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(57) **ABSTRACT**

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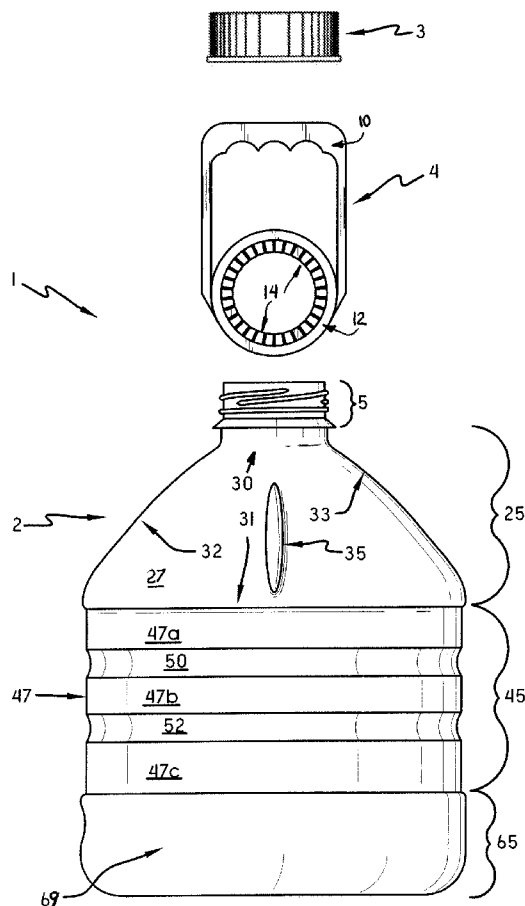
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### Related U.S. Application Data

(60) Provisional application No. 60/912,794, filed on Apr. 19, 2007.

A container suitable for holding a fluid includes a body defining an interior volume and having a torso portion having a substantially square-shaped cross section, a shoulder portion joined above the torso portion and including a plurality of shoulder walls that define a substantially square cross-section, and a base portion, which may have a substantially square or octagonal cross section. The container body may be formed with indentations at each of its four bottom corners that are shaped to give the container relief from detrimental piercing contact with the lugs that are provided in the bottom of some square retention buckets used on commercial paint shakers. The body may be made substantially or entirely of polyethylene terephthalate. The container is particularly suited for colorants and pigment dispersions for tinting coatings and for shaking colorants and pigment dispersions prior to dispensing into a tinting machine.



