

- UNITED STATES PATENTS

1,523,039	1/1925	Reed.....	221/247
1,623,107	4/1927	Goodykoontz.....	222/107
3,028,986	4/1962	Cushman.....	222/107 X
3,078,986	2/1963	Ushkow.....	206/56 AA
3,181,743	5/1965	Libit et al.....	222/528

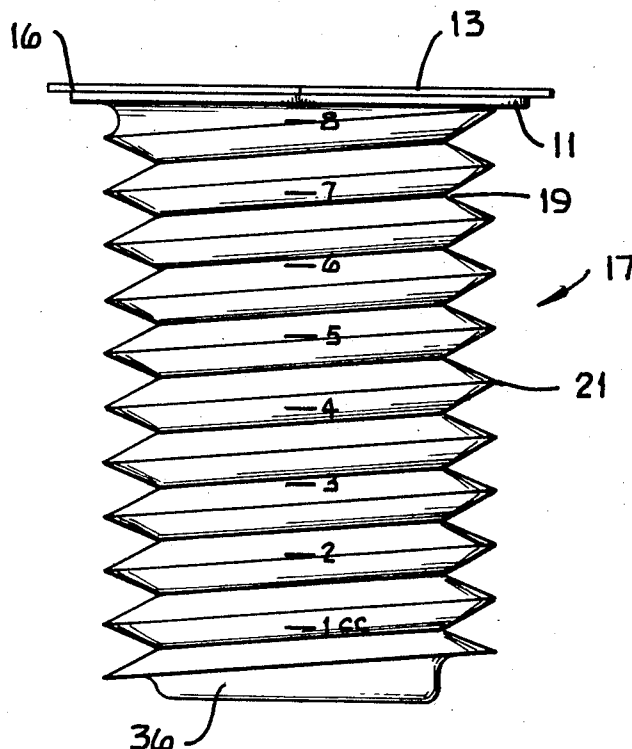
3,201,111	8/1965	Afton.....	215/1 C
3,240,415	3/1966	Pugh.....	229/7 S
3,415,425	12/1968	Knight et al.	222/386.5
3,465,921	9/1969	Mullan.....	222/212
3,559,868	2/1971	Chang.....	229/7 S

Attorney, Agent, or Firm—Woodard, Weikart, Emhardt & Naughton

ABSTRACT

A small plastic container having a built-in foldable straw and a built-in receptacle for the folded straw includes a bellows-type wall with an integral in-wall plastic spring, and includes a flanged upper face with a gummed identification label thereon having an integral sleeve encircling a portion of the straw to facilitate erection of the straw for dispensing of contents by collapsing the bellows or accordian wall, using thumb or finger pressure.

10 Claims, 10 Drawing Figures



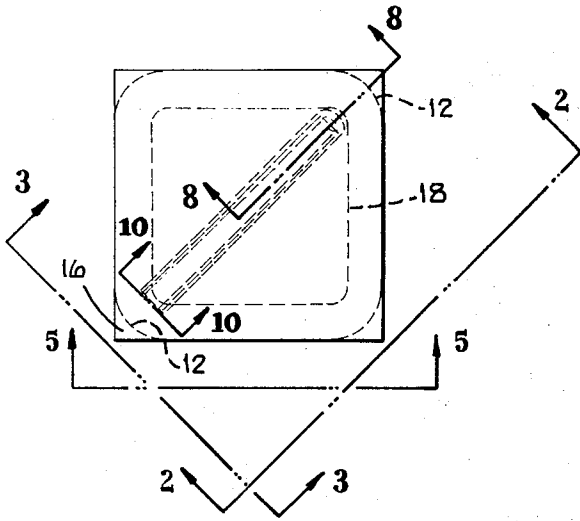


Fig. 1.

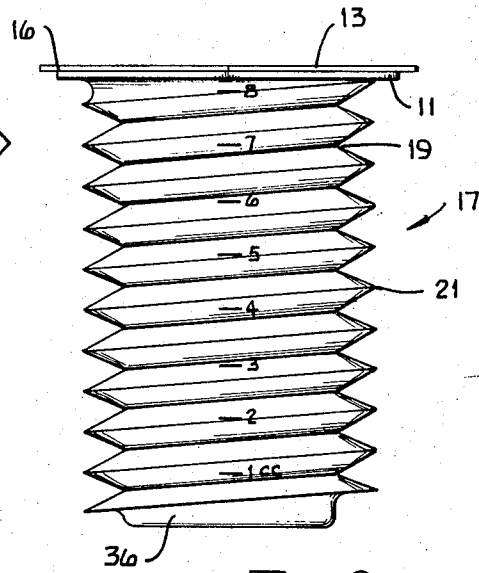


Fig. 2.

