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(54) **PLASTIC CONTAINER WITH DOUBLE LOCK LID AND TEAR BAND**

Publication Classification

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(57) **ABSTRACT**

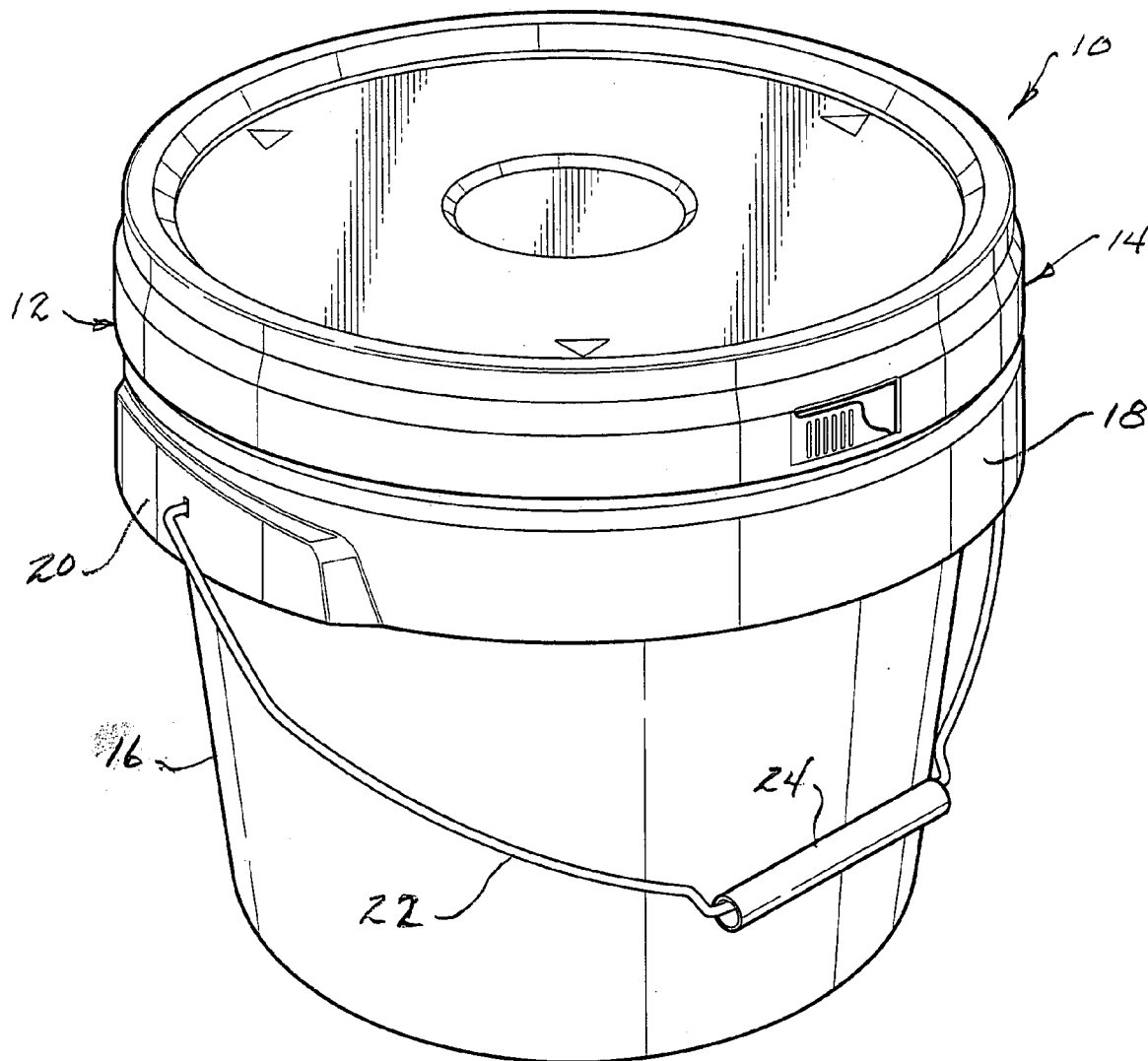
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An all plastic container comprising the combination of injection molded pail and lid. The lid initially locks onto the container at upper and lower locations and seals thereto by virtue of an inverted U-shaped peripheral section with a segmented upper lock and a relatively continuously lower lock at the bottom edge of the lid skirt. The bottom lock can be torn away by way of a circumferentially weakened area that forms the lower edge of the skirt into a tear band. A starter tab is provided. Once the tear band is removed the segmented upper locks securely hold the lid to the pail. However, by lifting and flexing the lid at discrete locations identified by indicia on the top deck of the lid, the lid is relatively easily removed.

