CYLINDRICAL CONTAINER AND SPHERICAL CONTENTS THEREFOR

Inventor: John J. O'Connell, Jr., 415 Winona Blvd., Rochester, N.Y. 14617

Filed: Dec. 22, 1969
Appl. No.: 886,935

Primary Examiner—Herbert F. Ross
Assistant Examiner—Steven E. Lipman

ABSTRACT

A package including a flexible, resilient cylindrical tube, spherical pills therein and a stopper therefor. The pills are of a diameter slightly smaller than the tube so they may be poured therefrom. The stopper has flexible fingers extending into the tube to restrain the pills from movement as during shipment. The pills are dispensed by removing the cap, deforming the tube beneath the predetermined number of pills to be dispensed so as to form a barrier prohibiting the dispensing of pills therebelow and then inverting the tube to permit the pouring out of only the predetermined number of pills.

1 Claim, 3 Drawing Figures
This invention relates to a package and method of dispensing its contents. More particularly, this invention relates to a cylindrical tube, a stopper and spherical contents therefor, whereby, due to their relation to one another, the contents may be readily dispensed from the tube.

Most medicinal tablets in commercial use today are packaged with an eye to getting the tablets from the manufacturers' or pharmacists' establishments to the consumer's pocket but not from the consumer's pocket to his mouth. Tablets, which can be shaped, spherical capsules, elongated capsules or the like are generally packaged in bottles with restricted orifices to permit only a limited number to flow therethrough when inverted. They can also be individually supported on stiff cardboard in rupturable plastic. Tablets, particularly aspirin, are quite often sold in metal boxes, singly tiered in horizontal rows whereby they snugly fill up the box. Lateral movement and resultant breakage is thereby minimized, at least until the first tablet is removed.

In no package of tablets are the contents readily removed or dispensed in a predetermined number. When removed from a bottle, the pills are poured therefrom as the bottle is inverted and a quantity is received in the hand not holding the bottle. Alternatively, the bottle may be partially inverted and agitated until a proper number is dispensed. In either event, the quick dispensing of a particular predetermined number of tablets is usually only attained when that predetermined number equals the total contents of the container.

When supported on a stiff cardboard and retained in individual plastic bubbles which are rupturable, the dispensing of single tablets or capsules is certain but, unfortunately, the process is time consuming, even when compared with the dispensing from a bottle. This packaging technique is also relatively expensive.

Perhaps the most popular container for carrying pills today is relatively flat rectangular flip-top tin containing a single layer of aspirin tablets in horizontal rows whereby movement of the tablets is minimized. While a package of this type is more conveniently used than most other types, it has its shortcomings. For example, the removal of the first tablet from the container is extremely difficult due to the tight packaging which formerly prevented their movement and minimized their breakage. Removal of the first tablet can usually only be done with a fingernail or other elongated object or by the inversion and emptying of the entire package. Furthermore, this type of container is not airtight to keep the tablets unaffected by humidity.

With these shortcomings of known packages in mind it is an object of the instant invention to overcome the prior art deficiencies.

Another object of the instant invention is to easily dispense spherical pills from a cylindrical container in a predetermined quantity with a minimum of effort.

Another object of the instant invention is to provide a conveniently-carried package of pills.

Another object of the instant invention is to retain spherical aspirins in a container which prevents their movement within the container during shipment without the use of supplemental material such as wadding.

Another object of the instant invention is the inexpensive packaging of spherical pills.

Another object of the instant invention is the supporting of spherical aspirin capsules in a substantially air-tight container which is easily held, carried on one's person and manipulated.

These and other objects of the instant invention are attained by spherical pills supported in a cylindrical tube having a closed end and a stopper for the open end. The tube is slightly flexible so that moderate finger pressure on the sides of the tube can grasp and hold a predetermined pill. Removal of the stopper and inversion of the tube can thus permit the removal of the pills between the grasped portion and the open end of the tube. The stopper is provided with deformable projections extending into the tube to resiliently contact the topmost pill to restrain the contents from movement and breakage during shipment while the closed end is provided with a permanent, partially spherical insert so that finger pressure may be more readily applied to the bottommost pill for dispensing near the end of the life of the package.

