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MacDaniel

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[54] **INSULATED PLASTIC BUCKET**

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[73] Assignee: **Sweetheart Plastics, Inc.**, Wilmington, Del.

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[21] Appl. No.: **410,991**

Related U.S. Patent Documents

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Appl. No.: **879,448**
Filed: **Nov. 24, 1969**

[52] **U.S. Cl.** ..... **229/1.5 B**; 229/5.5; 229/43
[51] **Int. Cl.** **B65d 3/00**; B65d 5/64; B65d 3/10
[58] **Field of Search** ..... 229/43, 1.5 B, 5.5, 5.8; 220/97 C, 97 F, 9

[56] **References Cited**

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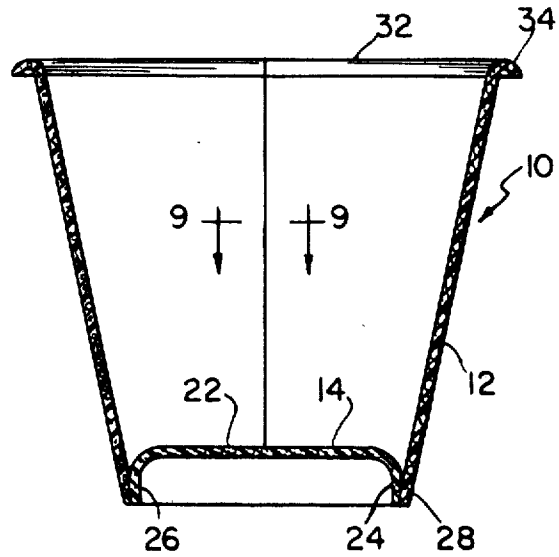
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Primary Examiner—George T. Hall
Attorney, Agent, or Firm—Birch and Birch

[57] **ABSTRACT**

A container having a wrapped side wall of foam plastic sheet material with the side margins overlapped and welded together, and a separately formed bottom having a central portion generally perpendicular to the container axis and with an annular skirt extending away from the plane of the central portion and sealed to the lower margin of the side wall. A lid made of the same material fits over the upper margin of the container.

