

June 16, 1964

S. LIPSCHUTZ ETAL
STABLE DISPENSER PACKAGE

3,137,433

Filed May 15, 1961

2 Sheets-Sheet 1

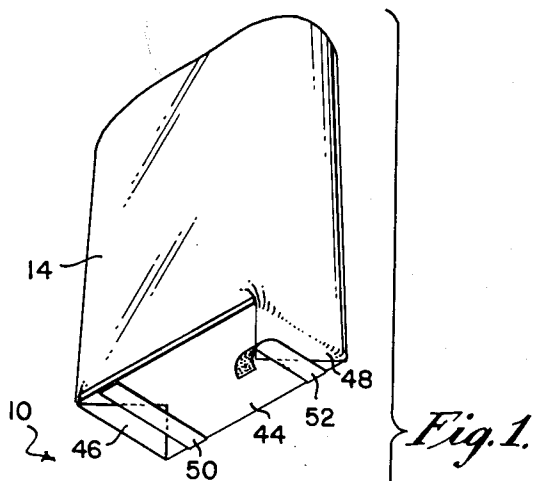
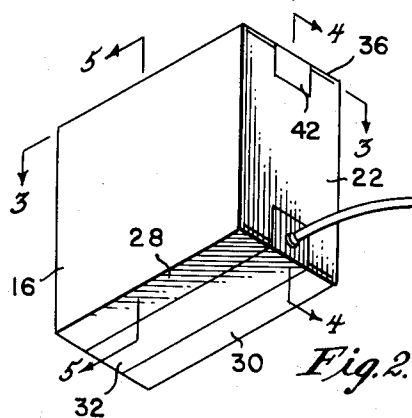
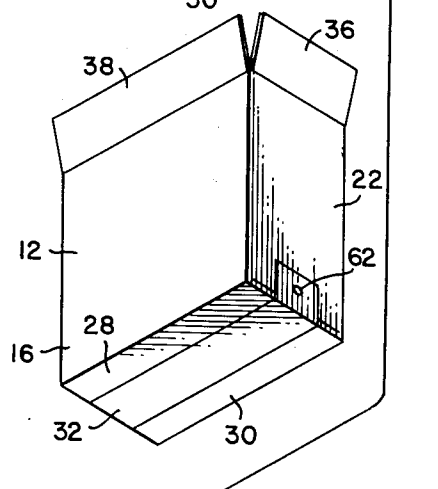
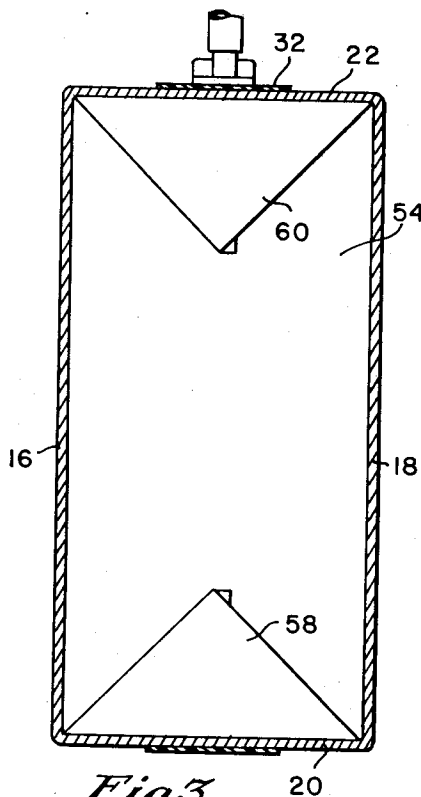
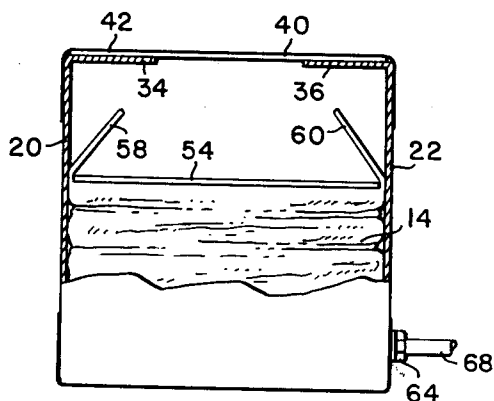


Fig. 6.

Fig. 3.

INVENTORS.
SIDNEY LIPSCHUTZ
BY EDWARD H. BARNETT

Caesar and Rivise

ATTORNEYS.

