

United States Patent

Goodrich et al.

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[54] COLLAPSIBLE SANITARY CONTAINER

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[51] Int. Cl. B65d 35/08

[58] Field of Search 222/527, 29, 105, 107, 530, 222/465; 150/5; 215/100, 100 A, .5

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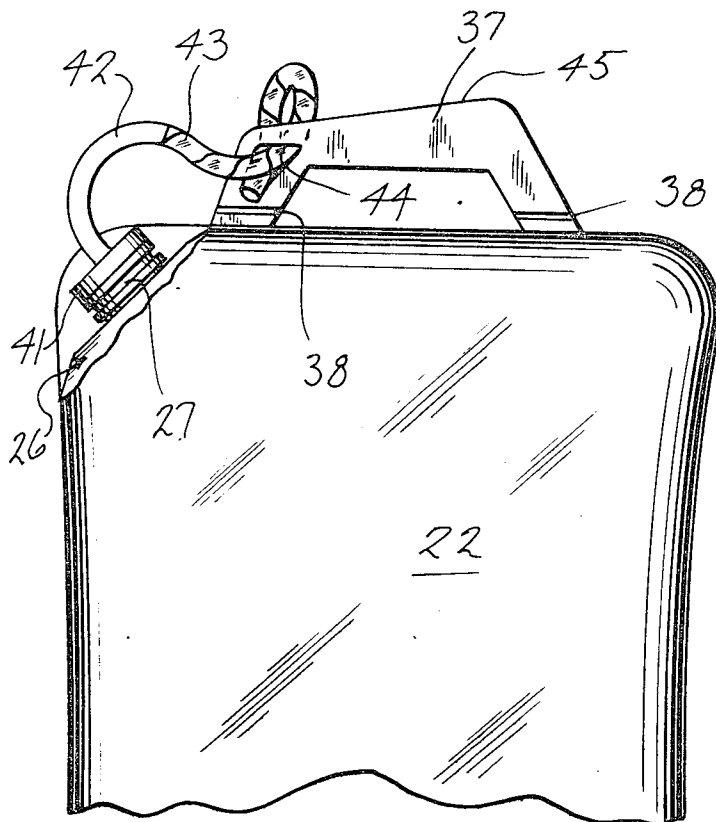
