank is made of a foldable sheet material having a foldable closure portion defined adjacent an edge of the sheet material. The foldable closure portion has a plurality of first fold segments which are linear fold segments, a plurality of second fold segments which are curved fold segments, and a plurality of third fold segments which are linear fold segments.

[0009] The first fold segments extend from the edge of the sheet material to an intersection with one of the second fold segments, and the closure portion is void of any of the third fold segments intermediate at least one pair of adjacent and spaced apart ones of the first fold segments. The third fold segments each extend diagonally from the edge of the sheet material to an intersection of two of the second fold segments and one of the first fold segments. The foldable closure portion is foldable to define a lid having a pair of gabled lid sections and a pair of lateral lid sections, and the gabled lid sections are oriented to be linearly aligned and abutting one another in an end-to-end relationship with the lateral lid sections oriented to be linearly aligned with one another and abutting opposite sides of the aligned gabled lid sections.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Further advantages of the disclosure are apparent by reference to the detailed description when considered in conjunction with the figures, which are not to scale so as to more clearly show the details, wherein like reference numbers indicate like elements throughout the several views, and wherein:

[0011] FIG. 1 is perspective view of a round top cup according to a preferred embodiment of the disclosure shown in a closed condition.

[0012] FIG. 2 is a blank for providing the sidewall and closure of the cup of FIG. 1.

[0013] FIG. 3 is a blank for providing the bottom of the cup of FIG. 1.

[0014] FIG. 4 shows an alternate embodiment of the blank of FIG. 2, which does not include a flat rim.

[0015] FIG. 5 shows the cup of FIG. 1 as initially formed with an open-top.

[0016] FIGS. 6-11 show steps in folding the lid of the cup of FIG. 1.

[0017] FIG. 12 is a top-end view of the cup of FIG. 1 in the closed condition showing the round top configuration of the cup.

[0018] FIG. 13 shows an alternate embodiment of a blank having shorter sidewalls, and

[0019] FIG. 14 shows the resulting cup or bowl made from the blank.

DETAILED DESCRIPTION

[0020] With reference to the drawings, in one aspect the disclosure relates to a round top cup 10 having a sidewall 12 having a substantially circular cross-section and a substantially sealing folding closure or lid 14 that substantially inhibits leakage or spillage from the cup. The sidewall 12 and the lid 14 of the cup 10 are formed from a one-piece blank 16 (FIG. 2).

[0021] The sidewall 12 may also be used to provide a bottom or other enclosing surface needed opposite the lid 14. However, to provide a bottom 18 to the cup 10 that supports the cup 10 in an upright orientation, it is preferred to use a separate blank 20 to provide the bottom 18. It will also be
understood that the blank 20 or other structure for forming the bottom 18 may be included with the blank 16 so as to have a cup made of a single blank.

[0022] With reference to FIG. 2, the blank 16 is a one-piece blank made of a foldable sheet material, such as paperboard material of the type conventionally used in the manufacture of paper cups. The blank 16 may be made of other sheet materials, including plastics of the type used to make plastic cups.

[0023] To render the cup 10 such that the sidewall 12 provides a generally tapered cylindrical structure, the blank 16 is shaped to have a bottom edge 22, an upper edge 24, and a pair of opposite side edges 26 and 28. The bottom edge 22 and the upper edge 24 are preferably upwardly bowed, that is the bottom edge 22 bowing toward the upper edge 24 and the upper edge 24 is similarly bowed away from the bottom edge 22 and parallel thereto. The side edges 26 and 28 are linear and extend from each end of the bottom edge 24 to the upper edge 24. However, the length of the bottom edge 22 is less than the length of the upper edge 24, such that the side edges 26 and 28 are not parallel. Thus, when the side edges 26 and 28 are overlapped when forming the blank 16 into the cup 10, the sidewall 12 will resemble a tapered cylinder in shape. Dashed line 30 on the blank 16 indicates an area that is overlapped by the opposite side as the blank is wrapped into a cone shape. The area defined between the edge 26 and the line 30 may also include a glue or adhesive to seal the overlapped portions together if desired. In this regard, however, it will be understood that the overlapped portions may be joined and sealed using conventional cup making techniques and equipment. It will be understood that the blank 16 may be configured to have a straight cylindrical sidewall instead of a tapered cylindrical sidewall.

[0024] To provide the desired folding closure or lid 14, portions of the blank 16 adjacent the upper edge 24 are configured to include generally longitudinal fold segments 32a-32f, generally lateral curved fold segments 34a-34f, and angled fold segments 36a-36b. The fold segments described herein are desirably formed using automated machinery of the type commonly used for making paperboard or other sheet material blanks, and the cup therefrom formed using automated machinery of the type commonly used for converting blanks into cups.