1

3,137,433

STABLE DISPENSER PACKAGE

Sidney Lipschutz and Edward H. Barnett, both of Philadelphia, Pa., assignors, by mesne assignments, to Chemical Sales, Inc., Philadelphia, Pa., a corporation of Pennsylvania

Filed May 15, 1961, Ser. No. 110,179

5 Claims. (Cl. 229-14)

This invention relates to containers for corrosive liquids and, more particularly, it relates to containers of the multi-unit type.

It has been the prior practice in the industry to package corrosive liquids such as acids or alkaline materials in containers consisting of a relatively rigid outer unit made of fiberboard enclosing a flexible inner unit of non-corrosive material such as polyethylene, cellulose acetate and the like.

One of the flexible inner units heretofore used has consisted of a tubular member sealed completely along its bottom edge and also sealed along its top edge except for a spout member extending therefrom which is not sealed until the bag has been filled.

Another flexible unit heretofore used has consisted of an outer bag and inner bag positioned therein, the two bags being secured together with a common seal along the bottom edge thereof. The seals in the foregoing bags have generally comprised two closely spaced parallel seals separated by a small air space rather than a single line of sealing.

In other applications, the spout has been eliminated and instead, the flexible inner container was initially sealed along its entire top and bottom edges. Thereafter, an upper corner was cut off to permit the corrosive liquid to be dispensed into the package and, finally, a seal was formed adjacent the upper corner.

Corrosive liquids packaged in the foregoing manner are dispensed by means of a probe of the nature of the device disclosed and claimed in pending application Serial No. 845,851 filed October 12, 1959. The probe is thrust directly through the wall of the relatively rigid outer container (fiberboard box) and then continues to penetrate through the flexible wall or walls of the inner container. The plastic memory of the material comprising the flexible bag tightly adheres about the probe, and the corrosive liquid contained in the flexible bag may flow only through the probe and then through a hose secured to the probe to be dispensed as desired. Clamping means are positioned about the hose at a desired point to control the dispensing of the corrosive liquid.

The foregoing probe constitutes a very simple and highly effective means of great safety for dispensing corrosive liquids. However, as previously stated, the inner container or containers are necessarily flexible. Thus, it has been found in actual practice that when the probe is inserted through the wall of the rigid container and plunges still further against the outer wall of the flexible inner container, the flexible inner container has a tendency to slide away from the pressure of the probe. Hence, the insertion of the probe may be rendered more difficult and, also, the piercing of the inner bag may be such that the probe enters the bag at a relatively small acute angle rather than the preferred right angle entry. Hence, insertion of the probe may be a faulty one so that leakage around the probe will occur.

The foregoing problem was effectively solved in prior copending application Serial No. 9,898 filed February 19, 1960, now Patent No. 3,065,894, wherein the inner bag was provided with a foldable spout which was fastened to an inside portion of an outer flap of the rigid container. The flap was then folded in a conventional manner upon

2

previously folded inner flaps to complete the packaging. Thus the spout was interposed between the inner and outer flaps of the rigid container in the fully assembled package and the probe was thrust into the relatively rigid container at a point closely adjacent to the folded and interposed flap. Hence, the flexible container adjacent the entry of the probe is held fast in position, and penetration of the probe is accomplished at a substantial right angle.

However, the foregoing device necessitated a filling spout. Moreover, where the flexible inner container comprised outer and inner flexible bags, the problem of the inner flexible bag sliding away from the outer flexible bag under the pressure of the probe existed to a substantial degree.

The foregoing problems were effectively solved in copending application Serial No. 43,532 filed July 18, 1960, wherein an adhesive surface was interposed along a limited area between the inner and outer bags so that the inner bag would not slide away from the pressure of the inserted probe. In addition, adhesive tape means were fastened to the outer surface of the flexible container and then led between the folded inner flaps of the relatively rigid outer container and, finally, over the outer surface of one of the inner flaps to be secured against the external surface of the relatively rigid outer container. The probe was accordingly thrust into the relatively rigid outer container at a point adjacent the emergence of the tape therefrom.

The foregoing technique constituted a very effective solution to the above specified problems. However, it entailed considerable labor and a certain amount of care in interposing the adhesive surface between the inner and outer flexible bags, as well as care in threading the adhesive tape means between the inner flaps and fastening it against the relatively rigid outer container.

