

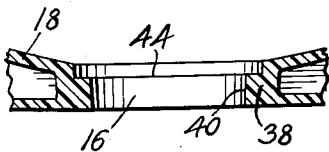
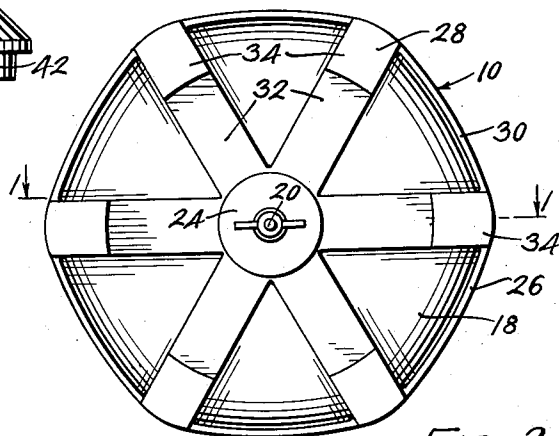
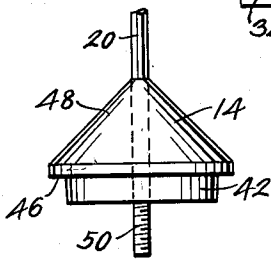
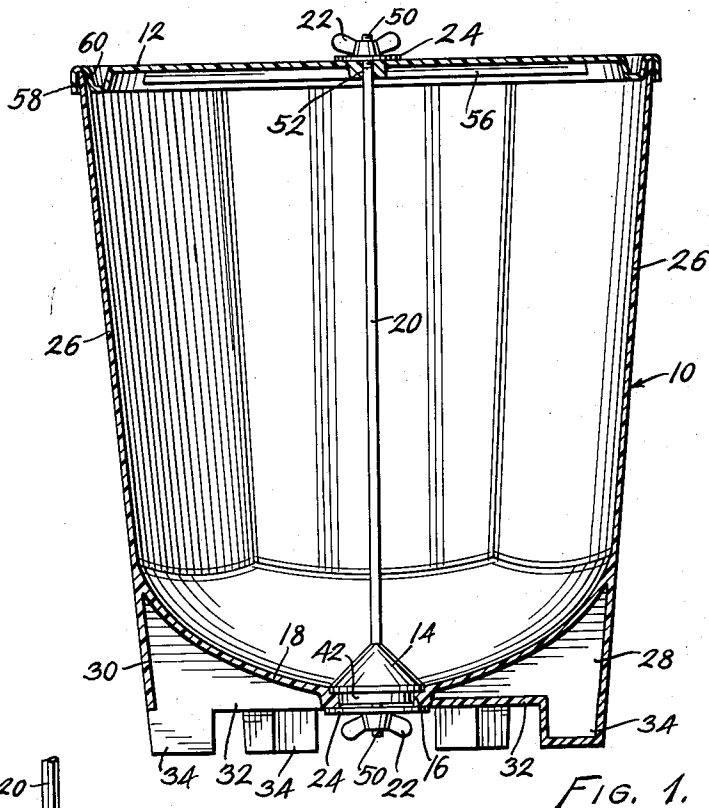
Dec. 24, 1963

