

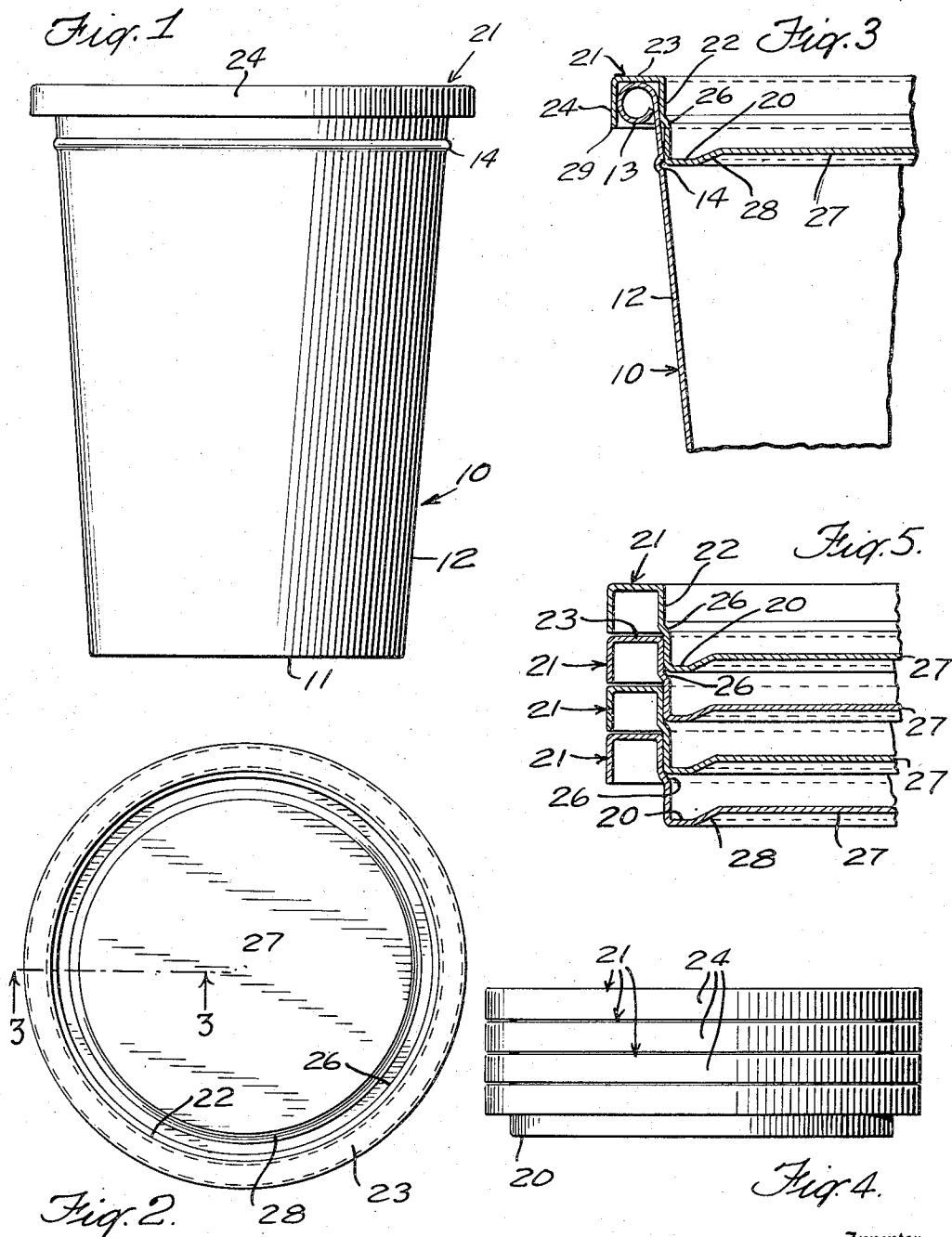
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CAP FOR PAPER CUPS

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CAP FOR PAPER CUPS

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3 Claims. (Cl. 229—5.5)

This invention relates to caps for paper cups or the like having a flared inner surface, a disc seating groove, and an outer top bead, and has for an object to provide an improved cap which seats firmly within the disc seating groove and grips the top of the cup and the bead to form a tight closure.

Another object is to provide a novel and improved cap of the above type having an outer skirt extending over the cup bead.

Another object is to provide a novel and improved cap of the above type having a rim which is adapted to be nested for stacking.

Other objects and advantages will be apparent as the invention is more fully disclosed.

This application is a continuation-in-part of my co-pending application Serial No. 288,451, filed May 17, 1952, now abandoned, for Caps for Paper Cups.

In accordance with this invention the cap is formed with a central diaphragm which is dimensioned to seat against the inner surface of the cup, preferably in the disc seating groove thereof. The diaphragm is bowed or dished to provide greater resilience for sealing and an improved grip on the cup wall. An upstanding rim surrounds the diaphragm. This rim is generally U-shaped in cross section having an inner wall to seat within the cup, a top wall extending across the top of the cup bead, and an outer skirt extending downwardly over the outer periphery of the bead. The skirt is shorter than the inner wall which is formed with an annular offset portion providing a shoulder at an intermediate part of the wall about opposite the end of the skirt and adapted to engage and grip the inner surface of the cup at that point. The diameter of the inner wall below the shoulder is less than the diameter above the shoulder by an amount which conforms to the flare of the cup and also which permits caps to be partially nested for stacking. The space required for each cap in the stack is thus determined by the height of the skirts.

