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(54) **RECLOSEABLE DRINK CUP LID**

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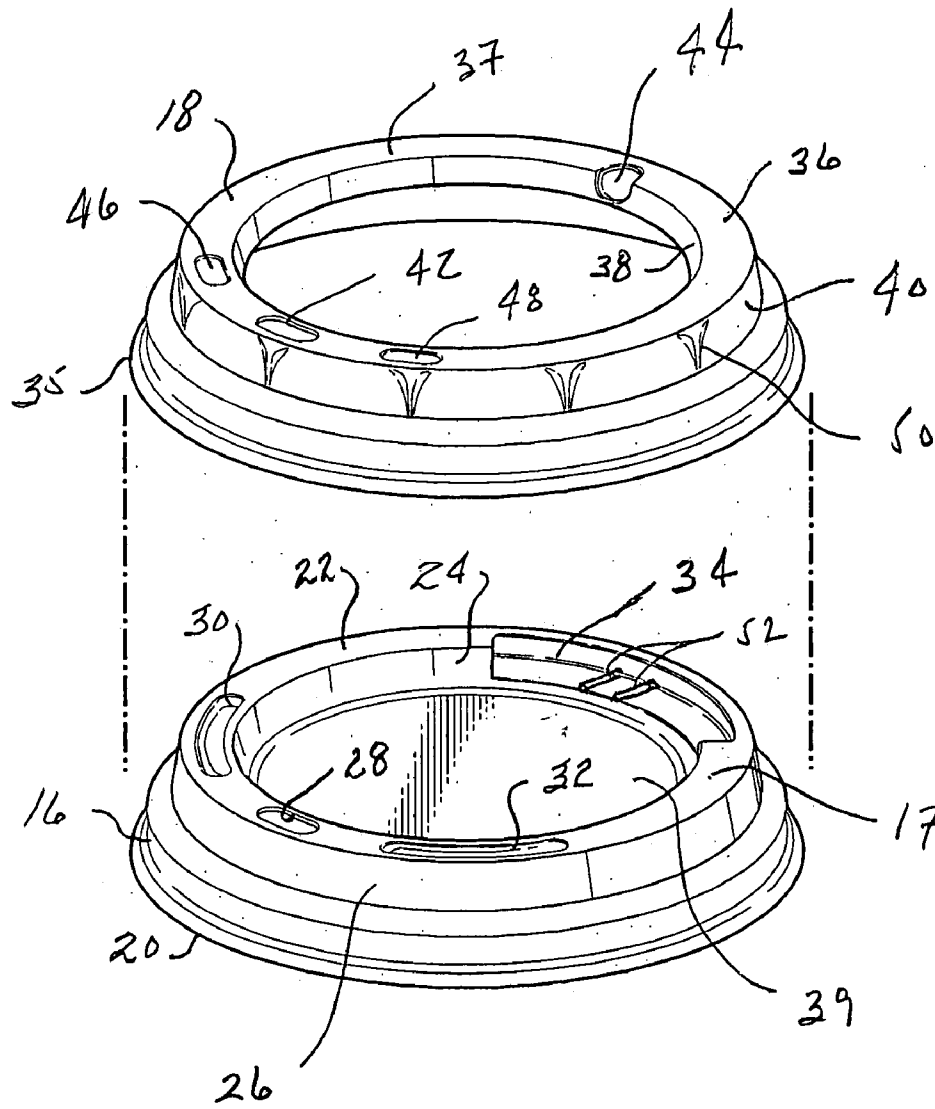
(57) **ABSTRACT**

A two-ply drink-through lid for a disposable drink cup comprising outer and inner nestable shells of thin plastic material held together by means of an edge configuration which also holds the lid to the rim on the cup. The shells have apertures formed therein which can be aligned or de-aligned by rotating the outer shell over the inner shell while the lid is on a cup. Rotation stops are provided by an arcuate recess in the inner shell and a detent in the outer shell which fits into the recess. Two-position and three-position lids are described.