Thus, there was provided in copending application Serial No. 105,486; filed on April 25, 1961, now Patent No. 3,065,895, entitled Improved Multiple Unit Container, a flexible inner container comprising an outer bag and an inner bag sealed together along their upper and lower edges. One of the lower corners of the bag was laid upon a bracing member, a piece of relatively rigid material, such as corrugated cardboard of the same general dimensions as a lateral cross section of the relatively rigid outer container. Thus, the bracing member inter-fitted snugly into the relatively rigid outer container. A corner of the flexible container was secured to the bracing member by adhesive tape, heat sealing and the like. The bracing member was then folded to lie beneath the flexible container with the secured corner thereof being carried along with the folding of the bracing member. The assembly was then positioned inside the relatively rigid outer container, the flexible inner container filled and sealed in a well-known manner and the upper flaps of the relatively rigid outer container positioned in a conventional manner. Dispensing was effected adjacent the lower side of the relatively rigid outer container near the folded corner of the flexible bag.

The foregoing technique thus constituted a very satisfactory solution to the previously specified problems. However, it has been discovered that the dispenser packages heretofore employed tended to experience a phenomena known as stress cracking in the polyethylene. This occurs when folds or layers of polyethylene are compressed or otherwise pressed by forces in addition to the normal weight of the contained liquid, as during the transportation of the package to the user's site. The jarring and shaking action experienced whenever goods are transported, as for instance, in a truck, gives rise to an abrading action which, in combination with the weight of the contained liquid, is responsible for such compressing or pressing action. The net result is a tend-

3

ency toward cracking of the polyethylene with but several hours of transportation. This, of course, is quite dangerous as it may lead to a leaking or escape of the corrosive liquid.

It is accordingly an object of the present invention to provide a stable dispenser package including a single inner flexible container which will resist the phenomena of stress cracking.

Yet another object of the present invention is to provide a stable dispenser package which can withstand the stresses involved in transporting the package to the user's site.

Still another object of the present invention is to provide a stable dispenser package with but a single inner flexible container which will not slide under the force of insertion of the dispensing probe.

A still further object of the present invention is to provide a stable dispenser package which avoids the necessity of a filling spout and is sealed at its top and bottom ends.

Yet another object of the present invention is to provide a stable dispenser package from which liquid may be dispensed either by a dispensing probe or by direct pouring of the contained liquid.

Yet another object of the present invention is to provide a dispenser package of the aforesaid type which is relatively simple in construction and inexpensive to manufacture.

The foregoing, as well as other objects of the invention, are achieved by providing a flexible inner container comprising but a single bag sealed together along its upper and lower edges. Both of the lower corners of the bag are tucked beneath a lower bracing member, a piece of relatively rigid material, such as corrugated cardboard of the same general dimensions as a lateral cross section of the relatively rigid outer container. Thus, the lower bracing member, as well as the upper bracing member to be specified hereinafter, will interfit snugly into a relatively rigid outer container. The lower corners of the flexible container are then permanently secured to the lower bracing member by adhesive tape, heat sealing, etc. The assembly is then positioned inside of the relatively rigid outer container. An upper corner of the flexible inner bag is cut off to permit the corrosive liquid to be dispensed inside the bag and the corner is then resealed. Thereafter, an upper bracing strip, similar to the lower bracing strip, is positioned to lie upon the filled bag. The upper corners of the bag are folded to lie upon the upper bracing strip and the upper flaps of the relatively rigid outer container are then folded in place to hold the upper corners of the flexible bag in a generally horizontal folded position. The upper flaps are, in turn, held in position by external tape means to complete the packaging. Dispensing may be effected by a dispensing probe or, alternatively, the flexible bag may be adhesively secured to the interior of the relatively rigid outer container so that the upper flaps of the outer container may be unfolded and a corner of a flexible bag snipped so that the entire package may be raised and the liquid poured therefrom.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

FIG. 1 is an exploded perspective view showing the flexible bag of the present invention with respect to the relatively rigid outer container;

FIG. 2 is a perspective view of the parts of FIG. 1 in the fully assembled position with a probe and connecting hose inserted for dispensing;

FIG. 3 is an enlarged sectional view taken along the lines 3—3 of FIG. 2;

FIG. 4 is an enlarged sectional view taken along the

4

lines 4—4 of FIG. 2 with portions broken away for the sake of clarity;

FIG. 5 is an enlarged sectional view taken along the lines 5—5 of FIG. 2;

FIG. 6 is an enlarged side elevational view of the package of FIG. 2, partly broken away to show the internal condition of the package when a portion of the contained liquid has been dispensed therefrom;

FIG. 7 is an exploded perspective view similar to FIG. 1 but showing a modification thereof; and

FIG. 8 is a side elevational view on a reduced scale of the assembled package of FIG. 7, with portions broken away for the sake of clarity and having a portion of the top of the relatively rigid outer container and of the flexible bag removed to permit the liquid to be poured as represented in the figure.

