

[54] **CONTAINER**

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[51] Int. Cl. **B65d 1/02**

[58] Field of Search **215/1 R, 1 C, 31, 215/43 R, 43 A, 9; 53/289, 317, 331.5; D9/72, 101, 102, 47, 48, 49**

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[57]

ABSTRACT

A plastic bottle or like container is provided adjacent an externally threaded discharge nozzle with a longitudinally fluted gripping portion whereby it may be held without substantial deformation during capping in an automatic capping machine.

4 Claims, 3 Drawing Figures

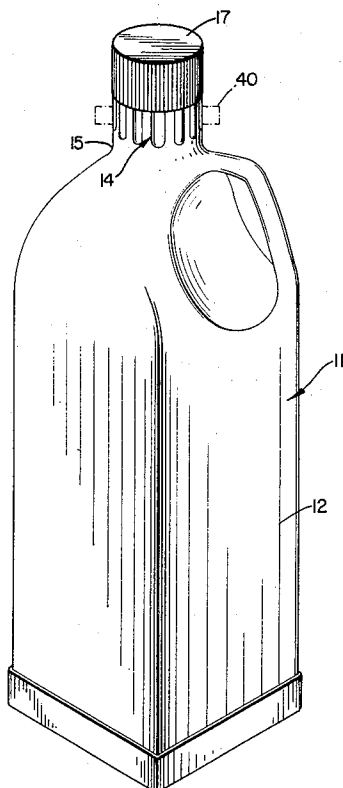


FIG. 1

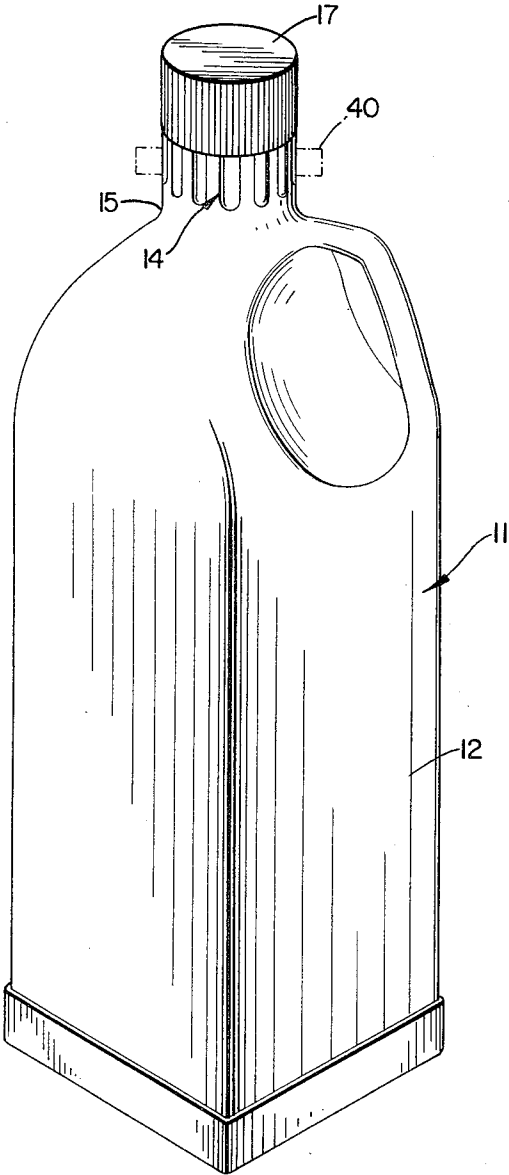
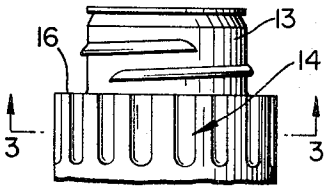


FIG. 2

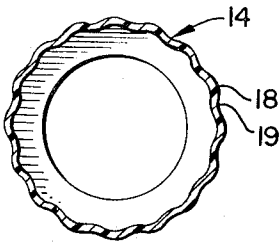


FIG. 3

CONTAINER

This invention relates to the capping of relatively lightweight plastic bottles and like containers in an automatic capping machine, and particularly to container structures providing for efficient and trouble-free holding of the filled container while the closure cap is being attached thereto.

For some time cleaning liquids and the like have been marketed in relatively large plastic bottle or bottle-like containers. These containers are usually formed by blow molding and they have externally threaded discharge nozzles and relatively thin-walled body sides which flex appreciably when squeezed or subjected to force. As a practical matter it is necessary to install the closure caps on the nozzles of these bulky containers after filling in automatic machines. In such automatic capping machines each container is gripped and held against rotation while the closure cap is rotated onto the nozzle.

Problems have arisen in adapting the containers to automatic capping machines. Where the filled container may be gripped at the body sides flexing of the body often results in liquid contents of the body being pumped out through the open nozzle. Attempts to grip the container elsewhere without causing scar or damage to the container surface, which is smooth and slippery, have proved inefficient.

