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EARED LAMINATED PLASTIC CONTAINER

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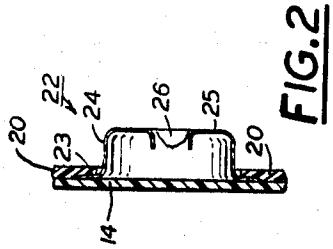


FIG.2

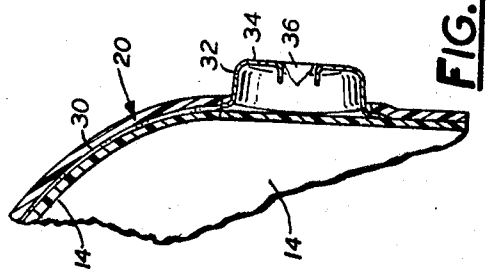


FIG.3

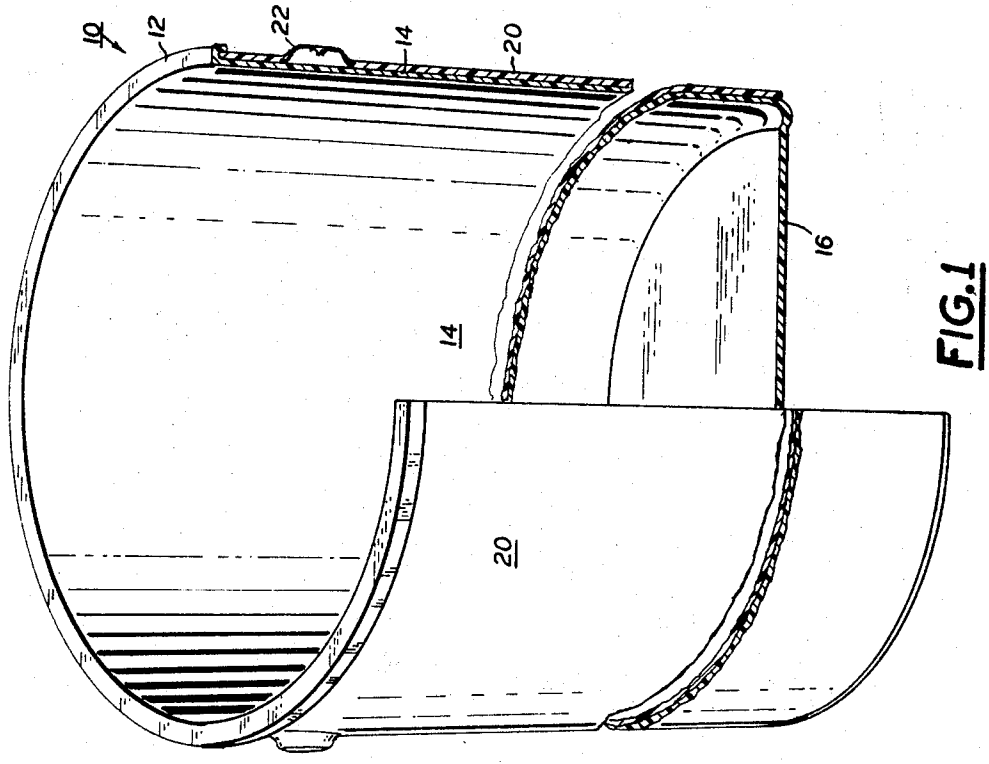


FIG.1

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EARED LAMINATED PLASTIC CONTAINER

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ABSTRACT OF THE DISCLOSURE

An eared container is of laminated plastic construction in which the interior portion is a one-piece fluid-retaining member. The outer member provides an additional stiffness to the wall while at the same time positioning and retaining a pair of ears of metal and the like. The ears are of conventional shape and disposition to retain a wire bail.

BACKGROUND OF THE INVENTION

Field of the invention.—Plastic containers, as such, are not placed in a particular general class but the container of this invention pertains to receptacles such as are found in the general class of Cloth, Leather and Rubber. In particular the invention relates to the sub-class of handles and handled receptacles. In addition, the general class of receptacles identified as Bottles and Jars contain some plastic containers and the sub-class of attachments is particularly noted. The method of assembly or laminating the container is noted but in the preferred embodiment hereinafter shown and described is not, as a method, considered patentably novel.