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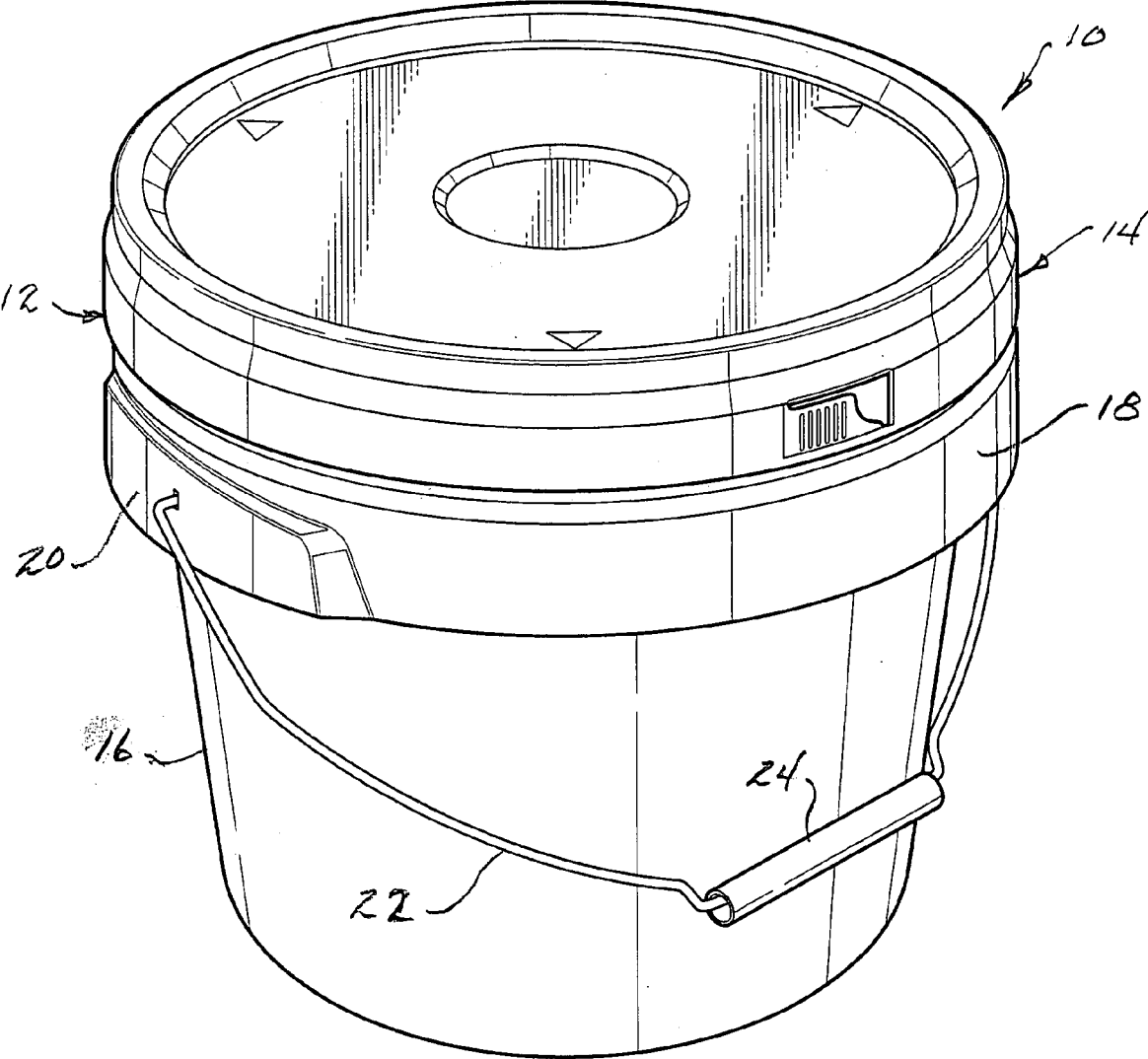


