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C. E. FITZGERALD

3,520,441

CONTAINER

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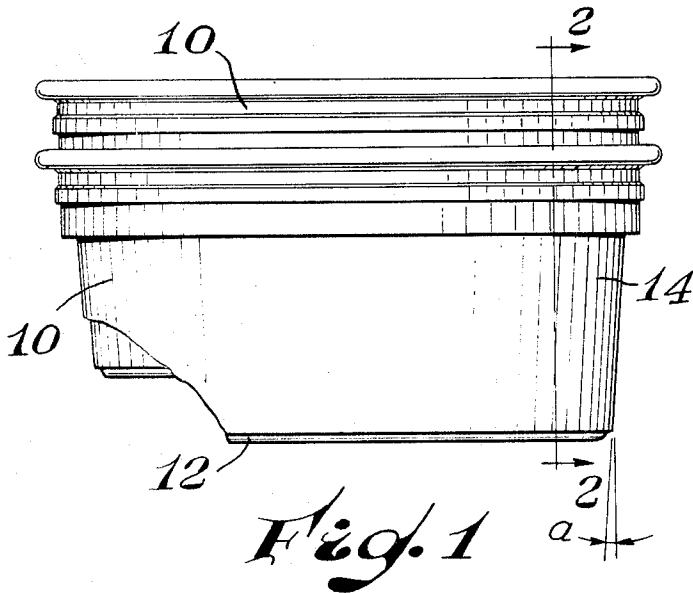


