

[54] CONTAINER CONSTRUCTION

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[58] Field of Search.... 422/92, 94, 95, 105, 183, 206, 422/214, 215

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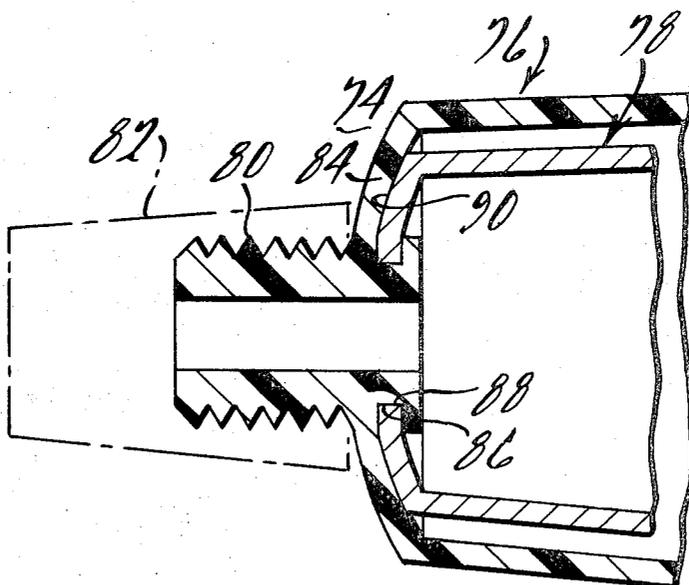
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[57] ABSTRACT

A container for toothpaste and other substances having a permanently deformable inside dispenser for containing the substance, a resiliently deformable surrounding housing which protects the dispenser, a nozzle on the dispenser or the housing which is adapted to mate with a cap, and a portion on each of the housing and the dispenser which is securely engaged with the other portion for positively restraining relative motion between the housing and dispenser independently of the cap.

2 Claims, 8 Drawing Figures



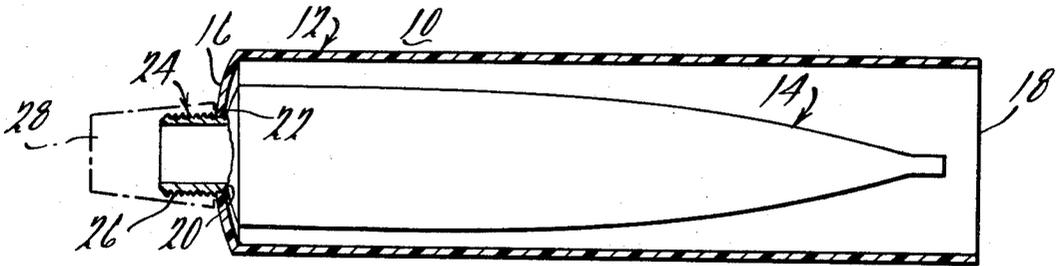


FIG. 1A.

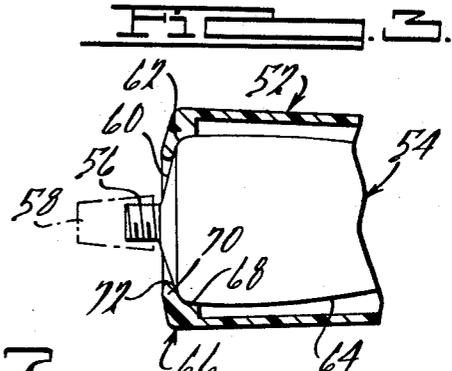
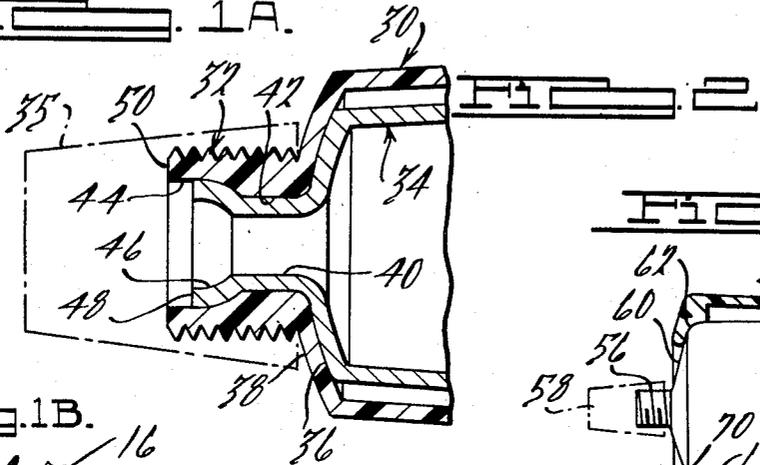


FIG. 1B.

