

Aug. 18, 1970

K. J. PARKS

3,524,566

STRAW SLOT FOR CONTAINER CLOSURE

Filed Aug. 12, 1968

Fig. 1

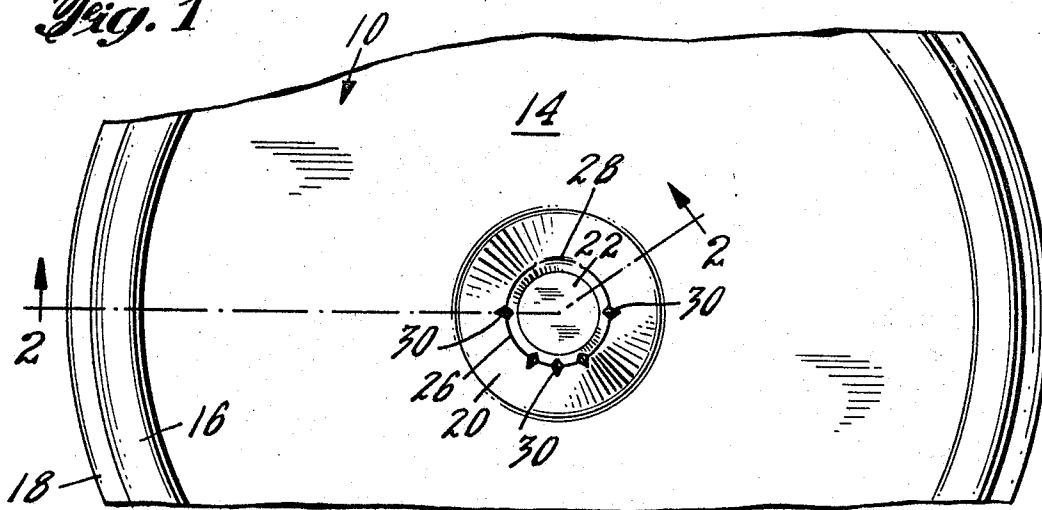


Fig. 2

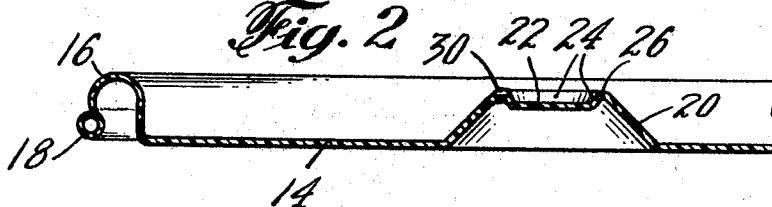


Fig. 3

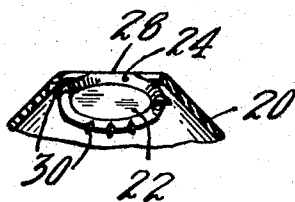


Fig. 5A

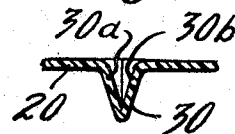


Fig. 4

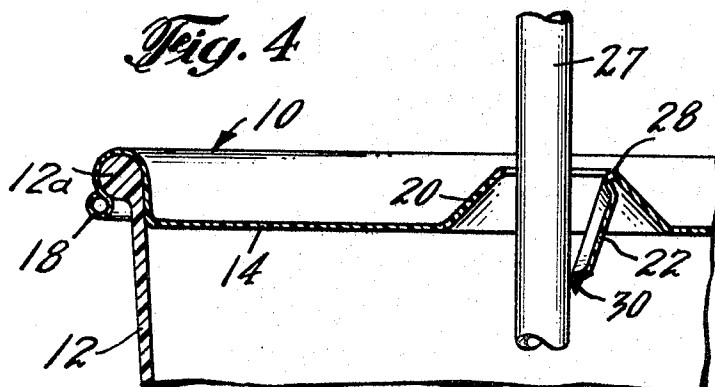


Fig. 5B

INVENTOR.
KENNETH JAY PARKS
BY
Leonard P. Kohan
ATTORNEY

1

3,524,566

STRAW SLOT FOR CONTAINER CLOSURE

Kenneth Jay Parks, Ringwood, N.J., assignor to American Can Company, a corporation of New Jersey

Filed Aug. 12, 1968, Ser. No. 751,987

Int. Cl. B65d 17/00

U.S. Cl. 220—27

4 Claims

ABSTRACT OF THE DISCLOSURE

A drinking container lid designed to be penetrated through pressure applied by a straw. The area on the lid against which the end of the drinking straw is pressed, is outlined by a scored line which terminates at both ends in a relatively narrow unscored portion. The latter serves as a hinge for the outlined area or flap when the score is severed. Minute unscored sections interrupt the continuity of the scored line, and are distributed along the path defined by the line. The flap is situated on a dome-shaped portion projecting above the lid of the container. The flap is recessed below the top edge of the dome-shaped portion to serve as a guide to the user in applying the end of the straw to the flap held in closed or sealed position by the score.