Fig. 1

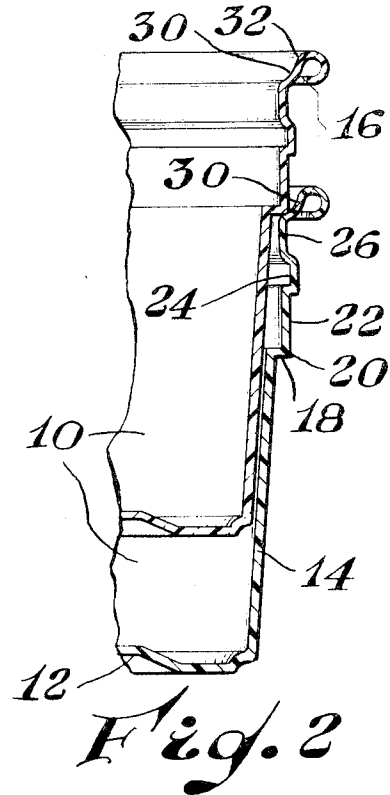


Fig. 2

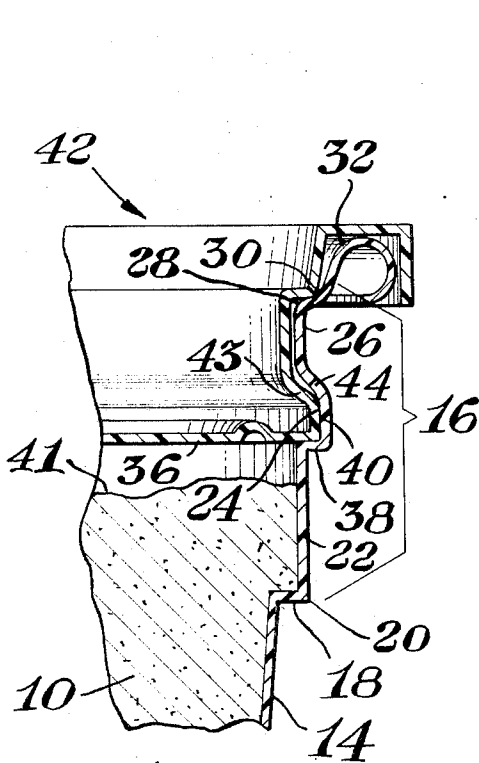


Fig. 3

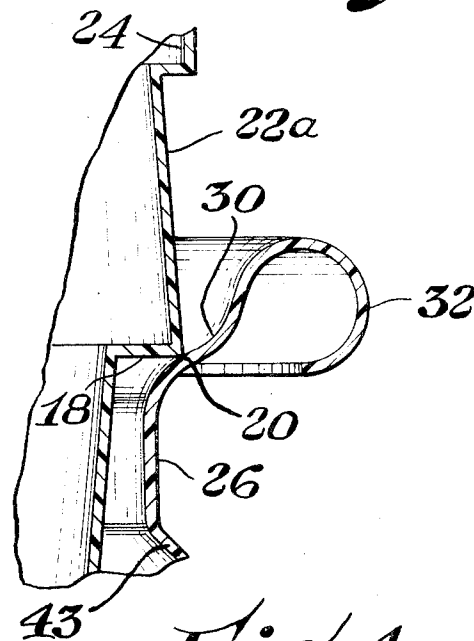


Fig. 4

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CONTAINER

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9 Claims

ABSTRACT OF THE DISCLOSURE

A nestable thin walled container for packaging cottage cheese, salads, ice cream, sherbet and other products. The tub part of the container includes a novel stacking ridge particularly adapted for containers having only a slight side wall taper. The stacking ridge extends both above and below a lid receiving groove in the side wall of the tub whereby a substantially rigid positive stack between a plurality of such tubs when nested is obtained.

DESCRIPTION OF THE INVENTION

This invention relates to nestable thin walled containers, presenting very little side wall taper, such as tubs for packaging cottage cheese, salads, ice cream, sherbets and other products, the tubs of which containers are particularly well adapted to be handled in stacks and dispensed one at a time in commercial filling machines. More particularly, this invention relates to a new container stacking feature wherein a stacking ring extends both above and below the lid receiving groove of the tub to provide a substantially rigid, more positive stacking when such tubs are nested.

While stacking features of the prior art, as best typified by U.S. Pat. No. 3,396,868, for example, have been extremely satisfactory for average and small size containers where the side wall taper has been about seven degrees or more from the vertical, some difficulty results where such stacking concepts are employed in larger containers which have very little side wall taper. In the larger containers very slight side wall tapers are usually employed so that greater quantities of the product can be contained within the smallest practical height of the container. Typically, such containers are often used in packaging 16 ounces of cottage cheese. Because of the slight side wall taper used in these larger containers it has been difficult to prevent jamming or scuffing of side wall printing between nested containers prior to the present invention because when nested too closely side wall interference often occurred.

Accordingly, it is the primary object of the present invention to provide a substantially rigid non-interference positive stack for large containers wherein there is only slight side wall taper to the tubs.

Briefly, the present invention provides an elongated stacking ridge extending both above and below the lid receiving groove of a tub. The upper shoulder of the stacking ridge extends into the relatively rigid rim area of the tub. The lower stacking shoulder is located below the lid receiving groove so as to give the stacking ridge greater vertical height to prevent jamming or scuffing of containers having only slight side wall tapers. The section below the lid receiving groove can be either vertical or back drafted, the draft being either continuous or intermittent, to achieve positive stacking between nested containers. The lid is received in the tub in generally the same fashion as shown in the aforesaid Pat. No. 3,398,868.

Yet additional objects and advantages of the present invention are even more apparent when taken in conjunction with the accompanying drawing in which like

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characters of reference designate corresponding material and parts throughout the several views thereof, in which:

FIG. 1 is an elevational view of a pair of nested tubs, with portions of the lowermost one being broken away, illustrating the principles of the present invention;

FIG. 2 is an enlarged cross-sectional view of the nested tubs taken along reference line 2—2 of FIG. 1;

FIG. 3 is a further enlarged fragmentary cross-sectional view of a container, the container comprising a tub as illustrated in FIG. 2 and a lid; and

FIG. 4 is a greatly enlarged fragmentary cross-sectional view of a pair of modified nested tubs employing a reversely tapered portion in the stacking ring.

Referring more particularly to FIGS. 1 to 3, each nested tub 10 is cup-shaped and has a bottom wall 12 and, extended upwardly therefrom, an outwardly tapered side wall 14. The inclination of the side wall 14 from the vertical (angle a) is only about six degrees or less. In nesting a stack of such tubs it is generally necessary to have about 12 to 15 thousandths of an inch clearance between the tub sidewalls 14 when completely nested, to avoid scuffing of the printing on the sidewalls, and possible jamming due to frictional interference between the sidewalls. At the upper extent of the sidewall 14 is a stacking ring 16 designed to prevent such scuffing and jamming where sidewall taper is only slight. Stacking ring 16 includes a shoulder 18 extending generally outwardly and preferably horizontally from sidewall 14, which shoulder extends to outer edge 20. Extending substantially vertically upwardly from outer edge 20 is a circumferential portion 22. Extending laterally outwardly and above circumferential portion 22 is a circumferential lid receiving groove 24. Another circumferential portion, similar to the portion 22, and bearing reference character 26, extends upwardly from groove 24 and terminates at an inner edge 28. Continuing generally outwardly and upwardly from edge 28 is a shelf 30 which extends into the curled rim 32 located about the upper periphery of the container 10.