FIG - 1

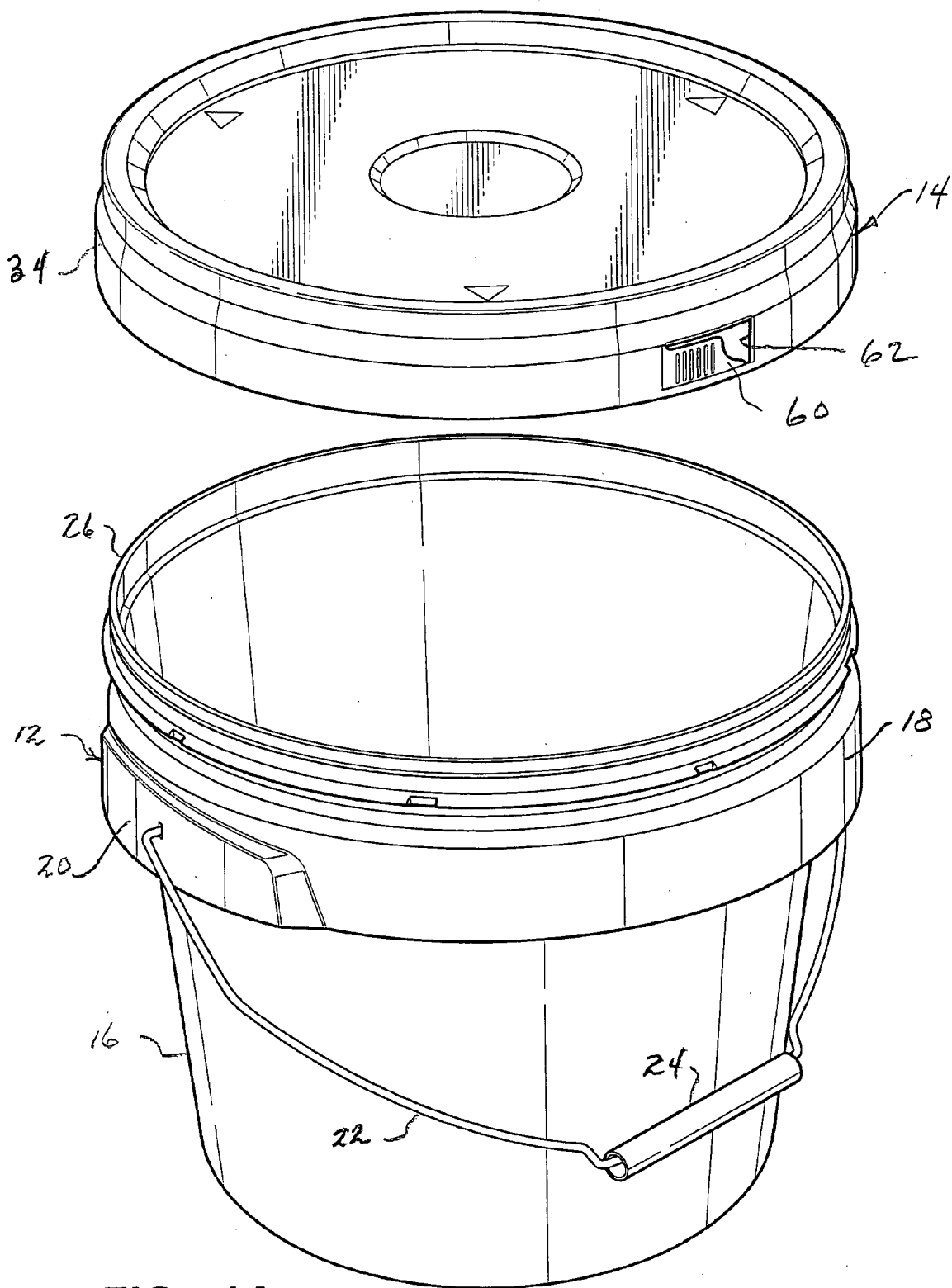


FIG - 1A

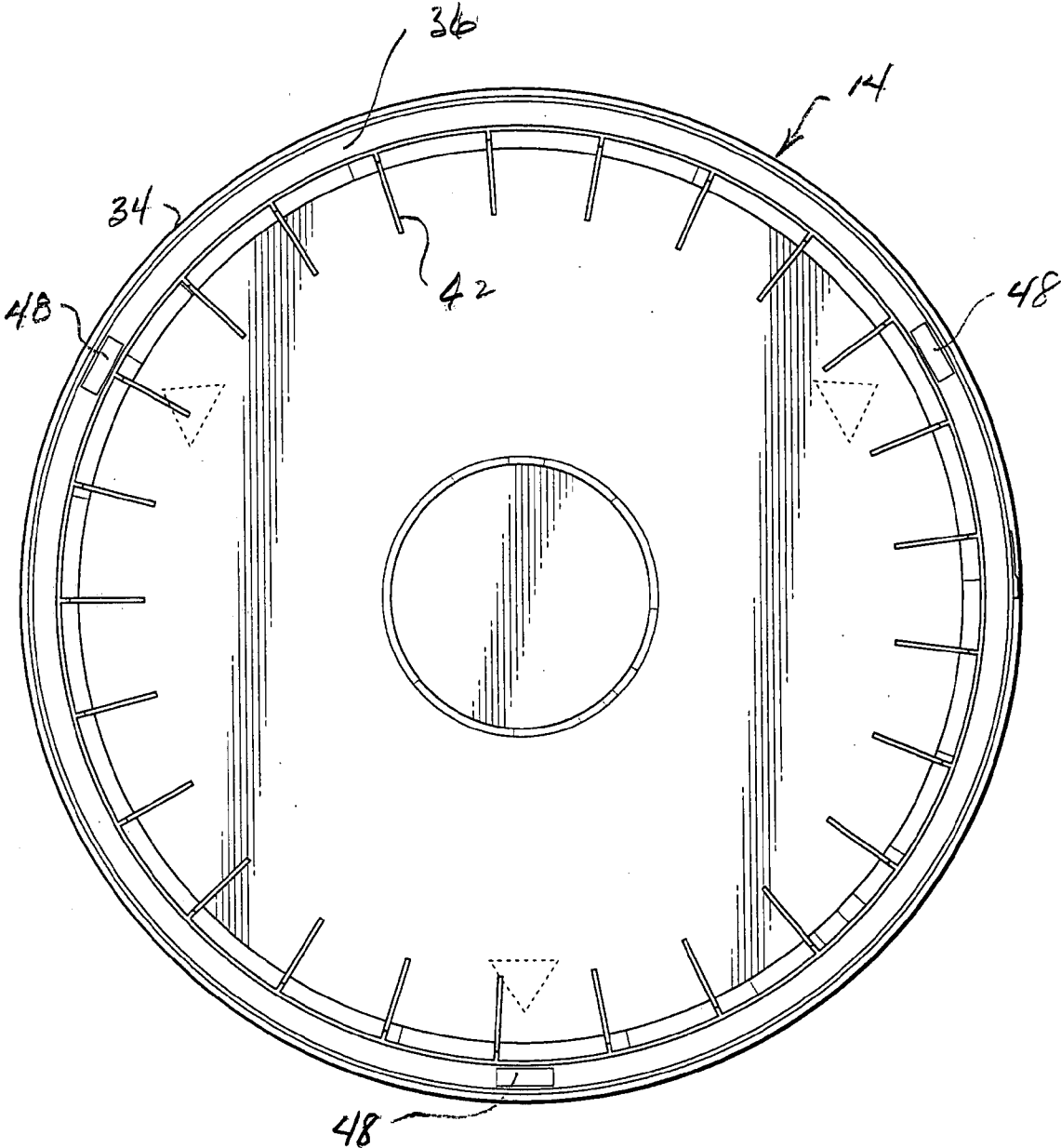


FIG - 2

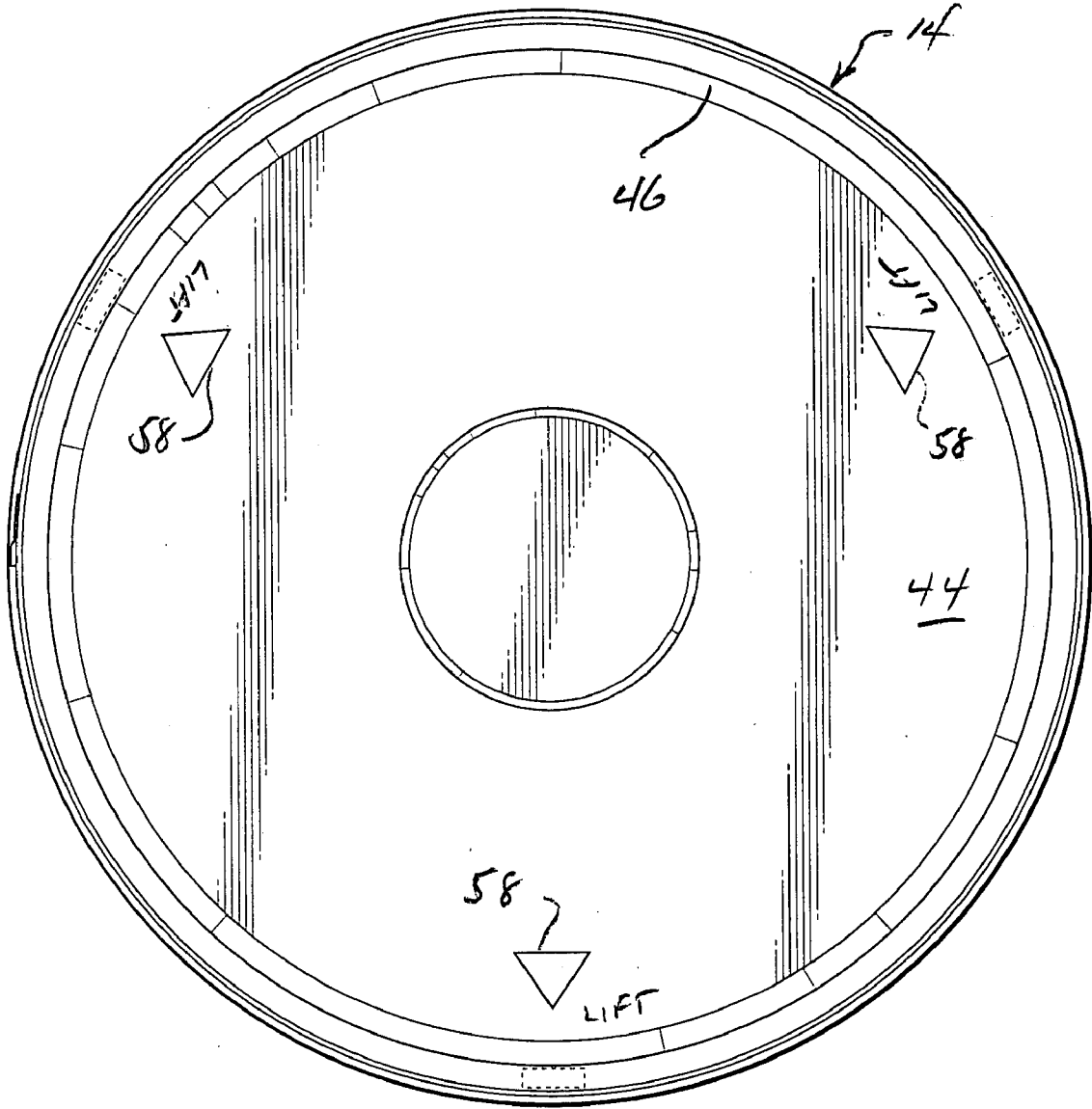


FIG - 3

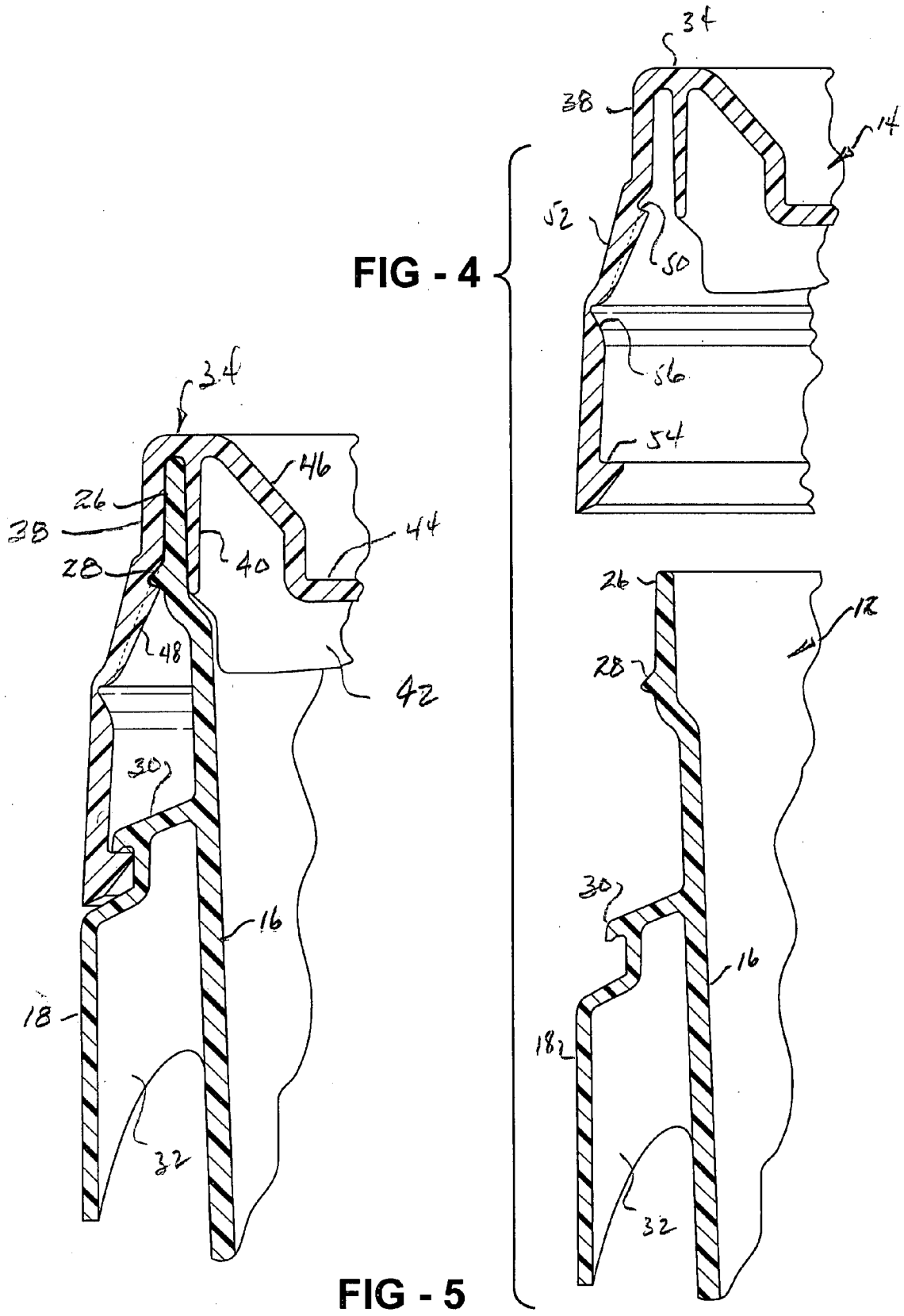


FIG - 4

FIG - 5

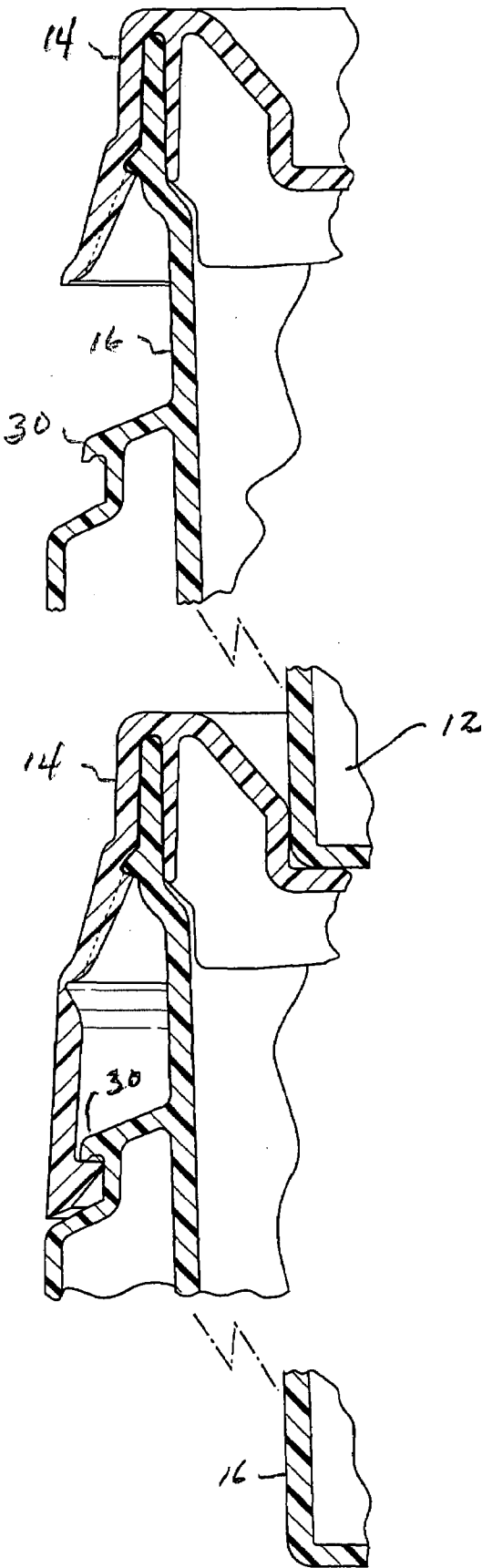


FIG - 6

PLASTIC CONTAINER WITH DOUBLE LOCK LID AND TEAR BAND

FIELD OF THE INVENTION

[0001] This invention relates to plastic containers of the type comprising a pail and a lid which sealingly fits onto the pail without the need for a gasket and further wherein the container combination has locking features which hold the lid onto the pail.

BACKGROUND OF THE INVENTION

[0002] Plastic containers comprising the combination of an open top pail and a lock on lid or closure are well known and have been in commercial use for shipping and merchandising various products in the United States for many years. They have largely supplanted metal containers in many areas including adhesives, food products and paint. The pail and lid are typically injection molded of a suitable polymeric material such as high density polyethylene or polypropylene. The seal between the pail and the lid can be achieved by providing a compressible O-ring gasket or by molding a notch in the top of the pail rim flange and providing a corresponding bead in the underside of the inverted U-shaped channel of the lid which receives the rim bead of the pail. This later structure is described in the published U.S. Application US 2002/0148846. Still another seal structure is illustrated in the expired patent to Richard Landis, U.S. Pat. No. 4,418,833.

SUMMARY OF THE INVENTION

[0003] The present invention provides a container comprising the combination of an open top pail and a lid, both preferably made of injection molded plastic such as polypropylene, wherein a good seal is provided between the pail and the lid without the need for either a gasket or special features such as rim beads and notches in the top of the pail.

