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I. SOLOWEY

3,321,097

BOTTLE WITH TWO OR MORE SEPARATE COMPARTMENTS

Filed May 13, 1966

Fig. 1

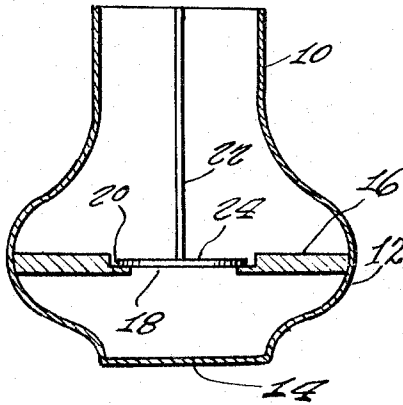


Fig. 2

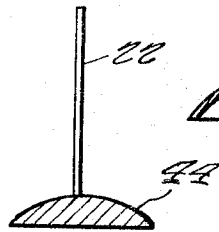


Fig. 3

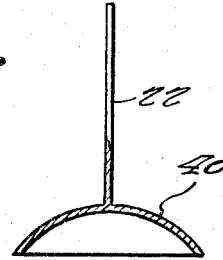


Fig. 4

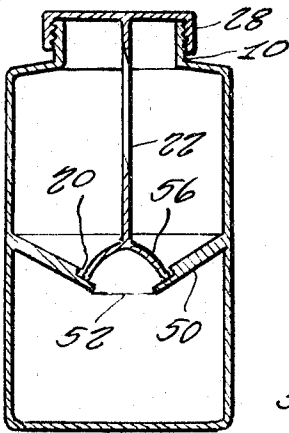


Fig. 5

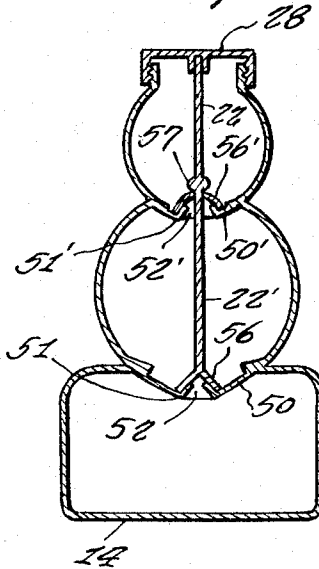


Fig. 6

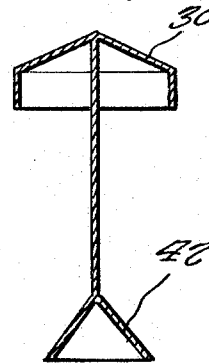


Fig. 7

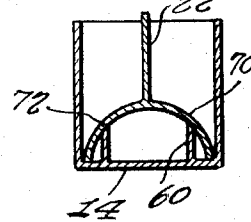
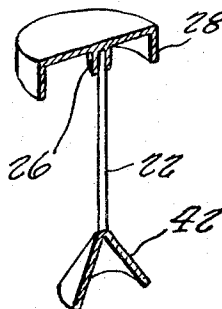


Fig. 8



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BOTTLE WITH TWO OR MORE SEPARATE COMPARTMENTS

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3 Claims. (Cl. 215-6)

This application is a continuation in part of my pending application filed July 6, 1964, Ser. No. 380,507, now abandoned.

My invention is directed toward bottles, jars, jugs or cans containing two or more medicinal, chemical, food, or beverage ingredients which are held isolated from each other until mixing is desired, said containers being provided with means for permitting mixing of said ingredients whenever such mixing is desired.

Accordingly, it is an object of my invention to provide new and improved bottles, jars, jugs or cans, of the character indicated.

Another object of my invention is to provide new and improved bottles, jars, jugs, or cans, of the character indicated, wherein a separate compartment is provided for storing each ingredient and wherein each pair of adjacent compartments are separated by a glass rib having an orifice sealed by a removable stopper.

Still another object is to provide new and improved bottles, jars, jugs, or cans, of the character indicated, wherein a separate compartment is provided for each ingredient and wherein said compartments are stacked vertically one above the other.

All of the foregoing, and still further objects and advantages of my invention will now be explained with reference both to this specification and to the drawings wherein:

FIGURE 1 is a cross-sectional view of one form of my invention;

FIGURES 2 and 3 are cross-sectional views of different modifications of stoppers which can be used in the invention of FIGURE 1 in place of the stopper shown in FIGURE 1;

FIGURE 4 is a cross-sectional view of another form of my invention;

FIGURES 5 and 6 are cross-sectional views of different modifications of stopper, rod and cap combinations which can be used in the invention shown in FIGURE 4 in place of the stopper, rod and cap combination shown in FIGURE 4;

FIGURE 7 is a cross-sectional view of a third form of my invention; and

FIGURE 8 is a detail cross-sectional view of a fourth form of my invention.