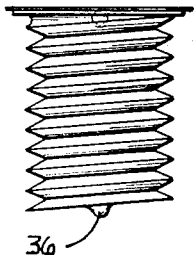


Fig. 3.

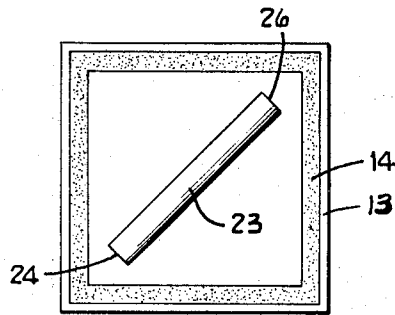


Fig. 4.

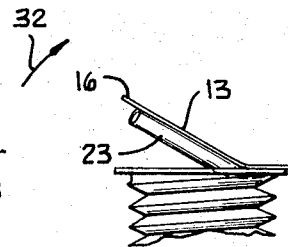


Fig. 5.

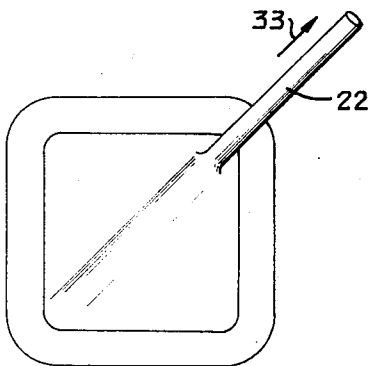


Fig. 6

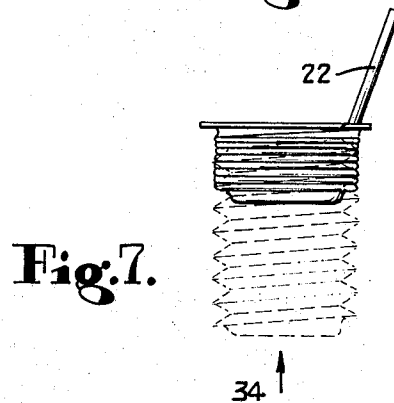


Fig. 7.

INVENTOR

ELMER F. CHILCOATE

BY

Woodward, Weikert, Emhardt & Naughton
ATTORNEYS

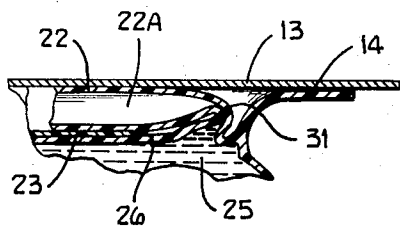


Fig. 8.

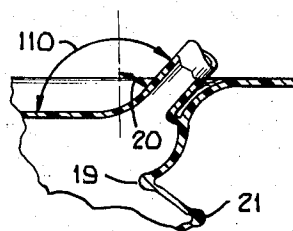


Fig. 9.

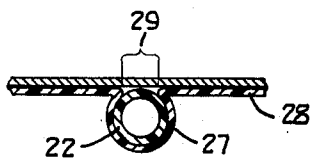


Fig. 10.

INVENTOR

ELMER F. CHILCOATE

BY

Woodard, Winkert, Enhardt & Naughton
ATTORNEYS

LIQUID DOSAGE DISPENSER

BACKGROUND OF THE INVENTION

1. Field of the Invention:

This invention relates to capsules or containers for unit or multiple dose quantities of liquids, pastes, powders, or other forms of low or high viscosity substances. It is especially suitable in dispensing applications requiring metered quantities of a contained material, and where such applications are pharmaceutical in nature the dispensed material may be delivered direct orally, rectally, topically, and, with slight modification, subcutaneously, in the exact cubic centimeter or other unit of measure desired.

2. Description of the Prior Art:

There exists in the art a system for preparation and distribution of individual dosage units of pharmaceutical materials. A patent generally describing such a system is U.S. Pat. No. 3,512,858 issued May 19, 1970 to Kenneth D. Relyea. It is a common experience of persons who must work with recalcitrant and senile patients to find that such patients may attempt to conceal in their mouths and later dispose of pill and capsule or dry-type medical preparations. Accordingly there is a need for an improved type of oral administration of medical preparations.

