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H. A. HOLZWARTH ETAL

3,207,461

CUP HOLDER

Filed May 10, 1963

2 Sheets-Sheet 1

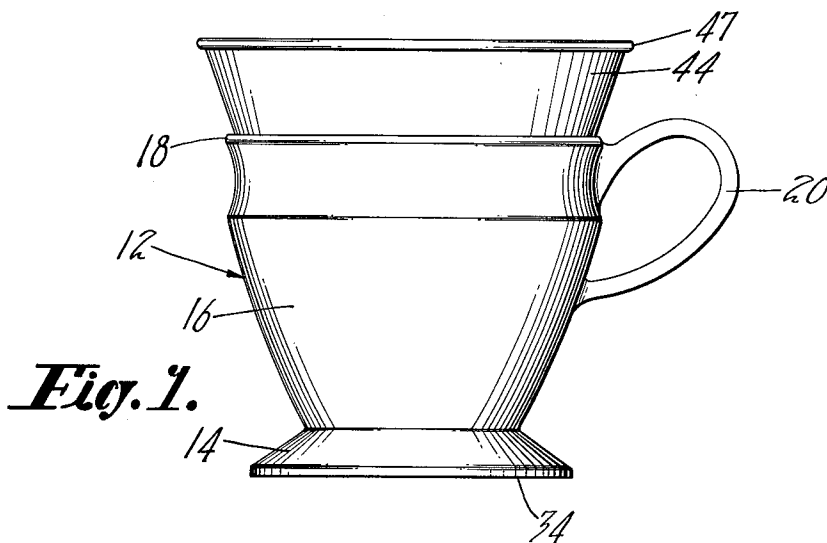


Fig. 2.

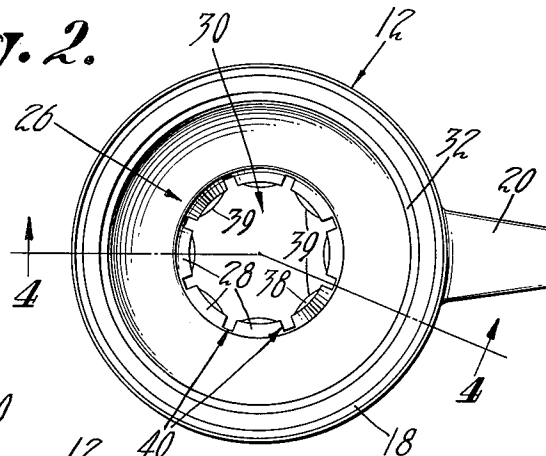
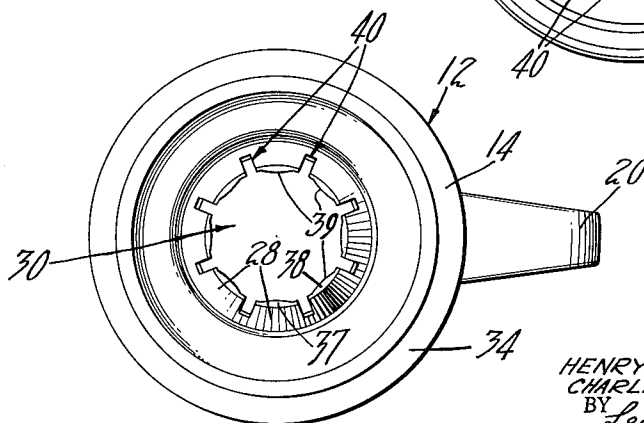


Fig. 3.



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Fig. 4.

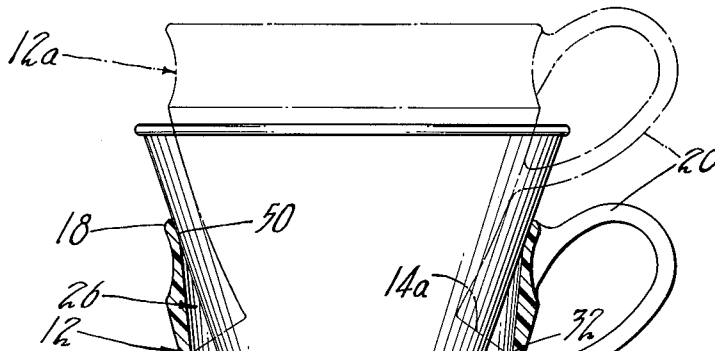


Fig. 7.