With this arrangement, the outer edge 20 of the shoulder 18 extends outwardly of the upper edge 26 so that a shoulder 18 can seat on shelf 30 of a next lower tub 10 (as shown in FIGS. 1 and 2) to provide a positive stack between two such tubs when nested together. It is appreciated that variations in the above stacking ring configuration can occur, such as by varying the shoulders 18 and shelves 30 from substantially horizontal to substantially inclined dispositions, respectively, or by providing a significant back draft to the circumferential portions 22 and/or 26 either continuously or intermittently to provide a Z-stack if desired (circumferential portion 22a being back drafted, for example, in FIG. 4), and still present a nestable tub coming within the concepts of the present invention. In any event, by the bottom stacking shoulder 18 being located considerably beyond the lowermost extent of the lid receiving groove 24, a taller stacking ring is achieved than contemplated by any of the prior art so as to prevent frictional contact between the nearly vertical side walls 14 of the nested tubs 10, and significant rigidity is maintained between the stack rings 18 by locating the stacking shelf 30 in the relatively rigid rim area. The rim 32 gives significant hoop strength to the shelf 30 and the shelf 30 is located in an area of greater material thickness since this area has not been subjected to significant thinning during the drawing process.

Once a tub 10 is filled with a product 41 a lid 34 is seated within each tub 10, as shown in FIG. 3, in substantially the same manner as taught in the aforesaid Pat. No. 3,398,868, to form container 42. The lid 34 includes an annular central base 36 which at its outer extremity presents a land area 38 seating within groove 24 of the

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tub. A generally vertical portion 40 ends in ridge 43 locked against substantial vertical movement by a mating ridge 44 of groove 24. The ridge 43 is connected by an inverted L-shaped section 46 to an inverted U-shaped rim receiving channel 48 covering rim 32 of tub 10.

Preferably containers 42 are comprised of thermoplastic materials such as polystyrene, acrylonitrile butadiene styrene polymers (commonly referred to as "ABS"), polyvinyl chloride, homopolymers or copolymers of ethylene or propylene, etc., or multilayered structures containing such materials and possibly other materials, such as metal foils and the like.

While certain representative embodiments and details have been shown for the purpose of illustrating the invention, it will be apparent to those skilled in the art that various changes and modifications can be made therein without departing from the spirit and scope of the invention.

What is claimed as new is:

1. A nestable tub comprising a bottom wall, a circumferential side wall extending upwardly and tapered slightly outwardly from said bottom wall, a shoulder extending generally outwardly from the upper extent of said tapered side wall to an outer edge, a first circumferential portion located upwardly therefrom connecting said outer edge to a lid receiving groove section, a second circumferential portion located upwardly of said groove section, a shelf extending substantially laterally outwardly from the upper end of said second circumferential portion and into a rim and spaced downwardly from the top of said rim, the outer extent of said shoulder being greater than the inner extent of said shelf so that the shoulder of one such tub can seat on the shelf of a next lower like tub to provide positive stack between two such tubs without side wall interference when two such tubs are nested together.

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2. The tub of claim 1 wherein said sidewall taper is no greater than about six degrees from the vertical.

3. The tub of claim 2 wherein said shoulder extends generally horizontally from the side wall.

4. The tub of claim 3 wherein said shelf is generally inclined upwardly into said rim.

5. The tub of claim 2 wherein said first circumferential portion is generally vertically disposed.

6. The tub of claim 2 wherein said first circumferential portion is back drafted from the inclination of the side wall from the vertical.

7. The tub of claim 6 wherein said back drafting is only intermittent about said first circumferential portion.

8. The tub of claim 2 wherein a product is contained therein, a snap-in removable lid closing said tub, with the product therein, said lid comprising an annular central base extending entirely across the opening of said tub and having a peripheral end area seating within said lid receiving groove of said tub, and a portion extending upwardly from said area and ending in a generally inverted U-shaped rim receiving channel overlying said rim, said tub and lid providing a container for said product.

9. The container of claim 8 wherein the groove of said tub and the end area of said lid have mating ridges locking said lid against substantial vertical movement.

References Cited

UNITED STATES PATENTS

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GEORGE E. LOWRANCE, Primary Examiner

U.S. Cl. X.R.

220-97; 229-1.5