16 Claims, 10 Drawing Figures



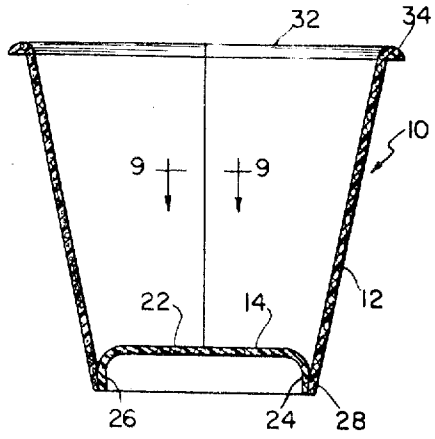


FIG. 1

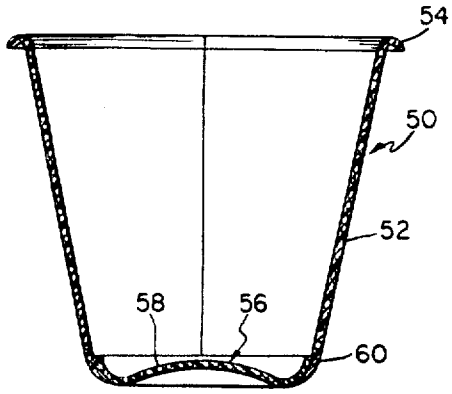


FIG. 2

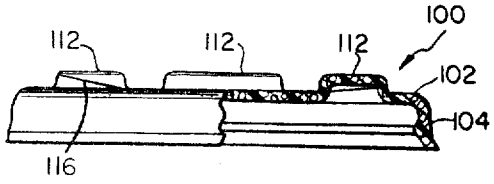


FIG. 3

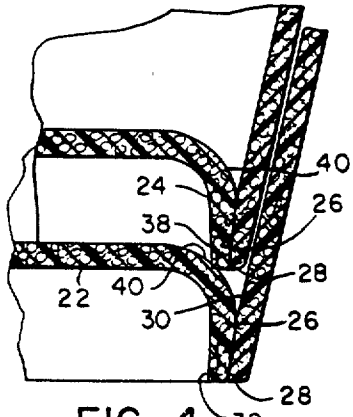


FIG. 4

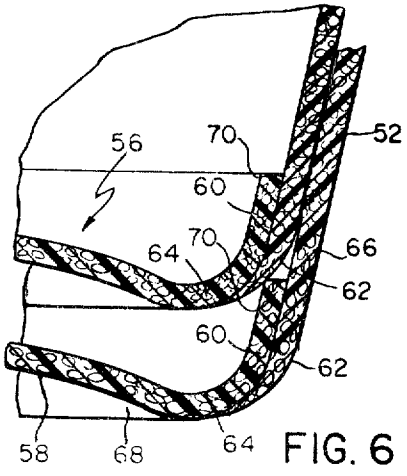


FIG. 6

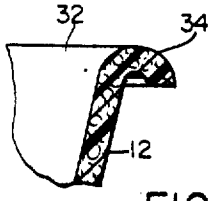


FIG. 5

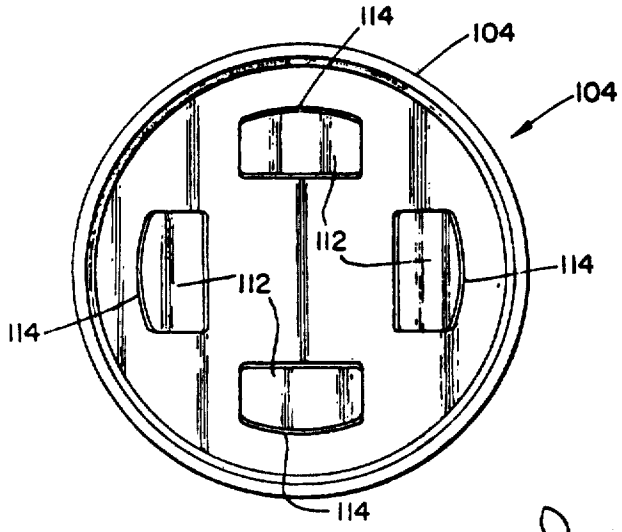


FIG. 7

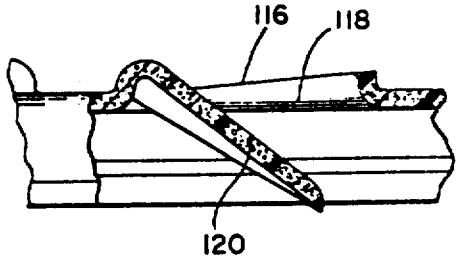


FIG. 8

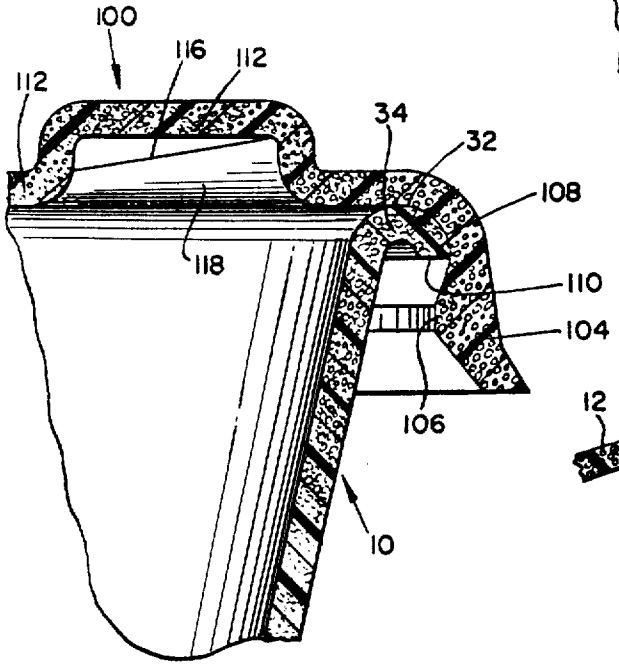


FIG. 10

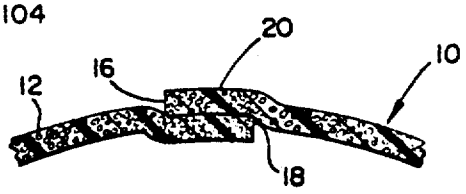


FIG. 9

INSULATED PLASTIC BUCKET

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

This invention relates to disposable containers and lids made of plastic, and more particularly comprises a new and improved insulated disposable container and lid made from foam plastic sheet. The invention has particular application in the manufacture of containers in the half gallon and larger range.

