United States Patent

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[54] **CONTAINER**
6 Claims, 4 Drawing Figs.

[52] **U.S. Cl.** **220/97,** 215/10, 215/99.5, 229/1.5
[51] **Int. Cl.** **B65d 21/02,** B65d 1/26
[50] **Field of Search** ..... 220/97 (C), 97 (F); 229/1.5 (B); 215/10, 99.5

[56] **References Cited**

UNITED STATES PATENTS

3,094,240	6/1963	Wanderer	220/97
3,123,273	3/1964	Miller	220/97
3,185,331	5/1965	Loffelhardt	215/10
3,288,340	11/1966	Shapiro	229/1.5

FOREIGN PATENTS

1,321,330	2/1963	France	220/97
16,878	1904	Great Britain	220/97

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ABSTRACT: A one-piece nestable thin wall container made from plastic sheet material including a novel stacking configuration which permits axial yielding movement of a nested stack of similarly configured containers when a weight is impressed thereon.

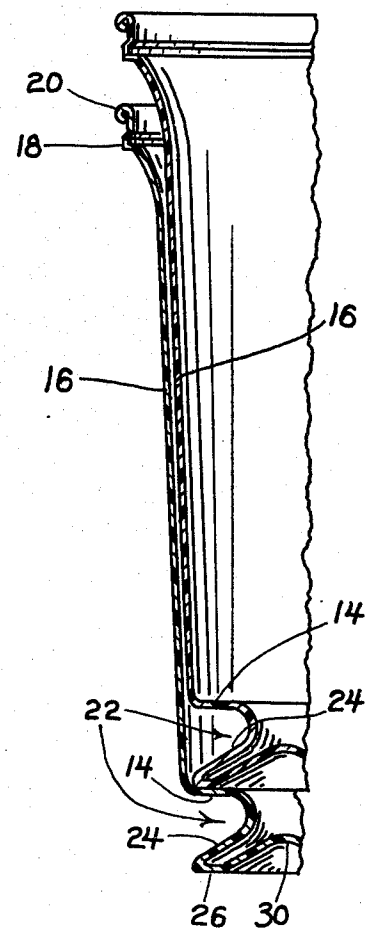


Fig. 1

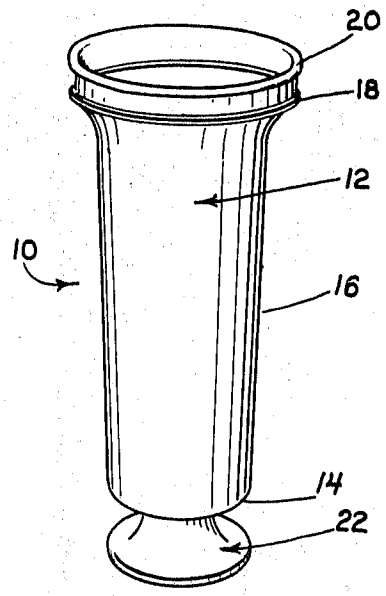


Fig. 2

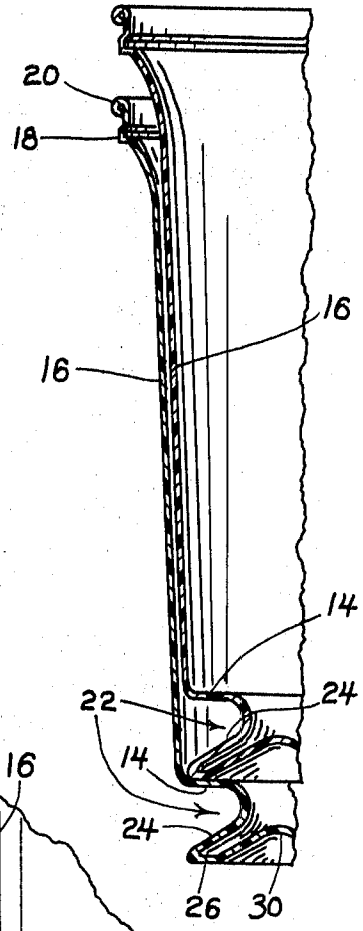
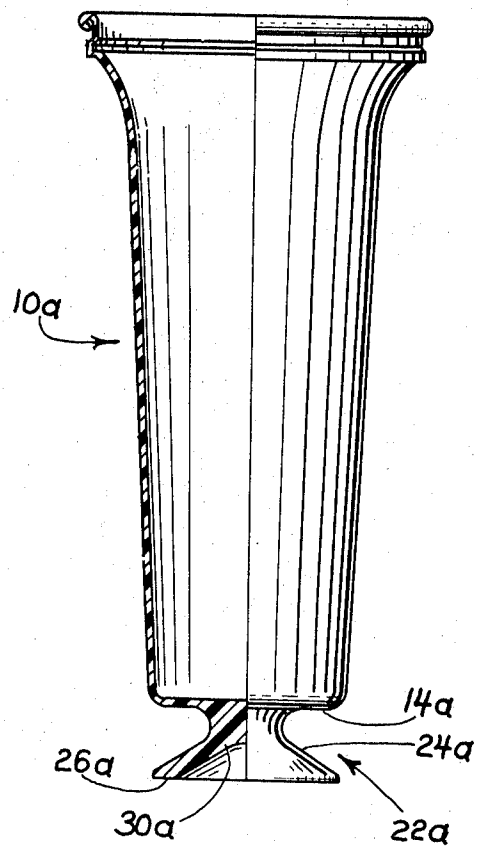