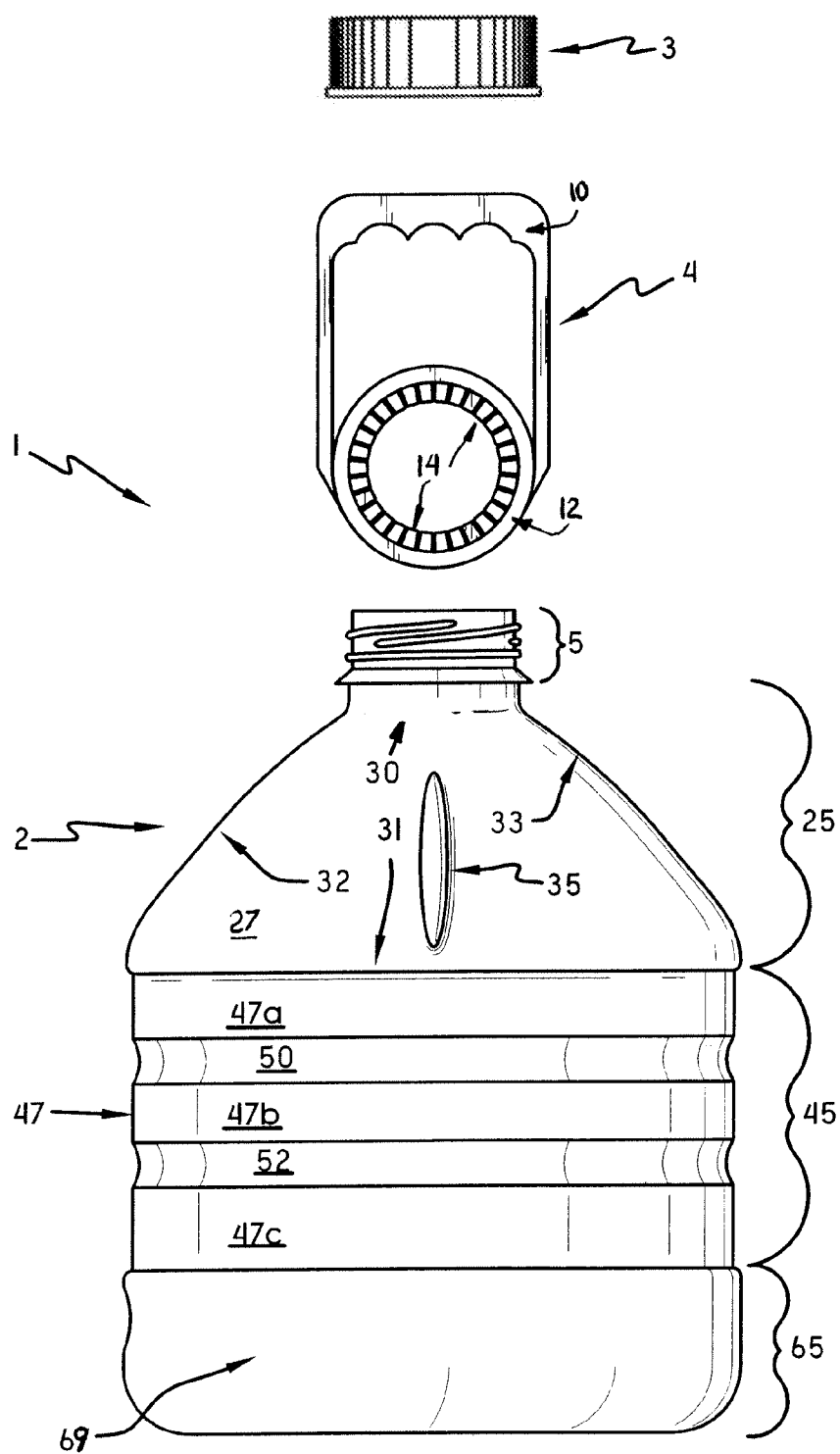


FIG.-I

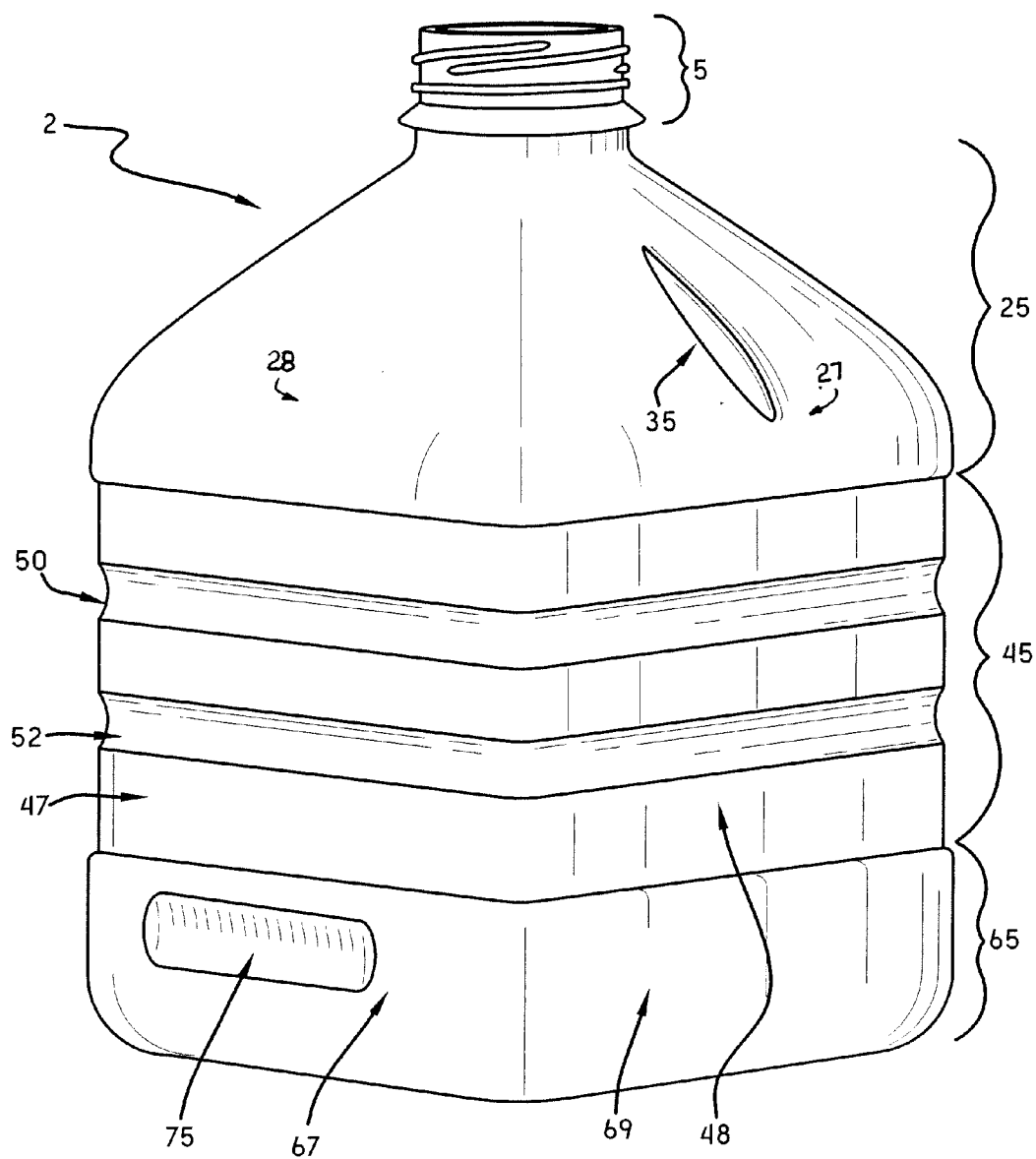


FIG.-2

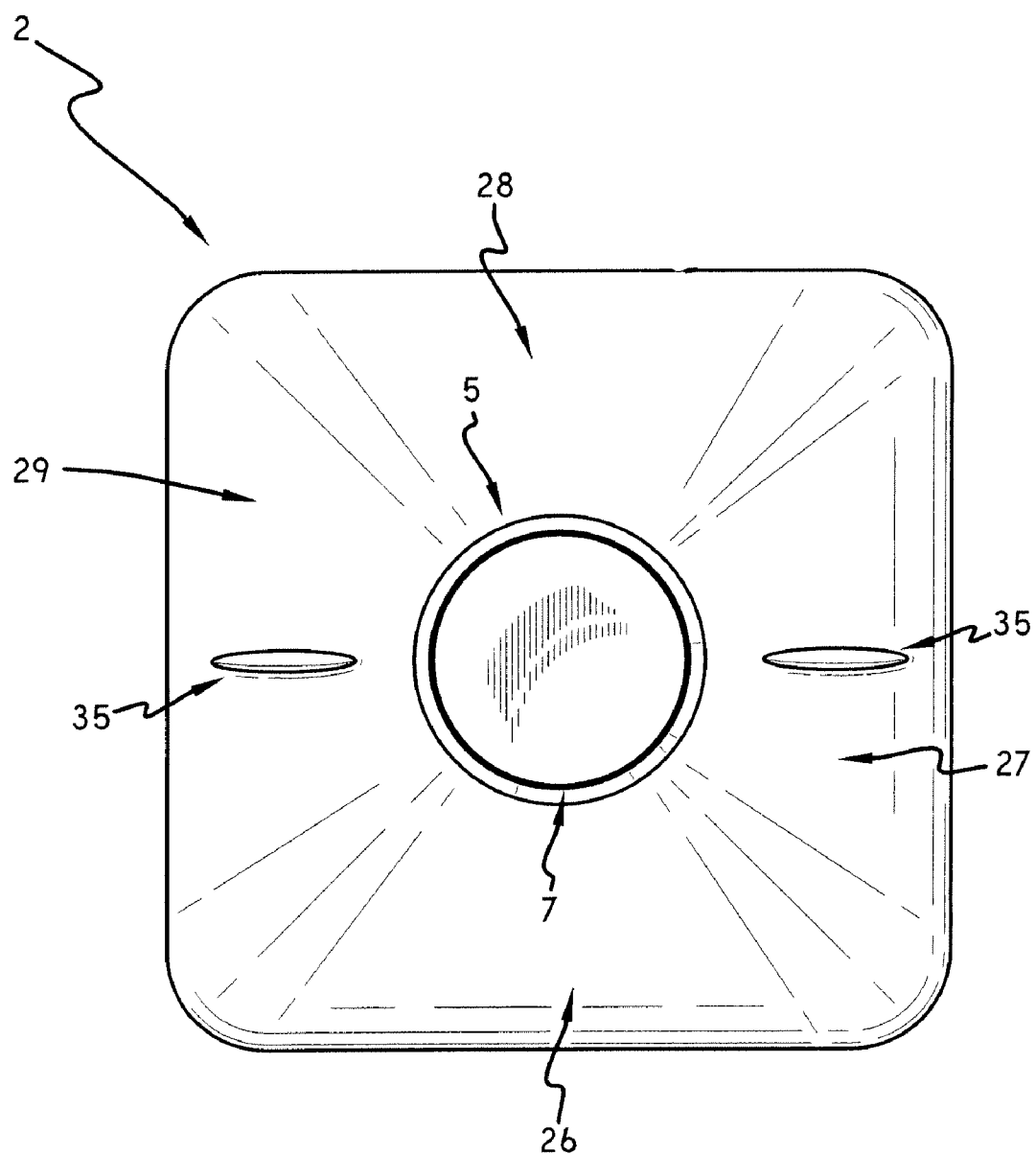


FIG.-3

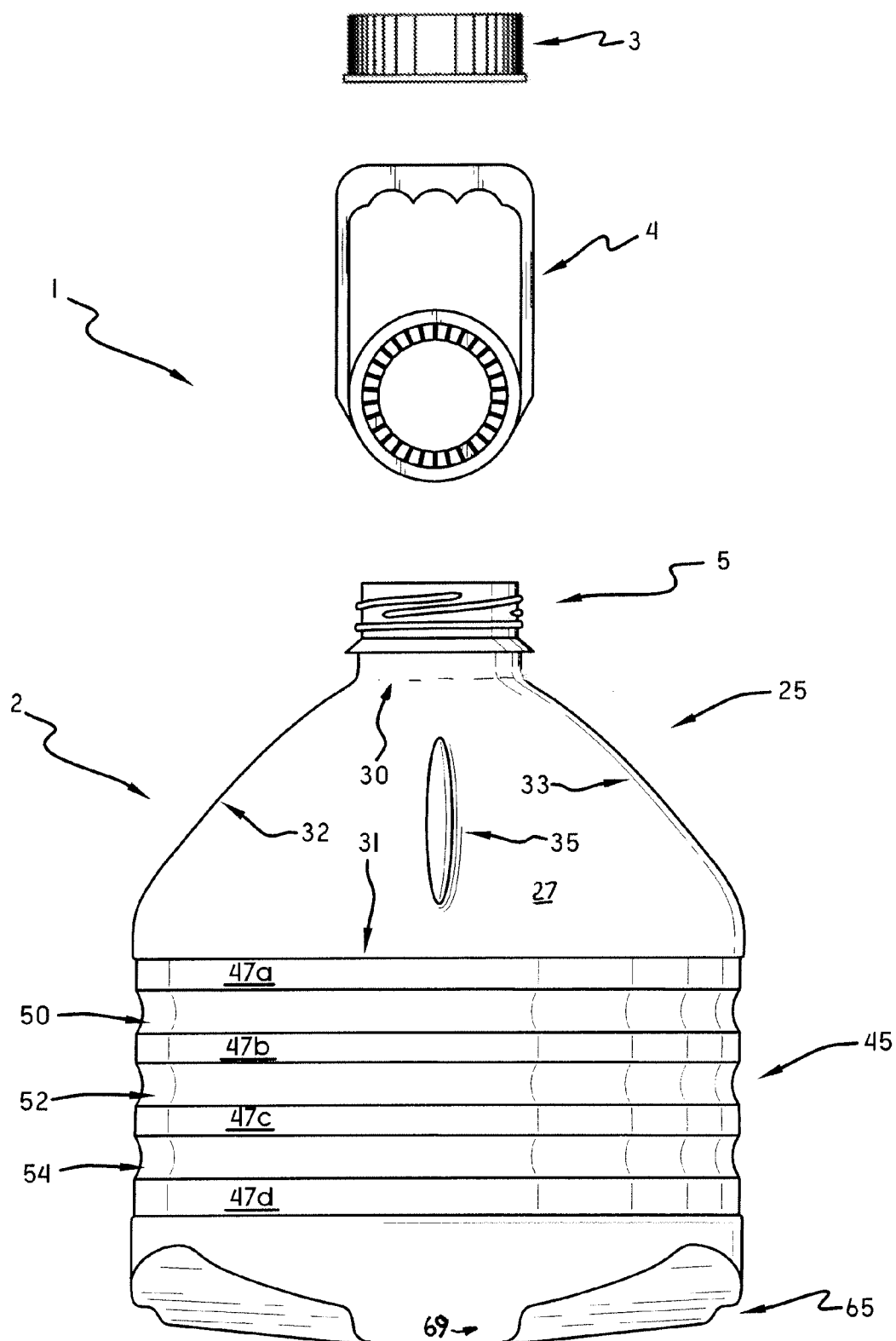


FIG.-4

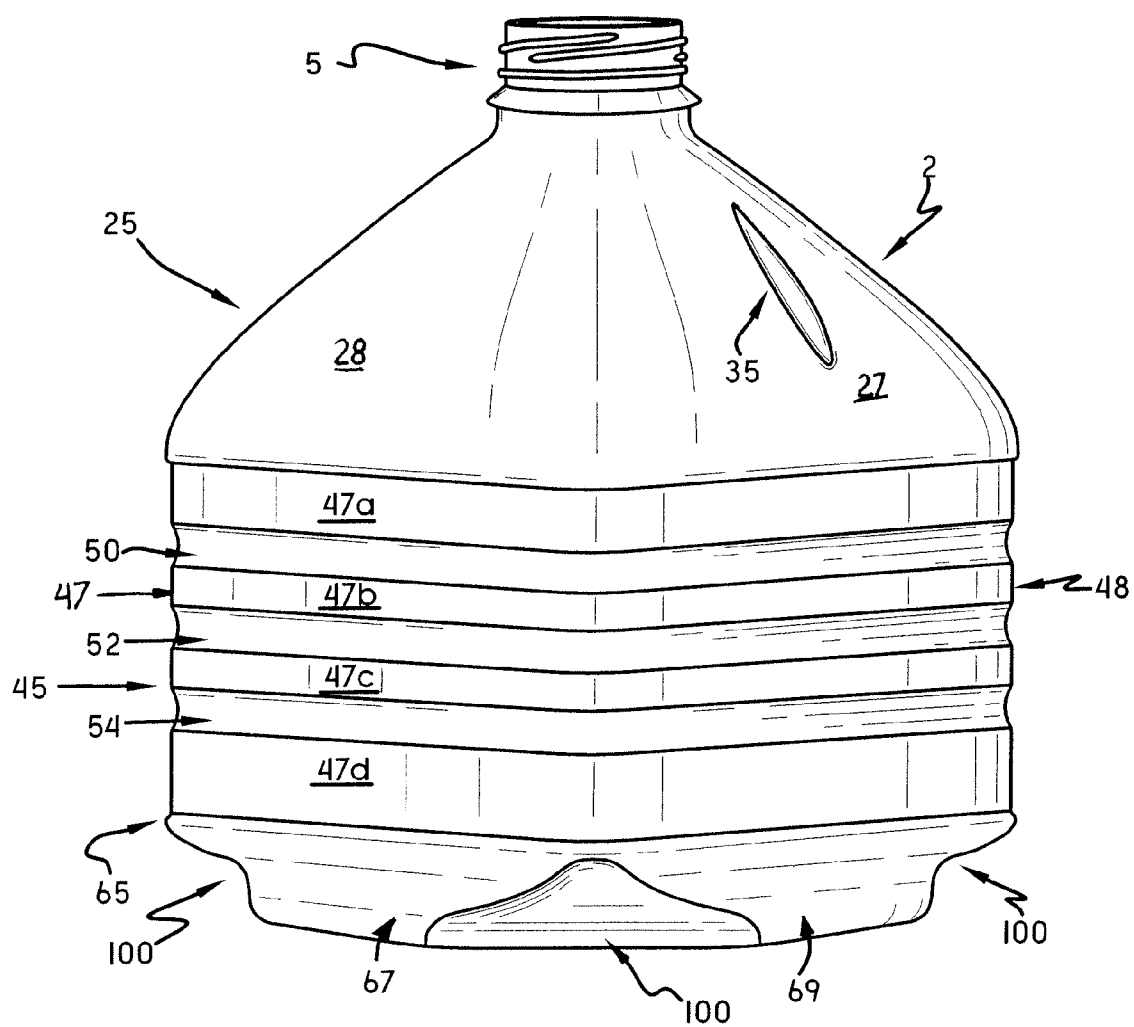


FIG. -5

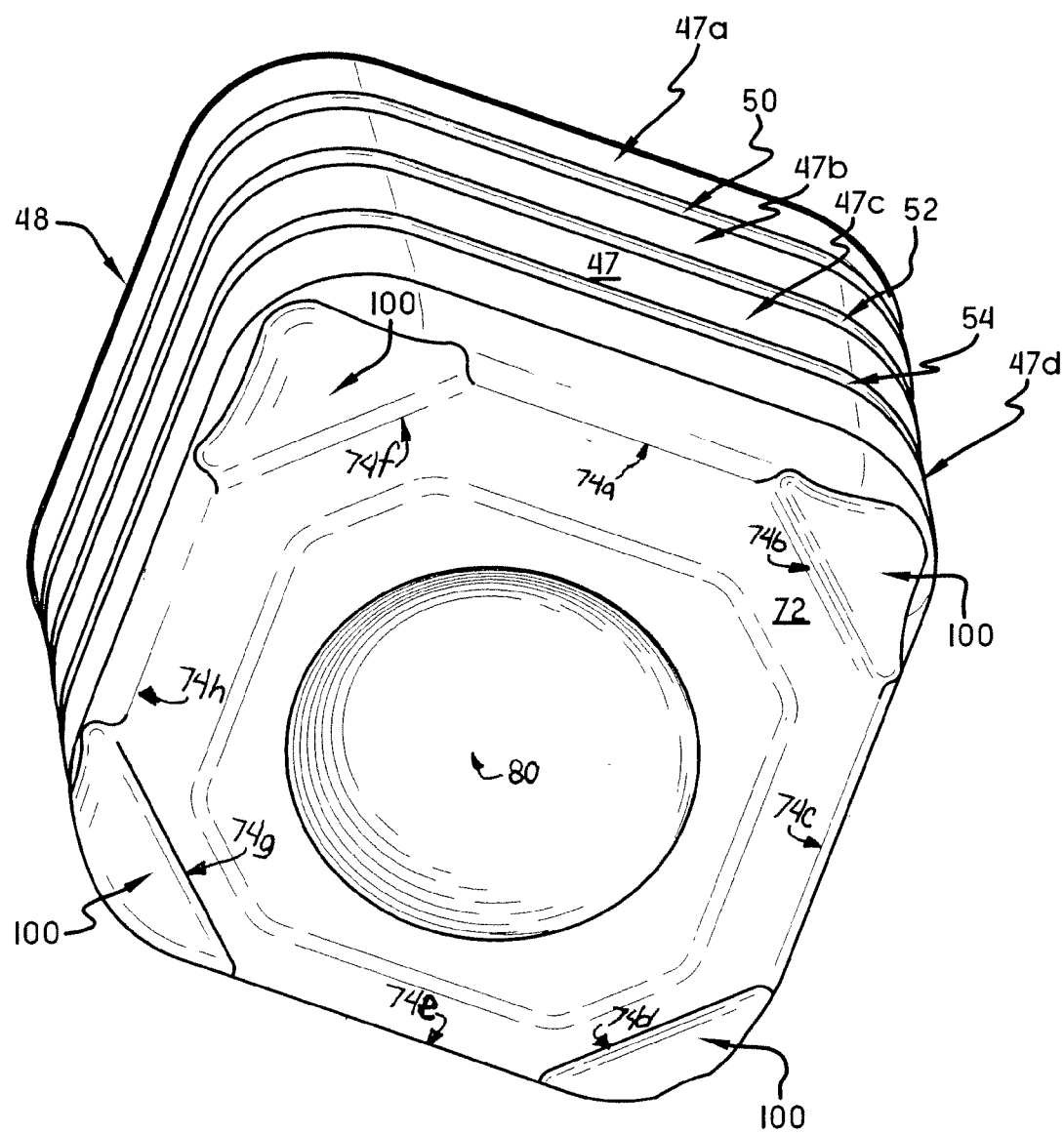


FIG.-6

## COLORANT CONTAINER

[0001] This application claims priority from U.S. Provisional Application 60/912,794 filed Apr. 19, 2007, the entirety of which is incorporated herein by reference.

### I. BACKGROUND OF THE INVENTION

[0002] Pigment concentrates, referred to herein as “colorants,” used in tinting architectural coatings, such as latex paints, have traditionally been packaged in metal cans. Recently, there has been a shift toward the use of plastic colorant containers made of polypropylene (“PP”) or high-density polyethylene (“HDPE”). PP and HDPE containers are serviceable replacements for metal cans, having the structural integrity necessary for storing the relatively heavy colorants and facilitating the pouring of colorants into colorant dispensers (paint tinting machines). F-style plastic colorant containers have been in use for this purpose. More recently, PP and HDPE colorant containers have been constructed with cylindrically shaped bodies so as to be adapted for use in many standard mechanical paint shakers. Some of the benefits of shaking a colorant container prior to pouring the contents into a colorant dispenser have been taught, for example, in U.S. Pat. No. 6,960,012.

