June 30, 1936. R. L. ALLISON 2,045,746

PAPER DRINKING CUP

Filed July 13, 1934

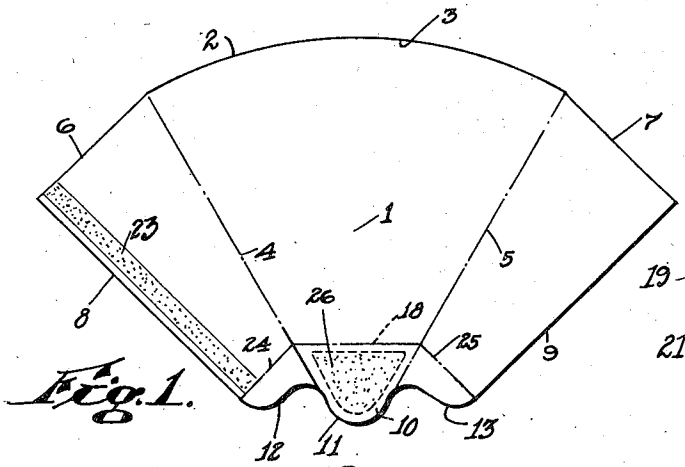


Fig. 1.

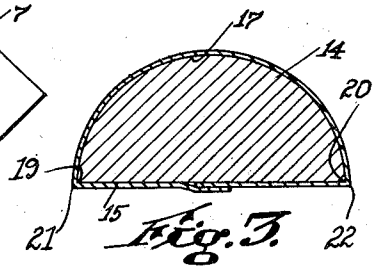


Fig. 3.

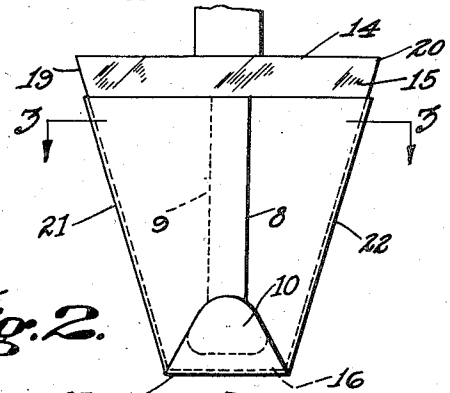


Fig. 2.

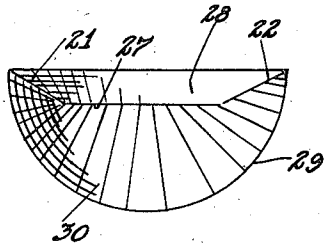


Fig. 4.

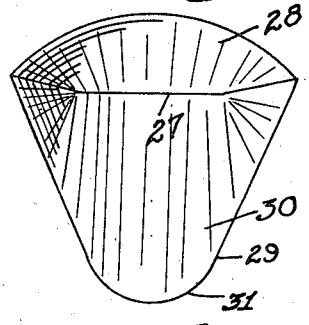


Fig. 6.

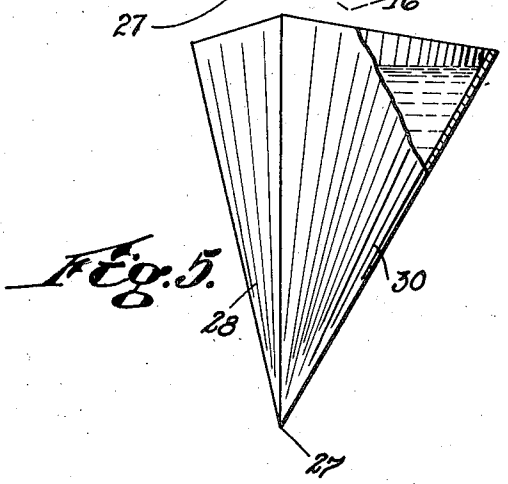


Fig. 5.

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PAPER DRINKING CUP

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5 Claims. (Cl. 229—1.5)

The present invention relates to paper drinking cups of the open mouthed type, which are adapted to be nested and stacked in a container and to be withdrawn singly therefrom as they are required for use.