Referring now in greater detail to the various figures of the drawings wherein similar reference characters refer to similar parts, an improved stable dispenser package embodying the present invention is generally shown at 10 in FIG. 1. Device 10 basically comprises relatively rigid outer container 12 and flexible inner bag 14 adapted to hold the corrosive liquid and be positioned within rigid container 12.

As best shown in FIGS. 1 and 3, relatively rigid outer container 12 comprises side walls 16 and 18 and end walls 20 and 22. As best shown in FIGS. 4 and 5, relatively short lower end flaps 24 and 26, respectively, extend from the end walls 20 and 22. End flaps 24 and 26 are held in the horizontal position of FIG. 4 by means of lower longitudinal flaps 28 and 30 extending from side walls 16 and 18, which are positioned to lie externally of the end flaps 24 and 26, as best shown in FIG. 5. External tape 32 secures the respective flaps in the position of FIG. 5.

Similarly, relatively short upper end flaps (FIG. 4) 34 and 36 extend respectively from the end walls 20 and 22. Upper longitudinal side flaps (FIG. 5) 38 and 40 extending from side walls 16 and 18 are positioned externally of the relatively short flaps in abutting relationship for reasons which will be discussed hereinafter. External upper tape 42 is secured over the abutment seam of the flaps 38 and 40, as shown in FIG. 5.

Inner bag 14 is constructed of polyethylene, cellulose acetate, or similar plastic and is essentially a tube with heat seals formed along its upper and lower edges. As shown in FIG. 1, a lower bracing member 44 of flat sheet corrugated cardboard is positioned beneath the bag 14 and lower corners 46 and 48 of bag 14 are tucked under the bracing member 44. The corners 46 and 48 are affixed in a horizontal position beneath bracing member 44 by means of adhering tapes 50 and 52 or by similar well known securing techniques, as for instance, heat sealing. The bag assembly of FIG. 1 is then positioned within the relatively rigid outer container 12, as best shown in FIGS. 4 and 5. Thus, it is seen (FIGS. 4 and 5) that the lower bracing member 44 essentially rests against the lower end flaps 24 and 26. The bag 14 is thereafter filled with the corrosive liquid in a well known manner. One technique of filling the bag 14 is to cut off a portion of the upper edge, to give access to the inside of the bag, dispense the corrosive liquid into the bag and reseal the previously cut edge.

After the inner bag 14 has been filled and sealed, upper bracing member 54, similar in construction to member 44, is positioned to lie against the upper seal of the bag 14. Upper corners 60 and 58 of bag 14 are then tucked over the upper bracing member 54 and folded down in a horizontal position, as indicated in FIG. 4. End flaps 34 and 36 of the relatively rigid outer container 12 are then folded respectively over the corners 58 and 60 and the longitudinal flaps 38 and 40 are folded thereover to complete the packaging. Upper external tape 42 holds the assembly in the position of FIG. 4. As further shown in FIG. 4, the external tapes 32 and 42 may extend to

5

terminate against the side walls 20 and 22. Also, it is to be noted that the bracing members 44 and 54 are of a cross section substantially the same as that of the interior of the relatively rigid outer container so that they snugly interfit therein.

The stable dispenser package of the present invention may be used either with a dispensing probe, as shown in FIG. 4, or by simple pouring, as shown in FIG. 8. When a dispensing probe is to be used, such as the one of the previously mentioned prior copending application, it is thrust through the wall 22 of the relatively rigid outer container adjacent the bottom thereof at a point such as indicated spot 62 in FIG. 1. The probe 64 passes through tape 32, side wall 22 and, finally, through the wall of the flexible bag 14 which tightly adheres about the probe by virtue of plastic memory. The probe 64 is locked into position by means of locking member 66 which is interposed between wall 22 and the wall of the flexible bag 14, as discussed in detail in said prior copending application. The corrosive liquid may travel through opening 66 into the hollow bore of the probe 64 and then through attached hose 66 to be dispensed by the release of clamping means (not shown) at the other end of the hose.