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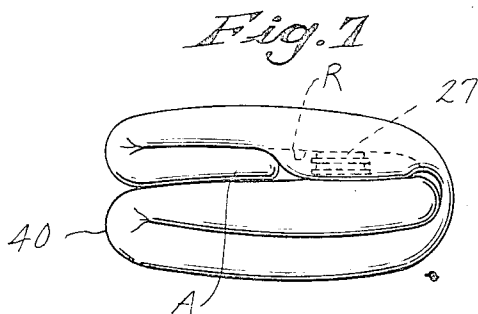
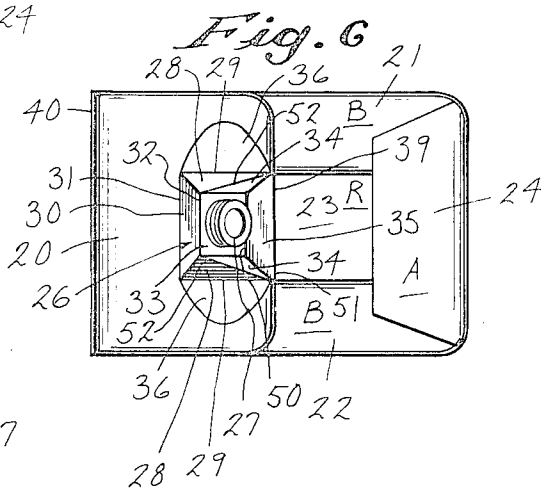
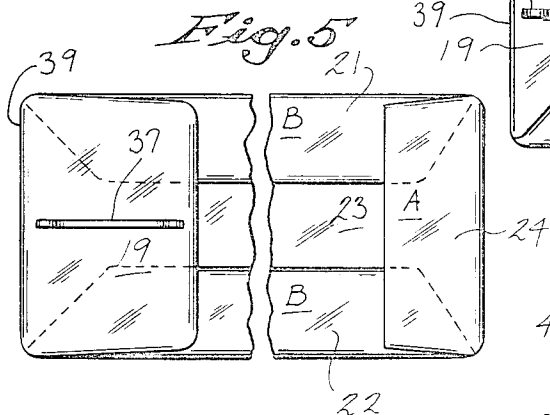
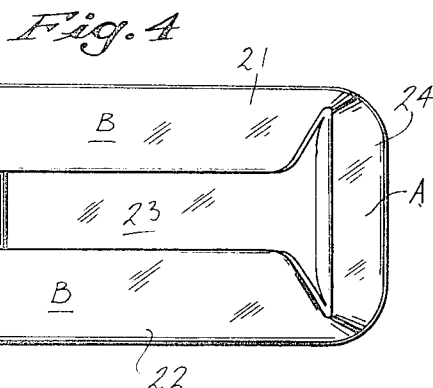
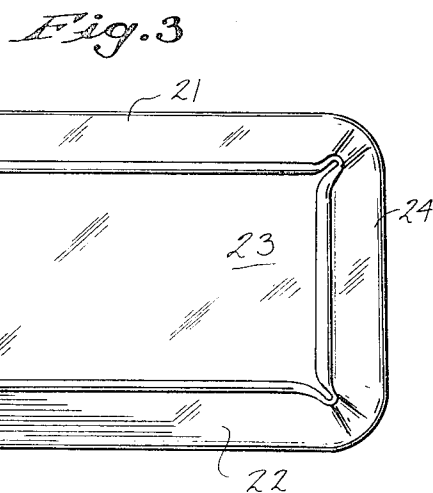
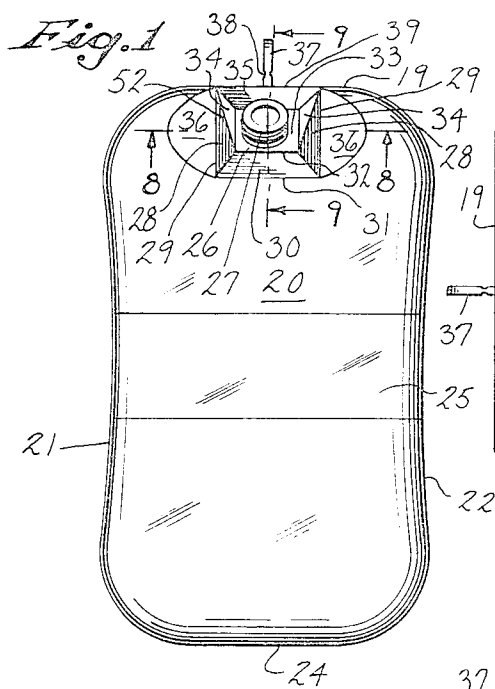
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[57] ABSTRACT