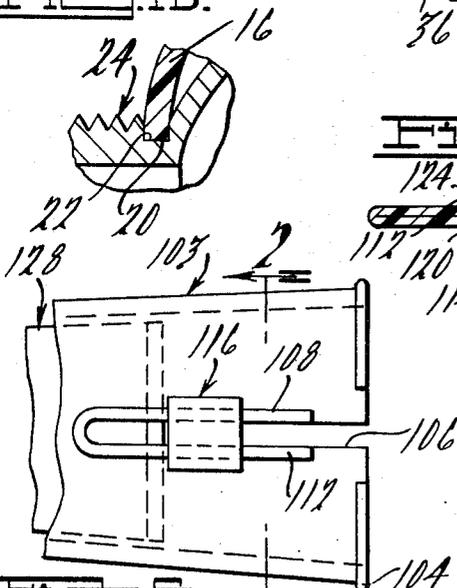


FIG. 2.

FIG. 4.

FIG. 5.

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CONTAINER CONSTRUCTION

CROSS REFERENCE TO A RELATED APPLICATION

This invention relates to the containers disclosed in my co-pending application Ser. No. 36,171 filed May 11, 1970 and entitled "Container for Toothpaste Dispensers and the Like."

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention generally relates to modifications of the structure shown in the above-referenced application. According to this invention, a container is provided which includes the combination of a permanently deformable dispenser, a resiliently deformable housing of plastic or the like, and a nozzle which has a thread or other adaptation for a cap. According to this invention, the dispenser and housing have mutually engaged portions which positively restrain the dispenser and housing against relative movement at the engaged portions. In one exemplary embodiment, the container is provided with an inwardly turned flange which defines an opening for receiving the nozzle of a dispenser and which is dimensioned so as to snap into a circumferential relief or slot in the dispenser to positively restrain relative movement between the dispenser relief and the housing flange. In another embodiment, the resilient housing is provided with a nozzle having a bore portion of reduced diameter and an outwardly adjacent bore portion of increased diameter so that the stem or neck portion of the deformable dispenser may be inserted into the reduced diameter bore portion and expanded at the increased diameter bore portion to securely retain the dispenser within the resilient housing. In yet another embodiment, the dispenser is provided with the usual conical end of increased thickness to provide substantial cross-sectional rigidity across the shoulder of the conical end of the dispenser. The resilient housing is adapted to snap onto the shoulder to provide secure engagement therewith. In still another embodiment, a resilient housing is provided which has a circumferential groove or relief in which an inwardly extending flange of the dispenser resides to provide secure engagement therebetween. In another embodiment, the end of the dispenser and the container opposite of the nozzle are securely engaged by heat sealing the resilient container end over the deformable dispenser end. In still another embodiment, an adjustably positionable stop is secured to the housing which abuts the deformable dispenser to securely retain the dispenser in position.

It will be appreciated that the container of this invention is exceptionally durable and has an attractive external appearance. Moreover, the containers of the present invention avoid the usual problem encountered in the use of dispensers having resilient housings, namely, the tendency of the resilient housing to assume its original state after partial depletion so as to create an air space within the dispenser. On subsequent use, the air space results in irregular egress of the substance in the dispenser which is annoying and at times wasteful. In this regard, it will be appreciated that the permanently deformable internal dispenser of this invention, once deformed, does not return to its original shape thereby circumventing the above problem.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A and B are cross-sectional views of a first exemplary embodiment of a container according to this invention;

FIG. 2 is a partial cross-sectional view of another exemplary embodiment of a container according to this invention;

FIG. 3 is a partial cross-sectional view of yet another exemplary embodiment of a container according to this invention;

FIG. 4 is a partial cross-sectional view of still another exemplary embodiment of a container according to this invention; and

FIG. 5 is a cross-sectional view of still another exemplary embodiment of a container according to the present invention; and

FIGS. 6 and 7 are views of yet another exemplary embodiment of a container according to the present invention with FIG. 7 being a cross-sectional view taken along the lines 7-7 of FIG. 6.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