Description of the prior art.—The use of metal in pails or cans to be provided with bails is well known and their yearly consumption is in the hundreds of million units. Plastic pails of like size and with wire bails mounted as in the manner of sheet metal cans are, as far as can be ascertained, unknown in the art and trade.

Among patented plastic containers is a garbage container shown in U.S. Patent No. 2,558,322 to Stine on June 26, 1951. This container includes metal straps which form a steel spring frame and which are increased and molded in plies of rubber. An insulated container as in U.S. Patent No. 3,070,253 to Brown on December 25, 1962, shows a handle hinged to inserted members molded in place during the forming of the container body. Bands attached to the neck or in grooves of the container are well known in the art and are noted in U.S. Patents No. 3,093,257 to Miller on June 11, 1963; No. 2,760,262 to Homan on August 28, 1956, and No. 3,120,974 to Matson on February 11, 1964. In these referenced patents as well as other known exemplifications the handle or bail-retaining means is molded in as an insert; is mounted in a groove, or is attached beneath a shoulder and as an exterior member.

The widespread use of water based paints and the like has made the use of steel containers dependent on the interior surface treatment. The commercial tin plate usually provided for oil based paints is not satisfactory for water based paints in that rust becomes a factor in the storage of the paint. To overcome this difficulty instead of tin plate the interior of the can is coated as by lacquer and the like. This coating is selected to act as an impervious lining in which to safely store the paint in the container. However, if the ears are welded or soldered to the container body after the coating of the interior, the localized portion where the attachment is made may be effected by the heating produced during the attachment and thus destroy this coating and requiring a repair. For these and other reasons the cost of the eared metal container as used for water based paints has continued to increase. As a cost reducing substitute for metal containers, the smaller

cans customarily furnished without bails are often of metal bound paper, plastic and the like. A molded plastic container for one gallon sizes and larger, although solving the rust and like problems would, with molded bail ear inserts, likely be more expensive than comparable metal containers.

As the paint pail is a disposable item which is usually thrown away after the contents are used, its cost is a matter of business awareness and competitive concern. A rust proof eared container of satisfactory strength and of lower cost is greatly desired and needed.

SUMMARY OF THE INVENTION

The container of this invention contemplates an inner member of one-piece construction which provides a fluid-retaining receptacle having an upper rim, side walls and a bottom. To provide additional support and/or rigidity to the side wall as well as providing a locating and retaining means for metal ears there is an outer sleeve sized to snugly mate with the outer surface of the inner member. Carried in appropriately formed recesses in the outer sleeve there are a pair of domed metal ears having apertures therein and when assembled in place are adapted to receive and pivotally retain the end of a wire bail.

It is an object of this invention to provide an eared container of laminated plastic construction in which a bail-retaining ear is mounted and is adapted to receive and retain a wire bail.

It is a further object of this invention to provide an eared container of laminated plastic construction in which the inner member is a fluid-retaining receptacle and in which the outer member is adapted to support and stiffen the wall of the container while between the inner and outer members there is mounted a metal bail ear retained by and partially extending outwardly from the outer member.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 represents an isometric view of the container of this invention with the walls partly broken away and sectioned to show a partial orthographic sectional view of the wall construction of this container;

FIG. 2 represents a sectional side view of a metallic ear adapted for mounting between the wall members of the container of FIG. 1, and

FIG. 3 represents a partially isometric and sectioned view showing a metal band having bail ear pockets formed therein and adapted for mounting between the wall portions of the container of FIG. 1.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now in particular to the drawings in which like numbers refer to like members throughout there is shown in FIG. 1 a container **10** which as seen in the orthographic sectioned view on the right includes a top rim **12** and an inner wall **14** extending downwardly to a bottom **16** and forming therewith a fluid-retaining inner member. An outer sleeve **20** is sized to snugly seat upon and retain the wall **14** of the container. This outer sleeve **20** has formed therein two apertures diametrically spaced and, when seated, are at a predisposed distance down from the upper rim **12**. These apertures are adapted to receive an ear **22** which may be the ear of FIG. 2 or may be the ears formed as part of a band of FIG. 3. It is to be noted that the outer wall **20** is preferably sized so that its upper edge will be retained by a recess formed in the under side of the top or upper rim **12** of the inner wall. It is also to be noted that the walls **14** and **20** are preferably slightly tapered at like angles of one or two degrees so that when the inner wall has the outer wall **20** placed thereon there is a friction sliding fit allowing the outer wall to snugly engage and

retain the inner wall **14**. It is to be noted that the ear **22** is preferably of metal as more fully hereinafter described.