There is at the present time a growing demand for disposable containers in large sizes. This growth in part is the result of the rapidly growing business of franchised take-out food vendors such as the roadside fried chicken stands, as well as the generally increasing labor costs that make reusable containers in all industries prohibitively expensively. While in the disposable container industry plastic has captured a significant percentage of the market in smaller container sizes, thus far the larger containers of the one gallon size range are almost exclusively still made of paper. This is particularly true in the insulated bucket or tub field where heretofore no one has developed a commercially competitive insulated plastic tub. Conventionally the large tubs used for example as chicken buckets are made of double wrap paper. These heavy duty double wrap paper buckets are expensive, have only limited insulating properties, and generally are subject to the same failings as paper food containers made in smaller sizes, namely, they have a taste and odor which effects the contents, they absorb moisture, etc.

An object of this invention is to provide a simply constructed tub made of foam plastic which has very high insulating properties.

Another object of this invention is to provide a disposable insulated container whose side walls may be embossed or otherwise treated as part of the assembling operation for decorative or advertising purposes.

Another object of this invention is to provide a large disposable tub which is moisture proof and grease proof and which is suitable for the packaging of hydroscopic materials.

Still another object of this invention is to provide a disposable insulated tub which is suitable for use as an ice bucket and whose mouth is sufficiently rigid to allow the bucket to be used as a scoop to gather ice cubes from a chest.

To accomplish those and other objects, this invention is embodied in a tub made of expanded foam plastic sheet. While the invention is not limited to containers of a particular size and has application to both large and small containers, in accordance with one embodiment typically the sheet may be approximately *0*112. inch thick and having a weight of approximately 19 grams per square foot. The container is made in two parts, namely, a side wall blank which is sealed along a side seam and a preformed bottom having a skirt which abuts against the bottom of the side wall and is sealed to it. A separate cover or lid may be provided, which has a snap fit over the mouth of the container, and the lid is provided with slits that enable vent openings to be formed in it.

In the drawings:

FIG. **1** is a vertical cross-sectional view of a tub constructed in accordance with this invention;

FIG. **2** is a vertical cross-sectional view of another embodiment of tub constructed in accordance with this invention;

FIG. **3** is a side view, partly in section, of a lid which may be used with either of the tubs shown in FIGS. **1** and **2**;

FIG. **4** is a fragmentary, cross-sectional, detail of two tubs shown in FIG. **1** and illustrating their nested relationship;

FIG. **5** is a detail view of the rim of the tubs of FIGS. **1** and **2**;

FIG. **6** is a fragmentary cross-sectional detail of the tub of FIG. **2** and showing how two such tubs nest;

FIG. **7** is a plan view of the lid of FIG. **3**;

FIG. **8** is a fragmentary cross-sectional detail of the lid showing how a vent opening is formed in it;

FIG. **9** is an enlarged fragmentary cross-sectional view taken along the section line **9—9** of FIG. **1**; and

FIG. **10** is an enlarged fragmentary detail view showing the way the lid fits on the container rim.

The bucket **10** shown in FIG. **1** has a side wall **12** and a bottom **14.** The side wall **12** may be made from a blank having curved and parallel top and bottom edges of conventional form and with diverging side edges so that when the side wall is rolled into the container shape it is frustoconical with the desired side wall taper to facilitate nesting. In accordance with one embodiment the side wall **10** along with the bottom **14** are made from generally rigid expanded styrene sheet of approximately .112 inch in thickness and weighing 19 gram per sq. ft. with a cell size of 4 to 5 mils. It is to be understood that these dimensions are not limitations to the scope of this invention.