A generally rectangular polyethylene container for liquids such as milk having a collapsible spout along one corner of the top and having an integral foldable handle on the top, the container being adapted to be folded to collapsed condition by folding which is so arranged that the spout and handle are enclosed within the folds and accommodated in recesses between folded portions, the container being automatically opened out when it is filled with liquid and being self-supporting when thus filled. The foldable handle has an inclined outer edge and the handle is adapted to open out so that its inclined edge tilts the container toward the spout when the container in the dispensing cabinet is partially emptied, and the handle has an opening in a corner which is adapted to receive the dispensing tube during transit of the filled container.

9 Claims, 16 Drawing Figures



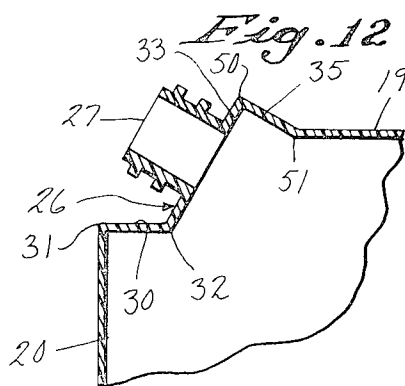
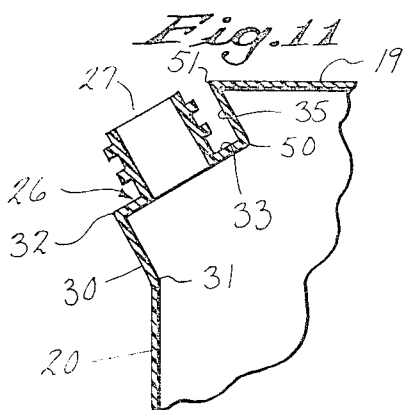
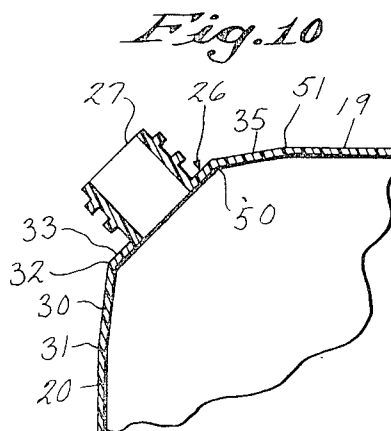
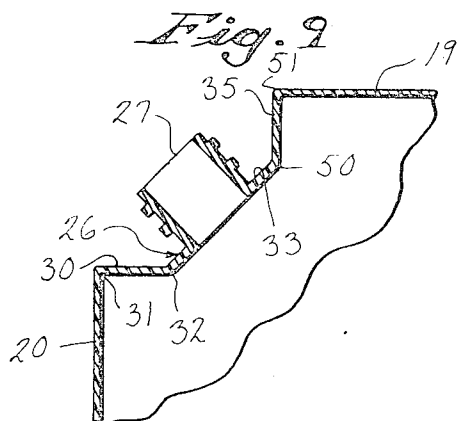
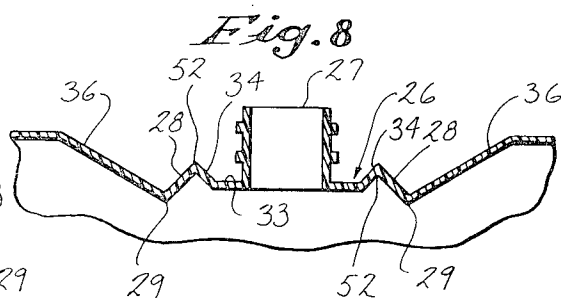
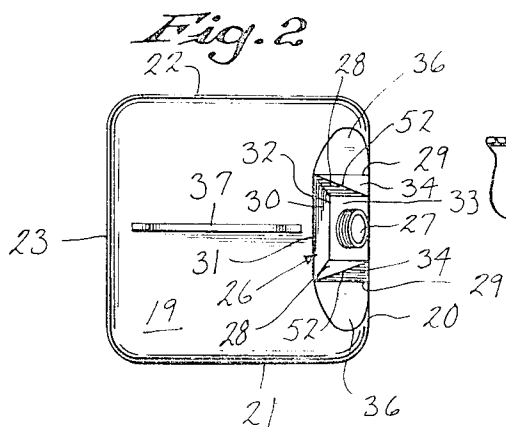