Therefore it is an object of my invention to provide a container having a variety of possible uses meeting size ranges from minuscule to multi-liter, which would possess an air-tight, leak-proof, self-closing, self-filling capability and equipped with a dispensing aperture through which the container's contents could be ejected with simple manual compression, obviating the slower air-intake, free-flow type liquid ejection principle, yet utilizing such simple manual compression so applied as to accomplish nearly perfect evacuation of the container chamber while metering the ejection output with unitized precision. A further object is to provide a container which would be of a simple one-piece, blow-molded, plastic construction with "built-in" impact cushioning qualities approximating most of the qualities of glass or other container materials, yet which would be of a highly flexible material and design adequate to meet all the requirements heretofore stated. Additionally, such container is to afford a nearly absolute bacteria-free environment for the contents while container-stored, yet when used would not require the dispensing aperture to be touched by human hands during single-use, throw-away applications.

There is other prior art having some relation to this general subject matter but which, for one or several reasons, does not meet the objectives which I have here outlined. Such prior art of which I am aware is as follows:

2,663,461	Brown	Dec. 22, 1953
2,334,600	Boysen	Nov. 16, 1943
2,397,051	Scherer	March 19, 1946
2,401,617	Cochran	June 4, 1946
2,430,995	Roos	Nov. 18, 1947
2,547,362	Berry	Apr. 3, 1951

SUMMARY OF THE INVENTION

Described briefly, in a typical embodiment of the present invention, an enclosed container is provided, having flexible walls manually collapsible for expelling contents from the container, and having a tube communicating with the interior of the container and collaps-

ible to prevent transmission of content from the container through the tube. The tube and container are an integral homogeneous unit of resilient material, the tube being foldable into a recess built-into the top of the container. A gummed label may be employed to cover the folded tube but, where used, is easily removable intentionally to erect the tube and thus enable the dispensing of container contents.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a top plan view of a liquid dosage dispenser according to a typical embodiment of the present invention.

FIG. 2 is a side elevational view thereof taken at line 2—2 in FIG. 1 and viewed in the direction of the arrows.

FIG. 3 is a side elevational view on a much smaller scale taken at the line 3—3 in FIG. 1 and viewed in the direction of the arrows.

FIG. 4 is a bottom plan view of the identification tag and dispenser tube sleeve unit itself, separate and apart from the remainder of the dispenser.

FIG. 5 is a fragmentary elevational view on the same scale as FIG. 3 and viewed in the direction of the arrows 5—5 in FIG. 1, but showing the identification label partially removed and erecting the straw.

FIG. 6 is a top plan view of the dispenser on the same scale as FIG. 1 and showing the straw fully erected as it is after the identification label has been completely removed.

FIG. 7 is an elevational view on the same scale as FIG. 5 and showing the dispenser after it has been almost entirely collapsed for discharge of the fluid contents therefrom through the tube.

FIG. 8 is an enlarged fragmentary section taken at line 8—8 in FIG. 1 and viewed in the direction of the arrows therein, and showing the collapsed straw (dispensing tube) retained in place by the label and precluding escape of liquid contents.

FIG. 9 is a section like FIG. 8 but after the label has been removed completely and the straw erected completely.

FIG. 10 is a fragmentary section taken at line 10—10 in FIG. 1 and viewed in the direction of the arrows and showing the dispensing tube retained in the receptacle therefor and with the label covering it.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail, the container, which may be made of polyethylene or other types of plastic or other flexible materials preferably having some inherent resilience or "memory", is provided with a perimetrical laterally extending flange 11 rounded at the corners as indicated by the dotted outlines 12 in FIG. 1. It is covered by a sheet 13 which may serve as an identification label, and may hereafter be referred to occasionally as a label. As shown in the bottom plan view thereof in FIG. 4 it has an adhesive strip 14 on the underside thereof extending throughout the perimeter thereof and which is adhered to the top face 16 of the flange 11. The adhesive thus provides a complete peripheral seal between the sheet and the flange 11. The sheet itself is typically rectangular so that at least one corner thereof overhangs the flange as indicated at 16 in FIG. 1. This facilitates the intentional removal of the sheet from the container flange. In this re-

spect it is similar to single-serving one-half ounce jelly containers which are well known and widely used.