[0003] PP and HDPE colorant containers are difficult and costly to dispose of. In part containers of these materials tend to retain a significant amount of colorant residue, it is believed due to the hydrophobicity of the plastic driving water away from the container walls. As a result of this process, the residue colorant caked onto the container walls may be relatively more concentrated than the colorant that was poured from the container. This can result in the undesirable waste of expensive colorant solids and increase the weight of the empty container, which is often a factor in disposal costs. Further, the variation, and potential reduction in the concentration of pigments in the dispensed colorant can increase the risk of paint mistints. Additionally, while existing PP and HDPE containers have, by virtue of their design and choice of plastic, had good structural integrity, resulting in containers that are sturdy in use, they are difficult to crush after use. This limitation in crushability can result in increased disposal costs because of the inability to effectively reduce the volume of used containers prior to disposal.

[0004] As noted, to facilitate using mechanical paint shakers to shake colorant containers before dispensing the contents into paint tinting equipment, many current containers, particularly having volumes of about one-gallon or less, incorporate a cylindrical shape, similar to a conventional metal paint can. Notwithstanding that these container may fit snugly in the shaker's retention bucket, and that the action of the shaker may facilitate some mixing of the colorant, the cylindrical sides of the colorant container are not optimized for assisting in the mixing of the colorant, to disperse the pigments. Further improvement in facilitating the mixing of the colorant by incorporating design modifications in the container, would shorten the time necessary to optimally mix the colorant.

[0005] Given the increasing costs that are associated with the transport and disposal of used colorant containers and the undesirable waste of colorant that remains in colorant containers according to existing designs, it is desirable to provide a container that retains sufficient structural integrity to serve as a colorant container, including having the integrity to with-

stand shaking in a mechanical paint shaker, but which is lighter and more crushable than existing PP and HDPE containers—leading to less weight and volume for disposal, and which has improved characteristics for limiting the amount of colorant residue. It is also desirable that the container be easily and readily formed, preferably at less expense than existing PP or HDPE plastic containers. Moreover, it would be desirable to provide a container having a structure that would facilitate the mixing of the contents when shaken and be adaptable for use in at least some conventional paint shakers.