Existing cups of this character, as disclosed for example in Dickerson Reissue Patent No. 17,553 dated January 7, 1930, have substantially symmetrical circular or elliptical mouth openings, with walls entirely free from creases, and are formed by rolling a sector-shaped blank on a rounded wedge-shaped mandrel with opposite edges of the blank overlapping to form a longitudinal seam in the cup body. While a cup of the Dickerson type is entirely satisfactory in use, difficulties have been encountered in obtaining a perfect seal along its longitudinal body seam owing to the rounded mandrel surface against which the seam is pressed. Accordingly, one of the objects of the present invention is to provide a modified form of open mouthed cup which provides a substantially flat portion, so that in the formation thereof, the overlapping edges of the blank may be pressed against a flat mandrel surface, with uniform pressure, to obtain a perfect seal along the longitudinal seam and at the folded bottom.

Other objects of the invention are to provide a cup, which when held naturally by the user, presents to the user's mouth a relatively sharp curve providing an easy pouring lip, thereby eliminating to a large extent the possibility of spilling the contents which is present in a cup of the Dickerson type, when full, due to the tendency of the open mouth to present a relatively flat curve to the user.

The above and other objects of the invention will hereinafter appear from the following description taken in connection with the accompanying drawing, in which:—

Fig. 1 is a plan view of a blank from which the cup is formed.

Fig. 2 is a view in elevation of a completed cup, after its formation on a suitable mandrel.

Fig. 3 is a horizontal sectional view along the line 3, 3 of Fig. 2, looking in the direction of the arrows.

Fig. 4 is a plan view of a completed cup removed from the mandrel.

Fig. 5 is a view in side elevation illustrating the distension of the cup when filled with a liquid.

Fig. 6 is a plan view of the cup of Fig. 5.

Like reference characters refer to like parts in the different figures.

Referring first to Fig. 1, a blank 1 from which a cup is formed provides an outer edge 2, the central portion 3 of which is curved. The curved edge portion 3 terminates where creases, subsequently formed in the blank when folded, intersect the edge 2, the location of these creases being indicated on the blank by dot and dash lines 4 and 5. Straight portions 6 and 7 of the outer edge 2 on opposite sides of the curved central portion 3 are substantially perpendicular to the side edges 8 and 9 of the blank, which edges 8 and 9 are in turn substantially radial with respect to the center of curvature of portion 3. The inner edge of the blank connecting the radial edges 8 and 9 provides a centrally located tab 10 having a curved outer edge 11 merging at 12 and 13 with the edges 8 and 9.

For the purpose of forming a cup in accordance with the invention, a mandrel 14 is provided which, as shown in Figs. 2 and 3, presents a flat surface 15 substantially trapezoidal in form, with its lower straight edge 16 determining the width of the bottom of the cup to be formed from the blank 1. The mandrel 14 also provides a curved surface 17 opposite to the flat surface 15, the horizontal cross section of the mandrel being substantially semi-circular or semi-elliptical, as shown in Fig. 3.

In the formation of a cup, the blank 1 and mandrel 14 are relatively positioned, with the bottom edge 16 of the mandrel engaging that portion of the blank which latter becomes the straight line bottom, as indicated by the dot and dash line 18 in Fig. 1. With the mandrel so located, the blank is curled around the curved surface 17 of the mandrel and as the opposite edges 8 and 9 of said blank are brought into overlapping relation on the flat surface 15, as indicated in Fig. 2, the sharp corners 19 and 20 of the mandrel form creases 21 and 22 in the cup body along the lines 4 and 5 of the blank. The overlapping edges 8 and 9 are secured together by adhesive 23 applied to the blank, and the portion of the blank extending beyond the bottom edge of the mandrel is then folded over into overlapping engagement with the flat wall of the cup, as indicated in Fig. 2. This bottom fold occurs along the line 18 and the lines 24 and 25 in Fig. 1, and adhesive 26 applied to the tab 10 before, or during the formation of the cup, serves to hold the folded-up tab against the flat wall of the cup. Pressure applied against the flat surface 15 of the mandrel will result in perfect adhesion between the overlapping edges 8 and 9, as well as between the tab 10 and cup wall, it being obvious that a more uniform pressure can be obtained against

a flat surface than against a curved surface. The completed cup may then be removed from the mandrel.

