Sept. 27, 1966 P. S. OPTNER ETAL 3,275,180

MAILING CONTAINER CONSTRUCTION

Filed Jan. 4, 1965

Fig. 1

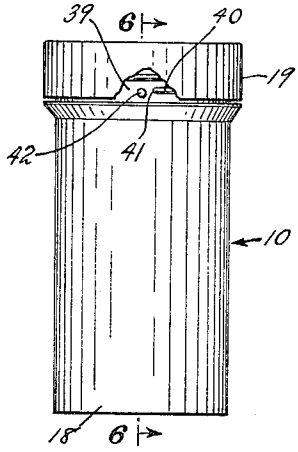


Fig. 2

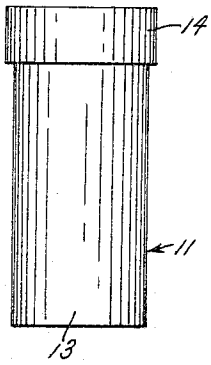


Fig. 3

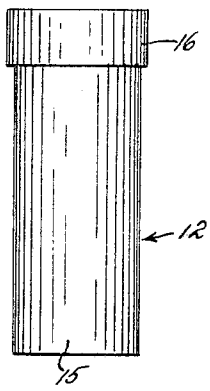


Fig. 6

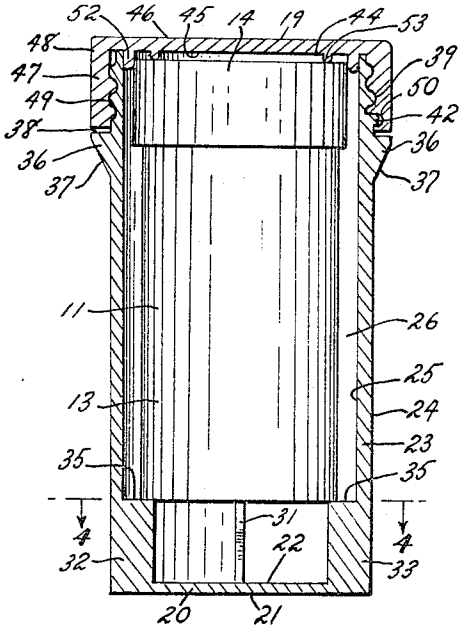
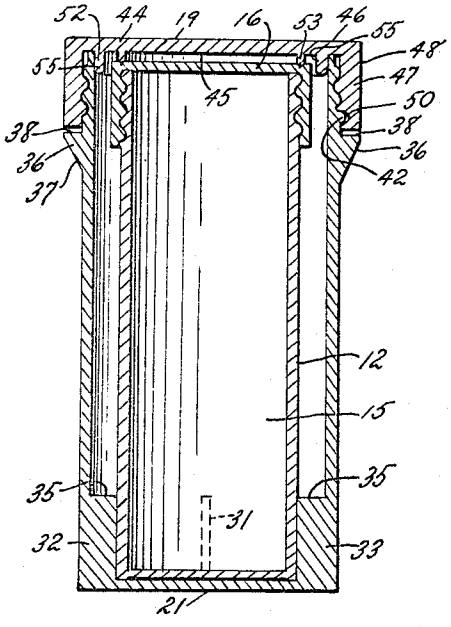


Fig. 7



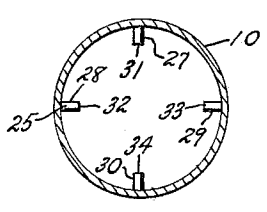


Fig. 4

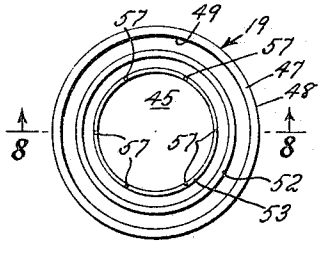


Fig. 5

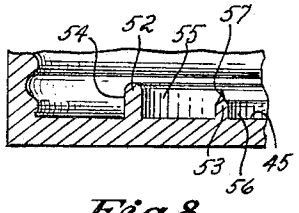


Fig. 8

United States Patent Office 3,275,180 Patented Sept. 27, 1966

3,275,180

MAILING CONTAINER CONSTRUCTION

Philip S. Optner, Roslyn Heights, N.Y., and Richard E. Kresge, Elizabeth, N.J., assignors to Lermer Packaging Corporation, Garwood, N.J., a corporation of New Jersey

Filed Jan. 4, 1965, Ser. No. 423,138
3 Claims. (Cl. 220—17)

This invention relates generally to the field of mailing containers, and more particularly to an improved synthetic resinous container construction particularly adapted for the mailing of fluids in small quantities.

