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MOLDED NESTABLE CONTAINER HAVING INDICIA PROTECTION MEANS

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Fig.1

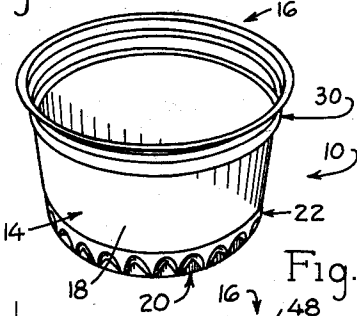


Fig.3

Fig.4

Fig.5

Fig.2

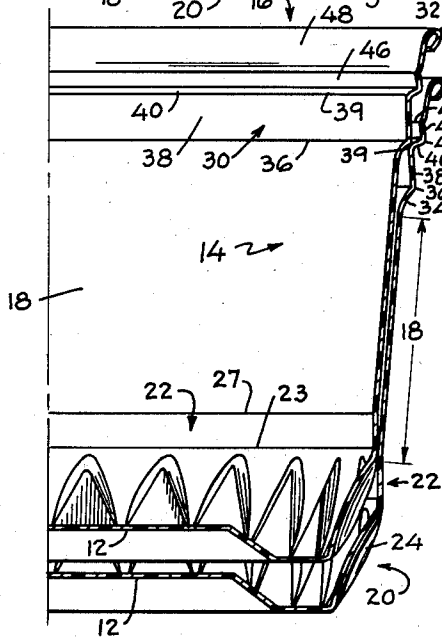
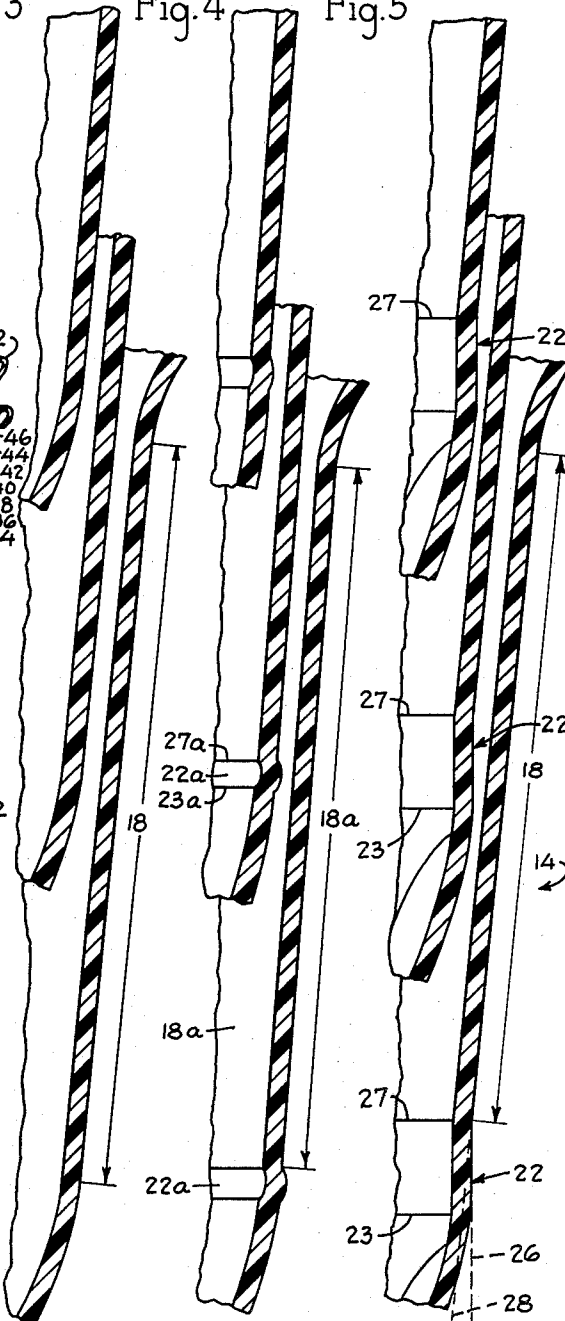
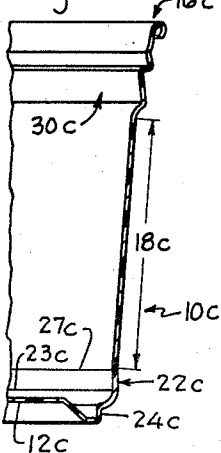
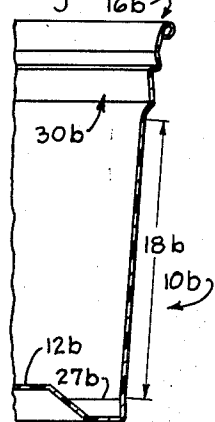