Further objects, features and advantages of this invention will become apparent when reading the following detailed description of the invention, the appended claims and the accompanying drawings wherein:

FIG. 1 is a sectional view of the containing tube, spherical aspirin capsules and stopper, constructed in accordance with the instant invention;

FIG. 2 is an enlarged sectional view of the stopper of FIG. 1 with the projections in their relaxed state; and

FIG. 3 is a perspective showing of the stopper and tube with the capsules being removed therefrom. (Hand apply pressure)

Shown in the figures is one embodiment constructed in accordance with the instant invention. The basic container portion is the tube generally noted as numeral 10 being formed as a cylinder having a circular cross-sectional configuration. The tube may be constructed of a moderately flexible, resilient material such as a cellulose acetate at about 0.001 inch of thickness. This construction is by way of example but readily permits the tube to be deformed by finger pressure of a person using it so that the contents thereof may be grasped and held immovable for a purpose to be later described. Such material may also permit the tube to be transparent for viewing the contents, also for a purpose to be later described.

One end of the tube, the closed end 12, is permanently provided with a convex, partially spherical sealing member such as insert 14 to render this end of the tube permanently closed. This insert may be formed of a cellulose acetate as the tube 10 for economy purposes. It is permanently adhered to the end of the tube by a suitable adhesive, a heat seal, sonic seal or the like at 16. The partially spherical shape extending into the tube permits the contents of the tube to be raised substantially from the closed end of the tube beyond where such contents would be if the insert were flat or partially spherically shaped extending exterior of the closed end of the tube. This shaping of the closed end permits improved gripping of the contents of the tube adjacent the closed end of the tube by the same resiliency and flexibility as exists at the central portions of the tube.

The open end 18 of the tube 10 receives a stopper generally noted as numeral 20. The stopper is preferably constructed of a moldable plastic material such as a transparent or translucent natural polyethylene. The
stopper has a gripable section 22 including undulations of raised sections 24 and valley sections of 26, both sections being concentric with the axis 28 of the stopper 20 which is coincident with the axis of the tube when the cap is inserted in the tube. The raised sections of the stopper are of a diameter slightly larger than the exterior of the tube 10 so that the stopper may be readily grasped by merely sliding one's fingers up the tube. The undulations of the stopper facilitate its removal since such removal is effected by unrolling the stopper along its axis. When the cap is held by the thumb and forefinger with the other fingers and heel of the palm around the tube, the stopper may be removed from the tube with one hand.

The top face 30 of the stopper 20 is molded integrally with the gripable section 22 as is the insertable section 32. A shoulder section 34, perpendicular to the axis of the stopper, separates the gripable section 22 from the insertable section 32. The shoulder section mates with the lip of the open end of the tube when inserted to assist in rendering the tube substantially airtight, and facilitate alignment.

The insertable section 32 adjacent the shoulder section 34 is conically shaped having an outside diameter slightly less than that of the inside diameter of the tube. The outside diameter of this section gradually increases until it is slightly larger than the inside diameter of the tube above an angle section 36. This gives an interference fit between the tube and stopper above the angle section to further ensure the airtightness of the stopped tube. The stopper, including the space above the angled section, is hollow for economy and ease of construction. The resilience and flexibility of the stopper and tube permit the insertion of the stopper into the tube.

Beneath the angle section 36 are resilient, flexible fingers 38, preferably three or more, for contacting and applying an even restraining force to the contents of the tube. These fingers are preferably 0.008 to 0.010 inches thick for proper flexibility. The angle section, by its shape, permits the stopper to be easily inserted into the tube with minimum centering of the cap relative to the tube.