In FIGS. 1A and B, an exemplary container construction 10 is illustrated which includes a resiliently deformable elongated housing 12 and a permanently deformable elongated dispenser 14. The housing 12 is preferably made of a plastic material such as polypropylene while the dispenser 14 is made of relatively soft metallic material such as tin or the like. The housing 12 is of generally circular cross section so as to substantially encapsulate the dispenser 14 and includes one partially closed end 16 of conical cross section and one open end 18. The partially closed end 16 has a radially-inward extending flange portion 20 which is in close mating engagement with a circumferential, radially inward extending relief or slot 22 at the neck of the nozzle portion 24 of the metallic dispenser 14. The nozzle portion 24 further includes a threaded portion 26 which is adapted to be threadedly engaged with a cap 28 or other suitable closure for the nozzle bore. The relief 22 and the flange 20 are adapted to be mated by pressing the threaded portion 26 of the stem 24 by the flange 20 until the flange 20 snaps into the relief 22 so as to securely attach the housing 12 to the dispenser 14. It can be seen that the engagement of the flange 20 and the relief 22 positively restrains relative motion along the longitudinal axis of the container 10 of the engaged portions of the container 12 and the dispenser 14. The flange 20 and the relief 22 may be dimensioned or configured so that the dispenser 14 and the plastic housing 12 are relatively permanently affixed, for example, by providing a deep relief 22 or a substantial interfering fit between the two parts. The same result may be achieved by providing barb-like engaging portions. If desired, the relief may be of relatively shallow depth and the fit may be free of substantial interference so that dispenser 14 may be removed when depleted and a new dispenser 14 inserted.

In FIG. 2, another construction of a container according to the present invention is illustrated. In the embodiment of FIG. 2, a plastic housing 30 is utilized which is provided with a nozzle portion 32 having molded threads for threadedly engaging a cap 35. The plastic housing 30 generally encapsulates a deformable

metallic dispenser 34 which has a conical end 36 which closely mates with a conical end part 38 of the plastic housing 30. The dispenser 34 has a neck 40 which closely mates with a bore portion 42 of the housing 30. It can be seen in FIG. 2 that the bore portion 42 transitions to an enlarged bore portion 44. The metallic dispenser 34 is secured to the housing 30 by a portion 46 which conforms to the transition between the reduced bore portion 42 and the enlarged bore portion 44, and extends along the enlarged bore portion 44. Preferably, the end 48 of the dispenser 34 is inwardly disposed with respect to the end 50 of the plastic housing 30, i.e. inset, so that the metallic dispenser 34 is not exposed during use. During assembly, a dispenser 34 having a stem portion no larger than the reduced bore portion 42, may be secured to the housing 30 by first inserting the dispenser 34 into the bore 42, and thereafter, flaring the portion 46 into engagement with the enlarged bore portion 44.

In FIG. 3, still another construction according to the present invention is illustrated. In FIG. 3, a plastic container 52 is illustrated in combination with a deformable metallic dispenser 54 having a threaded stem 56 which is adapted to threadedly engage a cap 58. The dispenser 54 has the usual conical end 60 and a shoulder 62 at the intersection of the conical end 60 and the dispenser deformable body 64. It will be appreciated that the conical end 60 is of enlarged thickness so as to present a relatively high resistance to cross-sectional deformation under loads applied across the shoulder 62. The container 52 has a shoulder portion 66 of generally enlarged cross-sectional thickness which defines a generally longitudinally extending bore portion 68 and a radially inwardly extending conical flange portion 70 which is adapted to mate with the conical end 60 of the dispenser 54. The bore 68 and flange 70 are in close mating engagement with the conical end 60 and shoulder 62 of the conical end 60, so as to retain the dispenser 54 in position within the housing 52. Preferably, an interference fit is established between the bore 68 and the shoulder 62. The flange 70 terminates at 72 to provide a bore of sufficient diameter so that the nozzle 56 and the cap 58 of the dispenser 54 may be inserted therethrough. Also preferably, the dispenser is removable for replacement after depletion.

In FIG. 4, still another embodiment of a container according to the present invention is illustrated. In FIG. 4, a container 74 is illustrated having a plastic housing 76 and a deformable metallic dispenser 78. The plastic housing 76 is provided with an externally threaded nozzle 80 for engaging a cap 82. The housing 76 also has a conical end portion 84 which joins a circumferential radially-inwardly extending slot 86 which accepts an inwardly turned flange 88 on the dispenser 78 so as to positively retain the dispenser flange 88. As can be seen in the drawings, the dispenser flange 88 has a forward surface 90 which mates with the flange 84 of the housing 76.

In FIG. 5, another embodiment of the present invention is shown having a plastic housing 92 in combination with a dispenser 94 which is joined with the housing 92 at the rearward closed end 96 of the dispenser. The housing 92 may have a forward conical end portion with an opening freely receiving the dispenser nozzle

as disclosed in my aforementioned copending application. The closed end 96 is encapsulated within a heat sealed portion 98 of the container 92 whereby the outer surface 100 of the end part of the dispenser 94 is in sealed retaining engagement with the inner surface 102 of the container 92. The end 96 of the dispenser 94 may be closed as by crimping prior to heat sealing of the portion 98, or if desired, the end 96 may be closed and the portion 98 may be heat sealed in one operation.