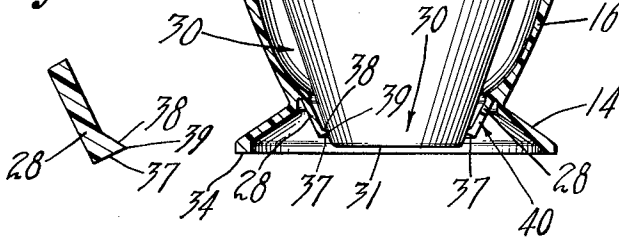


Fig. 5.

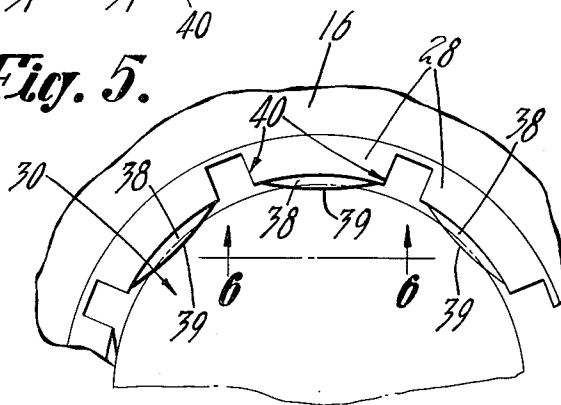


Fig. 8.

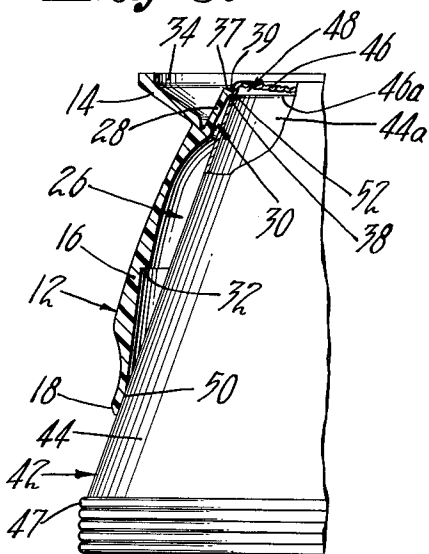
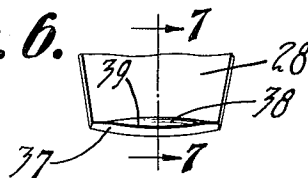


Fig. 6.



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CUP HOLDER

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5 Claims. (Cl. 248—145.3)

This invention relates to a holder for cups and more particularly to a one-piece nestable holder for disposable flexible walled cups, generally made of paper, which are commonly used in the dispensing of potable liquids, ice cream and the like.

Cup holders of the variety contemplated in this invention are of the pick-up type. In this type of cup holder, cup engaging or gripping means are provided within the holder which automatically engage a lower portion of the cup wall when pressure is exerted upon the holder as it is forced downwardly over an inverted cup. Generally the cups are nestably stacked in an inverted position and the holder is forced downwardly on the stack until the top-most cup is gripped by the holder. Upon being lifted from the stack, the holder removes only a single cup.

Various difficulties have been encountered in these types of cup holders. One of the problems has been the tendency of the cup holder to engage more than one cup from the stack, thus requiring the manual removal of the excess cup or cups and obviating the distinct sanitary advantage present when the disposable cups are not handled individually prior to use.

Another difficulty has been insuring that the cup does not separate from the holder when the holder is tipped while the contents of the cup are consumed. This has heretofore been partially solved by conforming substantially the entire side wall of the cup to the inside wall of the container to maximize the frictional forces for holding the filled cup within the holder. Of course, this in turn requires that the holders have straight side walls and large bases, which does not permit nesting the holders and thus necessitates that the holders be stored individually, thereby taking up considerable room for their storage when not in use.

It is therefore an object of this invention to provide a pick-up holder for disposable resilient walled cups wherein the holder is adapted to remove only the terminal cup from a stack of nested flat-bottomed cups.

A further object is to provide a paper cup pick-up and holder which engages only the wall portion of a flat-bottomed paper cup adjacent the bottom of the cup.