Referring further to FIG. 2, it will be observed that the wall 17 of the container is of an accordin or bellows type generally helical configuration although, as better shown in FIG. 1 by the dotted line 18, it is rectangular in form as viewed from the top or bottom. This is not to say that it could not be circular, if desired, but only that for convenience of packaging and maximizing the volume in a given space of generally rectangular configuration, the generally rectangular form is believed preferable. By employing the helix, with a thickened cross section at the roots 19 and crests 21, as better shown in FIG. 9, the effect of two concentric helical springs can be achieved. Thus, if the container is molded in the expanded form as in FIG. 2, the container can be collapsed to the condition shown in FIG. 7, but will normally and due to its inherent memory and helical spring construction, return to its extended position of FIG. 2. On the other hand, if the container is molded in a collapsed condition such as shown in FIG. 7, and later extended by pressurized filling thereof, it will normally tend to restore itself to the collapsed condition.

An additional feature of the construction is the built-in collapsible dispensing tube or straw referred to briefly above. As shown in FIG. 8, this tube 22 is normally disposed so that the label 13 conceals it entirely. The label includes a sleeve 23 on the underside thereof which is approximately cylindrical in shape extending from one end 24 to the other end 26 thereof. The end 26 is shown in FIG. 8, as in a portion of this sleeve 23 which encircles the tube. The tube and sleeve reside in a semi-cylindrical recess 27 in the top 28 of the container itself, the top 28 being co-planar with and continuing into the laterally extending perimetrical flange 11. The end of tube 23 can project slightly from the end 24 of the sleeve for secure retention in the gap 29 at the top of the recess 27 so that the inherent resilience and restoring force of the tube does not cause it to overcome the adhesive effect of the adhesive strip 14 on the label which might otherwise disturb the security of the label on the container.

It should be noted further in FIG. 8 that the tube 22 is folded upon itself at 31 to provide a complete seal precluding passage of any contents of the container from the container to the portion 22A of the tube.

OPERATION

In the use of the dispenser, assuming that it has been filled with a pharmaceutical preparation or other appropriate fluid, typically a liquid, it is received at the point of use in the configuration shown in FIGS. 1, 2 and 3. The label 13 which may be of plastic, paper or other suitable material, and which may incorporate appropriate legends, identification, or other indicia, may be peeled off, preferably beginning at the corner 16 immediately adjacent the open end of tube 22. As it is lifted in the direction of arrow 32 in FIG. 5, the tube 22 is raised by its own memory and by virtue of the fact that it is encircled by the sleeve 23 secured to the label 13. As the label is completely removed in the diagonal direction of the arrow 33 in FIG. 6, the tube 22 is erected and the sleeve 23 simply slides off the tube. During this operation, the tube 22 moves through an angle of approximately 110° as indicated at 110 in FIG. 9. It is then in position for dispensing the liquid con-

tents. Upon manual compression of the bottom of the container as in the direction of arrow 34 in FIG. 7, for example, its contents can be partially or completely discharged from the tube 22, at the will of the user. The cavity 36 at the bottom of the container is slightly larger than the recess 27 in the top of the container so as to avoid any interference with complete collapse of the container as it is squeezed together.

In instances of the application of my container concepts to the giving of medicinal preparations of a legend drug or other nature to the very aged person or to the very young person, the apertural tube of the container is placed directly into the mouth, for example, of a baby, and the container's content is safely and cleanly ejected therein by simple compression of the bottom of the container, obviating the vexing problems of pouring from bottle to spoon and not spilling the preparation while coaxing or fighting the baby to "open up". Similarly the oral and esophageal muscles of the aged person often are so weak that he cannot "suck out" the content of a container. Often he must remain in the supine position rendering the act of drinking from the typical drinking vessel very difficult or impossible. It should be observed that it is nearly impossible to conceal liquid medication in the mouth as a number of recalcitrant and senile patients are wont to do with pill and capsule or dry-type medical preparations.

Other qualities of my container will become readily apparent and will take on broader significance upon consideration of its wider range of uses. For example, the container can easily be adapted to hypodermic applications by shaping the tube 22 to allow the affixing of a hypodermic needle for purposes of injecting or withdrawing fluids.