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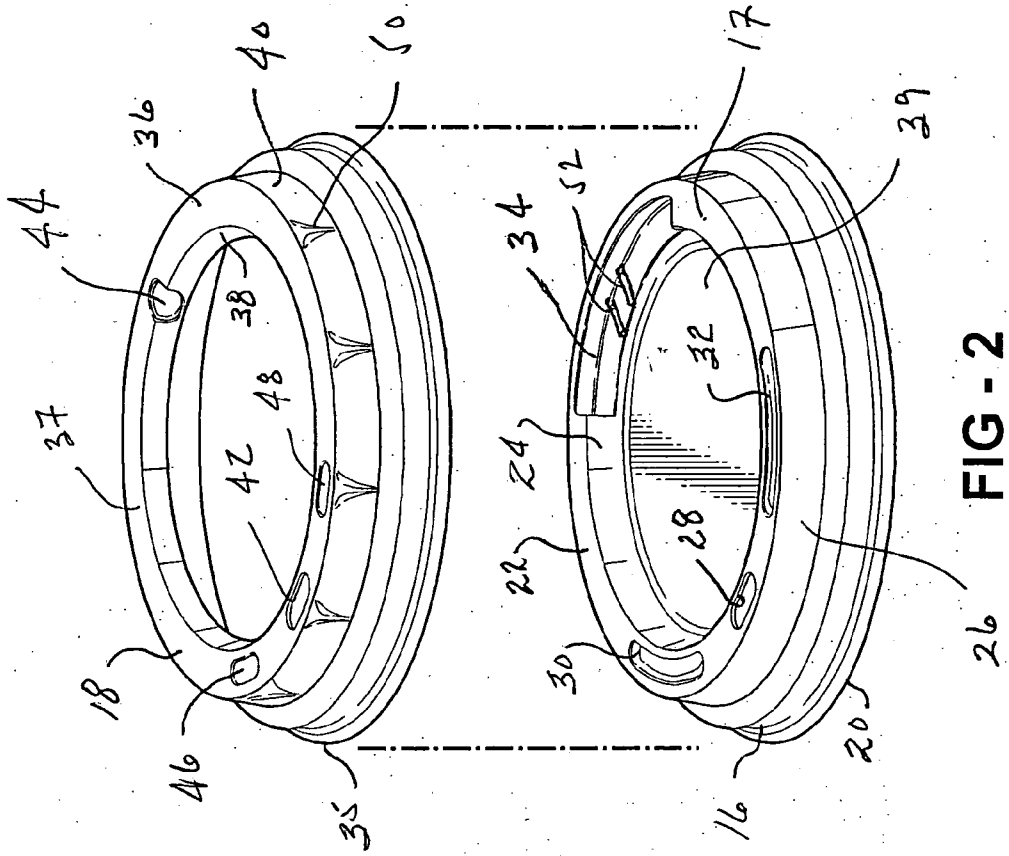


