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PRONGED CLOSURE DEVICE FOR MULTIPLE COMPARTMENT SQUEEZE TUBE

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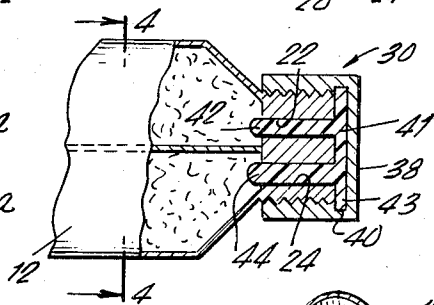
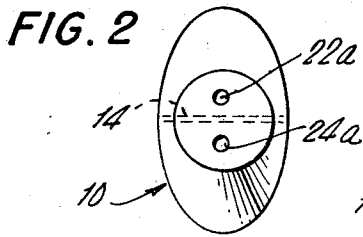
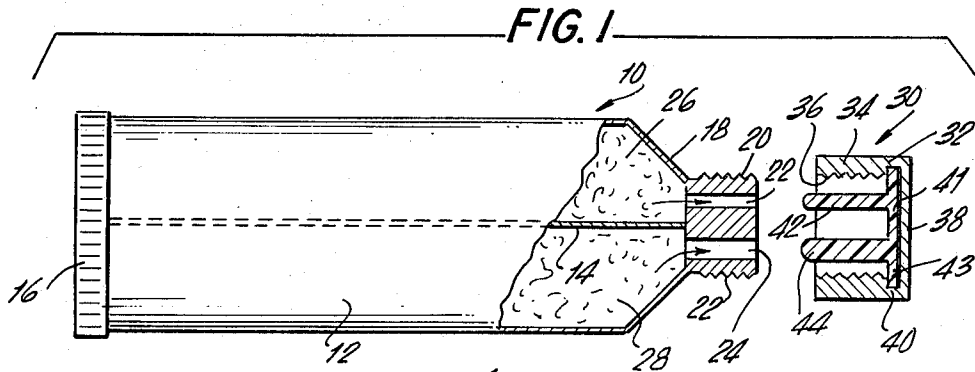


FIG. 3

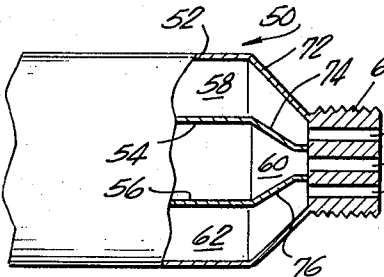


FIG. 5

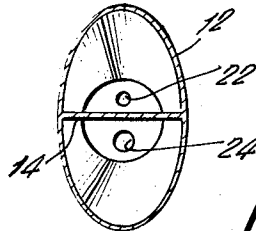


FIG. 4

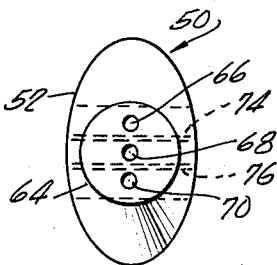


FIG. 6

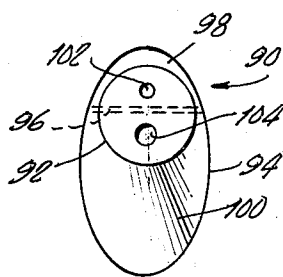


FIG. 7

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**PRONGED CLOSURE DEVICE FOR MULTIPLE
COMPARTMENT SQUEEZE TUBE**

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7 Claims

ABSTRACT OF THE DISCLOSURE

A closure device in combination with a squeezable container such as an extruded synthetic plastic tube having an integral divider for forming separate storage compartments. A neck is provided with outlet bores for feeding the material from the compartments. The closure device includes a cap and a rotatable insert having a pair of prongs receivable in the bores for closing the bores.

This invention relates to a closure device for use in combination with a multicompartment container and more particularly for a novel combination of a closure device with a container constructed and arranged for isolating the contents of the various compartments of the container so as to prevent their mixing at any location except outside of the container.

Various types of materials must be stored separately prior to the time that they are used for various reasons. Epoxy adhesives usually have two separate ingredients which must be stored apart because as soon as the parts are mixed, there is a reaction and subsequent hardening which prevents further use.

Heretofore two separate containers have been used for such epoxy adhesives and very often one of the containers is lost or misplaced thereby rendering both tubes useless at that time. In addition, it has been difficult to inexpensively package epoxy adhesives because two separate tubes have to be used.

It is a concept of the present invention to provide for packaging inexpensively epoxy adhesives or other materials in a single container having two separate compartments and wherein the two ingredients are stored separately and effectively sealed from each other, yet which are conveniently disposed in a single container for facilitating subsequent use.

Other types of materials such as hair dyes include a pigment and a peroxide, each of which has a considerable shelf life when stored separately, but which deteriorate when stored together. Likewise, other types of cosmetics, including suntan lotions and suntan oils, are separately used, but it is desired that a supply of each be available in a single easy to use package. The present invention provides for a convenient multiple package, while also providing for the sealing of each of the compartments of the package in an inexpensive manner.

The concept of this invention features the use of a closure device in the form of a cap having an insert rotatably mounted therein. The insert is provided with integrally formed prongs which extend into bores in a neck portion of the tube so as to assure proper closure and the sealing of the separate compartments, while permitting the cap to be effectively threaded onto the neck.

Still further objects and features of this invention reside in the provision of a multicompartment container and closure device therefor which container may be extruded from various types of synthetic plastic materials in a convenient manner, the extruder tube being so arranged that pressure on any portion thereof will effectively cause delivery of the contents of all compartments of the tube, while the closure device permits for the con-

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venient sealing of the multicompartment container, which is strong and durable, attractive in appearance, capable of being manufactured inexpensively, and efficient in operation.