[0025] The fold segments 32a-32f, 34a-34f, and 36a-36b cooperate to enable formation of the lid 14 into the closed orientation as seen in FIGS. 1 and 7-9 to define opposed and substantially lateral lid sections 38a-38f and opposed and substantially gabled lid sections 40a-40f located between the lateral lid sections 38a and 38f. The gabled lid sections 40a and 40b of the closed lid are linearly aligned and abut one another in an end-to-end relationship, with the lateral lid sections 38a and 38b linearly aligned with one another and abutting opposite sides of the gabled lid sections 40a and 40b. As will be noted, the lateral lid section 38a abuts both of the gabled lid sections 40a and 40b on one side thereof, and the lateral lid section 38b abuts both of the gabled lid sections 40a and 40b on the opposite side. Thus, the integrity of the closed orientation is maintained by the cooperating orientations of the gabled sections and the lateral sections.

[0026] As used herein, the term “substantially lateral” will be understood to mean that the lid sections 38a and 38b are positioned generally laterally relative to the sidewall 12. Thus, while the lid sections 38a and 38b may have a somewhat curved surface or a planar surface, each lies generally laterally relative to the sidewall 12 when the lid 14 is assembled to substantially enclose the cup 10. The term “substantially gabled” will be understood to mean that the lid sections 40a and 40b include a generally triangular raised portion.

[0027] Fold segments 32a-32f are oriented to be substantially parallel to the length of the blank 16 and the side edges 26 and 28 of the blank 16. Each fold segment 32a-32f extends from the upper edge 24 to an intersection with one of the lateral fold segments 34a-34f. The fold segments 32a-32f are preferably substantially linear folds or creases formed on the blank 16 with the fold made so that the fold segment is oriented to be outward of the adjacent material portions of the blank 16.

[0028] Fold segments 34a-34f are oriented to be substantially parallel to the width of the blank 16 and the bottom edge 22 and the upper edge 24 of the blank 16. The fold segments 34a-34f are formed such that the segments of the upper edge 24 of the blank 16 extend generally toward the center of the cup 10. As shown, the segments 34a-34f are generally scalloped or arcuate curved folds. The use of arcuate or curved folds for the segments 34a-34f provides additional aesthetic appearance features to the lid 14 and also provides generally curved surfaces 42 and 44 on the lid 14 which have been observed to offer surfaces comfortable to the mouth of a user of the cup 10. In this regard, it is desirable to provide a perforated location that may be removed to define a slot or aperture 46 on one or both of the surfaces 42 or 44, for facilitating drinking of a beverage from the cup 10. In addition, a perforated location may be provided to define an aperture 48 configured for accepting a straw or the like.

[0029] A feature in the form of a flat rim 49, discussed more fully below, may be provided to the cup by folding along a curved fold line 49a that extends parallel to and closely adjacent the uppermost edge of the blank 16. As the cup is folded down along fold line 49a it may be crimped or crushed inwardly to accommodate the curvature of line 49a. Alternatively small cuts may be formed along the uppermost edge of the cup to allow the cup edge to overlap on itself as it is folded down to form the flat rim 49. (The term “flat” is used to indicate that the flat rim 49 lies in a plane when the blank is formed into a cup and left in an unfolded orientation.). In this regard, it will be understood that the cup may be made to not include the flat rim 49. With reference to FIG. 4, there is shown the blank of FIG. 2 with the fold line 49a removed, so as to provide the cup without the flat rim 49. In addition, it will be understood that the cup 10 described herein may be made to have a shorter sidewall so as to resemble a hot tea cup or a bowl in appearance. In this regard, FIG. 13 shows the blank of FIG. 4 modified to have a shorter sidewall for use to make a cup useful as a hot tea cup or bowl, as shown in FIG. 14. It will be understood that the blank of FIG. 13 may be modified to include the fold line 49a so as to include the flat rim 49.

[0030] Returning to FIG. 2, the fold segments 36a-36f are each preferably linear folds oriented to extend diagonally from the upper edge 24 to the intersection of two of the lateral fold segments 34a-34f and one of the longitudinal fold segments 32a-32f. For example, the segment 36a extends diagonally at an angle of about 45 degrees to the intersection of the lateral segments 34a and 34b and the longitudinal segment 32a. As will be noted (FIG. 2), the closure 14 is void of any of the fold segments 36a-36f intermediate at least one pair of adjacent and spaced apart ones of the fold segments 32a-32f. For example, no diagonal fold segments are located between...
the pair of adjacent and spaced apart fold segments 32c and 32d, which enables forming of the lateral lid section 38b.