FIG - 2

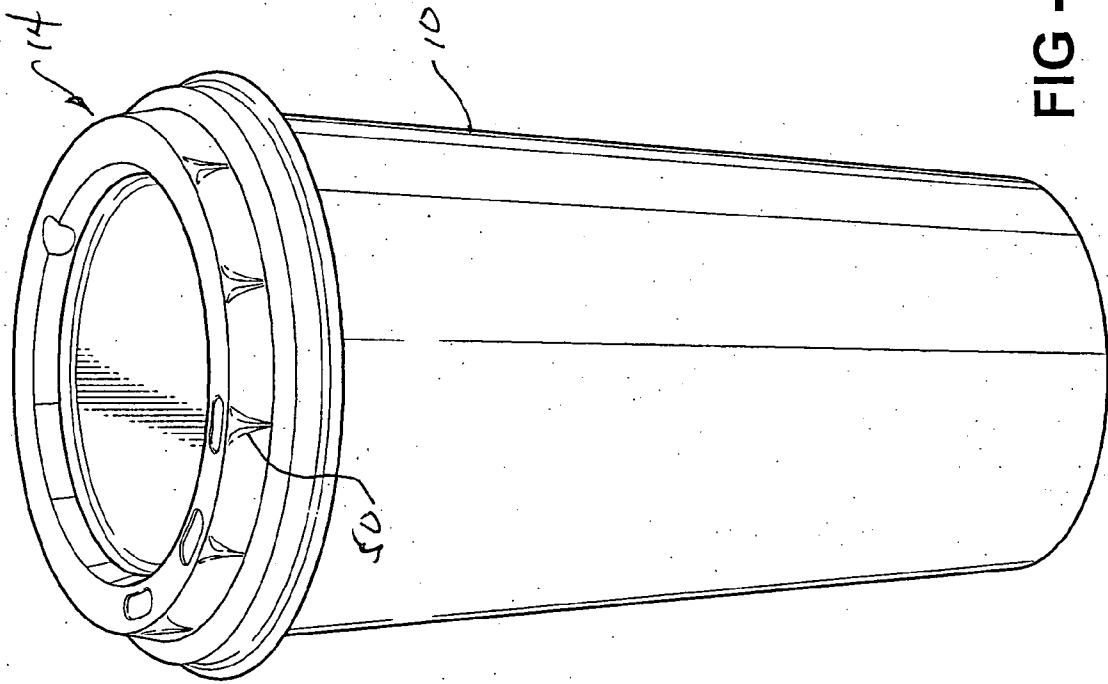