Fig.6

Fig.7



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**MOLDED NESTABLE CONTAINER HAVING
INDICIA PROTECTION MEANS**

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This invention relates in general to plastic containers, and more particularly relates to plastic containers of the integral thin walled throw-away variety having a large side wall area adapted to receive printing thereon, there being means associated and integral with the container to protect the printed area from being rubbed off during telescopic association of a number of like containers.

Integral thin walled containers formed of thermo-plastic material from web stock are coming into greater and greater use. The nature of the container is such that it is quite inexpensive, however, the molds and machinery for manufacturing the container are, by contrast, very expensive. There are many situations where the substantially identical container may be desired by a number of users, however, each wishes its own identifying characteristics. The problem of the manufacturer is to provide individually unique containers without changing the basic mold design and without changing the machinery. The most obvious and most advantageous way of providing a variety of different products utilizing the same base shell is to print identifying indicia in the form of patterns, advertising logos, etc. in various colors upon the surface of the container. This is far preferable to embossing a design on the side wall of the container which requires a special mold insert, which is quite expensive. On the other hand, printing indicia of various types may be made up rapidly by well known techniques and at low expense.

Containers of the type contemplated by this invention are quite bulky per unit weight and, hence, from the standpoint of ready transportation prior to filling thereof, the containers are preferably nested together for purposes of decreasing overall bulk. Also, it is usual to feed and handle containers of this nature from a stacked nested relationship. One prior art problem encountered with printing on the outside of containers of this type is that indicia means put on the outside of a relatively smooth side wall of the container becomes damaged upon telescoping relationship of a number of like containers due to the rubbing of the outer side wall of one container with the inner side wall of the next adjacent telescoped container. This invention is concerned generally with the prevention of damage to indicia means on the outside of plastic containers of the above type in such a manner that it does not interfere with good nesting relationship of a number of like containers, said nested containers having a relatively small stack height between adjacent containers and feed freely from nested relationship without jamming.

It is a further object of this invention to provide a means for preventing indicia transfer from the outside of one container to the inside of another container during telescopic relationship thereof.

It is a further object of this invention to provide an article of manufacture wherein the antirub feature in one embodiment is barely visible to the naked eye so as not to obliterate the aesthetic qualities of the container design.

It is a further object of this invention to provide a preferred design of antirub configuration wherein the configuration is independent of the material thickness within a wide range of thicknesses.

It is an object of this invention to provide a container having a large smooth surface portion which has printing

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indicia thereon and is lying substantially in a single constant plane on the side wall of a container, which portion is bounded on one end by an antitransfer means for the indicia, and is bounded on the other side by a stacking means, said stacking means providing the dual function of lid retention after the container is removed from a stack of containers as well as to provide resilient stacking for a plurality of like nested containers.

Another object of the present invention is to provide a food container such as a container for cottage cheese and the like which is well adapted for mass manufacture, is trouble free in its nesting and denesting relationships and otherwise well adapted for the purposes for which it is designed.

The novel features or the characteristics of the invention are set forth with particularity in the appended claims. The invention itself, however, both as to its organization and its method of operation, together with additional objects and advantages thereof will best be understood by the following description of specific embodiments when read in connection with the accompanying drawings in which:

FIG. 1 is a perspective view of a container incorporating the inventive concepts;

FIG. 2 is a partial sectional view of the containers in FIG. 1, two containers being shown in nested stacked relationship;

FIG. 3 is a semidiagrammatic sectional view showing portions of three containers of the prior art variety susceptible of causing damage to indicia means disposed on the outer surface of individual container portions, said damage being caused by one portion engaging the inner surface of the next adjacent container portion;

FIG. 4 is a view similar to FIG. 3 showing one form of an antirub feature for protection of printed matter disposed in the side wall of the container;

FIG. 5 is a sectional view similar to FIGS. 3 and 4 showing a preferred form of antirub feature in a container design;

FIG. 6 is a sectional view similar to FIG. 2 showing an alternate embodiment of my concepts; and

FIG. 7 is a sectional view of still another form of container utilizing the concepts of this invention.