The contents 40 of the tube according to the instant invention are preferably pills, more specifically aspirin, formed into a substantially spherical shape and coated with a body-dissolving coating. The internal contents of each aspirin are the aspirin ingredients with conventional fillers compressed with about 15 to 25 tons of pressure per square inch. A thin coating which will quickly dissolve internally upon human consumption, i.e., body dissolving, covers the pill. This coating is of such rigidity that it won't deform between the thumb and finger of a user. Such coating also renders the internal contents of the pill substantially free from the effects of the atmosphere.

In an operative set of parameters, the pills may be slightly less than three-eighths inch in diameter as about 0.370 inches with the inner diameter of the tube slightly larger than the pills, about 0.375 inches or three-eighths of an inch in diameter. With this size relationship, the pills may roll out of the tube when inverted. But due to the closeness of the sizes, a slight restriction of the diameter of the tube as caused by a user's fingers can prohibit any pill from being poured from the tube during such an inversion.

The tube is preferably provided with a dozen pills, the tube being about 4 inches in length. The stopper, when placed therein, has its fingers 38 deformed by its contact with the topmost pill to resiliently hold the pills in place during shipment and thereby prevent their rolling and breakage.

To dispense any predetermined number of pills from the tube, regardless of the number of pills therein, the stopper must first be removed with the tube held upright. The tube is then grasped, preferably between the thumb and forefinger at a location to securely hold and prohibit the movement of the pill beneath the predetermined number of pills to be dispensed therefrom. The tube is then inverted to dispense the predetermined number of pills between the held pill and the open end of the tube. These pills may be dispensed into the user's other hand or directly into his mouth. The capability of the instant invention to dispense pills directly into a user's mouth is advantageous in that it eliminates contamination. The construction of the tube including the grasping of the lowermost pill in the tube with the same pressure as if it were the topmost pill or any intermediate pill.

The transparent material of the tube permits the viewing of the contents. Therefore, tubes may be employed to hold various types of pills which may be, for example, color coded. In this manner a user may readily know the nature or strength of the contained pills due to their appearance.

While the instant invention as to its objects and advantages has been described as being carried out in a specific embodiment thereof, it is not intended to be so limited but to be protected broadly within the spirit and scope of the appended claims.

What is claimed is:

1. A package including a cylindrical tube having a circular cross section formed of a flexible, resilient material, said tube having an open end and a closed end, said tube being formed of a transparent cellulose acetate about 0.375 inches in diameter and about 0.011 inches in thickness and said closed end including an insert of a cellulose acetate of a convex, partially spherical shape extending into said tube and permanently adhered to said tube adjacent to a plurality of substantially spherical means within said tube in contact with said closed end and being stacked to a predetermined distance from said open end, said spherical means having a diameter slightly less than the inside diameter of said tube, said spherical means being aspirin coated with a material nondeformable by pressures exsertable by a user's thumb and finger and

a stopper having resilient, deformable finger means extending into said tube and having an intermediate section of a diameter greater than the outside diameter of said tube and extending exterior of said tube, said stopper also having a gripable section of a diameter slightly larger than the inside diameter of said tube to cause an interference fit between said tube and stopper, said stopper further including circular undulations on said gripable section concentric with its axis and extending to a diameter
greater than the outside diameter of said tube and a shoulder section between said gripable section and said intermediate section which extends perpendicular to the axis of said stopper to thereby contact the edge of said tube adjacent said open end to facilitate alignment of the stopper and a conical section between said shoulder section and said resilient fingers, said conical section having a diameter slightly greater than the inside diameter of said tube adjacent said resilient fingers and a diameter slightly less than the inside diameter of said tube adjacent said shoulder section and a diameter equal to the inside diameter of said tube there between.
CERTIFICATE OF CORRECTION

Patent No. 3,768,636 Dated October 30, 1973

Inventor(s) John J. O'Connell, Jr.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

Claim 1, column 5, line 8, after "resilient" the word "fingers" should be deleted and --finger means--inserted therefor.

Signed and sealed this 9th day of July 1974.

(SEAL)
Attest:

McCoy M. Gibson, Jr. C. Marshall Dann
Attesting Officer Commissioner of Patents