BACKGROUND OF THE INVENTION

In the manufacture of disposable drinking cups, it has been found advantageous to provide the lid of the drinking cup with a scored portion through which a straw may be pushed in order to gain access to the contents of the cup. In such a design, the scored flap serves to seal the lid before usage, and then offers the user a simple method through which he may drink from the cup with a straw without having to remove the entire lid. The requirement to remove the lid, before access to the contents of the drinking cup may be obtained, is often a disadvantage from the viewpoint of the user. Thus, many users find that in attempts to remove the lid from the rim of the drinking cup, they often spill portions of the contents from the cup. Accordingly, it is desirable to provide the lid with the feature in which the user is only required to push the straw through a predetermined scored area of the lid. By scoring the area through which the straw is to be pushed, only a relatively small amount of pressure or force need be applied to the straw in order to accomplish penetration into the cup. At the same time, the score serves to seal effectively the lid, so that when the latter is secured to the top rim of the drinking cup, the contents are fully protected from the exterior environment.

In producing the score, during the manufacturing process, it has been found that more consistent and reliable manufacture may be realized if a plurality of relatively narrow unscored segments or sections were left along the scored line defining the area against which the straw is to be placed for entering the cup. These relatively narrow unscored portions are in addition to one unscored section interrupting the score line, which serves as a hinge for the area of the lid severed after the straw has been pushed through the lid. This hinge portion of the severed area serves to prevent the latter from dropping into the contents of the cup after being thus severed. The relatively narrow unscored segments provided in addition to the unscored hinge, serve the function of permitting the score to be located more accurately and consistently during manufacture, and thereby simplify considerably the manufacturing process of the lid. At the same time, the relatively narrow unscored portions or segments along the scored line also serve as a source of reinforcement of the area enclosed by the scored line which functions as a flap suspended by the unscored hinge portion after severance.

2

Such reinforcements, although not the primary purpose of the relatively narrow unscored segments, serve to assure complete closure of the lid before usage, without detracting from the ease with which the scored area may be severed.

SUMMARY OF THE INVENTION

A container closure or lid for drinking cups is provided with a scored area through which a straw may be pressed to gain access to the contents of the container. The lid is secured to the top of the rim. In the vicinity of the center of the lid, a circular segment is scored against which the straw is to be pressed. The segment has an unscored portion which serves as a hinge for preventing the scored segment from dropping into the contents of the cup after the scored segment has been severed through pressure from the straw. The scored area is in the form of a hinged flap which is sealed to the remainder of the lid until severed by the user in forcing the straw into the cup. A plurality of relatively narrow unscored portions are distributed along the path defined by the scored line. These unscored portions interrupt the continuity of the scored line and facilitate simplified manufacture of the lid, as well as reinforcement of the flap before severance. The scored flap is situated on a dome-shaped portion of the lid at the center. The flap is recessed to serve as a guide for the end of the straw and locating the latter firmly in place for forcing through the flap. The lid may be made of polystyrene or other suitable material used in the manufacture of drinking cups.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a top view of the lid and shows the arrangement of the unscored portions along the scored path of the hinged flap to be severed by the straw, in accordance with the present invention;

FIG. 2 is a cross-sectional sideview taken along line 2—2 in FIG. 1, and shows the construction of the dome-shaped portion of the lid with the unsevered hinged flap;

FIG. 3 is a partial cross-sectional view of the dome-shaped portion of the lid, and shows the condition of the hinged flap after severance;

FIG. 4 is a cross-sectional elevational view taken along a diameter of the lid, and shows the assembly of the lid to the drinking cup and the penetration of the straw through the hinged flap;

FIG. 5 is a cross-sectional view through any one of the unscored portions along the edge of the flap, and shows two different embodiments for the design of these unscored sections.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to the drawing, a lid 10 serves as a closure for a drinking cup 12 made of polystyrene or other suitable material. The drinking cup 12 may contain any type of drinking fluid. However, the drinking cup will generally contain cold fluids suitable for drinking with a straw.