As the liquid is dispensed from the probe 64 (FIG. 6), the upper portion of the bag 14 which is now empty tends to collapse. Such collapsing is enhanced by the weight of upper bracing member 54 which descends inside the package as the liquid is dispensed. The member 54 is now spaced an appreciable distance from the upper end and side flaps of the relatively rigid outer container and, therefore, upper corners 58 and 60 of the bag 14 are no longer restrained and may now fly free from a horizontal position to assume the inclined position of FIG. 6. Thus, the upper corners of the bag 14 may slip between the ends of the bracing member 54 to enhance the collapsing of the bag 14. This is quite important because the collapsing of the bag 14 prevents the establishment of a vacuum during the emptying process. Such a vacuum would otherwise retard the flow of the liquid from the package.

The contents of bag 14 may be poured where the package of the present invention has been modified, as shown in FIGS. 7 and 8. Such modification is effected by providing a centrally disposed lateral adhesive strip 70 which may be a double-faced adhesive tape or a coating applied to the under surface of lower bracing member 44. It is obvious that additional adhesive means may be substituted or provided in addition to adhesive strip 70 along the sides of the bag 14. Hence, the liquid may be poured from the package 10 by removing a portion of the upper flaps of the relatively rigid outer container and cutting a corner of the inner flexible bag.

It is thus seen that the present invention effectively solves the problem of the inner flexible container pulling away from the force of the inserted probe, as well as the problem of stress cracking of the polyethylene bag. Because lower corner 48 is surely secured beneath lower bracing member 44 and held in such position by the weight of the contained liquid, the vertical wall of the bag 14 adjacent insertion point of the probe 64 is held taut and will not pull away or slide away under the force of the inserted probe. Therefore, the probe will make a substantially perpendicular penetration through the bag 14.

It is to be further noted that, because the other lower corner of the bag 14, as well as the upper corners thereof, are tightly held in a generally horizontal position, all of the vertical walls of the bag 14 are held taut. In this manner, the polyethylene does not tend to gather in folds and thus, when the package is jarred as during transportation, the overlapping folds which are apt to

6

crack under the expressive forces developed by the jarring, have been eliminated. Moreover, the present stable dispenser package is assembled with a minimum of labor. All that is necessary is to secure the corners of the bag beneath a bracing member with the entire inner assembly thereafter being placed inside the relatively rigid outer container, the upper bracing member positioned above the bag after it has been filled and sealed and the package completed.

It is further observed that materials or techniques other than adhesive tapes or adhesive taping may be employed in the present invention. For instance, the corner of the inner container could be heat sealed to the bracing member. Moreover, the bracing member may be constructed from well known materials other than corrugated cardboard, such as, plastics including polyethylene, cellulose acetate and the like, wood, glass, etc.

It is possible to employ various combinations of the bracing members. One such combination would be to employ a second lower bracing member which is positioned beneath the taped lower corners. Another possible variation is to employ tapes in connection with the upper corners of the bag as well as the lower corners of the bag.

Obviously, many modifications and variations of the present invention are possible in the light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.

What is claimed as the invention is:

1. A stable dispenser package comprising a relatively rigid outer container and a flexible inner container having a liquid sealed therein, said inner container having a pair of lower corners and a pair of upper corners, a flat lower bracing member which is separated from said outer container and is positioned inside said outer container and below said inner container, with the lower corners of said inner container positioned between the bottom of said outer container and said bracing member, said lower corners being secured to said lower bracing member, and a flat upper bracing member, which is separated from said outer container, positioned upon said inner container, with said upper corners positioned between said upper bracing member and the top of said outer container, said bracing members being of substantially the same dimensions as a cross-section of said relatively rigid outer container whereby said bracing members interfit snugly in said outer container.

2. The invention of claim 1 wherein said relatively rigid outer container has a generally rectangular cross-section and said flat bracing members are of a generally rectangular shape.

3. The invention of claim 1 wherein adhesive tape means secure said lower corners to said lower bracing member.

4. The invention of claim 1 including indicia means on the external surface of said outer container to identify the place of proper insertion of a dispensing probe.

5. The invention of claim 1 including adhering means to secure said inner container to said outer container whereby the contents in said inner container may be directly poured therefrom.

References Cited in the file of this patent

UNITED STATES PATENTS

1,806,363	Narbo	May 19, 1931
2,306,581	Wilcox et al.	Dec. 29, 1942
2,618,409	Eisenberger et al.	Nov. 18, 1952
2,801,577	Ingham	Aug. 6, 1957
3,029,008	Membrino	Apr. 10, 1962