H. F. SOMME
SHIPPING CONTAINER

3,115,281

Filed Jan. 16, 1961

2 Sheets-Sheet 1



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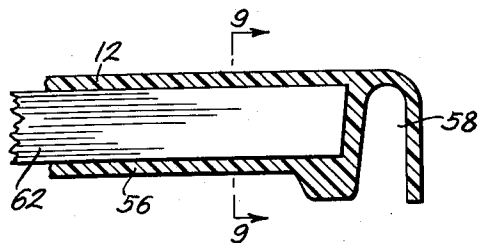
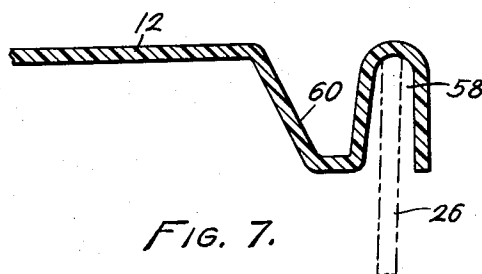
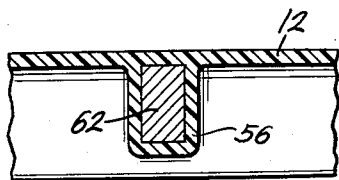
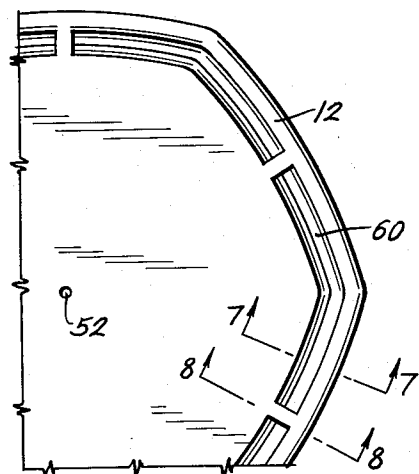
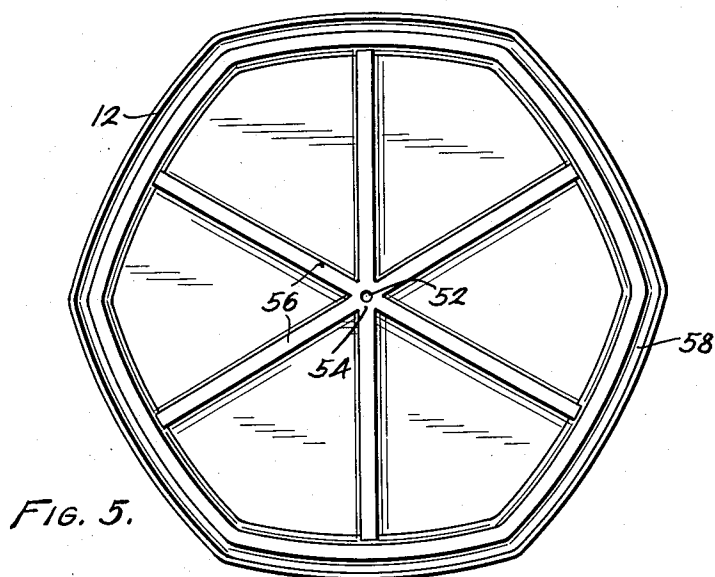
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2 Sheets-Sheet 2



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3,115,281

SHIPPING CONTAINER

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6 Claims. (Cl. 222-184)

This invention relates to a novel and improved container of a type ideally suited for use in the shipment and storage of either liquid or dry materials.

Relatively few products exist at the present time that do not require shipment by truck, rail or air into large marketing areas. Packaging of these products to insure against damage resulting from shipment and storage is no small problem and most manufacturers and carriers have frequent occasion to restudy their packaging methods with the purpose in mind of reducing the losses resulting therefrom and thereby lowering shipping costs.

In past years, cardboard boxes were the accepted and most widely used packaging medium. While containers of this type are still used extensively because of their low initial cost, they are unsuitable for packaging liquids and most powdered or granulated materials. Also, their strength leaves much to be desired and there are definite limits as to weight per cubic foot that can be safely carried therein or supported thereby. Furthermore, few, if any, of these containers are safe from the ravages of water, vermin and rodents.

Fibreboard barrels offer a compromise for many of the problems which render cardboard boxes unsuitable although they certainly offer no complete solution. Here again, they cannot handle liquid products effectively even with a waterproof liner and they remain quite susceptible to water damage. Laminated walls having a layer of foil provide some protection against invasion by vermin and rodents along with certain other advantages, but the possibility of this occurring is certainly not eliminated. Also, although able to withstand considerably greater loads than a cardboard box, they still become punctured, dented and otherwise damaged relatively easily necessitating frequent replacement.