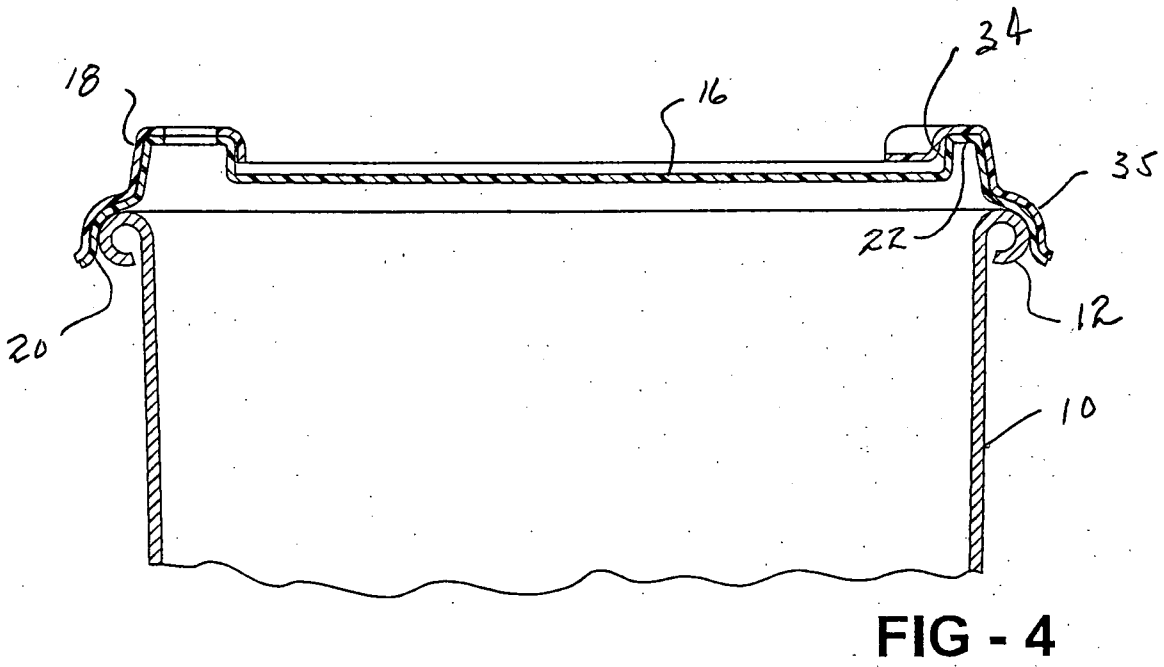
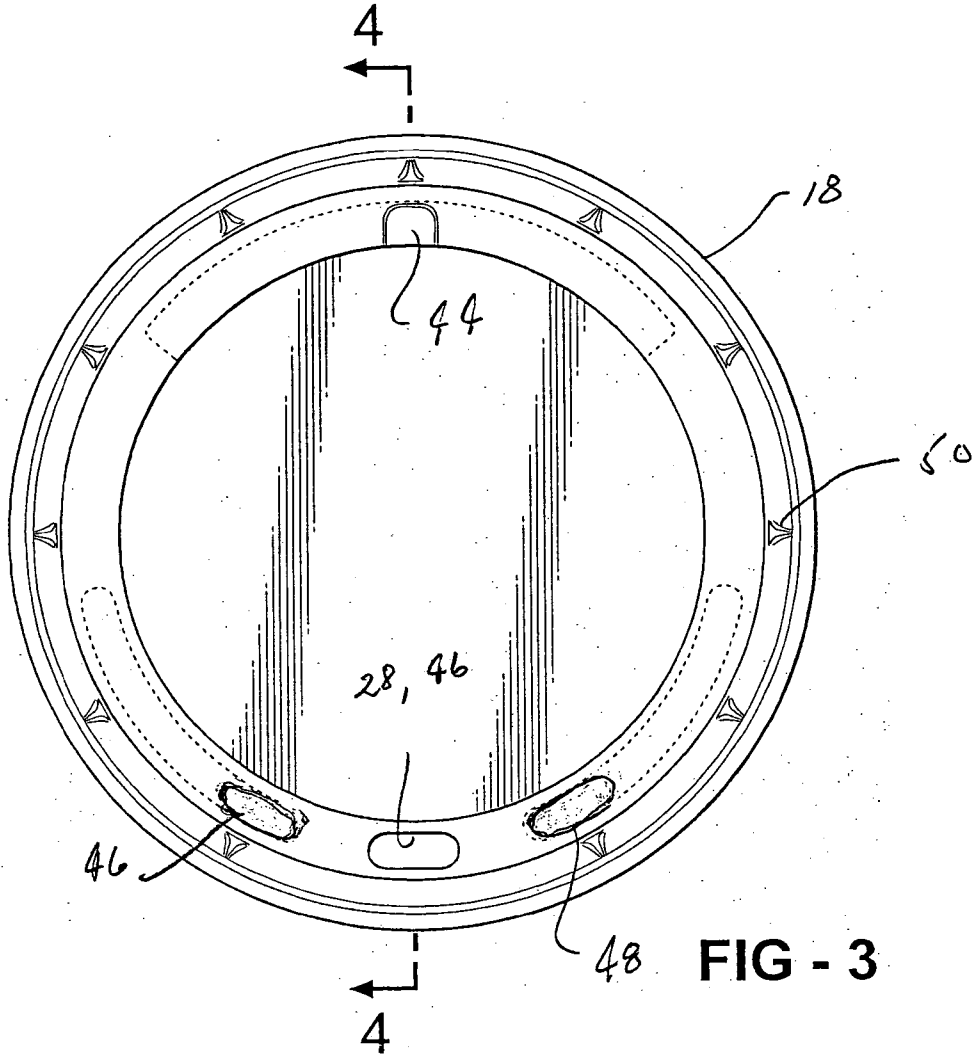