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Fig. 13

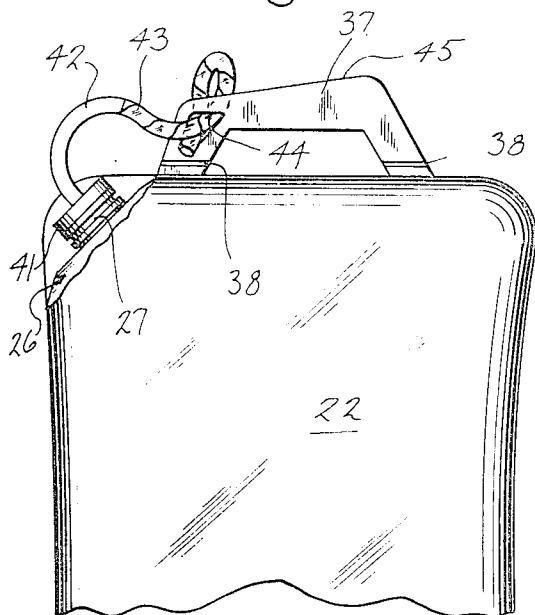


Fig. 14

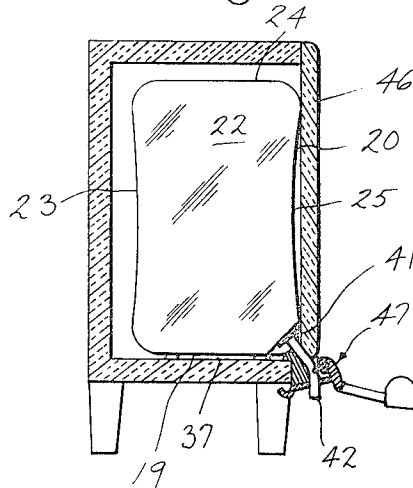


Fig. 15

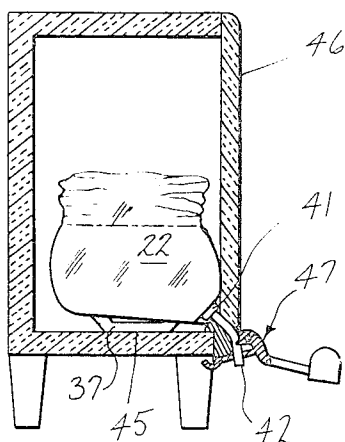
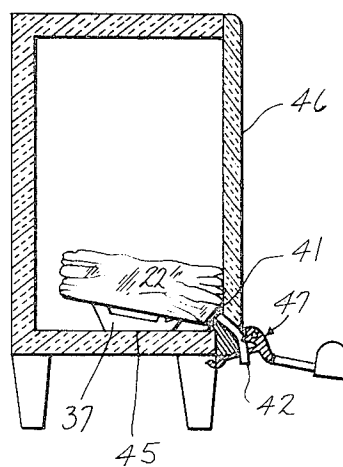


Fig. 16



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COLLAPSIBLE SANITARY CONTAINER

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention, while suited for use with a variety of liquids, is particularly suited for dairy use to provide a single-service, throwaway type of milk container which may be used in milk dispensers of the type commonly employed in restaurants.

2. Description of the Prior Art

Heretofore milk has been delivered by the dairy to restaurants, institutions, or the like for use in milk-dispensing cabinets either in metal milk cans or, more recently, in relatively thin plastic bags within a supporting carton of fiberboard or the like. The metal milk cans are objectionable as they must be rehandled when empty, and must be thoroughly cleaned and sanitized at the dairy before being used again. The relatively recent thin plastic bag, which is reinforced by an external carton, eliminates some of the problems connected with metal milk cans, but the supporting cartons are expensive, require dairy labor to set up, and often absorb moisture, thereby losing their effectiveness. Also the relatively thin plastic containers can only be filled manually while standing on an undersupport within the supporting fiberboard carton, into which they must be manually inserted. This slows up the process and generally increases the expense connected with packaging of milk. In our pending application, Ser. No. 702,257, filed Feb. 1, 1968, one type of collapsible container is disclosed. The present invention relates to improvements in the construction of the container, and improvements in the collapsed form thereof, which improvements simplify the manufacture and provide a more efficient construction.

SUMMARY OF THE INVENTION

The present invention provides a single-service, throwaway type of plastic milk container which completely eliminates the need for rehandling and cleaning at the dairy and eliminates the need for any supporting carton, the container being collapsible in a novel manner and having the spout so positioned that it is protected during collapse without substantially increasing the bulk of the collapsed package, and the handle being integrally formed of the same plastic material and having the property of tending to straighten out in a dispenser, as the weight of the contents decreases, to elevate and tilt the container in a manner to insure draining of all of the last liquid toward the spout.

A further object of the invention is to provide a plastic container having an integral spout mounting and spout which is located at a corner of the top of the container in a position for efficient dispensing from a milk cabinet, the spout mounting being of a partially recessed nature to reduce bulk in the folded package.

A further object of the invention is to provide a container as above described which, when in collapsed form, provides interior space between folded portions for accommodating the spout and folded handle.