Perhaps the ultimate in general purpose packaging up to the present time is the metal drum; however, they are extremely expensive and have other significant limitations. Rust is always a problem that requires constant attention and frequent applications of a rust-proof coating of some type. Cleaning and removal of residual materials prior to reuse is oftentimes necessary to eliminate the possibility of contamination, especially when the drum is to carry a different product. The weight of the drum is likewise a factor of substantial significance as the cost of shipping the container apart from the goods contained therein may price a product considerably above a local competitive market.

Accordingly, there is a definite and long-felt need for a more versatile shipping container that would, at least partially, solve the foregoing problems. Such a container should, preferably, be adaptable for use in carrying liquids, granulated and powdered products, ones having considerable density, those that are caustic or otherwise active chemically, and items having varying sizes and shapes that would be likely to puncture either a box or fibreboard barrel. It would be of a design that is easily cleaned, loaded and emptied while preventing escape of the contents and protecting them against the entry of outside contaminants such as vermin, rodents, air, water and sun. Finally, it should be strong yet lightweight thus providing substantial carrying capacity per pound of container weight while remaining relatively inexpensive.

It is, therefore, the principal object of the present in-

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vention to provide a novel and improved shipping container.

A second object is to provide a container of the class described which is fabricated from an epoxy resin impregnated chopped fiber glass molded to provide a seamless body having a drain opening in the bottom and an open top adapted to receive a closure or lid molded from the same composition in substantially liquid-tight and airtight sealed relation.

Another objective is the provision of a shipping container that is capable of handling a wide variety of materials including those, both liquid and solid, that are active chemically, ones which must be kept free from contamination, those which have a high specific gravity, products that must be protected against shock and the action of the elements, and things which are difficult and dangerous to handle.

Still another object is to provide a device for both the shipment and storage of materials that is capable of being stacked, nested, rolled, turned upside-down and subjected to substantial abuse without damaging the contents thereof.

An additional objective of the instant invention is the provision of a molded fiber glass container that utilizes a novel arrangement for securing both the lid and drain plug in place while permitting immediate access to the contents thereof and, at the same time, preventing it from escaping.

Further objects are to provide a shipping container of the type disclosed herein which is relatively inexpensive, reusable, rugged, lightweight, strong, decorative and adaptable for use with a wide variety of materials.

Other objects will be in part apparent and in part pointed out specifically hereinafter in connection with the description of the drawings that follow, and in which:

FIGURE 1 is a section taken along line 1-1 of FIGURE 2 showing the improved shipping container of the present invention;

FIGURE 2 is a bottom plan view thereof;

FIGURE 3 is a fragmentary detail to an enlarged scale showing the plug that seals the drain opening in the bottom of the body;

FIGURE 4 is an enlarged fragmentary section showing the details of construction of the drain opening in the bottom of the body;

FIGURE 5 is a bottom plan view of the lid;

FIGURE 6 is a fragmentary top plan view of the lid;

FIGURE 7 is a fragmentary section to an enlarged scale taken along line 7-7 of FIGURE 6;

FIGURE 8 is a fragmentary section to an enlarged scale taken along line 8-8 of FIGURE 6; and,

FIGURE 9 is a fragmentary section to an enlarged scale taken along line 9-9 of FIGURE 8.

Referring now to the drawings for a detailed description of the shipping container of the present invention, and specifically to FIGURE 1 for this purpose, it will be seen to comprise an open-topped cup-like body that has been indicated in a general way by numeral 10, a removable lid 12 that forms a substantially air and liquid-tight closure for the open top of the body, a plug 14 that provides the seal for the drain opening 16 formed in the bottom 18 of the body, and the threaded rod 20, wing nuts 22 and washers 24 that constitute the assembly which maintains both the lid and plug in place. In the preferred embodiment of the invention, the body 10 and lid 12 are each molded from short strands of fiber glass bonded together with an epoxy resin to produce a strong, tough unitary structure that is waterproof and resistant to most chemicals while preventing damage from rodents, mold, light, air and other exterior effects that harm other structures used for this purpose. The resultant receptacle is relatively light weight yet rugged enough