### II. SUMMARY OF THE INVENTION

[0006] According to one embodiment of the present invention, a container for holding a fluid, such as a colorant, comprises a body defining an interior volume, the body comprising a torso portion comprising a plurality of side walls, each side wall having at least two side edges, a bottom edge, and a top edge, the side walls joined at side edges to provide the torso portion of the body with a substantially square cross-section; and a bottom panel joined to a portion of the bottom edge of each of the plurality of side walls, wherein the body is formed so that each of the four corners defined by the junction of the bottom panel and each pair of bottom edges of adjacent torso walls is indented.

[0007] According to another embodiment of the invention, a container for holding a fluid comprises a body defining an interior volume, the body comprising a base portion comprising a bottom panel having a plurality of edges and a plurality of base walls extending substantially vertically upward from the edges of the bottom panel to form a bowl having a substantially octagonal cross-section; and a torso portion comprising a plurality of side walls, each side wall having at least two side edges, a bottom edge, and a top edge, the side walls joined at side edges to provide the torso portion of the body with a substantially square cross-section, wherein the base portion is integrally joined to the torso portion.

[0008] According to still another embodiment of the invention, a container comprises a body defining an interior volume, the body comprising a base portion comprising a bottom panel having a plurality of edges and a plurality of base walls extending upwardly from the edges of the bottom panel to provide the base portion of the body with a substantially octagonal cross-section, wherein the maximum distance between midpoints on opposing base-walls of the base portion is less than about 6 5/8 inches; a torso portion integrally joined to the base portion, comprising a plurality of side walls, each side wall having at least two side edges, a bottom edge, and a top edge, the side walls joined at side edges to provide the torso portion of the body with a substantially square cross-section; and a neck portion integrally joined to the torso portion opposite the base portion, the neck portion comprising a neck wall having a substantially circular cross section.

[0009] According to still another embodiment of the invention, an article comprises a container comprising a body defining an interior volume, the body comprising a torso portion comprising a plurality of side walls, each side wall having at least two side edges, a bottom edge, and a top edge, the side walls joined at side edges to provide the torso portion of the body with a substantially square cross-section, a base portion comprising a bottom panel, the base portion integrally joined to the torso portion, a funnel-shaped shoulder portion integrally joined to the torso portion opposite the base portion, the shoulder portion comprising a plurality of shoulder



walls, each shoulder wall having first and second non-parallel side edges and parallel top and bottom edges, the shoulder walls joined at side edges; and a neck portion integrally joined to the top edges of the shoulder walls, the neck portion comprising a neck wall having a substantially circular cross section; and colorant disposed in the container.

**[0010]** According to one aspect of the invention, the side walls, shoulder walls, neck wall, and bottom panel of the containers are made substantially of polyethylene terephthalate.

**[0011]** According to another aspect of the invention, the containers may have an interior volume of at least one gallon.

**[0012]** According to another aspect of the invention, the body of the container is formed without a handle.

**[0013]** Still other benefits and advantages of the invention will become apparent to those skilled in the art to which it pertains upon a reading and understanding of the following detailed specification.

### III. BRIEF DESCRIPTION OF THE DRAWINGS

**[0014]** The invention may take physical form in certain parts and arrangement of parts, a preferred embodiment of which will be described in detail in this specification and illustrated in the accompanying drawings which form a part hereof and wherein:

**[0015]** FIG. 1 is a front perspective view of a container for holding a fluid.

**[0016]** FIG. 2 is a corner perspective view of the container of FIG. 1.

**[0017]** FIG. 3 is a top down perspective view of a container according to the embodiments of the present invention.

**[0018]** FIG. 4 is a front perspective view of an alternative embodiment of a container for holding a fluid.

**[0019]** FIG. 5 is a corner perspective view of the container embodiment of FIG. 4.

**[0020]** FIG. 6 is a bottom view of the container embodiment of FIG. 4.

### IV. DETAILED DESCRIPTION OF THE INVENTION

**[0021]** Referring now to the drawings wherein the showings are for purposes of illustrating embodiments of the invention only and not for purposes of limiting the same, FIGS. 1 and 2 depict one embodiment of a container for a fluid storage and dispensing according to the present invention and FIGS. 4, 5 and 6 depict another embodiment of a container for fluid storage and dispensing according to the present invention. FIG. 3 depicts a top view of a container according to multiple embodiments described herein.

**[0022]** With respect to the embodiments depicted in the Figures, a plastic container, generally shown as 1, is adapted for primary use as a liquid colorant container; namely, a container for the storage, transport, and dispensing of colorant. The term "colorant" refers generally to the fluid pigment concentrates and dispersions conventionally used in tinting architectural paints and comprising highly concentrated levels of color pigment ground into a grinding vehicle. The most common grinding vehicle used in tinting concentrates is a blend of ethylene glycol and water in conjunction with various surfactants. Color pigments typically used include ferrite yellow oxide, red iron oxides, ferric iron oxide brown (which is a blend of red, yellow, and black iron oxides), tan oxide (which is a similar blend), raw sienna and burnt sienna, raw

and burnt umber, copper phthalocyanine green and blue, DNA orange (dinitroaniline orange #5), carbon black, lamp-black, toluidine red, parachlor red, (burnt red and maroon red) hansa yellows which are azo coupling of metapara nitrotoluidene and quinacridone red, magenta and violet. The amount of color pigment used in a colorant is typically from about 5 weight percent to about 70 weight percent, depending on the type of color pigment. Container 1 may be used for other pigmented fluids, such as printing inks, and, in another embodiment, it is contemplated that the container 1 could be employed for use as a container for architectural coatings, such as latex paints, and marine coatings. Without intending to narrow the scope of the invention, the container will be described hereafter as a colorant container.

**[0023]** The container 1 generally comprises a body 2 and a closing means 4 and, optionally, a handle 3. The body 2 defines an interior volume, which, in one embodiment, may be at least one gallon; however, in another embodiment, the container body 2 may be formed to hold at least one half-gallon, but less than one gallon of liquid, or in still another embodiment, at least one quart, but less than one-half gallon. Containers having volumes greater than about 1 gallon may be formed in accordance with the design(s) of the present invention. It is additionally desirable that the body 2 of the container 1 allow for an additional volume of head-space (namely, empty space located above the level of the fluid within the container).

**[0024]** To form the body 2 having the elements and features described herein below, the body 2 may be blow molded out of a suitable material. For purposes of the present invention the preferred material is a plastic material, with the most preferred material being polyethylene terephthalate (PET). PET has apparent advantages over other plastic materials, such as high-density polyethylene (HDPE) and polypropylene (PP), in relation to the colorant container described herein. Namely, as compared to HDPE and PP, PET imparts greater strength to the container body 2 at a given wall thickness, which allows for the manufacture of suitable containers having thinner walls (as described in greater detail below). Moreover, PET is lighter than HDPE and PP. As a result, less material needs to be used in forming a suitable body 2 for the container, resulting in a container having less weight. Additionally, it is believed that there is less adsorption of color pigments to PET than to HDPE and PP plastics due to PET's lower hydrophobicity.