A further object of the invention is to provide a container as above described in which the spout is protected within the folds of the collapsed container so that when the collapsed containers are shipped from the manufacturer to the dairy the spouts are protected against contact with bacteria, the collapsed arrangement eliminating the necessity of capping the spouts during shipment of the collapsed containers.

With the above and other objects in view, the invention consists of the improved collapsible sanitary container, and all of its parts and combinations, as set forth in the claims, and all equivalents thereof.

BRIEF DESCRIPTION OF THE DRAWING

In the accompanying drawing, in which the same reference numerals designate the same parts in all of the views:

FIG. 1 is a front elevational view of the improved container when filled;

FIG. 2 is a top view thereof;

FIG. 3 is a plan view of the container after it has been flattened to expel air, the sides and ends being bent upwardly preparatory to folding of the container for shipment;

FIG. 4 shows the next step in the folding process with the top folded over beneath the infolded side portions;

FIG. 5 is an alternative for the steps shown in FIG. 4 wherein the top portion is folded inwardly above the infolded side portions instead of under said portions as in FIG. 4 wherein the bottom is folded under;

FIG. 6 shows the next stage in the folding operation wherein the bottom end is folded over and superimposed upon the infolded side portions, and wherein the spout end is again folded to bring the spout on top;

FIG. 7 is the final folded form wherein the spout and handle are received in the recesses between the folds;

FIG. 8 is a fragmentary sectional view taken approximately on the line 8—8 of FIG. 1;

FIG. 9 is a fragmentary sectional view taken on the line 9—9 of FIG. 1, the spout being in a fully collapsed condition;

FIG. 10 is a view similar to FIG. 9 showing the spout in a fully extended condition;

FIG. 11 is a view similar to FIG. 9 showing the spout partially collapsed in one direction;

FIG. 12 is a view similar to FIG. 9 showing the spout partially collapsed in the opposite direction from FIG. 11;

FIG. 13 is a view of the upper portion of the container looking at a different side from FIG. 1 and showing the container in filled condition as it is sent by the dairy to the user;

FIG. 14 is a vertical sectional view through a milk dispenser showing a filled container in dispensing position therein with the weight of the liquid maintaining the handle in folded condition therebeneath;

FIG. 15 is a similar view showing the container after a relatively large amount of milk has been dispensed therefrom, sufficient to allow the handle to start to straighten up and tilt the container; and

FIG. 16 is a similar view showing the nearly empty container with the handle completely straightened up.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring more particularly to FIGS. 1, 2, 8, 9 and 13, the container is generally rectangular and is formed of moldable plastic material having flexibility and strength but being relatively nonstretchable, preferably of high- or low-density polypropylene or polyethylene. Other similar materials having suitable properties may be employed, such as other plastic materials having similar properties and which are approved by the Food and Drug Association for liquids.

The container, when filled, includes a sidewall forming the front 20, sidewalls 21 and 22, a sidewall forming the back 23, a bottom wall 24, and a top wall 19. All of these walls are generally rectangular as illustrated. It is preferred to employ an average wall thickness in the neighborhood of 0.010 to 0.030 of an inch. Intermediate its height the container is of reduced transverse dimensions and of somewhat increased thickness as at 25 to provide resistance against bulging when filled.

A spout base 26 is of increased thickness and is constructed as shown in FIGS. 1, 8 and 9. Also, the spout 27 which projects from said base is of increased thickness. The spout base is surrounded by relatively narrow flexing marginal areas 35 at the top, 30 at the bottom, and 28—34 on each side. Each of these marginal areas is a truncated triangle in plan view. Each marginal area on each side is separated into the two triangular portions 28 and 34 by a diagonally extending flex line 52, as shown more clearly in FIG. 2. As shown in FIG. 8, the thickened marginal portions 28 are normally inclined upwardly toward one another and their lower edges join the thinner material of the container proper along flex lines 29. These portions 28 are triangular in shape as illustrated in FIG. 1. The marginal area 30 in front of the spout base is inclined upwardly and inwardly as shown in FIG. 9 from a marginal flex

line 31 where it joins the thinner material of the container proper. This inclined front marginal area 30 is a truncated triangle in shape as shown in FIG. 1. Extending inwardly from the flex line 32 at the front of the base is the main panel portion 33 which is at an oblique angle with respect to the plane of the top 19 of the container when the latter is filled, as shown in FIGS. 1, 8 and 9. The triangular side portions 28 are flexibly connected with the sides of the panel 33 by the triangular portions 34, and the rear edge of the panel 33 is connected with the main body by the inclined marginal area 35, as shown in FIGS. 1 and 9. On each side of the spout base are inwardly tapered sections 36 of the same thickness as the main portion of the container.