FIG - 1



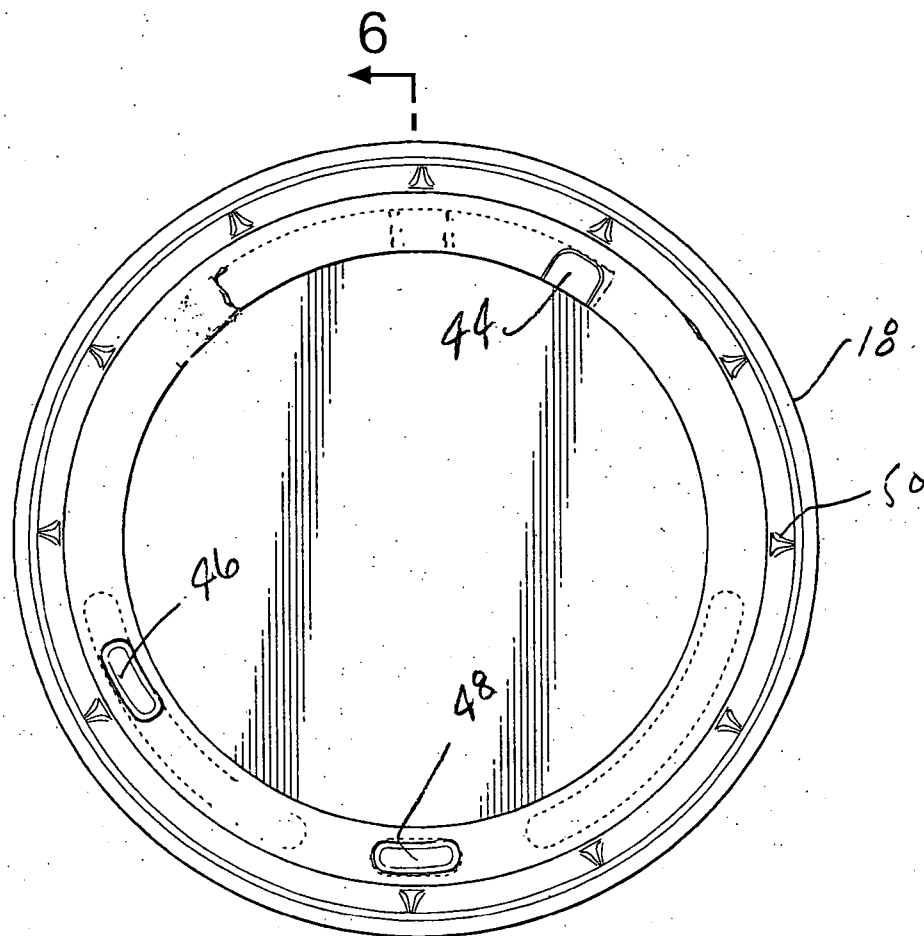


FIG - 5

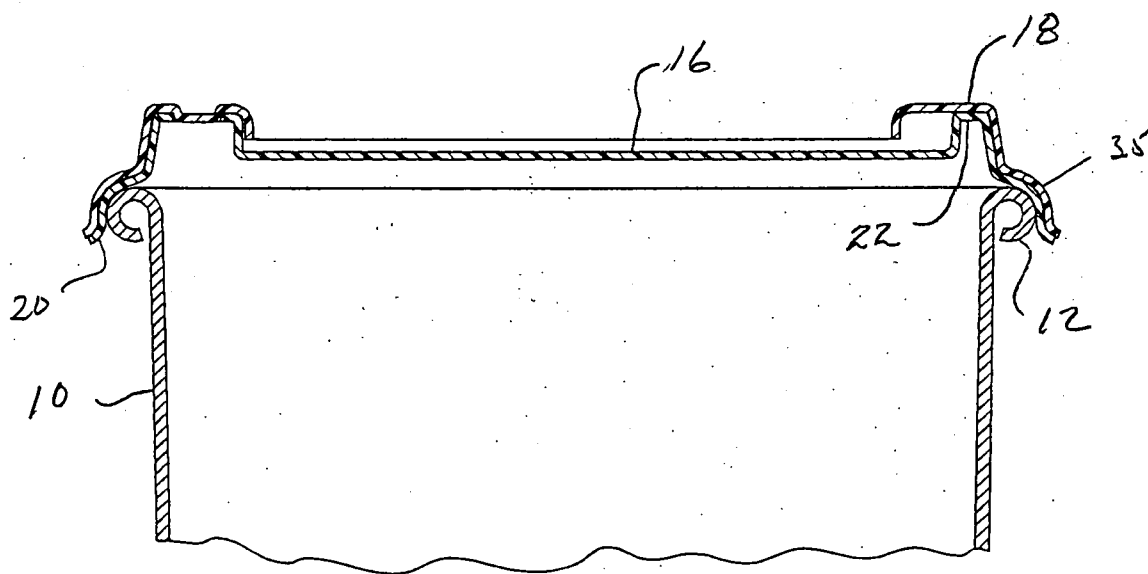


FIG - 6

RECLOSEABLE DRINK CUP LID

FIELD OF THE INVENTION

[0001] This invention relates to recloseable plastic lids for drink cups of the type having circular rims and more particularly to a two-ply recloseable lid made up of two similar interesting shells which can be rotated relative to one another to open and close a drink-through opening by aligning and/or de-aligning apertures in the shells.