Although the novel features of the invention are pointed out in the claims, the nature of the invention will be better understood by referring to the following description, taken in connection with the accompanying drawing in which a specific embodiment has been set forth for purposes of illustration.

In the drawing:

Fig. 1 is an elevation of a standard paper cup with the present cap in place;

Fig. 2 is a top plan view thereof;

Fig. 3 is a partial vertical section taken on the line 3—3 of Fig. 2;

Fig. 4 is an elevation of a stack of caps embodying the invention; and

Fig. 5 is a partial vertical section similar to Fig. 3 but showing the structure of the nested caps.

Referring to the drawing more in detail the invention is shown as applied to a standard paper cup 10 having a bottom wall 11 and a slightly flared side wall 12 formed at the top with a tightly rolled bead 13 which reinforces the top and also improves the appearance of the cup, and having an inner disc seating groove 14 near the top thereof.

The cap is formed with an internal diaphragm 20 seating in the groove 14 and against the inner surface of the cup wall 12, and a U-shaped rim 21 composed of an inner wall 22, a top wall 23, and an outer skirt 24. The inner wall 22 is offset at a point about opposite the bottom of the skirt 24 to form a shoulder 26. The

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depth of the shoulder 26 is such that the outer surface of the wall 22 at the shoulder 26 engages and fits tightly against the inner surface of the cup at that point thereby providing two gripping areas for the wall 22, one at the bottom of the wall 22 opposite the diaphragm 20 where it engages the shoulder formed by the groove 14, and the other at the shoulder 26. The cap thus grips the cup tightly to form a secure closure. In cups in which the groove 14 is omitted the cap will grip the inner surface of the wall itself and form a tight closure although the grip is improved by the groove 14.

The diaphragm 20 is formed with a dished or offset central part 27 and an inclined annular portion 28 near the outer periphery which increases the resilience of the cap for seating in the groove 14 and also improves the grip of the cap on the cup wall because the cap can be made slightly larger in diameter than the cup and, when forced into place, the annular groove is deflected slightly and tends to return to its original position. In addition, when used with a hot drink, the liquid cools and forms a vacuum in the cup which tends to pull the diaphragm downward. When this occurs the dished diaphragm causes the seating edge of the cap to grip the cup more firmly.

The top wall 23 provides a smooth top surface for the cap and the skirt 24 provides a smooth outer surface as indicated in Fig. 1. The skirt 24 extends downwardly from the top wall 23 to a point to cover and conceal the cup bead 13. The width of the top wall 23 is such that the bead 13 is gripped between the skirt 24 and the inner wall 22 of the cap. The shoulder 26, engaging the cup just below the center of the bead 13, serves to hold the bead in firm contact with the skirt 24. The shoulder 26 also serves as a second seal to prevent escape of any liquid or other content of the cup that may seep past the seal provided at the bottom of the wall 22 between the wall and the cup at that point.

The cap is preferably made of paper, which is treated and formed in a forming press as described in the Martin Patent No. 2,221,197. The cap thus formed is characterized by a skived smooth skirt having a compacted smooth bottom edge 29. The wall 24 and shoulder 26 are also smooth and compacted under pressure to provide a stiff, rigid structure.

Figs. 4 and 5 illustrate the manner in which the above caps nest for stacking. When nested the lower portion of the wall 22 of one cap fits within the larger upper part of the wall 22 of the next lower cap with the diaphragm 20 of one cap resting on the shoulder 26 of the next cap. The bottom edge 29 of the skirt 24 of one cap rests upon the top wall 23 of the next cap. Hence the nested height of each cap is determined by the width of the skirt and the location of the shoulder 26. Nested caps require less shipping space and also reinforce each other so as to prevent distortion or damage during shipping and handling.

While the above described cap is particularly adapted to use with a paper container it is obvious that it can be used with other containers having a top bead and that the cap may be made of other materials, such as plastic.

What is claimed is:

1. A stack of caps for containers, said caps each comprising a diaphragm to close the container and an annular U-shaped rim surrounding said diaphragm and formed by an inner wall extending upwardly from said diaphragm, a horizontal top wall and an outer skirt, said inner cap wall being of substantially greater axial length than said skirt and being offset to form an inner shoulder substantially opposite the bottom of said skirt, said caps being stacked and nested with the diaphragm of an upper cap resting on the shoulder of the cap below and the bottom of the skirt of the upper cap resting upon the top of said horizontal top wall of the rim of the cap below.

2. In combination, a paper cup having flaring side walls terminating in a rolled outer bead at the top and having a disc seating groove near the top thereof, a cap having a diaphragm fitting in said flaring side cup wall and seating said disc seating groove and an annular U-shaped rim surrounding said diaphragm and formed by

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an inner wall extending upwardly from said diaphragm, a horizontal top wall extending across said bead and an outer skirt extending over the outer surface of said bead, said inner cap wall being of substantially greater axial length than said skirt and being offset to form an inner shoulder substantially opposite the bottom of said skirt, said shoulder being of a width such that the outer surface of said inner cap wall contacts the flared inner surface of said cup at said shoulder, said top wall being so dimensioned that the cup bead is gripped between said shoulder and said skirt.

3. The combination set forth in claim 2, in which said diaphragm is dished upwardly to form an annular inclined portion adapted to be deflected when said cap is seated and tending to return to its original position to thereby exert gripping pressure against the inner wall of the cup.

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