It is believed preferable that the gap 29 at the top of the trough should subtend approximately 140 degrees about the axis of the folded tube. Also, considering that the normal manufactured angle of the tube 22 in its erect condition is 20 degrees beyond vertical as indicated at 20 in FIG. 9, a 110 degree sweep upon closure or folding of the tube is more than sufficient to effect a complete "kink" closure of the tube upon and within itself for complete blockage to any fluid flow there-through. It may be found desirable, particularly with some materials, to fill the container completely to a point above the kink so that after folding the tube, the container will remain completely full of liquid to the kink, without any bubbles therein, as indicated at 25 in FIG. 8.

As suggested above with reference to a hypodermic needle application, the distal or outer end of the tube 22 can be shaped in accordance with the specific use or uses intended for the product. Also, as suggested above, if the container is manufactured in the extended position of FIG. 2, it can be filled by fully compressing it with the container empty. The spring wire effect built into the container wall will then be sufficient to create adequate suction at the distal end of the tube to fill the container.

Content graduation marks can be provided along the edges of the bellows wall as and where desired. If desired, the gummed label can be retained in the event the container is not completely empty or is intended for limited multi-use situation. In that event the adhesive permits easy replacement onto the container for protection of the tube when folded and to facilitate continued identification of the contents. It is possible that for

a single-use or limited multiple-use prescription dosage dispenser, the volume of the container would be of the order of eight ml., with one ml. graduation marks on the edges of a bellows wall made of translucent or transparent material.

While the invention has been disclosed and described in some detail in the drawings and foregoing description, they are to be considered as illustrative and not restrictive in character, as other modifications may readily suggest themselves to persons skilled in this art and within the broad scope of the invention.

The invention claimed is:

1. A dispenser comprising:

a closed container having flexible side wall means manually collapsible for expelling contents from said container;

a tube communicating with the interior of said container and collapsible to prevent transmission of contents of said container through said tube;

said container having a top with an elongated trough extending therein from one point on said wall means, directly across the center of the top to a second point on said wall means directly opposite said one point;

said tube being foldable into said trough for storage, and unfoldable from said trough to permit passage of fluid through said tube, said tube having an inlet and an outlet, said tube inlet being in said top at said one point on said wall means, and said tube outlet being adjacent said second point on said wall means directly across the center of said top from said inlet when said tube is folded into said trough;

said container having a bottom connected to said top by said collapsible wall means, said collapsible wall means including a wall serving as the outer and inner wall of said container, all of said wall from said top to said bottom being collapsible for expelling contents from said container;

said container having a cavity in the bottom thereof parallel to said trough and matching said trough and accommodating said trough therein upon manual collapse of said wall means by movement of said bottom to said top to completely collapse said container and expel all the contents of said container through said unfoldable tube when unfolded.

2. The dispenser of claim 1 wherein:

said container and said tube are an integral homogeneous unit of resilient material.

3. The dispenser of claim 1 wherein:

the perimeter of the top of said container lies in a plane;

said tube is collapsible into a closed kink adjacent said inlet, during folding;

said trough receives said tube, when folded, longitudinally therealong generally parallel to said plane, said tube having a normal relaxed condition erect at an angle of 110 degrees from said plane, the resilience of said tube reopening said kink during unfolding to said relaxed condition.

4. The dispenser of claim 3 wherein:

said trough has an entrance gap having a dimension there-across slightly less than the outside diameter of said tube for retention of said tube in said trough.

5. The dispenser of claim 1 wherein said tube is collapsed, said dispenser further comprising:

a perimetrical flange at the top of said container;

a removable cover sheet secured to said flange and concealing said tube.

6. The dispenser of claim 5 wherein:

said flange is rectangular and said recess is disposed along a diagonal between the corners of said flange; and

said sheet is adhered to said flange throughout the perimeter of said container at said flange, said sheet overhanging said flange at a point adjacent the end of said tube opposite said inlet to facilitate removal of said sheet from said flange beginning at said point.

7. The dispenser of claim 6 wherein:

said sheet further comprises a sleeve encircling said tube and projecting into said recess and facilitating and implementing erection of said tube during removal of said sheet beginning at said point.

8. The dispenser of claim 1 wherein:

said container wall means are a bellows extending from said top to said bottom and having a thickened section at folds in said bellows to form a helical integral spring facilitating restoration of said bellows to its original formed configuration after deformation.

9. The dispenser of claim 8 and further comprising:

liquid contents in said container filling said container to the point of collapse of said tube.

10. The dispenser of claim 1 wherein:

the flexible wall of said container has a portion of light transmitting material with content volume indicating graduation markings thereon.

* * * * *