The completed cup, as shown in Fig. 4, provides a straight line bottom edge **27** and a substantially flat wall **28** conforming in shape to the flat side **15** of the mandrel, the wall **28** increasing in width from the edge **27** to the open mouth **29** of the cup. The opposite wall **30**, as a result of the greater amount of material therein between the creases **21** and **22**, as compared to the flat wall **28**, assumes a rounded form substantially corresponding to the curved mandrel surface **17**. Furthermore, the curved wall **30**, as a result of the normal resilience of the paper forming the cup, tends to maintain the wall **28** in a substantially flat condition while the cup is unfilled. Thus a stack of such cups may be received in a container of relatively small cross-sectional area with the flat side of the stack snug against a supporting surface.

When the cup is filled with a liquid, as indicated in Figs. 5 and 6, the pressure of the liquid therein tends to distend both cup walls **28** and **30**, but owing to the greater amount of material in the curved wall **30**, the bowing or bulging of the wall **30** is greater. This increased bulge tends to impart a relatively sharp curvature to the middle of wall **30** to provide a forwardly extending lip **31** which renders the cup very easy to drink from. Since a user normally holds a cup of this type with the bottom edge **27** resting on the inturned little finger and with the flat wall **28** facing the palm of the hand, one of the creases **21** or **22** naturally locates itself in the opening between the thumb and forefinger. Then, when a cup supported in this manner is raised to the mouth, the forwardly bulging lip **31** naturally pours the liquid into the mouth. When the cup is so utilized, the concave upper edge of the distended rear wall **28** naturally avoids the nose of the user, when drinking.

It will be understood that the invention is not limited to the exact manner of forming the cup, or the particular configuration of the blank disclosed herein; the invention residing in the provision of a cup having opposed walls of unequal areas defined between creases so disposed that the cup provides an unsymmetrical open mouth which when the cup is filled, naturally presents a forwardly projecting pouring lip.

I claim,

1. As a new article of manufacture, a paper cup having a normally open form with its body extending from an open mouth to a straight line bottom closure of material length, the body of the cup having opposed creases therein extending from each end of the bottom closure to the mouth of the cup, with said creases non-uniformly spaced apart to define opposed walls of unequal area.

2. As a new article of manufacture, a paper cup having a normally open form, with its body extending from an open mouth to a straight line bottom closure of material length, the body of the cup having opposed creases therein extending from each end of the bottom closure to the mouth of the cup, with said creases non-uniformly spaced apart to define opposed walls of unequal area, the larger wall being rounded and serving by its natural curvature to retain the smaller wall in a substantially flat condition when the cup is empty.

3. As a new article of manufacture, a paper cup formed from a substantially sector-shaped blank, the opposite edges of which are secured together in forming the cup, said opposite edges overlapping and forming a flat seam, said cup having a normally open form with its body extending from an open mouth to a straight line bottom closure of material length, the body of the cup having opposed creases therein extending from each end of the bottom edge to the mouth of the cup, with said creases non-uniformly spaced apart to define opposed walls of unequal area, with the seam formed by the line of attachment of opposite edges of the cup blank located entirely within the smaller wall and spaced from the creases.

4. As a new article of manufacture, a paper formed from a substantially sector-shaped blank, the opposite edges of which are secured together in forming the cup, said cup having a normally open form, with its body extending from an open mouth to a straight line bottom edge of material length, the body of the cup having opposed creases therein extending from each end of the bottom edge to the mouth of the cup, with said creases non-uniformly spaced apart to define opposed walls of unequal area, the larger wall being rounded and serving by its natural curvature to retain the smaller wall in a substantially flat condition when the cup is empty, with the line of attachment of the opposite edges of the cup blank located entirely within the smaller wall and spaced from the side creases.

5. As a new article of manufacture, a paper cup having a normally open form tapering from an open mouth to a straight line bottom closure of less length than the normal distance across the mouth of a cup to provide for contact nesting of a plurality of cups one within the other, the cup having at least one flat seam in the body thereof extending from the bottom closure to the open mouth of the cup and resulting from the securing of the overlapping edges of the blank together in the formation of the cup, said cup body having creases therein extending from opposite ends of the bottom closure to the open mouth and non-uniformly spaced apart to define opposite walls of unequal area, the larger wall serving by its natural curvature to retain the smaller wall in substantially flat condition when the cup is empty, with the flat seam located entirely in the smaller wall between and spaced from the opposite creases.

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