The present invention solves this problem by providing a novel plastic container structure wherein the container is formed intermediate the nozzle and body with a special longitudinally fluted region that permits and provides for positive gripping and holding a filled container without objectionable or substantial wall deformation and which is not subject to scar or defacement even though there might be some slippage while initiating or during the holding operation, and such is the major object of the invention.

Another object of the invention is to provide a plastic bottle or like container having a liquid containing body and a relatively small, externally threaded discharge nozzle, with a longitudinally fluted gripping throat portion adjacent the nozzle, said fluted portion comprising alternate rounded surface ribs and recesses wherein convex smooth surfaces of the ribs merge smoothly into concave smooth surfaces of adjacent recesses. Preferably the ribs and recesses are distributed uniformly entirely around the container with the ribs being of equal height and the same curvature and the recesses being of equal depth and the same curvature.

Further objects will appear as the description proceeds in connection with the appended claims and the annexed drawings wherein:

BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a generally perspective view showing a plastic bottle incorporating the invention in a preferred embodiment;

FIG. 2 is a fragmentary side elevation showing the top portion of the bottle of FIG. 1, the closure cap being removed; and

FIG. 3 is a section substantially on line 3—3 of FIG. 2.

PREFERRED EMBODIMENT

An integral bottle or like container 11 has a bulky body 12 and a relatively small diameter externally

threaded outlet or pouring nozzle 13 at the top. Between the body 12 and nozzle 13 the container is formed adjacent the nozzle with a substantially cylindrical throat portion 14 connecting the body to the nozzle. Throat 14 merges annularly smoothly into the larger lower body as in transition region at 15, and it terminates in a flat transverse ledge 16 on which the closure cap 17 bottoms when screwed onto the container.

Externally container portion 14 is fluted, being formed with a series of parallel convex ribs 18 spaced by a corresponding series of spaced concave recesses 19. As shown in FIG. 2 the ribs and recesses are open at ledge 16 and merge smoothly into the cylindrical body surface above the transition region 15. The ribs and recesses are preferably of the same length. The ribs are of equal height and the recesses of equal depth.

The container 11 is blow molded or similarly formed from a plastic material such as polyethylene and all external surfaces are smooth. It will be noted that the ribs and recesses are continuously smoothly and reversely curved all around portion 14, as shown best in FIG. 3. There are no sharp projections or corners around portion 14. Preferably there are a large number of spaced ribs and recesses, for example a throat of about 1 1/2 inches in diameter having about 18 ribs with a span of about 5/16 inch between rib crests. The recesses are relatively shallow having a depth of about one-sixteenth of an inch below the rib crests. Preferably the container wall thickness is uniform all around the throat portion as shown in FIG. 3.

In the capping machine, the upright filled container 11 moves into a capping station where it enters gripping jaws indicated generally at 40 in FIG. 1, and the cap 17 is fitted onto nozzle 13 and rotated into place. No other detail of the capping machine is disclosed because such is conventional and not part of the present invention.

It has been noted that the flutes at throat portion 14, which providing for efficient and adequate holding of the container when gripped by the jaws 40 to resist turning of the container as the cap is screwed on, provide strength against deformation of the container wall so that the nozzle retains its cylindrical contour to facilitate assembly with the cap. Also, since there are no sharp edges around the exterior of throat portion 14, a certain amount of slippage between the jaws and the container may take place without defacing the container surface, which remains smooth and retains an attractive appearance.

The invention may be embodied in other specific forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

What is claimed and desired to be secured by Letters Patent is:

1. An integral plastic container comprising a body, a relatively small diameter externally threaded discharge nozzle at the top and an annular throat portion adjacent the nozzle between the nozzle and the body, said throat portion being externally longitudinally fluted to provide alternate uniformly spaced rounded surface

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convex ribs separated by concave recesses that smoothly merge, and said throat portion being a substantially cylindrical region of larger diameter than the nozzle and appreciably smaller cross-section than the body and merging smoothly into the body below the lower ends of the ribs and recesses.

2. The container defined in claim 1, wherein there is a upwardly facing flat transverse ledge on said throat at the lower part of said nozzle.

3. The container defined in claim 1, wherein the radial wall thickness of said throat portion is substantially uniform.

4. An integral plastic container comprising a body, a relatively small diameter discharge nozzle at the top and an annular throat portion adjacent the nozzle be-

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tween the nozzle and the body, said throat portion being externally longitudinally fluted to provide alternate rounded surface convex ribs uniformly spaced around said throat portion by concave recesses that smoothly merge, and said throat portion being a substantially cylindrical wall region of larger diameter than the nozzle and appreciably smaller cross-section than the body and merging smoothly into the body below the lower ends of the ribs and recesses, and means providing an upwardly facing annular transverse ledge on said throat portion at the lower part of said nozzle, said recesses being open at their upper ends at said ledge and closed at their lower ends.

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