The side edges **16** and **18** of the side wall **12** are overlapped as shown in FIG. **9,** compressed, and sealed together to form a liquid tight seam running from top to bottom of the side wall when it is formed. The total thickness of the overlapped portion **20** of the side wall is less than twice the stock thickness and preferably does not exceed substantially the single stock thickness of the material.

The bottom **14** of the container is preshaped before assembly with a generally flat central portion **22** and a skirt **24** which extends downwardly from the central portion **22** generally with a downward flare of approximately 3°. The flare of the skirt is in part determined by the angle of the side wall **12.** The outer diameter of the skirt **24** at the bottom edge **26** is equal to or slightly larger than the inner diameter of the bottom edge **28** of the side wall **12** so that when the bottom is assembled as shown in FIGS. **1** and **4** the outer surface of the skirt **24** at its lower edge **26** engages the inner surface of the lower margin **28** of the side wall. This relationship is particularly evident in FIG. **4** where the bottoms of two containers are shown in their nested relationship.

When the bottom **14** is assembled in the side wall **12,** the lower edges are heat sealed together in a manner shown in FIG. **4,** and the mating surfaces of the skirt and lower margin of the side wall fuse through a height of approximately one thirty-seconds inch. From that point, the skirt and side wall diverge in an upward direction to form a well **30** which is particularly desirable as a grease trough when buckets are used to contain fried foods such as chicken. In a one gallon tube size, typically the height of the skirt **24** measured from its lower margin to the upper surface of the central

portion **22** is approximately 13/16 inch, and the trough **30** therefore has a height of approximately 25/32 inch. Its volume is of course also a function of the taper of side wall **12.** Typically it may be 12°. Thus the trough has substantial volume to accommodate grease or other substances which are given off from the material packaged in the tub.

To enhance the appearance of the tub, broaden its applications, and increase its stiffness at the mouth **32,** the rim **34** is turned over as shown in FIG. **5** to form a semi-rolled lip and preferably the material of the rim is somewhat expanded so as to increase its stiffness. The application of heat to the sheet material when the rim is rolled to form the configuration illustrated may be utilized to expand the sheet material to the desired thickness.

The embodiment of FIG. **1** nests as shown in FIG. **4** on the bottom **14.** The inner corner **38** of the lower edge **26** of the skirt of the upper container rests on the outer radius **40** which joins the skirt **24** to the central portion **22** of the bottom. When the container is made in the dimensions suggested above, the pitch or stack height may be approximately ¾ inch, and the side walls of adjacent containers will be held apart slightly and the rims of adjacent containers will be separated sufficiently to allow for ready separation of the containers.

The container **50** shown in FIG. **2** differs from the container of FIG. **1** in the construction of the bottom. Thus, the container **50** has a side wall **52** with a semi-rolled rim **54** identical to that of FIG. **1,** but the bottom **56** is distinctive. The bottom includes a generally horizontal central portion **58** which may or may not be bowed upwardly as shown in the drawing to resist sagging, and the bottom also includes a peripheral skirt **60** which extends upwardly from the margin of the central portion **58.** The skirt **60** is upwardly flared so that it forms the same angle with the vertical as does side wall **52.** Typically this flare may be an angle of 12°.

In FIG. **6,** the details of the connection between the skirt **60** and side wall **52** are shown. In that embodiment, the bottom **56** is preshaped in the form shown in FIGS. **2** and **6,** and the axial extent of the skirt **60** is substantially the same as the skirt **24** in the embodiment of FIG. **1.** The skirt **60** is heat sealed to the inner side of the side wall **52** of the container, and the bottom **62** of the side wall is wrapped about the radius **64** which joints the skirt **60** and the wall **58** so as to form a smooth juncture between the side wall of the container and the bottom. The lower edge **62** of the side wall where it wraps about the radius **64** is compressed so as to form a smooth union between the outer surface **66** of the side wall and the lower surface **68** of the bottom **58.**

When the containers of the type shown in FIGS. **2** and **6** are nested, the outer surface of the bottom **62** of the side wall **52** rests on the upper inner edge **70** of the skirt **60,** and the cups are thereby spaced apart a distance substantially equal to the distance (pitch) of the stacked containers of the type shown in FIG. **1.**