BACKGROUND

[0002] Molded and thermoformed disposable plastic lids for drink cups are well known in the "fast food" industry. The typical lid is formed as an integral single ply device having an edge contour which grippingly engages the rim of a disposable drink cup, and a deck portion having one or more of several available architectural features to satisfy specific requirements. Some lids are formed in such a way as to provide a plug fit for hot drinks while other lids have raised deck portions to accommodate whipped cream or foam, the latter lids often being referred to as "cappuccino" lids. Drink-through openings of various types may be provided, the most popular of which being the "tear back" feature which permits a small segment of the lid to be broken free and hinged or torn back to provide a drink-through opening. Other drink-through lids have pre-formed, permanent openings.

[0003] More recently, disposable drink cup lids have been designed in a two-ply construction in which nesting thin plastic shells are disposed in an overlying relationship with one another. The outer shell may be rotated relative to the inner shell while the lid is on the cup. In a typical design, rotation in one direction causes alignment or registration of two apertures, one in each of the shells, while relative rotation in the opposite direction de-registers the apertures to close the lid. One known design includes a manually manipulable "lever" formed in the inner shell and extending upwardly through an arcuate opening in the upper shell. The relative rotation between the two shells is accomplished by grasping the lever and moving it either left or right to open or close. To work, the inner shell must be smaller than the outer shell such that only the outer shell rests on the cup rim.

SUMMARY OF THE INVENTION

[0004] The present invention represents an improvement to existing two-ply relatively rotatable recloseable plastic lids for drink cups wherein the lid is of the type having nestable inner and outer shells made of thin plastic material. In accordance with the invention, the lid shells have nestable edge contours which edge contours engage one another to hold the two shells together as well as to provide a feature which permits the inner shell to directly grippingly engage the rim of a cup. Apertures are formed in the shells and may be aligned to provide a drink-through feature or de-aligned to close the lid. A gripping feature is provided on an outside surface of the outer shell to assist in the rotation motion.

[0005] In accordance with a preferred embodiment hereinafter described in greater detail, the inner and outer shells are provided, in addition to the edge contours described above, with annular crown portions characterized by top surfaces and inner and outer side surfaces. The apertures providing the drink-through openings are formed in the top

surface of each annular crown. Mechanical stops at the extremes of relative rotation are provided by means of an arcuate recess in the crown portion of the inner shell, and a detent is formed in the crown portion of the outer shell to extend into and ride within the arcuate recess of the inner shell. When the rotation of the two shells relative to one another is such to bring the detent into contact with either of the end surfaces of the arcuate recess, a mechanical stop is provided.

[0006] As hereinafter explained in greater detail, a lid constructed in accordance with the present invention may incorporate either of two operating modes. In one mode, one mechanical stop defines the "open" condition while the opposite mechanical stop defines the "closed" condition. Alternatively, the arcuate recess may be made to extend over a larger angular range, say 30 degrees to 45 degrees, and both mechanical stops may be associated with "closed" conditions, an "open" condition being defined between these two "closed" positions. A secondary detent feature may be optimally provided to produce a tactile signal to the user that the lid has been placed in the centered or "open" condition.

[0007] Further in accordance with the present invention, at least one downwardly extending male plug portion is formed in the under side of the crown portion of the outer shell. This male plug portion is smaller, is in reversely symmetrically relation to the aperture, and is of such size and shape as to fit into the aperture of the inner shell when the lid is closed. This feature may be used with either the two-position lid or the three-position lid described above.

[0008] In either embodiment, shallow arcuate recesses are formed in the crown of the lower shell to provide clearance for the plug(s) so they do not add excessive drag to the relative rotation of the lid shells.