Fig. 4



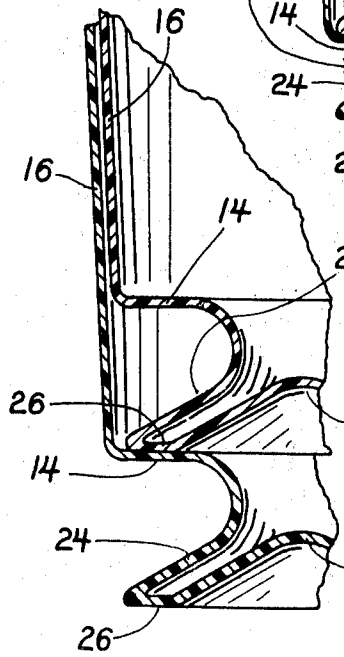


Fig. 3

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CONTAINER

This application is a continuation of my application Ser. No. 346,476 filed Feb. 21, 1964, now abandoned.

Disposable containers are made from various materials and in a variety of shapes, the most notable of which are thin-walled plastic containers since they not only retain their shape in use and form a substantially perfect vapor barrier, but they also can be easily formed in large numbers by mass manufacturing techniques and at a relatively low cost which is competitive to other types of container products. Thin-walled plastic containers are also well adapted for use with automatic dispensing equipment where containers are stored within a tubular magazine in telescoped or nested relationship to one another.

While thin-walled plastic containers are particularly suitable for automatic dispensing equipment, the bottom container in a stack of containers does not always drop satisfactorily. Stacked containers have a tendency to wedge together and prevent the introduction of air therebetween whereby a built-up air pressure tends to hold the bottom container to the stack. Additionally, stacked containers may result in a very rigid column, and resist the desirable step-by-step dropping of containers from a dispensing machine or apparatus or when shipped in a paper box or carton, increase the tendency that a column of containers will burst the box or carton when dropped or banged against a surface.

Accordingly, it is an object of the present invention to provide a novel container of the disposable variety which aids in the packing, storage, dispensing and consumer usage of containers.

More specifically, it is an object of the present invention to provide a container which is so configured that a plurality of containers can be stacked together for shipping or dispensing purposes without wedging together.

Furthermore, it is an object of the present invention to provide a container which is configured to take advantage of the inherent resiliency of the plastic material from which the container is made, and provide a resilient stack of containers for fast, efficient and repetitive dispensing of individual container from the container stack.

The marked advantages of thin-walled plastic containers over other containers such as those made from paper or paper impregnated or coated with wax have aided in promoting sales of food products since they have provided the consumer with a liquidtight container which does not have its own distinct taste, and which does not form condensation rings on a supporting surface. A manufacturer, by producing containers at high volume and low cost, can also benefit the consumer. From the standpoint of consumer sales as well as the variety of food products now available, it is desirable that a manufacturer or supplier have several types of high-volume low-cost containers to house the food or other products it sells to the public.

In achieving this particular goal, the present invention, as an additional object, is designed to provide a manufacturer or supplier with a disposable container of unique and novel configuration which can be added to the presently known container designs, and which is especially, though not exclusively, designed for use with parfait, ice cream, frozen custard and similar desserts. Such a container must be aesthetically pleasing in appearance to stimulate sales of food products contained therein as well as contribute in a satisfactory manner to the solution of the problems inherent in the contemplated manufacture and use of the container.

Still another object of the present invention is to provide a novel and attractively designed container which, in addition to the aforementioned objects, is provided with a substantially rigid construction to prevent injury to the container and escapement of its contents.

Another object of the present invention is the provision of a container of novel shape which facilitates manual grasping thereof and aids in insulating the user from the contents.