The lid 10 includes a horizontal wall 14 and a U-shaped rim 16 adjoining the horizontal wall. The top portion 12a of the drinking cup is admitted into the U-shaped portion 16 for purposes of sealing the lid onto the top of the drinking cup. The U-shaped portion 16 terminates in a curled edge 18 so that the edge of the lid is comfortable to the touch. It is to be noted that the U-shaped portion 16 and the curled portion 18 are shown in the drawing only for purposes of providing an example by which the lid may be sealed onto the drinking cup. Any number of different rim-shaped portions of a lid, as known in the art, may be used equally well in conjunction with the present invention.

Near the center of the lid 10, a sloping wall 20 adjoins

3

the horizontal wall 14. The wall 20 surrounds the entire central axis of the lid 10 and thus forms a dome-shaped portion near the center of the lid. A second horizontal wall 22 substantially smaller than the horizontal wall 14 is linked and suspended from the top edge of the wall 20, by the transition wall 24. The horizontal wall 22 lies below the top surface of the dome-shaped wall 20. The wall 24 may have a sloping character or may be substantially vertical in connecting the top edge or surface of the dome-shaped wall 20 to the horizontal wall 22. The horizontal wall 22 cooperates with the transition wall 24 in forming a guide for a straw 27 when the latter is pushed against the wall 22 for the purpose of being forced into the drinking cup. Thus, the top surface of the wall 22 in cooperation with the exterior surface of the wall 24, forms a recessed or depressed area against which the end of the straw 27 may be placed in a guiding manner.

In the vicinity of the top of the dome-shaped wall 20 and the transition wall 24, a score 26 is impressed. The score 26 does not extend entirely around the top of the dome-shaped wall 20. An unscored portion 28 remains to serve as a hinge for the horizontal wall portion 22. The score 26 reduces considerably the amount of force required by the straw to be exerted against the horizontal wall 22, so that the end of the straw may be admitted into the interior of the drinking cup. While thus simplifying the penetration procedure for the straw in entering the drinking cup, the score 26, at the same time, serves to seal the lid until it is to be used.

When the score 26 has once been severed by the straw 27, the horizontal wall 22 becomes a flap hinged to the dome-shaped wall 20 by means of the unscored portion or hinge 28. The relationship of the flap 22 with respect to the straw 27 after the latter has been pushed through the lid and into the drinking cup, is shown in FIG. 4. By leaving a portion of the flap 22 unscored along an area determined by the portion 28, the flap 22 is prevented from dropping into the contents of the drinking cup after the straw has been pushed through the wall 22 and into the interior of the cup.

In the manufacture of the lid 10, it has been found that the scoring procedure is greatly simplified if a plurality of unscored sections or segments 30 are left along the scored line 26. Thus, instead of a continuous score 26 around the top of the dome-shaped wall 20, leaving only an unscored portion 28, additional unscored segments 30 are provided. These unscored segments or portions 30 are substantially narrower in width than the unscored portion 28. Aside from simplifying the manufacturing procedure of the score 26, these unscored portions 30 also serve to reinforce the scored flap 22 prior to usage.

The unscored portions 30 may be in the form of flat sections or segments lying in the plane of the top surface of the dome-shaped wall 20. In this design, the top surface of the wall 20 is a continuous plane surface containing a score 26 interrupted by the unscored segments 30 and the portion 28. In another design of the unscored segments 30, the latter may be shaped in the form of an indentation or notch as shown in FIG. 5a. In such a design corresponding to FIG. 5a, the unscored portion or segment 30 does not, therefore, lie in the same plane as the remainder of the scored surface at the top of the dome-shaped wall 20. In a further design of the unscored sections or segments 30, the latter are shaped in the form of projections as shown in FIG. 5b. Thus, whereas the design of FIG. 5a shows a concave surface when viewed from the top, the projection construction of FIG. 5b reveals a convex surface. The indentation or projection of the unscored portion 30 shown in FIGS. 5a and 5b respectively, may have well-defined sharp edges or may be, on the other hand, well-rounded at the surface intersections. Thus, the surfaces 30a and 30b shown in FIG. 5a, may meet so that their intersection is a sharp line. At the same time, the design may be such that the intersection of the wall surfaces 30a and 30b is a somewhat

4

rounded portion as shown in FIG. 5a. The representation of the unscored portions 30 in FIG. 1, indicates the design in which the surfaces meet in well-defined edges or lines.