For a long period of time, postal authorities have frowned upon the mailing of small liquid specimens, such as those used in connection with urinalysis, owing to the difficulty of fabricating a suitable container which will be both leak proof and sufficiently resistant to damage caused by normal handling. Where containers containing such speciments are broken, not only the container itself is destroyed, but the liquid contents of the container are often spread over other packages. Since such containers are usually sent by first class mail, valuable correspondence is almost invariably reached as well.

Aside from breakage of non-resilient containers such as glass, and the breaking of fibrous containers owing to lack of sufficient mechanical strength, the principal problem in shipping liquid specimens has been the possibility that the cap will either loosen in transit or be engaged by other articles such that it is broken or snapped away from the body of the container. Either happening results in the spillage of the specimen, with the above described deleterious effect.

It is therefore among the principal objects of the present invention to provide an improved mailing container construction of the class described, in which the above mentioned disadvantages have been substantially eliminated.

Another object of the invention lies in the provision of a mailing container construction including first and second container elements, one being disposed within the other in such manner that damage to the outer container element is not imparted to the inner container element.

Another object of the invention lies in the provision of an improved container construction of the class described in which the screw caps used for sealing the containers may be closed to a predetermined degree, thereby avoiding the possibility of breaking the container owing to excessive tightening and assuring, at the same time, that a sufficient degree of tightness has been obtained.

Yet another object of the invention lies in the provision of an improved mailing container construction, in which the cost of fabrication may be of a reasonably low order, with consequent wide sale, distribution and use.

A feature of the invention lies in the fact that a single outer container element may be used in conjunction with a variety of sizes of inner container elements, interchangeably.

Another feature of the invention lies in the fact that use of the invention construction requires no tools and no more than ordinary skill.

These objects and features, as well as other incidental ends and advantages, will more fully appear in the progress of the following disclosure, and be pointed out in the appended claims.

In the drawing, to which reference will be made in the specification, similar reference characters have been employed to designate corresponding parts throughout the several views.

FIGURE 1 is a view in elevation, partly broken away

to show detail, of an outer container element embodying the invention.

FIGURE 2 is a view in elevation showing one size and configuration of inner container element used in conjunction with the outer container element shown in FIGURE 1.

FIGURE 3 is a view in elevation showing a second size and configuration of inner container element, selectively used in lieu of the inner container element shown in FIGURE 2.

FIGURE 4 is a transverse sectional view as seen from the plane 4—4 in FIGURE 6.

FIGURE 5 is a view in elevation showing the inner surface of a cap element shown in the upper portion of FIGURE 1.

FIGURE 6 is a longitudinal sectional view showing the container element of FIGURE 2 installed within the container element of FIGURE 1.

FIGURE 7 is a similar sectional view showing the container element of FIGURE 3 installed within the container element of FIGURE 1.

FIGURE 8 is a fragmentary enlarged sectional view as seen from the plane 8—8 in FIGURE 5.

In accordance with the invention, the device, generally indicated by reference character **10** is used in conjunction with standard specimen container tubes illustrated in FIGURES 2 and 3, and identified by reference characters **11** and **12**, respectively. The tubes **11** and **12** are substantially similar as to mechanical details, the tube **11** including a cylindrical body **13** having a screw cap **14** therefore, and the tube **12** having a somewhat differently configured cylindrical body **15** and a corresponding screw cap **16**.

The device **10** comprises broadly: a cylindrical body element **18** and a screw cap element **19**.

The body element **18** includes a bottom wall member **20** having an outer surface **21** and inner surface **22**, and a cylindrical wall member **23** having an outer surface **24** and inner surface **25**. The outer surface **24** may contain suitable printing (not shown) in the form of a prepaid mailing label or other suitable indicia. The inner surface **25** defines a cylindrical cavity **26** into which either of the first and second tubes **11–12** may be positioned. Extending upwardly from the inner surface **22** from the bottom wall member **20** are four short partial septums or projections **27**, **28**, **29**, and **30**, the inner edges **31**, **32**, **33**, and **34** respectively of which define lines on an imaginary cylinder corresponding in diameter to the outer surface of the second tube **12** to position the same against radial movement. The upper surfaces **35** of each of the septums lie in a single plane, and are adapted to engage the bottom wall of the first tube **11** to accomplish a similar positioning.