Other and further objects and advantages of the present invention will become apparent from the following description when taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a perspective view of a container constructed in accordance with the principles of the present invention;

FIG. 2 is a longitudinal sectional view through a stack of containers of the type shown in FIG. 1;

FIG. 3 is a fragmentary sectional view at the bottom of a stack of cups having a construction similar to that shown in FIG. 1; and

FIG. 4 is a side elevational view, partly in section, of a modified form of container coming within the purview of the present invention.

Referring now in greater particularity to the drawings, there is shown in FIGS. 1—4 a thin-walled plastic container **10** or **10***a*, both of which are preferably made of a high impact polystyrene. The container of the present invention can be formed by any of the present molding techniques now available such as injection molding or pressure molding, the latter consisting of the blow molding or vacuum forming techniques, or a combination of pressure differentials with a mechanical drawing along a web of sheet material. The particular method employed to form the containers of the present invention may be based upon design factors, uniform results, low cost, etc., it only being necessary to recognize that all of the above methods are envisioned as ways of manufacturing the present container.

The form of the container shown in FIGS. 1—3 and generally designated **10** comprises a container body portion **12** and a pedestal **22** of double wall reentrant character which supports and underlies the main portion of the container. Bottom wall **14** of the container body portion is integrally joined to the upwardly and outwardly extending sidewalls **16** which project outwardly from the bottom wall for a substantial distance to provide an open mouth at the terminal ends of the sidewalls. If desired, a lid seat **18** may be formed adjacent the terminal end of the sidewalls with a rounded and thickened portion **20** at the outer ends thereof to strengthen and support the open mouth of the container. This rounded and thickened portion **20** may be a rolled lip substantially formed in accordance with the teachings set forth in the patent to Bryant Edwards U.S. Pat. No. 3,096,546 dated Jul. 9, 1963.

The pedestal **22**, which will support and strengthen the container, is integrally joined to the bottom wall **14** of the container body portion **12** at points equidistant from the axis of the container. In this manner, the pedestal **22** provides direct support for the container body portion and distributes the weight of the container on opposite sides of the axis thereof. The pedestal is provided with a downwardly and outwardly tapering sidewall portion **24** which extends to an outer free extremity located at the intersection of the pedestal base **26** and the sidewall portion **24**. The maximum diameter of this outer free extremity is less than the smallest diameter of the container at the intersection of the bottom wall **14** and the sidewalls **16** of the container body portion **12** so as to facilitate stacking of a plurality of containers within one another. This is illustrated in FIGS. 2—3 of the drawings wherein the pedestal base **26** of the uppermost container rests upon and abuts the bottom wall portion or stacking shelf **14** of the container body portion of the lowermost container. It is preferable that the outer free extremity of each container pedestal portion be less than the smallest diameter of the container body portion by only a small amount, and that the sidewalls of each container be designed to taper upwardly and outwardly in a manner which permits the base of one container to rest upon the bottom wall of an adjacent container without the sidewalls of the containers engaging each other. FIG. 3 of the drawings illustrates the relative spacing of the sidewalls **16** of adjacent containers as well as the spacing of the pedestal of one container from the sidewall of the other. Thus, it will be evident that the tendency of stacked containers to wedge together and entrap air therebetween will be eliminated by this container construction.

In addition, it is desirable that the container have portions thereof which permit movement or axial breathing of containers when stacked together so as to facilitate transportation of and ready separability of the stacked or nested containers. This has been accomplished by designing the container to take advantage of the inherent resiliency of the plastic material of which the container is made. It will be noted in FIGS. 2—3 that the pedestal sidewall portion 24 is joined to the bottom wall 14 at a relative acute angle, and that the outer free extremity of the pedestal of the innermost container is spaced from the sidewall of the surrounding container. This will permit axial breathing of individual containers to occur when the weight from a stack of containers is impressed thereon since the bottom wall 14 and pedestal sidewall portion 24 will have a tendency to approach one another, and the lengthening of the pedestal resulting therefrom will be accommodated by the spacing of the outer free extremity of the pedestal of the innermost container from the sidewall of the surrounding container.

It may also be desirable to enhance this axial breathing, by providing a concavity or depression 30 located centrally of the base 26 of each pedestal as disclosed in FIGS. 2—3. The reduction of contact of the pedestal base 26 with the bottom wall 14 of an adjacent container will make it evident that the forces required to compress the pedestal portion will be reduced, thus facilitating axial breathing of the containers.

It will also be understood that the strength of the container has been increased by the addition of the novel configured pedestal. The underlying support provided to the container by the integrally attached pedestal has already been discussed. However, it is to be noted that the angularly offset surfaces of the pedestal, including the spacing of these surfaces, will provide a relatively rigid structure which is also capable of being resilient for the above-noted purpose. The rigidifying character of the pedestal portion is especially important with thin-walled plastic containers which normally measure between .005 to .020 inches. As an added feature, it will provide an area of the container which can be manually gripped without deformation.