[0004] In general, this is achieved by providing a pail with a flangeless top rim, and a lid having a narrow inverted U-shaped peripheral channel defined by an inner annular ring which is reinforced by radial ribs.

[0005] In addition, and in accordance with a preferred embodiment of the invention, multiple locks are provided for securing the lid to the pail wherein said multiple locks comprise an upper lock made up of comprising a continuous bead on the outer wall of the container immediately below the top edge and a plurality of widely circumferentially spaced locking segments on the inside surface of the inverted U-shaped channel formed by the lid to provide widely spaced, discrete undercuts which receive the pail sidewall bead and lock thereto. The second of the multiple locks is provided lower down on the container sidewall and at the bottom of the outer skirt of the lid. This second lower lock is preferably removable by forming a circumferentially extending weakened area in the inside of the lid skirt such that the portion of the skirt below the weakened area can be torn away leaving only the upper lock in place. This manipulation is typically carried out by the end user.

[0006] In the preferred from the upper lock is provided in two, three or four discrete and circumferentially spaced areas and indicia are carried on the top surface of the lid to show where the locking segments are located and to direct the user to apply a lifting force in that area to remove the lid from the container once the tear band has been pulled away. In the illustrated embodiment, there are three such indicia in the

forms of arrows with the legend "LIFT" molded into the top deck of the lid thereby to eliminate the need for a printing function or the application of a decal. However, both of these alternatives as well as other alternatives, while not preferred, are useable in accordance with the more detailed aspects of the present invention.

[0007] Other applications of the present invention will become apparent to those skilled in the art when the following description of the best mode contemplated for practicing the invention is read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWING

[0008] The description herein makes reference to the accompanying drawings wherein like reference numerals refer to like parts throughout the several views, and wherein:

[0009] FIG. 1 is a perspective view of an all plastic injection molded container comprising a pail and lid embodying the invention;

[0010] FIG. 1A is a perspective view of the FIG. 1 container with the lid removed;

[0011] FIG. 2 is a plan view of the inside surface of the lid from the combination of FIG. 1;

[0012] FIG. 3 is a plan view of the outside or top surface of the lid of FIG. 2;

[0013] FIG. 4 is a side view in section of an enlarged portion of the lid and pail showing how the upper and lower locks are formed;

[0014] FIG. 5 is a side view in section showing the upper and lower locks engaged; and

[0015] FIG. 6 is a composite of side views in section showing how containers stack on one another.

DETAILED DESCRIPTION OF THE ILLUSTRATIVE EMBODIMENT

[0016] Referring to the Figures there is shown an all plastic container 10 comprising the combination of a tapered cylindrical plastic pail 12 and an injection molded lock-on plastic lid 14. In this illustrative embodiment the pail 12 and lid 14 are both injection molded of polypropylene but other materials such as high density polyethylene may be used as alternatives.

[0017] The pail 12, which in this instance is a 3½ gallon pail but can be made in a variety of other sizes, comprises a tapered cylindrical side wall 16 extending upwardly to an enlarged diameter collar 18 which is integral with the wall 16 and lies below the upper rim portion 26 as best shown in FIG. 1A. The collar runs circumferentially around the entirety of the pail 12 and has diametrically opposite ear portions 20 which receive a wire bail 22 having a ferrule type plastic handle 24 mounted thereon.

[0018] As shown in FIG. 1A the upper rim portion 26 of the open top container 12 is featureless; i.e., it has no notches, flanges or beads at the upper end. However, approximately ½ to ¼" below the upper rim portion 26 and on the outer surface of the side wall 16 is a bead 28 which is circumferentially continuous around the pail 12 and forms part of an upper lock to be described. Approximately 1" below the bead 28 is a second radially outwardly extending bead 30 which is preferably notched at six or eight evenly spaced locations and is integral and contiguous with the radially outstanding collar 18. Reinforcing ribs 32 are provided at circumferential intervals of about 1⅛" around the pail.

[0019] Looking at the lid 14, it comprises an inverted U-shaped peripheral channel portion 34 defining a downwardly opening and radially narrow, internal channel 36 which snugly and sealingly receives the top rim portion 26 of the pail 12 therein. The inverted U-shaped channel peripheral portion 34 comprises an outer wall 38 and a downwardly extending annular inner wall 40 having circumferentially spaced reinforcing ribs 42 as shown in FIGS. 2 and 4. The lid has a recessed deck 44 with the tapered lead surface 46 from the peripheral channel portion 34 to make it easier to stack one of the containers on top of another of like size and design.