Another object is to provide a cup pick-up and holder which will firmly grip a picked-up cup throughout the use of the cup, but still readily release the cup at the proper time.

Still a further object is to provide a cup pick-up and holder construction which permits easy and stable stacking of a plurality of such holders.

Yet another object is to provide a cup pick-up and holder having a simplified construction and which may be manufactured relatively simply and inexpensively.

Numerous other objects and advantages of the invention will be apparent as it is better understood from the following description, which, taken in connection with the accompanying drawings, discloses a preferred embodiment thereof.

The above objects are accomplished by providing a unitary holder for individual flat bottomed-frusto conical disposable resilient walled cups, the holder having a base and a tapered tubular body integral with the base and adapted to receive and retain a disposable cup. The lower inner surface of the holder body terminates in a plurality of integral resilient cup gripping elements extending down-

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wardly and radially inwardly, each of the elements ending in an inwardly directed cup engaging edge. The gripping elements are adapted to cooperatively compressively engage the wall of a cup adjacent its bottom and remove the terminal cup from a nested stack of cups when the cup holder is pressed against the terminal cup of the stack of cups.

Referring to the drawings:

FIG. 1 is an elevational view of a cup holder having a cup therein;

FIG. 2 is a plan view of the cup holder;

FIG. 3 is a bottom view of the cup holder;

FIG. 4 is an elevational view partly in section showing a cup retained in the holder and, in phantom, another holder in stacked position;

FIG. 5 is an enlarged fragmentary plan view of the cup-engaging elements;

FIG. 6 is an enlarged fragmentary view of one of the cup-engaging elements taken substantially along line 6—6 of FIG. 5;

FIG. 7 is an enlarged fragmentary sectional view taken substantially along line 7—7 in FIG. 6; and

FIG. 8 is a fragmentary sectional view of the cup holder in inverted position, showing the cup holder engaging the terminal cup in a stack of inverted nested cups.

As a preferred or exemplary embodiment of the instant invention, FIGS. 1, 2 and 3 illustrate a one-piece, pick-up type cup holder, generally designated 12, comprising a base 14, a truncated substantially ogive shaped tubular body 16 extending upwardly from and integral with the base, a brim 18, and a loop handle 20 integral with and extending outwardly from one side of the body. The body 16 is tapered to hold a container such as a paper cup as will be described more fully hereinafter.

Within the holder 12 is a cup-receiving cavity 26. Near the junction of the base 14 and the cavity 26 is the cup pick-up and retaining means in the form of a plurality of separated arcuate gripping elements or fingers 28 defining a reduced diameter throat 30 in which is seated a cup with its side wall engaged by the retaining means adjacent the cup bottom.

Within the cup-receiving cavity 26 and substantially medially along the interior of the cup holder body 16 is an annular internal shoulder 32 substantially parallel to the bottom 34 of the base 14 and having a diameter slightly larger than the exterior diameter of the holder bottom 34. This shoulder 32 thus provides a seat for the base 14a (FIG. 4) of another cup 12a when it is desired to stack or store a group of holders in a minimum amount of space.

A clearer view of the fingers 28 is illustrated in FIGS. 5, 6 and 7. Each of the fingers 28 is integral with the bottom of the inner face of the body 16. The fingers 28 are wider at their base where they join the body 16, and taper slightly until they terminate in an arcuate face 37. From their base, each finger 28 extends downwardly and radially inwardly into the throat 30 and merges into a tooth 38 ending in a relatively sharp convexly curved gripping edge 39, directed inwardly from the face 37 for engaging a cup.

Angling also slightly upwardly, integral with the face 37, the tooth 38, having a lenticular cross-section, tapers to the sharp edge 39 as it projects radially inwardly and upwardly. The maximum thickness of the tooth 38 as defined along the convex curvature of the edge 39 is substantially greatest at the center and decreases as the edge 39 approaches the extremities of the face 37. As shown in the instant embodiment, the edge 39 does not extend entirely along the face 37, but terminates just short of either end of the face 37.

Each of the fingers 28 is separated from each other by a space 40 so that each finger 28 has a certain degree of resiliency and acts independently of any other finger 28, although each of the fingers is integral with the inner bottom of the cup body 16 surrounding the throat 30. The arcuate configuration of the sharp gripping edges 39 causes each edge to grip the cup in an arcuate line with the lines extending around the periphery of the cup wall closely adjacent its bottom. This coacting of gripping edges provides three major, and somewhat antagonistic, desired results: (1) to quickly, easily and firmly grasp the uppermost cup in an inverted stack thereof; (2) to grasp the uppermost cup only and (3) to quickly and easily release the grasped cup when desired, such as after the cup has been used.