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to be stacked for storage. Characteristically, items molded from this substance are highly resistant to impact blows, extremely difficult to pierce, relatively hard to scratch or otherwise abrade, and substantially crushproof in normal use. As for the finish, the exterior surfaces may be left in the rough state, whereas, the interior ones are preferably covered with a suitable coating that provides a smooth finish which can be cleaned easily to remove undesirable residues, dirt and other possible contaminants. In the particular form illustrated, the walls 26 of the body 10 taper slightly from top to bottom and are of a generally frusto-conical configuration although the sides may, if desired, be flattened somewhat as shown to produce a more or less polyhedral shape. The bottom 18 is cast integrally with the walls 26 and is of a dish-shaped that slopes toward the drain opening 16 thus facilitating the removal of liquids and powdered materials therefrom as well as making the unit easier to clean. The base 28, which also forms a part of the body 10, can best be seen in FIGURES 1 and 2 to which reference will now be had.

Base 28 includes a skirt 30 encircling the body at the bottom thereof which, for all practical purposes, constitutes an extension of the walls 26 although not formed integrally therewith. Extending outward radially from a common center are not less than three substantially equi-angularly spaced ribs 32 having upwardly opening channel-shaped cross sections. These ribs each terminate at their outer extremities adjacent the skirt 30 in a downwardly projecting generally box-shaped foot 34 which rests on the ground and provides support for the entire body. These radial ribs and feet may, if desired, be filled with some more or less rigid reinforcing substance such as wood or plastic foam although tests have shown the latter to be unnecessary in normal use. The base has a central opening 16 therein adapted to receive the annular flange or collar 38 formed around the drain opening in the bottom.

It will become apparent from an examination of FIGURE 1 that both the base and bottom cannot be molded in a single operation due to the double-walled structure resulting therebetween. Accordingly, the base and wall structure of the body can be molded as a single unit with the bottom being added in a separate operation and permanently attached in place with a suitable adhesive to form a unitary structure; or, the walls and bottom can be formed in the first operation and the base added, the latter being preferable as it eliminates any inside seams which could interfere with cleaning and emptying the container.

Now, with reference to FIGURES 1 through 4, inclusive, the improved means for holding the lid and drain plug in place will be described. As aforementioned, the drain opening 16 in the bottom of the body is surrounded on the underside thereof by an annular flange or collar 38, the tapered inner wall 40 of which provides a seat for the correspondingly tapered lower extremity 42 of the drain plug 14. The upper portion of the drain opening 16 above the seat just described is enlarged to provide a substantially planar shoulder 44 adapted to receive and provide support for a corresponding annular shoulder 46 on the plug. The remaining portion 48 of the plug has been illustrated as having a generally frusto-conical shape; however, this portion has no functional significance and may, therefore, take other forms. Thus, the plug provides a means by which the drain opening in the bottom of the body may be rendered liquid-tight until such time as it becomes necessary or desirable to remove the plug for purposes of emptying or cleaning the container.

The means by which the drain plug is maintained in place comprises an elongated rod 20 which is attached within the center of the plug and has a threaded portion 50 projecting downwardly therefrom. With the plug in place in the drain opening, a washer 24 of a diameter large enough to overlap the annular flange 38 on the

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underside of the container bottom is slipped over the threaded portion and tightened in place with wing nut 22 thus pulling the surfaces 42 and 46 of the plug into liquid-tight sealed contact with the corresponding surfaces 40 and 44 bordering the drain opening. This same rod 20 extends upwardly through a centrally-located opening 52 in the lid, the latter opening being reinforced by a section 54 of increased thickness that projects onto the underside of the lid and represents the intersection of a plurality of radial ribs 56 provided thereon. The upper extremity of the rod 20 is likewise threaded as at 58 and a washer 24 and wing nut 22 cooperate as before to hold the lid in place. Obviously, the lid can be detached from the body of the container without removing or otherwise disturbing the drain plug. Conversely, by removing the lower wing nut and washer, the drain plug and rod may be lifted from the drain opening without removing the lid by merely raising the rod through the opening in the latter which is, of course, the procedure followed in emptying the vessel through the drain opening, thus eliminating the need for placing the hands in the contents of the container in order to release the plug.