Referring now to FIGURE 1, there is shown a vertical glass bottle having an upper neck portion 10 connecting to and integral with an enlarged main portion 12 which tapers downward and inward to a bottom plate 14. A horizontal glass rib 16 is secured to the inner wall of the main portion 12 and is provided with a central orifice 18 having an enlarged shoulder 20. A first medicinal, chemical, food or beverage ingredient is placed in the lower section of the main portion 12 (i.e., below the rib 16) and rests on the top of plate 14. A vertical rod 22 is secured at its bottom end to a chemically inert highly polished heavy plastic or glass disc 24 or stopper which rests in the shoulder 20 to seal off the lower section of the main portion. The second ingredient is then placed on top of stopper 24. The stopper and rod can be held in place by having the rod fit within a central sleeve 26 of a cap 28 engaging the top of the bottle as shown in FIGURE 5. Alternatively, the rod can be integral with a cone-like cap 30 as shown in FIGURE 6, or the rod, without fitting into a central sleeve, but merely by being pressed tightly

against any part of the screwed on cap would thusly be held in place.

The stopper 24 can take various forms such as a spherical hollow section 40 (FIGURE 3) an inverted hollow cone 42 (FIGURE 5) or a convex disc 44 having a flat bottom surface (FIGURE 2). Note that the diameter of neck portion 10 is larger than that of the stopper to permit the stopper to be easily removed through the mouth of the bottle to permit complete mixing of the ingredients when and as desired.

As shown in FIGURE 4, the rib need not be horizontal but can take the form of a downwardly and inwardly tapering truncated cone 50, the bottom opening 52 of which has a shoulder 20 accommodating a stopper in the form of a hollow spherical section 56.

FIGURE 7 shows a further modification, wherein the bottle is provided with lower and upper concentric ribs 50 and 50'. Lower rib 50 encompasses the smallest opening 52 and upper rib 50' encompasses larger opening 52'. A rod 22 axially disposed, in the bottle, has a stopper 56 smaller than opening 52', integrally formed at its lower end adapted to make a sealing contact with rib 50. An upper stopper 56' is slidably mounted on rod between mouth of bottle and upper rib 50'. Ridge 57 is formed in rod 22 to retain stopper 56' in abutment with rib 50'. Stopper 56' is resilient enough to be forced over the ridge 57, and thereby be retained in the position of sealing contact with the rib 50'. Cover 28 is used to secure the bottle by means of threaded engagement with the bottle. The cover is adapted to tightly engage the rod 22 when the cover is screwed tightly on the bottle, thus pressing the rod downward and securing its position in the bottle. The mouth of the bottle is large enough to admit the stoppers.

In use, the first ingredient is poured in the lower compartment and stopper 56 is put in sealing contact with rib 50. Then the second ingredient is poured into the middle compartment and stopper 56' is slid into contact with rib 50', being retained there by ridge 57. The upper compartment is then filled and cover 28 is screwed on to secure rod 22 in place.

It is to be noted that ribs 50' and 50 are provided with conically upturned seats 51' and 51 which are adapted to fit in wedgelike fashion into stoppers 56' and 56 respectively. Due to the resilient construction of the stoppers they will fit sealingly over the seats 51' and 51 and more effectively prevent any premature intercompartmental seepage. Due to the upwardly streamlined shape of the stoppers, resistance to the upward movement will be reduced and a metering effect will be introduced upon upward stopper motion.

When the cover 28 is removed, the rod and stoppers are unsealed in one stop, causing mixing of the ingredients.

In FIGURE 8, there is shown a container having a natural bottom well formed by the base plate 14 and a hollow vertical cylinder rib 60 open at the top end, the well receiving one ingredient.

The stopper takes the form of a hollow resilient hemisphere 70 which fits over a curvately tapered seat 72 of rib 60 to seal as before. The curved seat provides a more effective seal because of the resilient wedging action.

While I have described my invention with particular reference to the drawings, my protection is to be limited only by the terms of the claims which follow.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A container for keeping separated at least two portions of different ingredients, comprising an upper chamber, and at least one lower chamber, communication between said chambers being provided by an orifice intervening between the two said chambers, said orifice being

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formed by an annular rib projecting inwardly from the inside wall of the container, wherein said upper chamber has a neck portion of greater diameter than the said orifice, in combination with a hollow, concave stopper having a sealing surface at one end, and a handle at the opposite end thereof, wherein said sealing surface is of a smaller diameter than the neck portion, and of greater diameter than the orifice, said rib having an upwardly extending abutting surface adapted to coact with an intermediate portion of the concave surface of the said sealing surface of the stopper to prevent communication between the said chambers when the stopper is in a lower position in abutment with the said rib, and will permit communication between the said chambers when the said stopper is raised by the handle to an upper position, and wherein the said stopper is contoured in a streamlined fashion, flaring outwardly from its center to the terminal end thereof in a downward direction, the hollow concavity of the stopper being adjacent and in communication with the lower chamber, and presenting a streamlined upwardly converging surface within the upper chamber, whereby the stopper can be more easily moved from the lower to the upper position because of its streamlined contour.

2. A container as in claim 1, wherein the stopper is of a bell-like contour forming a large hollow concavity on its under side, and wherein its maximum diameter fits snugly within the upper chamber wall, and wherein the

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inner wall rib is of a cylindrical shape extending concentrically and parallel to the walls of the upper chamber, and is provided with a tapered curvate sealing surface at its upper end adapted to contact and coact with a corresponding sealing surface formed on the under side of the stopper.

3. A container as in claim 1, wherein said rib abutting surface being an upturned conical seat adapted to fit sealingly into the stopper and wherein the stopper portion which fits about the seat is resilient being distended by the seating action.

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