Molding the holder from thermoplastic resin has been found to provide it with proper strength, wear and abrasion resistance, heat and chemical resistance during cleaning and sterilization, and the like, and at the same time provide the necessary resiliency for the cup-gripping action of the fingers 28. Examples of such resins are polypropylene, nylon (polyamides), polyoxymethylene (Delrin) and other similar plastics.

When picking up a single cup from a stack 42 of nested cups, FIG. 8 demonstrates how the fingers 28 coact to engage a terminal cup 44 in the stack 42. The cup 44 is a frusto-conical container having an integral flat flush bottom 46 which has been compressed to its flat, flush configuration during cup manufacture. It is possible, however, to use a two-piece cup, i.e. a separate cup body and bottom, although the unitary cup is preferred since its relatively heavy bottom wall provides a degree of stiffness to the contiguous side wall against which the fingers 28 act.

In the stack 42 the two outermost cup bottoms 46 and 46a are separated by a distance equal to the thickness of the peripheral bead 47 at the mouth of the cup 44. Thus there is a space 48 between the bottoms of the terminal cup 44 and the next cup 44a in the stack 42. It is this spacing that assists in removing only the terminal cup 44 from the stack 42 by the holder 12.

As the inverted holder 12 is forced downwardly over the inverted cup stack 42, the terminal cup 44 slides into the holder cavity 26 until substantially the entire inner surface of the brim 18 of the holder 12 contacts an annular portion of the cup wall 50. Prior to this engagement, the bottom 46 of the cup 44 passes through the throat 30 and past the gripping edges 39. As this occurs the resilient fingers 28 are forced slightly outwardly and the gripping edges 39 dig into and compress the cup 44 along an annular wall portion 52 adjacent the bottom 46. In compressing and engaging sectors along the wall portion 52, the gripping edges 39 also have a tendency to separate the terminal cup 44 from the next cup 44a in the stack 42 by forcing the periphery of the bottom 46a of the cup 44a away from contact with the terminal cup 44.

As the gripping edges 39 compress the cup portion 52 they do not engage the second cup 44a in the stack 42, since the bottom 46a of the next consecutive cup 44a in the stack 42 is separated by the space 48 substantially equal to the thickness of the peripheral bead 47 at the mouth of cup 44. Thus, upon withdrawal of the holder 12 from the stack 42, only the terminal cup 44 is retained within the holder 12.

Upon being picked up off the stack 42 and set upright, the cup 44 rests upon the inner periphery of the holder brim 18 and is securely held within the holder 12 by the holding action of the gripping edges 39 of the fingers 28 in compressing and slightly indenting sectors along the lower wall portion 52 of the cup 44 adjacent the cup bottom 46.

It is thought that the invention and many of its 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 the 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.

We claim:

1. A one-piece synthetic resin holder for a tapered, nestable resilient walled cup, which cup is closed at its smaller end comprising:

a base;

a tapered, tubular body, having an imperforate side wall extending upwardly from said base and adapted to receive and hold said cup; and

a plurality of spaced resilient gripping fingers extending generally downwardly from the inner surface of said body side wall substantially as a continuation thereof; each of said fingers ending in a radially inwardly directed tooth which terminates in a cup-engaging edge;

said edges defining therebetween an aperture of a predetermined size and shape and adapted to cooperatively, compressively engage said cup wall closely adjacent its closed end so as to grip only the terminal cup from a nested stack of cups when said cup holder is pressed against said terminal cup in said stack.

2. The holder of claim 1 wherein said teeth are lenticular in cross-section and taper to a convex-shaped engaging edge as they project inwardly from the end of said fingers.

3. The holder of claim 2 wherein said teeth also project upwardly.

4. The holder of claim 1 wherein an annular shoulder, substantially parallel with the bottom of said holder and having a diameter slightly larger than the exterior diameter of said holder base, lies along a medial portion of the interior of the holder body wall.

5. The holder of claim 1 wherein the lower portion of the holder body is in the shape of a truncated ogive.

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