[0020] In accordance with the invention, an upper lock comprises the combination of the bead 28 on the pail side wall 16 and three evenly circumferentially spaced locking segments 48 forming undercuts 50 on the inside surface of the outer skirt 52 of the lid. When the lid 14 is firmly attached to and seated on the pail 12 the bead 28 fits within the undercuts 50 of the three locking segments 48 to hold the lid 14 on the pail 12.

[0021] Further in accordance with the invention, indicia 58 comprising the combination of outwardly directed arrows and the legend "LIFT" are molded into the top surface of the deck 44 to indicate exactly where the locking segments 48 are located such that a user of the pail may apply a lifting force in this area after the removal of the tear band 52 has been achieved as hereinafter described. Similar equivalent legends may be used.

[0022] The lower skirt portion of the lid 14 comprises the depending skirt 52 terminating an undercut 54 which fits over and receives the bead 30 on the lower locking collar portion 18 of the pail side wall 16 when the lid 14 is placed on pail 12 and firmly seated. However, a circumferentially extending weakened area provided by a notch 56 allows the lower portion of the skirt 52 to be torn away. A starter tab 60 is provided as shown in FIG. 1A in a cut-out area 62 for the purpose of facilitating the removal of the tear band formed by the skirt 52 so as to eliminate the lower lock 30, 54.

[0023] In operation, the pail 12 and lid 14 are typically injection molded at a suitable plant site. Once they are shipped to the customer, the container 10 is filled with product (not shown) and the lid 14 is seated on the container 12 such that the upper rim portion 26 of the container side wall extends fully and contactingly into the channel 36 and is sealed by the tight fit therein. There is a contact seal on both sides of the sidewall 16. The upper lock 28, 50 snaps into place and the lower lock 30, 54 also snaps into place to securely hold the sealed lid 14 on the container 12. Similar containers 10 can be stacked and shipped in the product filled condition without fear of leakage or the ingestion of unwanted air into the interior of the container 10.

[0024] When the user is ready to gain access to the product, the starter tab 60 is broken away from the lid portion 52 and the tear band portion of skirt 52 is removed. This eliminates the lower lock 30, 54 and also provides evidence that the container 10 has been opened. Once the tear band portion of skirt 52 and the lower lock 30, 54, have been removed, the only locks holding the lid 14 to the pail 12 are the upper three locks 28, 50. These locks are relatively easily overcome without the use of tools by lifting the revealed edge of the lid 14

immediately adjacent the indicia arrows 58. The polypropylene pail and lid combination is sufficiently flexible to permit the lid rim channel sidewall 38 to be flexed outwardly in this overcomes the lock and permits the lid 14 to be removed from the pail 12. It also permits the lid 14 to be relocated and relocked onto the pail 12 using the three 120° spaced locks 28, 50.

[0025] While the invention has been described in connection with what is presently considered to be the most practical and preferred embodiment, it is to be understood that the invention is not to be limited to the disclosed embodiments but, on the contrary, is intended to cover various modifications and equivalent arrangements included within the spirit and scope of the appended claims, which scope is to be accorded the broadest interpretation so as to encompass all such modifications and equivalent structures as is permitted under the law.

What is claimed is:

1. A plastic container of the type including an open top pail and a lid which sealingly fits on to the pail wherein the pail includes an annular top rim and an annular external bead encircling the pail below the rim;

the lid comprising an inverted U-shaped peripheral channel portion integral with a central deck portion;

the inverted U-shaped channel portion being adapted to receive the top rim contactingly in sealing engagement therewith; and

the channel being formed by integral depending annular outer and inner rings, the outer ring having formed on the inner surface thereof a plurality of discrete spaced locking segments forming undercuts to receive and lock on to the annular pail bead.

2. A plastic container of the type described in claim 1 further including indicia carried on the top surface of the deck lid and indicating the locations of said discrete locking segments.

3. A plastic container of the type described in claim 2 wherein the deck is recessed relative to the inverted U-shape peripheral channel portion.

4. A plastic container of the type described in claim 3 wherein the inverted U-shaped peripheral channel portion is tapered to provide a lead for stacking similar containers on top of the lid.

5. A plastic container of the type described in claim 1 wherein the pail has formed on the outer surface thereof an additional radially extending locking structure below said external bead and the outer annular ring of the lid forms a depending skirt which lockingly engages the second lower structure of the pail when the lid is seated on the pail rim; and said outer ring having a circumferential weakened area which forms a tear tab which permits removal of the lower portion of said outer ring.

6. A plastic container combination of the type described in claim 1 wherein the pail and lid are formed of polypropylene.

7. A plastic container as described in claim 1 further including a plurality of radical reinforcing ribs molded into the underside of the lid and extending to and integrally with the annular inner ring.

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