The designs of FIGS. 5a and 5b provide increased strength characteristics of the unscored portions 30. Thus, the indentations of projections as shown in FIG. 5, have the characteristics of ribs, and thus contribute materially to the strength of the unscored portion. From the viewpoint of the user, these unscored portions 30, when designed in the form of FIG. 5, may be considered to tack the flap 22 in place, and assure a complete seal of the lid until the user has forced the straw through the lid and into the interior of the drinking cup. When the unscored portions 30 are used for reinforcements, in this manner, it may be desirable to distribute them in a nonuniform manner about the circumference of the scored portion of the flap. Thus, maximum reinforcement characteristics may be realized by locating the unscored sections or portions 30 as remotely as possible from the hinge section 28. This same principle also applies for locating most accurately the score 26 and hence the flap 22. Accordingly, through the application of the unscored portions 30, the score 26 may be produced with greater consistency and accuracy, and the flap may be more uniformly located. While the unscored segments 30 may be located uniformly about the score 26, advantages may be realized from the viewpoint of strength and located accuracy by providing a larger number of such unscored segments along the remotely located portion of the score 26, than the portion which is closer to the hinge 28. As shown in FIG. 1, the segments 30 are located at least 90° away from the center of the hinge 28 along the score 26.

In the use of the lid 10, the latter is secured to the top rim of the drinking cup after being filled with liquid. When the lid 10 has been secured to the drinking cup 12, in this manner, the contents of the cup are entirely sealed from the exterior of the cup. When the user wishes to drink the contents of the cup with the straw, he brings the end of the straw 27 against the central portion of the lid 10. The end of the straw is directly guided against the top surface of the flap or horizontal wall portion 22, by being recessed through the wall 24. When the user applies pressure to the straw in the direction tending to push the straw 27 into the interior of the drinking cup, the flap 22 is readily severed from the dome-shaped wall 20, as a result of the score 26. The flap, however, does not drop into the contents of the cup because it is hinged at the portion 28.

The severance of the unscored portions 30 may be such that the section remaining attached to the dome portion 20 contains a small cutout of the flap 22. In other cases, the reverse situation may occur in which the flap may possess an extended portion fractured from the dome portion 20. In still other cases, the fracture may be entirely a clean-cut co-incident with the score 26 if extended through the segment 30. It is quite possible in severing the flap from the dome 20, in practice, that all three cases prevail at different segments 30 distributed along the top of the dome. The type of fracture that may occur in a segment 30 is immaterial to the usage of the lid. The type of fracture is determined through a number of unpredictable factors including the immediate characteristics of the material in the vicinity of the segment 30, as well as the placement of the straw against the flap by the user. FIG. 3 illustrates the condition of the flap 22, after it has been severed from the dome portion 20.

It is thought that the invention and many of this attendant advantages will be understood from the foregoing description and it will be apparent that various changes may be made in the form, construction, and arrangement of parts without departing from the spirit and scope of the invention or sacrificing all of its material advantages, the form hereinbefore described being merely a preferred embodiment thereof.

5

What I claim is:

1. A thermoplastic closure lid for a container cup, wherein said closure has a hinged flap therein firmly attached to said lid at a plurality of points about its periphery such that said flap may be opened to admit a drinking straw into the interior of said container when said straw is manually pressed against said flap, comprising:

a horizontal wall surrounded by means adapted to attach said lid onto said container cup;

a dome shaped portion projecting upwardly from said horizontal wall;

a flap defined by a peripheral score forming the center of said dome shaped portion, said flap being substantially smaller than said horizontal wall;

and a hinge and a plurality of segments connecting said flap to said dome shaped portion, said segments being in the form of indentations that lie outside the plane of said flap, such shape tending to reinforce and strengthen said segments, and being substantially narrower in width than said hinge such that said segments fracture when said straw is manually pressed against said flap and said flap pivots about said hinge to admit said straw into said container.

2. The closure lid of claim 1 wherein a transition wall

6

is located between the wall of said dome shaped portion and score such that said transition wall forms a guide for said straw when said straw is pressed against said flap.

3. The closure of claim 1 wherein said segments are located at least 90° away from the center of said hinge along said score.

4. The closure lid of claim 1 wherein said flap lies in a plane substantially parallel to and spaced above said horizontal wall.

References Cited

UNITED STATES PATENTS

1,056,914	3/1913	Lang	220—27
1,296,341	3/1919	Towle.	
3,048,317	8/1962	Cochrane et al.	
3,206,059	9/1965	Fead et al.	
3,243,075	3/1966	Reinke	220—42 XR
3,355,058	11/1967	Asbury	220—27 XR

RAPHAEL H. SCHWARTZ, Primary Examiner

U.S. Cl. X.R.

220—90.2; 229—7