The axial height of the pedestal may be such as to facilitate manual grasping in the reduced neck portion between the bottom wall 14 of the container body and the outer free extremity of the pedestal. This will provide a convenient area for the user to grasp and aid in positioning the container in an upright position. Moreover, if the axial height between the bottom wall of the container body and the outer free extremity of the pedestal is designed to permit grasping thereof in the area therebetween, but prevent the entrance of finger portions in what would substantially be the reduced neck area of the container, the configured shape of the pedestal as related to the container body portion will aid in insulating the user's hand from the container contents whether it be hot or cold since only a small portion of the grasping fingers will be able to encircle and contact the container.

While the outer free extremity of each container pedestal has a dimension which is less than the smallest diameter of the container body, it has nevertheless been found that the container will stand in an upright position when either empty or full. This is primarily due to the fact that the pedestal is centrally located with respect to the container body portion, and that the design of the container pedestal acts to complement this by distributing the weight of the container and its contents on a uniform basis. Thus, it has been found that the container will stand upright even though the axial extent of the container body portion is more than twice the diameter of the open mouth or more than ten times the axial height of the pedestal.

A modified form of the invention is shown in FIG. 4 wherein the container is designated 10*a*. As will be evident from an inspection of that figure, the pedestal 22*a* of the container, rather than being substantially hollow, is shown as being solid in form so as to provide a peripherally continuous wall portion 24*a* of predetermined thickness. Wall portion 24*a* tapers downwardly and outwardly to a base portion 26*a* at the outer free extremity of the pedestal, there being a concavity or depression 30*a* located centrally of the base portion. Since the pedestal 22*a* of the container 10*a* shown in FIG. 4 is substantially solid in form, it will enable the carrying and support of hot or cold food products in a slightly better manner than the FIGS. 1—3 embodiment since there will be no contact with the container contents.

From the foregoing, it will be apparent that the thin-walled plastic container of the present invention facilitates the nesting or stacking of a plurality of containers for shipping or automatic dispensing purposes while enabling the ultimate user to readily handle and support the container without harm.

It is to be understood that the specific example of the invention herein shown and described is for illustrative purposes only. Various changes in structure will no doubt occur to those skilled in the art, and will be understood as forming a part of this invention insofar as they fall within the spirit and scope of the appended claims.

I claim:

1. A one-piece nestable thin wall container made from plastic sheet material comprising a container body portion and pedestal therefor, said container body portion in upright position having a radially inwardly extending and substantially horizontal bottom portion to which the pedestal is integrally attached and an outwardly tapering sidewall extending in a direction opposite to the pedestal and terminating in a substantially open mouth at the end of said tapering sidewall, said pedestal including a depending skirt portion of resilient character which flares outwardly from its connection with said container bottom portion at an acute angle to a diameter at its outer free extremity slightly less than the smallest internal diameter of said container body portion in the vicinity of the juncture of the bottom portion and sidewall thereof, said container adapted to nestably receive and to be nestably received by like containers of similar configuration with the pedestal skirt portion of each container above the bottom container in the nested stack resting upon the bottom portion of a subjacent container at an inwardly open acute angle for permissive outward sliding surface contact therewith when a weight is impressed thereon and determining the stack height of said nested containers, the depending skirt portion of each pedestal in said nested stack of containers capable of yielding an axial direction when a weight is impressed thereon to cause outward sliding radial enlargement of the outer free extremity thereof, the dimensional difference between the outer free extremity of each depending skirt portion and the container body portion of a subjacent container in the vicinity of the juncture of the bottom portion and sidewall thereof defining a space therebetween to accommodate the radial enlargement of the depending skirt portion at its outer free extremity and thereby provide axial breathing between the containers in said nested stack.

2. The container as defined in claim 1 wherein the sidewall has a predetermined substantially uniform thickness, said depending skirt portion being of solid cross section and at least twice the thickness of said sidewall throughout its axial height to strengthen and support the container when filled.

3. The container as defined in claim 1 wherein the axial height of the pedestal is of a character to facilitate manual gripping of the container in the area between the container bottom portion and the outer free extremity of said pedestal and aid in thermally insulating the user from the contents of the containers.

4. The container as claimed in claim 1, wherein the pedestal skirt portion is a double wall reentrant formation.

5. The container as defined in claim 1, wherein the outer end portion of the skirt portion is substantially flat to complement the engaged surface of the bottom portion.

6. The container as defined in claim 1, wherein the bottom portion is continuous radially across the container and the skirt portion is integral therewith and of solid cross section.