[0009] Other applications of the present invention will become apparent to those skilled in the art when the following description of an illustrative embodiment of the invention is read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] The description herein makes reference to the accompanying drawings wherein like reference numerals refer to like parts throughout the several views, and wherein:

[0011] **FIG. 1** is a perspective view of a drink cup having a recloseable plastic lid positioned thereon in accordance with the invention;

[0012] **FIG. 2** is an exploded view in perspective of the two shells of the recloseable lid of **FIG. 1**;

[0013] **FIG. 3** is a top plan view of the lid of **FIG. 1**;

[0014] **FIG. 4** is a sectional view through the two-ply lid of **FIG. 3** in an open condition along the section line 4-4;

[0015] **FIG. 5** is a top plan view of the lid of **FIG. 1** in a closed condition; and

[0016] **FIG. 6** is a sectional view of the two-ply lid of **FIG. 5** taken along the section line 6-6.

DETAILED DESCRIPTION

[0017] Referring to the drawing a disposable drink cup **10** made of plastic or paper and having a rolled circular rim

12 is fitted with a two-ply recloseable lid **14**. Lid **14** comprises nestable inner and outer plastic shells **16**, **18** respectively. The shells are typically manufactured by thermoforming thin plastic sheet in a known manner. Inner shell **16** comprises a rolled or arcuate edge contour **20** which is of such size and shape as to grippingly engage rolled rim **12** of the cup **10**. The lower shell **16** further comprises generally annular integral crown portion **22** having a top surface **17** and inner side surface **24** and outer side surface **26**. A drink-through aperture **28** is die cut through the top surface of the crown portion **22** of the lower shell. In straddling and reversely similar relationship to the aperture **28** are arcuate depressions **30**, **32** for purposes to be described. Directly opposite the aperture **28** an arcuate recess or channel **34** is molded into the crown portion **22** and having an arcuate length of between 30 and 65 degrees. Small detents **52** are formed into the inner top surface of the recess channel **34** as shown in **FIG. 2**.

[0018] The outer shell **18** also has a crown portion **36** with top, inside and outside surfaces **37**, **38**, **40** respectively. The shape and the size of the crown **36** is such as to nest with and overlie the crown **22** of the inner shell **16**. Where the lower shell **16** has an integral closed center deck **39**, the outer shell **18** has an open center.

[0019] The outer shell **18** is also provided with a drink-through aperture **42** of the same size and shape as opening **28** located in the top surface **37** of crown portion **36**. Shallow, downwardly-extending arcuate plugs **46**, **48** are formed in shell **18**. When the shells **16**, **18** are placed together in nesting relationship, the plugs **46**, **48** extend into the shallow recesses **30**, **32**. The recesses **30**, **32** thus provide clearance from the plugs **46**, **48** during relative rotation between the two shelves so as to prevent excessive drag which would otherwise resist relative rotation.

[0020] A detent **44** is formed in the crown **36** directly opposite the opening **42**. This detent **44** fits into the recessed channel **34** and moves left and right in the channel from a central position in which the detent **44** fits exactly between the raised detent **52**.

[0021] A pattern of darts is provided in the outer side surface **40** of the top shell **18** to assist in gripping the outer shell and rotating it relative to the inner shell **16** when the two shells are placed on the cup **10**. Other patterns can, of course, be used.

[0022] In operation, the two shells **16**, **18** are nested together. The edge configurations are such as to hold the two shelves together without the need for other mechanical interlocks as well as to hold nested shells to the rim of the cup **10** when they are serving their purpose as a two-ply lid.

[0023] When the cup **10** is filled with liquid and the lid **14** is in place, the lid **14** is typically closed by de-registering the apertures **28**, **42**; i.e., achieving the condition shown in **FIGS. 5 and 6** of the drawing. Note in this condition, the detent **44** abuts one of the side edges of the recess channel **34**, said side edges therefore serving as mechanical stops to limit relative rotation between the two shells **16**, **18**. In this closed configuration the plug **48** is aligned with the aperture **28** to close the aperture **28** and essentially prevent leakage of fluid therefrom.

[0024] To open the lid **14**, the outer shell is twisted or rotated relative to the inner shell back toward the central

position shown in **FIGS. 3 and 4** of the drawings. In this condition the openings **28**, **46** are in registry and detent **44** fits within the detents **52** to give the user a tactile indication that the lid shells are in center or "drink-through" position. The lid **14** can be closed by rotating the top shell **18** relative to the bottom shell **16** in either direction to once again bring one of the plugs into registry with the drink-through opening **28**.