[0031] With reference to FIG. 3, the blank 20 to provide the bottom 18 is a one-piece blank made of a foldable sheet material in the manner of the blank 16. The blank 20 includes a substantially circular portion 50 having a sidewall 52 extending upwardly therefrom. In the manufacture of the cup 10, the blank 20 is married with the blank 16 to form the cup 10 as provided in an open top configuration, such as shown in FIG. 5, which provides a substantially open passage to the interior of the cup 10 that facilitates loading of contents into the cup. Also, the cup 10 in the open top configuration of FIG. 5 may be readily stacked with a plurality of like cups for shipping, storage, and dispensing, for example, in a retail store or fast food setting.

[0032] To use the cup 10, a user will obtain the cup in the open configuration of FIG. 5 and fill the cup through the open passage with a desired material, such as a beverage. In this regard, the cup 10 may desirably include indicia, such as a fill line indicated by dashed line 53 to indicate a desired full level of the cup 10 that cooperates with the lid 14. Next, the cup 10 is configured to fold the segments 32a-32c, 34a-34c, and 36a-36b to form the lid 14 into the closed orientation and form the lid sections 38a-38b and 40a-40b.

[0033] With reference now to FIGS. 6-12, steps are shown in forming the lid 14. Beginning with FIG. 6, the sheet material is initially creased or folded about the fold lines 32b and 32c to define triangular portions 54 and 56 formed by the abutting triangular sections of the sheet material on opposite sides of the fold lines 32b and 32c, respectively. The flat rim 49 is provided when the upper edge of the cup is folded about the fold line 49a. The flat rim 49 is located on the outer perimeter of the uppermost edge of the cup. To maintain the rim 49, adhesive may be utilized to bond the material to itself, however, application of heat or just simple folding pressure may be sufficient depending upon the material of the cup is made. In FIG. 6, the cup is shown in a very slightly folded orientation, but when frilly not folded the flat rim 49 lies in a circle in a horizontal plane, that is, a plane parallel to the bottom 18 of the cup. In this unfolded orientation, the cup is frustro-conical in shape with the lower and upper edges of the cup lying in parallel planes joined by a conical surface.

[0034] Next, as shown in FIGS. 7 and 8, the sides of each triangular portion 54 and 56 are urged together and pressure applied to fold the triangular portions 54 and 56 toward one another in directions toward the center of the cup 10. As the triangular portions 54 and 56 are urged toward one another, folding occurs along the remaining fold segments to the point that a lower corner of each of the triangular portions 54 and 56 abut one another.

[0035] Next, as seen in FIGS. 9 and 10, the triangular portions 54 and 56 are urged further until the innermost edges of the triangular portions 54 and 56 bear against one another and are substantially aligned with longitudinal axis 1. of the cup 10 to form the gabled lid sections 40a and 40b, with the lateral lid sections 38a and 38b being simultaneously formed to render the lid 14 in the closed condition (FIGS. 1, 11, and 12). Thus, the gabled lid sections 40a and 40b of the closed lid are linearly aligned and abut one another in an end-to-end relationship, with the lateral lid sections 38a and 38b linearly aligned with one another and abutting opposite sides of the gabled lid sections 38a and 40b.

[0036] It has been observed that the over-center application of pressure provided by the frictional end-to-end interface of the edges of the triangular portions 54 and 56 reinforced by the abutting lateral lid sections 38a and 38b focused at the center of the lid serves to maintain the lid 14 in the closed condition even when the cup 10 is squeezed, tipped over, or dropped, with vastly improved resistance to leakage or spilling as compared to conventional cup lids under similar conditions. For example, if the cup 10 is dropped and lands on its side, then some minor spillage may occur if the cup is substantially fill through joints of the lid 14. However, it has been observed that the lid 14 typically remains substantially intact and that in less than full conditions very little spillage occurs since the joints are located proximate the center of the lid 14.

The use of the blank embodiment which provides the flat rim 49 is particularly preferred, since it has been observed that the presence of the flat rim 49 enables a greater force or compression to be exerted by the frictional end-to-end interface of the edges of the triangular portions 54 and 56 reinforced by the abutting lateral lid sections 38a and 38b when the flat rim is included, as best seen in FIG. 1.

[0037] Conversely, as will be appreciated, conventional lids sent around the perimeter of the cup and upon the cup being squeezed, dropped or tipped. Thus, when the seating of the lid is disrupted at any point around the perimeter, leakage readily occurs at such location and the lid typically becomes completely unsealed and falls off, leaving no blockage to spilling.

[0038] Another feature of the round top cup 10 relates to the use of the curved fold sections 34a-34c. The use of the curved fold segments enables the cup to be round at the top, as best seen in FIGS. 1 and 12. In addition, the curved folds enable the provision of the curved surfaces 42 and 44 on the lid 14 which are aesthetically pleasing and provide surfaces comfortable to the mouth of a user.