The container 10 is preferably formed from web stock thermoplastic material by any of several known sheet forming processes such as, for example, pressure differential forming using either vacuum or positive pressure and with or without a plug assist. The resultant article or container 10 is unitary in construction and has no seams and is of the "thin walled" variety having a side wall thickness in the neighborhood of .002 inch to .035 inch. This thickness is substantially uniform throughout the entire extent of the article.

Container 10 is formed with a bottom wall 12 and has outwardly flaring side walls 14 which extend upwardly and outwardly from the bottom wall 12 to define an open mouth 16. As shown in FIGS. 1 and 2, the side wall 14 has a substantially smooth portion 18 which makes up the major extent of the side wall, said portion 18 being disposed in substantially a single constant plane throughout its entire extent. Stated in another way, the side wall portion 18 diverges from the axis of the container at a substantially constant rate throughout the entire extent thereof. The area 18 is the area of the container designed to receive indicia means thereon in the form of printed material by conventional processes such as pressure pad inking and the like. Intermediate the bottom wall 12 and portion 18 is a second side wall portion 20 which has first and second sub portions 22 and 24.

Portion 22 provides a means for preventing indicia transfer from portion 18 on the outside of one container

10 to the inside of the next adjacent identical container during telescoping relation thereof. The other sub portion 24 is in the form of a symmetrical design, having portions thereof diverging in various directions from the plane of the first side wall portion 18. This design portion 24 may be varied to suit as long as no part thereof extends radially outwardly of the plane of portion 18 and as long as the design does not present interfering surfaces which will create a stacking problem. The sub portion 22 provides an antirub feature as best shown in the lower right hand portion of FIG. 5. The portion 22 diverges from the angle of side wall portion 18 (shown semidiagrammatically by line 28) but no part thereof extends radially outwardly of a cylindrical plane concentric with the axis of the container which intersects the junction 27 of portion 22 and portion 18. The cylindrical plane is shown diagrammatically by the line 26. Stated another way, portion 22 is substantially disposed in a vertical plane. This particular configuration thus affords the bottom edge 23 of portion 22 a "spacer effect" preventing surface 18 from engaging the surface of the next adjacent container upon telescopic relation thereof. Further, this relationship is extremely advantageous in the manufacture of the mold for molding the containers since it does not require any undercutting of the mold surface which requires expensive inserts and the like in the original manufacture of the mold. The exact length of portion 22 from 23 to 27 in the vertical direction may be varied within a range as determined by the stacking height of the third portion 30 of the container side wall, the angle of divergence of portion 18 and the thickness of the material involved.

The third portion 30 of the side wall is disposed intermediate portion 18 and the mouth 16. It will be noted that it is preferred that the mouth 16 has a curled over rim portion 32 for purposes of preventing damage to the user's hands. Portion 18 is joined to the portion 30 by a diverging ring 34 which extends radially outwardly and is characterized as being curvilinear across the extent thereof and terminates at sharp point 36 which forms a junction between portions 34 and the next upwardly portion 38. Portion 38 has a back taper therein so that stacking interference greater than the thickness of the material is provided to the container. A rather radially sharply outwardly divergent ring portion 40, together with upwardly extending portion 44 juncture at 42 to define a lid seat which also serves in the stacking function as can be perceived in FIG. 2. Portion 44 has a back taper and terminates at its upper extent at 46 whereupon the wall portion 48 extends outwardly and upwardly to the top of the container. In stacking two like containers, portion 34 adjacent to the juncture 36 engages the point 39 formed by the juncture of portions 38 and 40 of the next adjacent container. Due to the geometry and angularity above discussed, portion 39 of one container will engage portion 34 of the next container just slightly below juncture 36. Thus, compression of a stack of containers will afford a resiliency to the entire stack so that a stack of containers nested in this relationship will readily absorb impact shock.