Molded integrally with the top of the container is a handle 37 which is foldable into parallelism with the top of the container on light score lines 38 (see FIG. 13). This handle is relatively thick, preferably about one-eighth of an inch, and has the property of inherently tending to straighten out to the upright condition of FIGS. 1 and 13, the score lines extending only part way in on each side and not far enough to detract from the tendency of the handle to straighten up.

Before the container is shipped to the dairy or other user, it is placed downwardly on its front, as shown in FIG. 3, and the back 23 is inverted toward the front 25 to form the shallow, boatlike form of FIG. 3. Next, the portion A of the bottom 25 at one end is folded upwardly and inwardly over the infolded side portions B, as shown in FIG. 4, or under as shown in FIG. 5, and the portion of the top at the opposite end and which contains the handle is folded inwardly approximately on the spout baseline 39 to a position where it is preferably beneath the ends of the folded portions B of FIG. 4. Alternatively, this part of the top may be folded inwardly above the ends of the portions B as shown in FIG. 5 and the end A may be folded over as in FIG. 6, or under as in FIG. 5. In either event, the material is again folded over on the line 40, as shown in FIG. 6, to bring the spout portion on top. This leaves a pocket R between the folded portions A and B which is positioned to receive the bulky portions of the spout and its base when the bottom end A is finally folded to the final collapsed condition of FIG. 7. Also, the handle 37 of FIG. 4 is folded down in the space between the folded side portions B. In this form the collapsed container is substantially free from air and the spout is completely confined and protected from contact with anything which might cause contamination. A quality of these collapsed containers may be shipped by the container manufacturer to the dairy or other user.

At the dairy the containers are filled with milk in the manner illustrated and described in our copending application, Ser. No. 702,257, and, when filled, they are in the condition shown in FIGS. 1 and 10. The filled containers are capped by caps 41 which carry dispensing tubing 42, the latter being usually wrapped with thin polyethylene or other material as at 43 to protect it from contamination. The end of this tubing may then be doubled over and inserted in the opening 44 of the handle. This keeps the dispensing tubing in an out-of-the-way position and also tends to prevent the protective wrapping 43 from coming off.

An important feature of the invention resides in the structure and shape of the handle, the latter having an inclined upper edge as at 45 for a purpose to be hereinafter described.

In use of the container in the usual milk-dispensing cabinet 46 shown in FIGS. 14 and 16, the filled container is positioned in the cabinet as shown in FIG. 14, the dispensing tubing 42 having been pulled out and operatively associated with the manually operable dispensing mechanism 47 as it well known in this type of equipment. The weight of the filled container maintains the handle 37 in a folded position in parallelism with the top of the container (bottom in FIG. 14). As the milk or other liquid is dispensed the vacuum created in the upper portion of the container causes it to collapse as shown in FIG. 15. Also, the reduction in weight allows the handle to start to spring toward its opened-out position as in FIG. 15. Due to the inclined edge 45, as the handle thus opens out it tends to tilt

the bottom of the container toward the dispensing spout to assure complete discharge of the last portion of milk in the container. FIG. 16 shows the practically emptied container with the handle 37 completely straightened up and causing substantial incline of the container toward the spout.

Due to the reduced transverse dimensions of the container intermediate its height and to the reinforced bulging in the center to a point which might interfere with the fit of the filled container in a dispensing cabinet.