The present techniques of molding have produced very inexpensive containers in which vacuum forming or the like is used in conjunction with plastic sheets which have been softened as by heat to allow vacuum forming or pressure forming in which the sheet is pushed by means of vacuum or air into contact with one-half of a shape. Mechanism for forming in this manner is shown in many patents, one of which is U.S. Patent 2,832,094 to Groth on April 29, 1958. In this particular application it is contemplated that a sheet of polypropylene or polyethylene or the like which thermo-plastic material is warmed sufficiently for molding. In a female mold this warmed sheet is forced as by pressure into the cavity to form the inner container having the upper rim **12**, inner wall **14** and bottom **16** as shown in FIG. 1 and with the outer surface of the wall **14** of precise size and configuration.

In like manner a tube of plastic which may be polyethylene, polypropylene or other thermo-plastic material is cut to length and in a heated and softened condition is expanded into a mold to form the taper and at the same time form the sockets for receiving the ears or ear band. After forming, this same shaped tube is then cooled upon a mandrel to provide a precise size determination of the inner surface of the outer wall **20**.

Referring now to FIG. 2 it is to be noted that an ear **22** of conventional construction is made with a small flange **23** which lies substantially in a single plane. Extending upwardly from the flange is the outer wall **24** which terminates in an end **25** into which is formed an opening **26** adapted to receive the end of a bail. These ears are conventionally made in punch presses by means of a forming die and from a strip of metal such as steel and no novelty in the forming is claimed. However, the assembly of these ears in this laminated plastic container is considered novel.

Referring now to FIG. 3 it is to be noted that an ear portion similar to the ear of FIG. 2 is formed in a strip **30** which strip may be as wide as the flange of the ear of FIG. 2. Into this strip two ears may be formed, the ear portions having an outwardly extending wall portion **32** closed by an end **34** into which is formed an opening **36** for the entrance of the end of the bail, not shown. It is to be noted that this band need not be joined at its ends but as formed has a small amount of taper provided therein in order to seat within a recess formed in the outer wall or the inner wall of the container of FIG. 1. It is contemplated that the ear of FIG. 2 and/or of FIG. 3 may be made of sheet metal such as steel of about eight to ten thousandths of an inch in thickness, this material being readily deformable in dies to form the ears in a conventional manner as is well known in the present state of the art.

ASSEMBLY OF THE CONTAINER

The container of this invention is readily assembled by means of many types of collating apparatus. However, it is suggested that the container of FIG. 1 have the inner members placed upon a conveyor with their open ends down and with the inner portion supported as by means of a short mandrel extending into the container at least past that portion of the container which will be opposite the ear **22**. The outer sleeve **20** may have the ears **22** inserted into the apertures formed therein or may have the band **30** with the ears formed therein placed within the sleeve **20** with the ears extending outwardly through the formed apertures. The apertures are sized to slidably engage and retain the outer diameter **24** of the ear **22**, each aperture forming a collar member for engaging the flange **23** of the ear **22** of FIG. 2 or the strip **30** of the ear assembly of FIG. 3. As the inner portion is brought in the way of the outer stiffening sleeve **20** with the ears therein, this outer sleeve is brought down upon the inner member and is pushed into a locked or seized relationship preferably with the upper edge or with the larger end of the sleeve **20** sliding into and being retained by the undergroove formed in the lip **12**. By making the mating surfaces of the inner and the outer walls with approximately a three to five thousandths interference fit it is possible by means of a sliding until locked engagement to make the inner and outer walls of the container of FIG. 1 in effect one wall. However, the locking of the two wall members or the retention of the inner to the outer wall may be further insured as by applying localized heat welding to various spots on the inner and outer wall. The inward facing surfaces of the flange portions **23** of the ears **22** or the band portion **30** of the ear strip is engaged by the wall **14** of the container. The outward facing surfaces of the flange portions **23** of the ears **22** or the band portion **30** of the ear strip is engaged by the wall **20**. As the walls **14** and **20** are designed for an interference fit, at the engagement with the ear they are locally displaced by the flange portion **23** or band portion **30**. The displaced wall portions tend to move toward their formed position and by this movement toward each other and thus tend to grip the ear flange or band portion. Manufacturing inaccuracies may cause the inner and outer walls of the container to be slightly separated at the ear locations whereby the ear or band becomes retained in a pocket whose inner retaining member is wall **14** and the outer retaining member is the sized aperture in the wall **20**.