[0039] The foregoing description of preferred embodiments for this disclosure has been presented for purposes of illustration and description. It is not intended to be exhaustive or to limit the disclosure to the precise form disclosed. Obvious modifications or variations are possible in light of the above teachings. The embodiments are chosen and described in an effort to provide the best illustrations of the principles of the disclosure and its practical application, and to thereby enable one of ordinary skill in the art to utilize the disclosure in various embodiments and with various modifications as are suited to the particular use contemplated. All such modifications and variations are within the scope of the disclosure as determined by the appended claims when interpreted in accordance with the breadth to which they are fairly, legally, and equitably entitled.

What is claimed is:

1. A cup, comprising a sidewall having a substantially circular cross-section and a folding closure inhibiting leakage or spillage from the cup, the sidewall and the closure both formed from a one-piece blank, the folding closure being located adjacent an edge of the blank, being located adjacent the sidewall and being configured to provide a substantially open passage in an unfolded orientation and to provide a substantially closed structure in a folded orientation that substantially inhibits leakage or spillage from the cup, the substantially closed structure including a pair of gabled lid sections oriented to be linearly aligned and abutting one another in an end-to-end relationship, and a pair of lateral lid sections oriented to be linearly aligned with one another and each abutting opposite sides of the gabled lid sections.
2. The cup of claim 1 wherein the sidewalls and the folding closure in an unfolded orientation have a frusto-conical shape with the unfolded closure forming an upper edge lying in a plane.

3. The cup of claim 1 wherein the sidewalls and the folding closure in an unfolded orientation have a frusto-conical shape with the unfolded closure forming an upper edge that is circular and lies in a horizontal plane.

4. The cup of claim 1, wherein the blank comprises a paperboard blank.

5. The cup of claim 1, wherein the blank comprises a plastic blank.

6. The cup of claim 1, wherein the cup further includes a bottom opposite the folding closure.

7. The cup of claim 1, wherein the blank in a planar unfolded orientation has a length, a width, and an upper edge, and includes a plurality of longitudinal fold segments that are linear fold segments, a plurality of lateral fold segments that are curved fold segments, and a plurality of angled fold segments that are linear fold segments; wherein the longitudinal fold segments are each oriented to be substantially parallel to the length of the blank and extend from the upper edge of the blank to an intersection with one of the lateral fold segments which are each oriented to be substantially parallel to the width of the blank; and wherein the angled fold segments each extend diagonally from the upper edge of the blank to an intersection of two of the lateral fold segments and one of the longitudinal fold segments.

8. The cup of claim 1, wherein the lateral lid sections provide curved surfaces.

9. The cup of claim 1, further comprising a flat rim incorporated onto the cup.

10. The cup of claim 9, wherein the flat rim is located to be present on the abutting portions of the gabled lid sections and on the lateral lid sections where the lateral lid sections abut the gabled lid sections.

11. A closure for a round top cup, the closure comprising a pair of gabled lid sections and a pair of curved lateral lid sections, the gabled lid sections oriented to be linearly aligned and abutting one another at the center of the cup in an end-to-end relationship and the lateral lid sections oriented to be linearly aligned with one another and abutting opposite sides of the gabled lid sections.

12. The closure of claim 1, further comprising a flat rim is located to be present on the abutting portions of the gabled lid sections and on the lateral lid sections where the lateral lid sections abut the gabled lid sections.

13. A cup blank, comprising a foldable sheet material having a foldable closure portion defined adjacent an edge of the sheet material, the foldable closure portion having a plurality of first fold segments which are linear fold segments, a plurality of second fold segments which are curved fold segments, and a plurality of third fold segments which are linear fold segments; wherein the first fold segments extend from the edge of the sheet material to an intersection with one of the second fold segments, wherein the closure portion is void of any of the third fold segments intermediate at least one pair of adjacent and spaced apart ones of the first fold segments; and wherein the third fold segments each extend diagonally from the edge of the sheet material to an intersection of two of the second fold segments and one of the first fold segments, wherein the foldable closure portion is foldable to define a lid having a pair of gabled lid sections and a pair of lateral lid sections, and wherein the gabled lid sections are oriented to be linearly aligned and abutting one another in an end-to-end relationship and the lateral lid sections are oriented to be linearly aligned with one another and abutting opposite sides of the aligned gabled lid sections.

14. The blank of claim 13, wherein the plurality of first fold segments comprises six first fold segments, the plurality of second fold segments comprises six fold segments, and the plurality of third fold segments comprises eight fold segments.

15. The blank of claim 13 wherein the blank has one edge lying in an arc that forms a circular top edge when the blank is formed into a cup and the foldable closure portion is not folded.

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