The retractable spout is designed so that it can be positioned in various ways as required. FIG. 9 shows the spout completely retracted. FIG. 10 shows the spout flexed outwardly to a completely projecting condition. During movement from the position of FIG. 9 to the position of FIG. 10 the material flexes on the lines 31 and 32 and 50 and 51, as shown in FIGS. 9 and 10, and also on the lines 29 and 52 (see FIG. 8). When the container is in the collapsed condition of FIG. 7 the spout may be in either the retracted condition of FIG. 1 or the extended condition of FIG. 10. When the container is in filled condition, being transported from the dairy to the user, the spout is preferably in retracted condition for protection, but it could be in the extended condition of FIG. 10. When dispensing is being performed as in FIGS. 14, 15 and 16, the spout is in the extended condition of FIG. 10. In certain situations it might be desirable to have the spout partially retracted in one direction as in FIG. 11, or in the other direction as in FIG. 12.

It is to be understood that we do not desire to be limited to the exact details of construction shown and described, for obvious modifications will occur to a person skilled in the art.

What we claim is:

1. A collapsed generally rectangular container of flexible material having a generally rectangular top and having a first generally rectangular sidewall, a spout projecting from a corner between said top and said first sidewall, said container having three other generally rectangular sidewalls and having a generally rectangular bottom, the sidewall opposite said first generally rectangular sidewall being inverted into substantial contact with said first wall and between the other two sidewalls, and said other sidewalls having fold lines intermediate their width, with said walls providing doubled infolded side portions folded over the side edges of the inverted sidewall and terminating short of meeting to provide a recess therebetween, and there being a top portion which carries the handle infolded from one end over part of the inverted sidewall, and there being a bottom portion infolded from the opposite end over another part of the inverted sidewall, said infolded portions being folded toward one another but short of meeting to provide a spout recess therebetween which is also bounded by the edges of infolded side portions, and said infolded end portions being also folded over one another into superimposed condition with said spout recess receiving and protecting said spout in confined and hidden condition between layers of the collapsed container.

2. A collapsed generally rectangular container as claimed in claim 1 in which the top portion has a handle which is concealed in the recess between the infolded side portions and is folded into parallelism with the top portion.

3. A collapsed generally rectangular container as claimed in claim 1 in which the infolded bottom portion at one end is shorter than the infolded top portion at the other end and extends within the collapsed container from one end of said collapsed container to a position short of the spout.

4. In a liquid container of molded plastic material having a front and having a top, and having a spout projecting from a corner between said front and top, the improvement comprising: a plastic handle integrally molded with said top extending toward the spout and normally projecting outwardly from the top a substantial distance beyond the spout, said handle being foldable into parallelism with said top, said handle having a tendency to straighten up from folded position so that when the container is in inverted position in a dispensing cabinet, resting on the container top and on the folded handle, the han-

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die will tend to straighten out after a predetermined amount of liquid weight has been removed, the handle having an outer edge which, when the handle is in straightened-out position, projects beyond any portion of the spout and which is inclined inwardly toward the spout in a direction to cause tilting of the container toward the spout for better draining of the remainder of the contents of the container.

5. A container for liquid as claimed in claim 4 in which the handle is of sufficient thickness to support the nearly drained container after it has straightened out, the tendency to straighten out being inherent in the integrally molded handle.

6. A container for liquid as claimed in claim 5 in which there are lines of weakness on the handle near the junction with the container to facilitate foldable collapse.

7. A liquid container of strong, flexible plastic material, said container being a rectangular prism and having sidewalls and a top and there being corner edges between said sidewalls and top, part of said plastic material on one corner edge providing

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an obliquely disposed quadrilateral base panel for a spout, which panel is of less length than and positioned obliquely on said corner edge intermediate the length of said edge, a spout integral with and projecting from an intermediate portion of said base panel, marginal flexing areas which are bounded by flex lines surrounding said base panel, two of said areas extending transversely of the corner edge on opposite sides of said base panel, said flex lines providing for inward buckling movement of said marginal areas when pressure is exerted on the base panel whereby the panel may be moved inwardly on selected flex lines to selectively alter the position of the spout.

8. A liquid container as claimed in claim 7 in which each of said oppositely disposed, transverse marginal flexing areas is divided by an oblique flex line into two triangular portions which flex relative to one another.

9. A liquid container as claimed in claim 7 in which each of said marginal flexing areas is a truncated triangle in plan view.

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