In the preferred embodiment above-described only one bottom has been provided in the container of FIG. 1 and when and if an additional support bottom is desired or needed the outer sleeve **20** may be formed with a bottom which will nest and additionally support the bottom **16**. As this container is intended to be produced at a cost less than that of the metal containers of a similar size, configuration and use, it is of course necessary that the plastic components and ears be made as economically as possible. Therefore, the method suggested above of using a draw or drape plastic molding is one practical way of providing the maximum amount of formed plastic for a minimal amount of expense. It is also to be noted that the inner container which provides the fluid-retaining means may be made of one plastic while the outer sleeve **20** may be made of a different plastic with a much greater rigidity and strength. The locking taper suggested for use in this container may be as little as one-half to one degree on the side which angle usually will still allow these assembled containers to be nested one within the other with the ears **22** acting as a limiting stop for the stacking of these containers.

The container of FIG. 1 is shown with tapered walls **14** and **20** and is the contemplated and preferred configuration. However, the walls **14** may be made with a straight side configuration whereupon the outer wall **20** is also made with a straight configuration and with a size adapted to be shrink fitted to the wall **14**. A heat shrink fit permits straight sided containers to be laminated with the assembled walls in locked engagement and acting substantially as one. Of course the advantage of nesting is lost on straight sided containers.

Irregularly shaped side walls or even a slight reverse taper could be used with a heat shrink assembly. It is only necessary that the outer wall **20** have apertures and/or pockets for receipt and retention of the ears **22** or ear strip **30**. This construction of course is adaptable for containers having a transversely cross-sectional configuration which may be generally square, rectangular or other geometrical or an irregular shape.

Terms such as "left," "right," "up," "down" and the like are applicable to the embodiment shown and described in conjunction with the drawing. These terms are merely for the purpose of description and do not neces-

sarily apply to the position in which the eared laminated plastic container may be constructed or used.

The conception of said container and its many applications is not intended to be limited to the specific embodiment shown but departures therefrom may be made within the accompanying claims and without sacrificing its chief advantages and protection is sought to the broadest extent the prior art allows.

What is claimed is:

1. In an eared laminated plastic container assembled from at least two separately made members which are assembled to provide a container having an open top and a closed bottom, said laminated container comprising: (a) an inner member having a bottom and a side wall extending therefrom and continuing to an open end, the outer surface of the side wall being of precise configuration and size; (b) an outer sleeve member having at least a side wall portion adapted to provide a reinforcement for the side wall portion of the inner member, the outer member having a pair of diametrically disposed apertures of determined size formed at a determined distance from one end of the outer member, the inner surface of said outer member being of a precise configuration and size, the outer member having a length substantially as long as the side wall of the inner member and as assembled to the inner member the outer member frictionally engages and retains the side wall of the inner member from a point near a rim portion at its open end to a point near its bottom, and (c) a pair of bail ears of cup-like configuration, the ears each having a side wall with a flange portion extending therefrom, the ear side walls sized so as to seat in and be retained in the apertures of the side wall of the outside member, the flange portions of the ears being of a greater size than the aperture so that the ears are restrained from passing through the aperture, and when the ears are mounted therein and the inner and outer members are in the assembled and locked position the flange portions of the ears are engaged by the inner and outer walls to retain the flange portions therebetween with the dome portion extending outwardly with the ear providing means for attaching a bail to the container by which to lift the container.

2. In a container as in claim 1 in which the side walls of the inner and outer member are formed with a slight taper diminishing from the open end toward the bottom.

3. In a container as in claim 1 in which the ears are two separate and individual members of sheet metal with a small flange at one end of the side wall and with a closing and extending from the outer end of the ear side wall, said closing end having a bail end receiving opening therein.

4. In a container as in claim 1 in which the cup-like shaped portions are formed in a strip of sheet metal and with each cup-like shape having side walls extending from the strip to a closed end portion having a bail end receiving opening therein.

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