The stacking height of the containers is determined by measuring, in a vertical direction, two identical portions of two containers and the distance therebetween when the two identical containers are in stacked nested relationship. In this regard, it must be pointed out that the vertical dimension of portion 22 must have an axial height less than the stacking height as determined by the stacking means, otherwise the antirub feature in portion 22 will interfere with the nesting relationship of a plurality of containers.

The embodiment shown in FIG. 4 is an alternate way of accomplishing the desired results. Similar parts will be identified with similar reference numerals with the addition of the suffix "a." The ring or groove 22a is

here shown in the form of a distinct ring portion offset outwardly from the vertical plane of the junction 27a between portions 18a and 22a. This construction requires an undercutting in both the making of the original mold and in the molding operation of the container and hence is not quite as advantageous for manufacturing techniques. However, the amount of offset from the axis of ring 22a is less than the contraction factor of the plastic material when the container is being molded, and thus the major aspect of the cost differential in providing the antirub feature 22a as contrasted with 22 is the extra expense in providing a mold insert and/or a post metal removal operation to the mold during manufacture thereof. Functionally, the groove 22a will operate equivalent to portion 22 as discussed although the design will not accommodate a wide range of material thickness.

The embodiment shown in FIG. 6 is substantially similar with that aforesaid and similar parts will be given similar reference numerals with the addition of the suffix "b." The container 10b is substantially identical to the container 10 except that portion 22b is located immediately adjacent to the bottom wall 12b of the container rather than being spaced therefrom by a sub portion 24. It will be noted that the axial height of portion 22b is less than the stacking height of container 10b. The embodiment 10b also has the advantage of providing an exceptionally large space 18b for disposing indicia thereon.

The embodiment 10c shown in FIG. 7 is substantially identical to the foregoing and similar parts will be given similar reference numerals along with the suffix "c." The embodiment 10c differs only slightly from embodiment 10b in that the portion 22c is spaced upwardly from the bottom portion by a short axial extension 24c on the side wall. This embodiment 10c also provides a relatively large indicia space 18c while retaining the advantages aforesaid relative to the antirub in stacking features.

Although various embodiments have been shown and described, it is with full awareness that many modifications thereof are possible. The invention, therefore, is not to be restricted except in light of the prior art and the spirit of the appended claims.

I claim:

1. A nestable container having a bottom wall and side walls extending upwardly and outwardly therefrom to define an open mouth, said side wall having a first portion of major extent which is characterized as being substantially smooth and diverges upwardly and outwardly from the axis of the container at a constant predetermined angle, said first portion of said side wall being bounded by second and third portions, said second portion being intermediate the bottom wall and said first portion and radially outwardly offset from the plane of the outer surface of said first portion, said third portion being intermediate said first portion and said open mouth, said third portion being further characterized as having portions thereof offset from the predetermined angle of said first portion to define stacking means for cooperation with a like configured container nested therewithin, said stacking means affording a predetermined spacing in the vertical dimension of like containers when in nested relation, the amount of radial outwardly offset of the outer surface of said second portion of said side walls preventing rubbing contact of the outer surface of said first side wall portion with the inner side wall surfaces of a like container upon telescoping movement of like containers and permitting the stacking relationship between adjacent containers to be determined by said stacking means in said third side wall portion whereby freshly printed indicia means on the surface of said first portion will be protected during nesting and denesting of like containers.

2. The container set forth in claim 1 wherein said second portion of said side wall means further includes symmetrical configurations intermediate said radially outwardly offset portion and said bottom wall portion,

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said configurations being radially inwardly of an extension of the plane of said first side wall portion.

3. The container set forth in claim 1 wherein said radially outward offset portion of said second portion of said side walls is further characterized as lying entirely within a cylindrical surface parallel with the axis of the container whereby no undercutting from a vertical plane is required in forming thereof.

4. The container set forth in claim 1 wherein said radially outward portion of said second portion is disposed immediately adjacent to the bottom wall portion of the container.

5. The container set forth in claim 1 which is further characterized as being formed from thermoplastic web stock material to provide a seamless unitary construction having a side wall thickness dimension less than .035 inch.

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6. The container set forth in claim 1 wherein said third portion includes a first angularly divergent ring adjacent said first side wall portion, a second ring portion having a back taper, and third and fourth ring portions defining a lid seat, the junction between said second and third portions of one container being engageable with said first ring portion of a second container nested therewithin to afford a resilient stack of containers.

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