**[0025]** In one embodiment, the body 2 may be blow-molded in a conventional one step process; wherein PET plastic is blown into a form having the shape of the containers body 2 however, in another embodiment, the body 2 of the container may be blow molded in a two-step process, wherein the first step comprises molding a PET preform and the second step comprises molding the body 2 of the container from the preform. The processes for blow molding containers are well known in the art. Though blow molding is a useful method of forming the body 2 of the container 1, any other method of forming the body 2 as selected with sound engineering judgment may be used.

**[0026]** Referring to the Figures, in all embodiments of the container 1, the body 2 of container 1 may have a substantially cylindrical neck portion 5. The neck portion 5 may include a neck wall 7 having inner and outer surfaces. The neck wall 7 may define a substantially cylindrical opening having an inner diameter of less than about 50 mm and a height of about 2 to about 20 mm. Variations in the diameter and height of the

neck wall 7 may be anticipated. In one particularly useful embodiment, the opening defined by the neck wall 7 may have an inner diameter of between about 40 mm and about 48 mm. Neck walls 7 defining openings of larger diameters may be selected. However, diameters of between about 40 and about 50 mm are adequately large to facilitate pouring the fluid from the container body 2.

[0027] Neck portion 5 may be adapted to communicate with a closing means 4, such as a seal or a cap, to provide for the selective opening and closure of the container 1 and for effectively sealing the container 1 so as to prevent the leakage of its contents. In one embodiment, shown, for example, in FIGS. 1 and 4, the outer face of the neck wall 7 may be formed with threads that are adapted to mate with matching threads located on the interior of a conventional screw-on cap 4, which may be molded separately of plastic or metal or other appropriate material. Other forms of closures and tops may be used in accordance with sound engineering judgment, including snap closures.

[0028] As previously indicated, container 1, may include a handle 4. The handle 4 may be formed integrally with the container body 2, such as, during the molding process of the body 2, however, in a particularly useful embodiment, the handle 4 may be removably attached to the body 2. It is particularly desirable that the handle 4 not be in fluid communication with the body 2; namely, not be formed or attached in such a manner that fluid from can flow into the handle. The handle may be removably secured about the neck wall 7. The handle 4 may be rotatably attached about the neck wall 7. One such handle 4 suitable for removable and rotatable attachment about the neck wall 7 of the body 2 is shown in FIGS. 1 and 4 and comprises a bail member 10 and a circular, washer-like portion 12 having a plurality of inwardly directed tabs 14 and an inner diameter that is between the minimum and maximum outer diameters of the neck wall 7. Washer-like portion 12 of the handle 4 may be pushed onto the neck wall 7 of the container body 2.

[0029] With reference now to FIGS. 1-5, the body 2 may include a shoulder portion 25, which may extend from the neck portion 5 and may be integrally formed with the neck portion 5. The shoulder portion 25 will preferably transition the body 2 of the container 1 from the substantially circular cross-section of the neck portion 5 to the substantially square cross section of the torso portion 45 (discussed in further detail below) of the body 2 of container 1 and may be funnel shaped to funnel the fluid contents of the container 1 toward the opening of the container when the container is in a tilted dispensing position. For purposes of this disclosure, the term "cross section" refers to the cross section defined by a horizontal plane through the vertically oriented, standing container, unless otherwise stated. The shoulder portion 25 may also define all or a portion of a volume allocated to head space within the container 1.

[0030] The vertical height of the shoulder portion 25, namely, the vertical distance between the bottom of the neck portion 5 and the top of the torso portion 45, may be from about 0.5 to about 4 inches, and in some embodiments, from about 0.75 to about 3.75 inches, and in still other embodiments, from about 1.0 to about 3.5 inches, and in still further embodiments, from about 2.5 to about 3.5 inches.

[0031] As shown in the Figures, the shoulder portion 25 may be substantially pyramidal, having a plurality of, and in one embodiment, four generally planar or slightly arcuate shoulder walls 26, 27, 28, 29 (as shown in FIG. 3) each

shoulder wall 26, 27, 28, 29 may generally be in the form of an isosceles trapezoid extending simultaneously downwardly and radially outwardly from the neck portion 5. Each shoulder wall 26, 27, 28, 29 may have top 30 and bottom 31 parallel edges and first and second non-parallel side edges 32, 33. Each shoulder wall 26, 27, 28, 29 of the shoulder portion 25 may be joined to two adjacent shoulder walls. The top edge 30 of each shoulder wall may be joined to the neck portion 5 and the bottom edge 31 of each shoulder wall may be joined to a side wall 47, 48 of the torso portion 45. As shown in the Figures, the transitions between adjacent shoulder walls 27, 28 may be rounded, as may be the transitions between the bottom edges 31 of the shoulder walls and the respective top edges of the side walls 47, 48 of the torso portion 45. To facilitate a funneling effect toward the opening of the container body 2, and provide suitable head space, the shoulder walls 26, 27, 28, 29 may extend downwardly and outwardly from the neck portion 5 at an angle. Though a four-sided pyramidal shoulder portion 25 is contemplated in the embodiments shown in the Figures, other funnel shapes, having one or more sides may be used.

[0032] At least one or two, and in still further embodiments all four shoulder walls 26, 27, 28, 29 may be provided with at least one vertically oriented shoulder rib 35. The length of the shoulder rib 35 may be oriented substantially perpendicularly to the top and bottom edges 30, 31 of the shoulder wall and the length is preferably greater than the width of the shoulder rib 35. A shoulder rib 35 may extend from the top edge 30 of the shoulder wall to the bottom edge 31 of the shoulder wall.

[0033] With reference to FIG. 3, the shoulder ribs 35 may facilitate the crushing of the container in the region of the shoulder portion 25 by providing relief "joints" at which the shoulder walls 27, 29 are inclined to fold when an inwardly directed crushing force is applied to the shoulder portion 25. In one embodiment, the shoulder 35 ribs may protrude outwardly from the surface of the respective shoulder walls 27, 29, though it is contemplated in another embodiment that the shoulder ribs 35 could protruded inwardly from the respective shoulder walls 27, 29. The shoulder ribs 35 may be substantially centrally positioned between the side edges 32, 33 of the shoulder wall 35.

[0034] With continued reference to the Figures, the body 2 of the container 1 may comprise a torso portion 45, which may extending below the shoulder portion 25 and may be integrally joined to the shoulder portion 25. The torso portion 45 of the container 1 may have a substantially non-circular cross section defined by a plurality, and in some embodiments, four generally quadrilateral torso side walls 47, 48 (which may be referred herein as torso walls or side-walls). Two torso side-walls 47, 48 are shown in the Figures, but it will be recognized that two additional side walls are not shown but present. Adjacent side-walls may be joined at rounded corners. One or more side-walls 47, 48 may be divided into a plurality of sections by means of one or more torso ribs 50, 52, 54. In one embodiment, a side-wall 47 may include upper, middle, and lower sections 47 a-c separated by at least two and in another embodiment, three, and in still further embodiments, four or more, generally horizontally oriented (circumferential) torso ribs 50, 52. Although not shown, label(s) may be fixedly secured to one or more of the middle portions. In another embodiment, the label may be slideably jacketed about the torso portion 45.