Disposed at hte upper or open end of the body element **18** is annular flange **36** having a tapered outer surface **37** and a radial surface **38** forming a rabbet into which the screw cap element **19** may be positioned. Disposed above the surface **38** is a threaded portion **39** having a continuous snigle thread **40** thereon terminating at the lower end thereof at **41**. Positioned immediately adjacent the terminal **41** is a radially extending button-like projection **42** of height greater than the thread **40**.

The screw cap **19** includes an end wall **44** having an inner surface **45** (see FIGURE 5) as well as an outer surface **46**. The wall **44** is molded integrally with a cylindrical wall **47** having an outer surface **48** and a correspondingly threaded inner surface **49**. Extending radially into the inner surface is a recess or detent **50** corresponding to the projection **42**, and so positioned as to provide for mutual engagement when a proper degree of tightness of the cap **16** upon the body **15** is attained. This

engagement is accomplished in a clearly observable manner by the user, and if desired, the recess **50** may be carried through the wall **47** so as to permit visible observation of the projection **42**. When this condition has been obtained, the free cylindrical edge of the cap **16** is positioned adjacent the radial surface **38**, thereby allowing the tapered outer surface **37** to prevent the engagement of an article beneath the edge of the cap to possible damage the same or force the cap from engagement with the body **15**. This is accomplished by making the effective diameter of the flange **36** equal to, or slightly greater than, the diameter of the cap **19**, as best seen in FIGURES 6 and 7.

Referring to FIGURE 5, the inner surface **45** of the end wall **44** is provided with a first or outer arcuate flange **52** and a second or inner arcuate flange **53**. The flange **52** includes an outer surface **54** which forms a seal with the cylindrical body **15** by defining a groove existing between the surface **54** and the inner surface **55**. This seal is accomplished irrespective of the size and configuration of the tube **11** or **12** which is used with the device **10**. The inner surface **55** of the flange **52**, additionally provides a locating means for the cap **14** of the tube **11** as seen in FIGURE 6, as well as means for limiting to a substantial degree the movement in a radial direction which is possible with the screw cap **16** of the tube **12**.

The flange **53** is shorter in a longitudinal direction than the flange **52**, and includes an inner surface **56** having a plurality of projections **57** located thereon of sufficient height to contact the upper surface **51** of the inner cap **14**, or the upper surface **62** of the inner cap **16** when either of the tubes **11** and **12** are positioned within the device **10** and the cap **16** is tightened.

The result of this operation will be to prevent the inner tube **11** or **12** from loosening from a previously tightened condition while in transit, and in addition to prevent any relative movement between the first and second tubes **11** and **12** and the device **10**.

From a consideration of FIGURES 6 and 7, it will be observed that should the device **10**, which is formed from suitable synthetic resinous material, become cracked or otherwise damaged, such damage is not normally transmitted to the inner tube which must be punctured before breakage can result. In addition, once the cap **16** has been suitably tightened owing to the presence of projection **42** and corresponding recess **50**, it will not accidentally vibrate loose, and in tightened condition will effectively prevent any loosening of the cap **14** or **16** wherein leakage could result.

We wish it to be understood that we do not consider the invention limited to the precise structures shown and set forth in this specification, for obvious modifications will occur to those skilled in the art to which the invention pertains.

We claim:

1. In a synthetic resinous tubular mailing container, a hollow cylindrical body having a first closed sealed end and a second open end, said open end having a threaded outer surface, and an annular flange adjacent said threaded surface; and a correspondingly internally threaded cap selectively engageable upon said open end, said annular flange being in abutted relation with respect to said cap when the latter is in engaged condition, and having an external effective diameter substantially equal to that of said cap; and resilient detent means for indicating when said cap is properly located with respect to said flange.

2. In a synthetic resinous tubular mailing container, a hollow cylindrical body having a first closed end and a second open end, said open end having a threaded outer surface, and a correspondingly internally threaded cap selectively engageable upon said body to effect a seal therewith, said cap and body having resilient detent means for indicating a predetermined degree of mutual engagement.

3. In combination, a synthetic resinous mailing container including a first cylindrical body, a cap selectively threadedly engageable upon said body, a second cylindrical body selectively positioned within said first cylindrical body, a second cap selectively threadedly engaged upon said second body, said first cap having an inner surface, said second cap having an outer surface, said last mentioned inner surface having means projecting therefrom for engaging said last mentioned outer surface; whereby upon the positioning of said second body and engaged second cap within said first body, and the tightening of said first cap upon said first body, said last mentioned means may maintain said second cap in tightly closed relation upon said second body.

References Cited by the Examiner

FOREIGN PATENTS

1,030,686 6/1953 France.

THERON E. CONDON, *Primary Examiner.*

J. B. MARBERT, *Assistant Examiner.*