The lid shown in FIGS. **3** and **7** to **10** is made of the same material and has substantially the same stock thickness as the containers of FIGS. **1** and **2.** The container lid **100** includes a top wall **102** and a downwardly extending skirt **104.** The skirt **104** is provided with an undercut ring **106** accentuated on its inner surface **108,** which is adapted to engage the lower end **110** of the rolled rim **34** of the container so as to retain the lid in place over the container mouth, as illustrated in FIG. **10.** The underside of the lid, in the juncture of the central portion and the skirt is contoured to mate snugly with a portion of the cross-section of the rolled rim **34** of the container. The lid is provided with four upstanding bosses **112** in the top wall **102,** which serve several functions. The outer edges **114** of the bosses **112** are each curved as is clearly shown in FIG. **7** so as to substantially define a circle. The bosses are adapted to fit within the skirt **24** of a container bottom stacked above it and retain that upper container in place. That is, the curved sides **114** of the bosses will prevent the upper container from slipping sideways on the top.

Preferably at least two of the bosses **112** are provided with a diagonal cut **116** which allows a portion of the bosses containing it to be bent inwardly as shown in FIG. **8** to form a vent opening **118.** That is, the cut **116** forms a flap **120** in the top wall of the boss, which flap may be bent downwardly as shown in FIG. **8** to open the top of the boss. It will be appreciated that when the flap **120** is left in the formed position as in FIG. **3,** the lid **100** forms a seal for the container, but when the flaps are folded downwardly as suggested in FIG. **8,** the interior of the container is vented. Even when the flaps **120** are bent so as to form the vent openings **118,** they do not interfere with the container which is stacked above when in fact several containers are placed one above the other.

The vent openings **118** are of sufficient size so that the fingers may be inserted through them so as to provide a convenient handle to carry the bucket. Thus the vent openings not only perform their main function of venting the contents of the container but also form a handle for the convenient carrying of the package made up of the container and lid.

From the foregoing description the containers and lid of this invention will be appreciated to have many advantages over prior art containers. The containers may have any cross sectional shape as the bottoms are preshaped and the entire container is made of plastic. The preshaped bottom may be either formed by thermoforming techniques such as pressure or vacuum forming, or it may be shaped by matched molds which work on the sheet. Because of the nature of the material used, both the bottom and top may be heat sealed. Thus the bosses **112** provided in the container lids not only facilitate stacking of filled containers, but they further facilitate stacking of the lids themselves. When the empty lids are stacked one on top of the other, the bosses **112** will cooperate with the skirts **104** to retard accidental "slicing" of the lids horizontally from a stack. The openings in the bosses provided by the slits form not only vents but gripping means as well. Moreover, it is apparent that the vent sizes may be varied by changing the angle of the bent flaps. In fact the vent flaps may be bent up or down, or even be torn off if desired. The vents are particularly desirable when the containers are used for chicken or other hot foods to allow the steam given off by the food products to escape. In this way the contents are kept relatively dry as the steam given off by the food will not tend to make the contents soggy. It will also be appreciated that the bosses **112** allow the slits to be formed horizontally in them by a horizontal blade as the lids are moved horizontally below it. Similarly, the lid may be trimmed from its web by a horizontal blade, and the arrangement may be used for lids of different diameters with altering the arrangement.

The grease trough provided in the embodiment of FIG. 1 further allows the contents to drain so that the food itself does not stand in the grease which drains from it. Because of the nature of the material from which the container is made, it will be apparent that the side wall material may be selectively expanded so as to provide raised or embossed lettering in the side wall for advertising for decorative purposes. A bucket formed of the material identified is moisture proof and grease proof and is suitable for storing hydroscopic materials. The relatively stiff rim allows the container to scoop hard materials such as ice without becoming mutilated.

While the containers are suitable for use with the lid of FIG. 3, it will be appreciated that inside fitting lids could also be used with them. Moreover, the foam material may be combined with other materials such as an open web-like fabric or a film for added strength or texture.