[0035] The torso ribs 50, 52 are preferably arranged in a generally horizontal and circumferential orientation around

the torso portion 45. Each torso rib 50, 52 may be a protrusion into the interior of the body of the container, though in another embodiment, the torso ribs 50, 52 may be outward protrusions. In still another embodiment, the side wall 47, 48 may have both outwardly and inwardly protruding torso ribs 50, 52. Outwardly protruding torso ribs 50, 52, if used, should not extend so far from the surface of the torso side-walls 47, 48 to prevent the container from fitting into the square retainer bucket of an associated paint shaker.

[0036] In accordance with one embodiment, the torso ribs 50, 52 may be positioned on the torso portion 45 to divide one or more side-walls into generally equal sections. Two torso ribs 50, 52 may divide a side-wall 47, 48 into three sections 47 a-c. As shown in FIG. 4, three torso ribs may divide a side-wall into four sections. These "sections" may provide surface area to affix or support a label. Moreover, these sections may bulge outwardly when the bottle is filled with fluid thereby increasing the area of contact between the body 2 of the container 1 and the inner walls of the associated shaker bucket.

[0037] The torso ribs 50, 52 may provide strength to the container body 2 and, like the shoulder ribs 35, may facilitate crushing of the container by acting as relief joints when direct or indirect crushing force is applied to the torso portion 45 of the body 2 of the container. While it is generally desirable to distribute the torso ribs 50, 52 equally on the torso portion 45, effective properties can be imparted to the container 1, both in structural strength and crushability, if the torso ribs 50, 52 are other than equally distributed on the torso portion 45.

[0038] The torso ribs 50, 52, as with the shoulder ribs 35, may be rounded to facilitate the molding process and add strength of the container body 2.

[0039] Below the torso portion 45 of the body 2 of the container 1 is a base portion 65. The base portion 65 may include a plurality, and in some embodiments four base walls 66, 67, 68, 69 and a bottom panel 72 joined together to form, in one embodiment, a cross-sectionally, substantially square base for the container 1 as shown in FIGS. 1 and 2. In another embodiment, the base portion 65 may comprise the bottom panel 72 having a plurality, and in some embodiment, four edges, which may be integrally joined at rounded corners to the torso walls of the torso portion 45. In still another embodiment, the edges of the bottom panel 72 may turn upward to form a bowl-like shape that may be integrally joined to the torso portion 45.

[0040] The joints between adjacent base walls 67, 69 and the joints between the base walls 67, 69 and bottom panel 72 (or the bottom panel 72 and the torso walls 47, 48) may be rounded. The bottom panel 72 may include a recess 80 centered therein as shown in FIG. 5. The recess may be substantially circular (dome-shaped) or star shaped. Other shapes and forms of recesses 80 may be selected with sound engineering judgment and may provide improved strength to the container body 2.

[0041] In one embodiment, shown in FIGS. 1 and 2, at least one of the base walls 67, 69 or one of the torso walls 47, 48, may be provided with a finger engageable indentation 75 of a suitable shape. When the container 2 is in a dispensing position, this finger engageable indentation 75 may serve as a stabilizing point of contact near the bottom of the container body 2 for an associated user's fingers.

[0042] FIGS. 1 and 2 depict one embodiment of the base portion 65 in which the bottom panel 72 is substantially square and has four edges, which are integrally joined to the

bottom edges 31 of the torso walls 47, 48 in rounded corners. In this embodiment, the footprint of the base portion 65 may be substantially the same size and orientation as the footprint of the torso portion 45.

[0043] In the embodiment shown in FIGS. 4, 5 and 6, the lower corners 100 of the body 2 of the container 1 are indented. These indented lower corners 100 are adapted to alleviate certain detrimental contacts which can occur between the bottom panel 72 of the container and upwardly oriented retainer lugs that are provided in the bottom of some types of associated retention buckets that have been adapted so as to be useful for holding and shaking both round and square paint cans. Exemplary commercially available paint shakers having such universal retention buckets for square and round paint cans are available from Red Devil Equipment Company (Red Devil 5300) and also include Harbil GQF paint shakers. Specifically, these paint shakers have been adapted with square retention buckets suitable shaking existing square PP and HDPE paint cans. A plurality of upward oriented lugs are provided on the floor of the bucket to define the footprint of a conventional round paint can, thereby allowing the shaker bucket to hold both round paint cans and square paint cans. When a container of the embodiment shown in FIG. 1 is placed in a retention bucket having such lugs, the shaking action may cause the lugs to rub the bottom panel 72 of the container and potentially puncture the container. When a container of the embodiment shown in FIG. 4-6 is placed in such a retention bucket, this risk of puncture is substantially reduced as the indentations 100 are adapted to provide room for the lugs, while allowing contact between a portion of the bottom panel 72 of the container 1 and the bottom of the retention bucket.

[0044] Preferably the indentations 100 in the corners of the body 2 of a container of the embodiment depicted in FIGS. 4-6 have sufficient vertical and horizontal clearance to provide relief from the lugs, while still allowing for contact between a portion of the bottom panel 72 and the bottom of the retention bucket. As shown in FIGS. 4-6, each indentation 100 may be formed in the region of a junction of two adjacent torso walls 47, 48 and the bottom panel 72 and may have at least two segments, one segment providing horizontal displacement of the body to facilitate the location of lugs and the second segment providing vertical displacement of the body to facilitate the height of the lugs. It will be noted that some contact between the body and the lugs may occur during shaking as a result of the container body 2 flexing outward from the weight of the fluid or during shaking.

[0045] The upper, horizontal displacement segment of the indentation may be defined by the substantially radially inward "push" of the corner junction of the torso walls 47, 48 toward the center axis of the container body 2. The lower, vertical displacement segment of the indentation may be defined by the subsequent vertically downward travel of the corner junction of the torso walls 47, 48 toward the bottom panel 72. The vertical distance traveled in the second segment of the indentation 100 is usefully at least the same as the height of the lugs in the associated retention bucket. The distance of the radially inward travel represented in the first segment of the indentation 100 is usefully at least the same as the distance from the inner wall of the retention bucket to the interior facing side of the lugs.

[0046] The provision of indentations 100 at the lower corners of the container body 2 allows the container 1 to fit within a broad array of shakers having square retention buckets

including those having and those not having lugs. Moreover, the indentations **100** add strength to the corners of the container.

**[0047]** With particular reference to FIG. 6, one approach to providing suitable indentations **100** in the lower corners of the container body **2** is to provide the container body **2** with a base portion **65** comprising a bottom panel **72** having a plurality, and in one embodiment, eight edges (**74a-h**) that turn substantially vertically upward to form a bowl having a substantially octagonal cross-section. Alternatively, but equivalently, what are viewed as curved edges (**74a-h**) of the bottom panel **72** may otherwise constitute eight base walls connected to an eight-sided bottom panel **72**. The height of the base walls or curved edges of the bottom panel in this embodiment may be approximately or slightly greater than the height of the lugs in an associated retention bucket which is adapted to receive square containers. In one embodiment, this height may be from about 0.25 inches to about 1.0 inches. The bottom panel **72** will preferably be sized so as to fit substantially inside the lugs of the associated shaker bucket. In one embodiment, the maximum distance between horizontally equivalent mid-points on opposing base walls of the base portion **65** may be less than about 6 5/8 inches. With reference to FIGS. 5 and 6, the transition from the substantially octagonal cross section of the base portion **65** to the substantially square cross section of the torso portion **45** may provide an indentation **100** in each lower corner of the container body **2** having suitable horizontal and vertical displacement to substantially avoid the lugs of an associated retention bucket.