FIGURES 5-7, inclusive, of the drawing are directed specifically to the construction of the lid and it will be noted that the latter element has a shape corresponding to the upper margin or edge of the walls of the body. The periphery of the lid is formed to provide a downwardly opening continuous groove or channel 58 adapted to receive the upper margin of the body in the manner shown by dotted lines in FIGURE 7 and form a substantially liquid-tight seal therewith. An upwardly opening interrupted groove 60 is also provided on the upper surface of the lid located adjacent and immediately inside the continuous groove 58 just described. The interruptions in groove 60 are the result of the intersection of hollow ribs 56 on the underside of the lid therewith as is most evident from an examination of FIGURES 6, 8 and 9.

The hollow ribs 56 extend radially in substantially equi-angularly spaced relation from a common center or hub 54 and comprise means for the reception of reinforcing members 62. The reinforcing members are usually small pieces of wood, having a generally rectangular cross section in the particular form shown, that are merely laid upon the planar surface of the lid after it has been sprayed on the mold. Then, of course, another layer of resin is sprayed over the reinforcing members, thus completing the ribs 56 and sealing the reinforcing elements therein. Obviously, these ribs together with the reinforcing members contained therein must terminate short of the continuous groove 58 in order to enable the latter to form an effective seal with the edge of the body. Reinforcement of the lid in the manner aforementioned strengthens it to the extent required for stacking the containers in loaded condition while protecting the contents thereof.

Having thus described the several useful and novel features of the shipping container of the present invention, it will be apparent that the many worthwhile objectives for which it was designed have been achieved. Although but a single specific embodiment of the invention has been illustrated and described in connection with the accompanying drawings, I realize that certain changes and modifications therein may well occur to those skilled in the art within the broad teaching hereof; hence, it is my intention that the scope of protection afforded hereby shall be limited only insofar as said limitations are expressly set forth in the appended claims.

What is claimed is:

1. A container of a type adapted for use in the shipment and storage of both liquid and non-liquid items which comprises an open-top body and lid forming a closure therefor fabricated from a material impervious to liquids, said body including walls, a sloping bottom with a drain opening therein and a ground supported base attached to

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the bottom, a drain plug mounted within the drain opening in liquid-tight sealed relation thereto and adapted for removal in the direction of the open top of the body, means forming an operative connection between the lid and drain plug adapted to provide for removal thereof either separately or together, said means comprising a rod detachably connected to said lid and permanently attached to the plug extending therebetween, said rod includes projecting portions accessible on both the underside and top of the container, and a removable washer and fastener assembly secured to said projecting portions to provide the operative connection between said plug and said lid.

2. The container as set forth in claim 1 in which both the lid and body are fabricated from molded fiber glass.

3. The container as set forth in claim 1 in which the lid includes a downwardly opening continuous groove positioned and adapted to receive the upper edge of the walls of the body and form a substantially liquid-tight seal therewith when the plug and rod are connected to the lid in a manner to hold the latter in place on the body.

4. The container as set forth in claim 3 in which the lid includes a plurality of radially-extending hollow ribs emanating from a common hub and relatively rigid reinforcing elements disposed within each of said hollow ribs;

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said ribs terminating adjacent the inner margin of the continuous groove.

5. The container as set forth in claim 1 in which the base includes at least three substantially equiangularly spaced ribs emanating from a centrally-located hub and terminating adjacent their free ends in feet adapted to support the bottom in spaced relation above the ground.

6. The container as set forth in claim 1 in which the lid includes a centrally-located opening sized to pass the rod and permit relative slidable movement of the latter in the direction of its length for purposes of removing the plug from within the drain opening without removing the lid.

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