In FIGS. 6 and 7, yet another embodiment of the present invention is illustrated. In the embodiment of FIG. 6, a plastic housing 103 having a forward conical end portion with an opening freely receiving the dispenser nozzle as disclosed in my aforementioned copending application may be utilized. As illustrated in FIGS. 6 and 7, the opposite end includes a beaded end portion 104, a central longitudinally extending slot 106 having an upwardly extending flange 108 and a downwardly extending flange 110 on one side of the slot 106, and an upwardly extending flange 112 and a downwardly extending flange 114 on the other side of the slot 106. A slider 116 is positioned within the groove 106 to close the end of the housing 103 by compressing the central portion of the container 103. To this end, the slider 116 is provided with a central web 118 which is positioned within the slot 106, a pair of transverse slots 120 and 122 which receive the compressed container adjacent the flanges 108-114, and perpendicularly disposed T-grooves 124 and 126 which receive the flanges 108-114. It will be appreciated that the slider 116 is securely retained in a longitudinally adjustable position by the frictional forces resulting from the restraint or compression of the housing 103. It will be further appreciated that the slider 116 can be positioned to abut the dispenser 128 so that the forward end of the dispenser 128 resides against the opposite conical end of the housing 103 to securely retain the dispenser 128 in position with respect to the housing 103.

In each of the embodiments of this invention, it will be appreciated that the dispenser is positively retained within the plastic housing by a gripping or interlocking engagement between portions of the two so that relative longitudinal motion at the engaged portions of the container and the plastic housing is restrained. This construction provides a container which is exceptionally convenient to use and one which has a high degree of durability.

Although the containers particularly described above are adapted for containing a single substance to be dispensed, the container may be readily adapted for use with multiple substance packages such as two part epoxys and the like by providing two or more resilient housings which may be joined, for example, along a longitudinal axis thereof so that the deformable metal dispensers are conveniently joined in parallel relationship.

While it will be apparent that the teachings herein are well calculated to each one skilled in the art the method of making the preferred embodiments of this invention, it will be appreciated that the invention is susceptible to modification, variation and change without departing from the proper scope of meaning of the subjoined claims.

What is claimed is:

1. A container for a substance such as toothpaste and the like comprising:

an elongated permanently deformable metallic dispenser for containing the substance; and
 plastic means including a plastic nozzle having an opening communicating with said metallic dispenser for forced egress of the substance therewithin by compressive deformation of said metallic dispenser being adapted to mate with a cap means for closing said opening, a plastic shoulder generally radially outwardly extending from said plastic nozzle for providing a plastic end structure with said nozzle, and a plastic protecting means surrounding said metallic dispenser for protecting said metallic dispenser which is deformable to allow deformation of said metallic dispenser;
 said metallic dispenser and said plastic means including means for joining said metallic dispenser and said plastic means including an engaging portion on said plastic means which is a circumferentially extending recess having at least a generally radially-inwardly extending recess portion; and an engaging portion on said metallic dispenser which is a circumferentially extending flange having at least a generally radially-inwardly extending flange portion, said flange portion residing in said recess portion of said plastic means engaging portion so as to be interposed between portions of said plastic means and to be securely retained in said recess.

2. A container for a substance such as toothpaste and the like comprising:

an elongated permanently deformable metallic dispenser for containing the substance; and plastic means including a plastic nozzle having an opening communicating with said metallic dispenser for forced egress of the substance therewithin by compressive deformation of said metallic dispenser being adapted to mate with a cap means for closing said opening, a plastic shoulder generally radially outwardly extending from said plastic nozzle for providing a plastic end structure with said nozzle, and a plastic protecting means surrounding said metallic dispenser for protecting said metallic dispenser which is deformable to allow deformation of said metallic dispenser;
 said metallic dispenser and said plastic means including means for joining said metallic dispenser and said plastic means including an engaging portion on said plastic means which is a circumferentially extending recess having at least a generally radially-inwardly extending recess portion; and an engaging portion on said metallic dispenser which is a circumferentially extending flange having at least a generally radially-inwardly extending flange portion, said flange portion residing in said recess portion of said plastic means engaging portion so as to be interposed between portions of said plastic means and to be securely retained in said recess;
 said metallic dispenser and said plastic protecting means having an end opposite said plastic nozzle means which is closed by heat sealing.

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