[0025] The lid of the present invention may be formed in various configurations and may be provided with embossed or printed indicia or advertising or promotional purposes as will be apparent to those familiar with products serving fast food industry.

[0026] A two-position lid is nearly identical to the lid **14** described above. The principal difference lies in the fact that the recess **34** is made smaller in angular length and the secondary detent **52** is eliminated. The apertures **28**, **42** are positional such that they are aligned when the detent **44** abuts one end wall of the recess **34** and non-aligned when the detent **44** abuts the opposite end wall of the recess **34**. Only one plug **46**, **48** is needed in this embodiment.

[0027] The words "apertures" and "openings" are used interchangeably in this document.

[0028] While the invention has been described in connection with what is presently considered to be the most practical and preferred embodiment, it is to be understood that the invention is not to be limited to the disclosed embodiments but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims, which scope is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures as is permitted under the law.

What is claimed is:

1. A two-ply recloseable lid for a drink cup having a rim, said lid comprising:

an inner shell of thin plastic material with an edge contour adapted to grippingly contact the rim of a cup;

an outer shell of thin plastic material having an edge contour in overlying and gripping contact with the edge contour of the inner shell;

each of said shells having an annular crown portion inset from but integral with the respective edge contour, said crowns being configured to nest whereby the crown of the outer shell overlies the crown of the inner shell;

each said crown portion having a top surface with a drink-through opening formed therein;

said shells being positionable through relative rotation to align said openings for access to the contents of the cup and to de-align said opening to close the lid;

said inner shell having formed in the crown portion opposite said opening an arcuate recess having end walls which serve as stops;

the crown portion of said outer shell having formed therein directly opposite said opening a detent which extends into and rides within the arcuate recess of the inner shell and coacts with said end walls to limit relative angular rotation of the outer and inner shells;

whereby the lid may be placed on a rim of a cup and opened by aligning said openings and closed by rotating the outer shell relative to the inner to de-align said openings.

2. The recloseable lid defined in claim 1 further including a downwardly extending male plug formed on the underside of the top surface of the crown portion of the outer shell in spaced relationship to said opening, said male plug being of such size and shape as to fit within and close the opening in the inner shell when the openings are de-aligned.

3. A recloseable lid as defined in claim 2 further including a shallow arcuate recess formed in the top surface of the crown portion of the inner shell to provide clearance for said male plug.

4. A recloseable lid as defined in claim 1 wherein the crown portions each have annular top surfaces and inner and outer side surfaces joined by said top surfaces.

5. A recloseable lid as defined in claim 4 wherein a gripping pattern is formed on the outer side surface of the crown portion of the outer shell.

6. A recloseable lid as defined in claim 5 wherein the gripping pattern is formed as a series of downwardly directed darts.

7. A recloseable lid as defined in claim 1 wherein the top and bottom shells are thermoformed.

8. A recloseable lid for a drink cup having a rim, said lid comprising:

interesting thin plastic outer and inner shells in overlying relationship to one another, each of said shells having

an edge configuration adapted to be placed in overlying and gripping relationship with the rim of the cup;

said shells having interesting annular crown portions with apertures formed therein, said apertures being registrable to provide a continuous drink-through opening for said lid; and

means for providing mechanically stopped angular rotation of said shells relative to one another;

whereby said shells may be rotated to a first position in which the openings are in registry to provide a drink-through feature and thereafter rotated to a second position wherein said openings are not in registry.

9. A recloseable lid as defined in claim 8 further including a downwardly extending male plug formed in the crown portion of the uppermost shell of such size and shape as to extend into and plug the apertures of the inner shell when rotated into registry therewith.

10. A recloseable lid as defined in claim 8 further including a recess channel formed in the inner shell symmetrically opposite the opening in the detent formed in the outer shell so as to extend into the arcuate recess of the lower shell, said detent and the side surfaces of the lower shell providing mechanical stops to limit rotation of the outer shell relative to the inner shell.

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