5 These, together with the various ancillary objects and features of this invention, which will become apparent as the following description proceeds are attained by the closure device, preferred embodiments of which are illustrated in the accompanying drawing, by way of example only, wherein:

10 FIG. 1 is an exploded longitudinal sectional view of a closure device in combination with a squeezable container constructed in accordance with the present invention;

15 FIG. 2 is an end elevational view of a modified form of container;

FIG. 3 is a partial longitudinal sectional view similar to FIG. 1, but showing the closure device in a closed position;

20 FIG. 4 is a transverse sectional view taken along the plane of line 4—4 in FIG. 3;

FIG. 5 is a partial longitudinal sectional view of a modified form of the invention;

25 FIG. 6 is an end elevational view of the modified form of the invention shown in FIG. 5; and,

FIG. 7 is an end elevational view of an other embodiment of the invention.

With continuing reference to the accompanying drawing, wherein like reference numerals designate similar parts throughout the various views, reference numeral 30 is used to generally designate a container in the form of a squeezable tube. The container is extruded from any of the readily available synthetic plastic materials and includes an outer wall portion 12 and an internal divider 14 integrally formed with the outer wall portion 12. The closed end 16 of the container 10 may be crimped or heat sealed in any convenient manner and the forward portion 18 is conically tapered and terminates in a neck 20 which is externally threaded at 22. The neck may be provided with outlet bores 22 and 24 therethrough which may be different sizes as shown in FIG. 1. Alternatively, bores 22a and 24a for the container 10a as shown in FIG. 2 may be provided which are of the same size. The bores communicate with the separate compartments 26 and 28 formed in the container 10.

A closure device generally indicated by reference numeral 30 is provided and includes a cap 32 provided with a cylindrical wall 34 which is internally threaded at 36. A tube 38 is integral with the cylindrical wall 40. The cylindrical wall 34 is provided with an annular groove 40 therein. An insert 41 is provided and includes a disk 43 rotatably disposed in the groove which is immediately adjacent the tube 38 and has a pair of prongs 42 and 44 integral with the disk 43 and which are adapted to closely fit into and extend through the bores 22 and 24 to close the bores 22 and 24 and to prevent passage of material from the compartments 26 and 28. As can be readily seen, the prongs 42 and 44 are of different sizes to closely conform to the dimensions of the bores 22 and 24. An insert having prongs of the same size may be provided for the embodiment as shown in FIG. 2. The prongs are eccentrically offset from the center of the disk 43 so that when the closure device 30 is threaded on the neck 20 with the prongs 42 and 44 being partially received in the bores 22 and 24, since these prongs extend slightly beyond the cylindrical walls 34, the insert 41 will rotate during the threading of the closure device on the neck. The threading of the closure device on the neck 20 will advance the prongs forcefully driving back any of the material in the bores 22 and 24.

Referring now to the embodiment as shown in FIGS. 5 and 6, herein is shown a container generally designated

by the reference numeral 50, which includes outer wall portions 52 of extruded synthetic plastic material and a pair of dividers 54 and 56 which divide the container 50 into three compartments 58, 60 and 62. A neck portion 64 is provided for the container 50 and includes bores 66, 68 and 70 therein, which communicate with the compartments 58, 60 and 62 respectively. It is noted that besides the conically tapered portion 72 of the container 50 that the inner end portions 74 and 76 of the dividers 54 and 56 are angulated so as to cooperate to direct the contents of the containers 58, 60 and 62 through the bores 66, 68 and 70. Any selected number of dividers may be employed.

In the embodiment shown in FIG. 7, there is shown a container generally designated by reference numeral 90, which includes a neck portion 92 which is offset from the center of the cylindrical walls 94 of the container 90 and the divider 96 is likewise offset dividing the container into compartments 98 and 100 which are of different sizes. The bores 102 and 104 may be of different sizes to permit for dispensing of predetermined amounts of material from the container 90 for mixing ingredients at a predetermined ratio, should such be desired.

The use of the extruded plastic material in the various forms of the tubes is highly desirable since pressure applied on any one location of the tube will be evenly distributed through the tube even through the dividers so that the contents may be metered out of all of the bores simultaneously. However, when it is desired to use, as for example in certain cosmetics, skin lotions and skin oils, only one of the contents of the tube, then the forefinger of one hand may be used to seal one of the bores when the tube is squeezed with the other hand. Of course, other equally easy manipulations may be undertaken to assure desired dispensing of the contents.

A latitude of modification, change and substitution is intended in the foregoing disclosure and in some instances some features of the invention will be employed without a corresponding use of other features.

I claim:

1. A closure device in combination with a squeezable container having a divider forming separated storage compartments and having a neck provided with outlet bores communicating with compartments, said neck being externally threaded, said closure device including a cap having an internally threaded cylindrical wall in threaded engagement on said neck and a top integral with said cylindrical wall, said cylindrical wall being provided with an annular groove therein adjacent said top, an insert rotatably disposed in said cap and including a disk portion received in said groove, and a pair of prongs integrally formed with said disk and extending normal to said disk, said prongs extending into said bores.

2. A device according to claim 1, wherein said bores are of different sizes, said prongs being of different dimensions for selective reception of said bores.

3. A device according to claim 1, wherein said prongs are eccentrically offset from the center of said disk.

4. A device according to claim 1, wherein said container is an extruded synthetic plastic tube and said divider is integral with said tube.

5. A device according to claim 1, wherein there are at least three compartments.

6. A device according to claim 1, wherein said divider is eccentrically offset so that said compartments are of different sizes.

7. A device according to claim 1, wherein said dividers include angulated portions for feeding contents of said compartments to said bores.

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STANLEY TOLLBERG, Primary Examiner

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