**[0048]** Having generally described the physical features of the form of various embodiments of the container of the present invention, details concerning the dimensions of the containers will now be provided. An empty container **1** suitable for holding a volume of colorant may have a maximum width of approximately 6 5/8 inches. Given the generally square cross section of the torso portion **45** of the container body **2**, the maximum width will be approximately the same for each side of the container. The maximum width of the torso walls **47**, **48** may be somewhat less than the maximum width of the base walls **67**, **69** and/or the shoulder walls **27**, **28** so as to provide a slight inset for the label. Suitable head space may be provided in the shoulder portion **25**, which may be from about 1 to about 20 ounces, with about 5 to 15 ounces of headspace preferred. The walls forming the walls of the shoulder portion **25**, torso portion **45** and base portion **65** may have a thickness of between about 0.20 and about 0.70 mm. Variations in the thickness of the walls at different points will be expected as a result of the blow molding processes used in forming the container body **2**. The thickness of the neck wall **7** and bottom panel **72** may be greater than 0.70 mm. The containers of the present invention may be formed from a 75 gram PET preform blown into a suitable mold.

**[0049]** The width of the container **1** should be selected so that the container body **2**, when filled with colorant, may be snugly received inside conventional one-gallon retention buckets associated with paint shakers adapted for use with commercially available one gallon square HDPE or PP paint cans, preferably without the need for an insert or other apparatus. In this respect, the outside distance between opposing corners of the container in at least the base portion **65** and torso portion **45** should not exceed the inner diameter of the retention bucket, and will, preferably be 0.01 to about 0.2 mm less than the inner diameter of the retention bucket to allow for easy removal of the container from the retention bucket.

**[0050]** As indicated above, except for the circular neck portion and, in one embodiment, an octagonal base portion, the containers of the present invention have a generally square cross section, and are adapted and sized to snugly fit inside a square retention bucket in a paint shaking machine. Shaking the colorant container prior to dispensing its contents into the tinting machine is believed to improve the distribution of pigments in the colorant. It is believed that the angular design reflected in the square cross section of the described containers speeds the pigment distribution during shaking over traditional round plastic or metal colorant containers. This may be as a result of the paddle effect achieved as the generally planar walls of the base, torso and/or shoulder portions and the angular corners between walls move relative to the colorant during the shaking process.

**[0051]** The embodiments have been described, hereinabove. It will be apparent to those skilled in the art that the above methods and apparatuses may incorporate changes and modifications without departing from the general scope of this invention. It is intended to include all such modifications and alterations in so far as they come within the scope of the appended claims or the equivalents thereof.

We claim:

1. A container for holding a paint colorant comprising: a body defining an interior volume, the body comprising: a torso portion comprising a plurality of torso walls, each torso wall having at least two side edges, a bottom edge, and a top edge, the torso walls joined at side edges to provide the torso portion of the body with a substantially square cross-section, a bottom panel joined to a portion of the bottom edge of each of the plurality of torso walls, wherein the body is formed so that each of the four corners defined by the junction of the bottom panel and each pair of bottom edges of adjacent torso walls is indented.
2. The container of claim 1, wherein the body further comprises a shoulder portion joined to the top edges of the torso walls, the shoulder portion comprising a plurality of shoulder walls, each shoulder wall having first and second non-parallel side edges and parallel top and bottom edges, the shoulder walls joined at side edges to form a funnel.
3. The container of claim 2, wherein the body further comprises a neck portion joined to the top edges of the shoulder walls, the neck portion comprising a neck wall having a substantially circular cross section.
4. The container of claim 3, wherein the neck wall has an inside diameter of less than about 50 mm.
5. The container of claim 3, wherein the torso walls, shoulder walls, neck wall, and bottom panel are made substantially of polyethylene terephthalate.
6. The container of claim 1, further comprising at least one torso rib circumferentially located about the torso walls.
7. The container of claim 1, wherein the maximum distance between the two furthest points of the container body at an equivalent horizontal plane is less than 6 5/8 inches.
8. A container for holding a paint colorant comprising: a body defining an interior volume, the body comprising: a base portion comprising a bottom panel having a plurality of edges and a plurality of base walls extending substantially vertically upward from the edges of the bottom panel to form a bowl having a substantially octagonal cross-section, a torso portion comprising a plurality of torso walls, each torso wall having at least two side edges, a bot-

tom edge, and a top edge, the torso walls joined at side edges to provide the torso portion of the body with a substantially square cross-section,

wherein the base portion is integrally joined to the torso portion.

9. The container of claim 8, wherein the base walls have a height of between about 0.25 and about 1.0 inches.

10. The container of claim 9, wherein the maximum distance between midpoints on opposing edges of the base portion is substantially the same or less than the maximum width of the torso walls.

11. The container of claim 10, wherein the body further comprises a shoulder portion joined to the top edges of the torso walls, the shoulder portion comprising a plurality of shoulder walls, each shoulder wall having first and second non-parallel side edges and parallel top and bottom edges.

12. The container of claim 11, wherein the body further comprises a neck portion joined to the top edges of the shoulder walls, the neck portion comprising a neck wall having a substantially circular cross section.

13. A container comprising:

a body defining an interior volume, the body comprising:

a base portion comprising a bottom panel having a plurality of edges and a plurality of base walls extending upwardly from the edges of the bottom panel to provide the base portion of the body with a substantially octagonal cross-section;

a torso portion integrally joined to the base portion, comprising a plurality of torso walls, each torso wall having at least two side edges, a bottom edge, and a top edge, the torso walls joined at side edges to provide the torso portion of the body with a substantially square cross-section; and

a neck portion integrally joined to the torso portion opposite the base portion, the neck portion comprising a neck wall having a substantially circular cross section.

14. The container of claim 13, wherein the maximum distance between midpoints on opposing base-walls of the base portion is less than about  $6\frac{5}{8}$  inches.

15. The container of claim 13 having an interior volume of at least one gallon.

16. The container of claim 13 having an interior volume of at least one-half gallon.

17. An article comprising:

a container comprising a body defining an interior volume, the body comprising:

a torso portion comprising a plurality of torso walls, each torso wall having at least two side edges, a bottom edge, and a top edge, the torso walls joined at side edges to provide the torso portion of the body with a substantially square cross-section;

a base portion comprising a bottom panel, the base portion integrally joined to the torso portion;

a shoulder portion integrally joined to the torso portion opposite the base portion, the shoulder portion comprising a plurality of shoulder walls, each shoulder wall having first and second non-parallel side edges and parallel top and bottom edges, the shoulder walls joined at side edges;

a neck portion integrally joined to the top edges of the shoulder walls, the neck portion comprising a neck wall having a substantially circular cross section; and colorant disposed in the container.

18. The article of claim 17, wherein the base portion comprises a bottom panel having a plurality of edges and a plurality of base walls extending upwardly from the edges of the bottom panel to provide the base portion of the body with a substantially octagonal cross-section.

19. The container of claim 17, wherein the body is made substantially of polyethylene terephthalate.

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