What is claimed is:

1. A container comprising:

a wrapped side wall made from generally rigid foam sheet material having a lapped side seam, defining openings at opposite ends thereof;

a preshaped bottom wall made from generally rigid foam sheet material, said bottom wall having its central portion lying generally perpendicular to the axis of the side wall and an annular shirt extending [away from the general plane of the] *outwardly of said* central portion *into proximity with one end of said side wall*, said skirt defining an outer diameter [slightly] *no* less than the inner diameter of [one of] *the* said opening [s] in said container *at said one end of said side wall* whereby said bottom wall may be fitted snugly into said opening *at said one end of said side wall;*

and a heat-sealed seam joining the skirt to said one end of the side wall.

2. A container as described in claim 1 further characterized by

said side wall being frustoconical in shape and narrower at the bottom edge and said skirt being frustoconical in shape and being wider at the bottom and with the upper edge of the skirt joining the central portion,

said heat-sealed seam joining only the lower portion of the skirt and the bottom margin of the side wall and with the side wall and skirt diverging from one another in an upwardly direction.

3. A container as described in claim 1 further characterized by

said side wall being turned over at the upper edge to lend lateral stiffness to the container.

4. A container as described in claim 1 further characterized by

said lapped seam being formed by overlapping the edges of the blank from which the side wall is made and welding together the overlapped margins, the thickness of the side wall at the overlapped edges being substantially less than twice the thickness of the side wall material.

5. A container as described in claim 1 further characterized by

said bottom skirt extending upwardly from the central portions and lying flush against the side wall,

the lower margin of the side wall being turned inwardly beneath the periphery of the central portion of the bottom with said margins being sealed to the bottom.

6. A container as described in claim 5 further characterized by

said lapped seam being formed by overlapping the edges of the blank from which the side wall is made and welding together the overlapped margins, the thickness of the side wall at the overlapped edges being substantially less than twice the thickness of the side wall material.

7. A container as described in claim [6] *4* further characterized by

said side wall be frustoconical in shape and narrower at the bottom edge and said skirt being frustoconical in shape and being wider at the bottom and with the upper edge of the skirt joining the central portion,

said heat-sealed seam joining only the lower portion of the skirt and the bottom margin of the side wall and with the side wall and skirt diverging from one another in an upwardly direction.

8. A container as described in claim [6] *4* further characterized by said side wall and bottom having an approximate stock thickness of 0.110 inch.

9. A container as described in claim 8 further characterized by

said side wall being frustoconical in shape and norrower at the bottom edge and said skirt being frustoconical in shape and being wider at the bottom and with the upper edge of the skirt joining the central portion,

said heat-sealed seam joining only the lower portion of the skirt and the bottom margin of the side wall and with the side wall and skirt diverging from one another in an upwardly direction,

said turned over portion of the rim being expanded to a thickness exceeding the thickness of the side wall.

10. A container comprising:

a wrapped side wall made from foam sheet material having a heat-sealed lapped side seam and defining openings at opposite ends thereof;

a preshaped bottom wall made from foam sheet material having a central portion disposed transversely of the longitudinal axis of the side wall and an annular skirt extending outwardly from said central portion having one surface thereof in proximity with the inner surface of said side wall at one end of the latter; and

a heat-sealed bottom seam joining said one surface of said skirt to said inner surface of said side wall.

11. The invention defined in claim 10, wherein said side wall is substantially frustoconical; and wherein said bottom wall is heat-sealed thereto adjacent the smallest end thereof.

12. The invention defined in claim 10, wherein said side wall is turned inwardly beneath said skirt in the provision of said heat-sealed bottom seam.

13. The invention defined in claim 12, wherein said side wall is substantially frustoconical; and wherein said bottom wall is heat-sealed thereto adjacent the smallest end thereof.

14. The invention defined in claim 1, wherein said side wall is turned inwardly beneath said skirt in the provision of said heat-sealed bottom seam.

15. A container as defined in claim 10 wherein said side wall is turned over at the edge defining said other end thereof to lend lateral stiffness to said container.

16. A container as defined in claim 12 wherein said side wall is turned over at the edge defining said other end thereof to lend lateral stiffness to said container.

* * * * *