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(54) **SQUEEZABLE AND REFILLABLE  
CONTAINER FOR DISPENSING LIQUID  
SOAP**

(52) **U.S. Cl. .... 222/215; 222/192; 15/105**

(57) **ABSTRACT**

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A squeezable container for dispensing liquid soap, including a plurality of walls for simulating different shapes. The walls define an internal chamber for containing said liquid soap to be dispensed. One of the walls include closure means for opening and closing the container and for refilling the internal chamber with the liquid soap, wherein the closure means includes a passageway which allows liquid soap to pass into the internal chamber but not out of the internal chamber. At least one of the walls is formed of a squeezable material having a plurality of slits formed therein to allow the liquid soap to be dispensed from the internal chamber through the slits or holes when a squeezing pressure is applied to the container. The walls have an outer surface forming a scrubbing surface for cleaning.

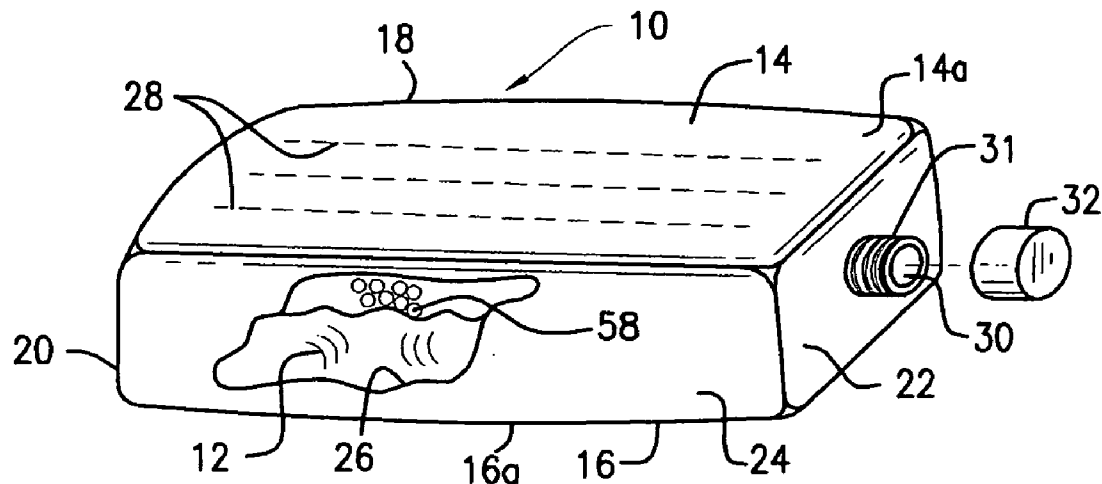
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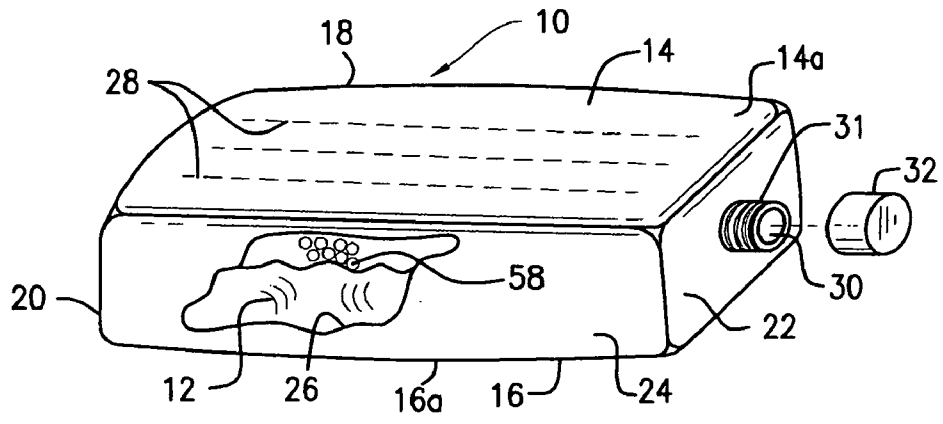


FIG. 1

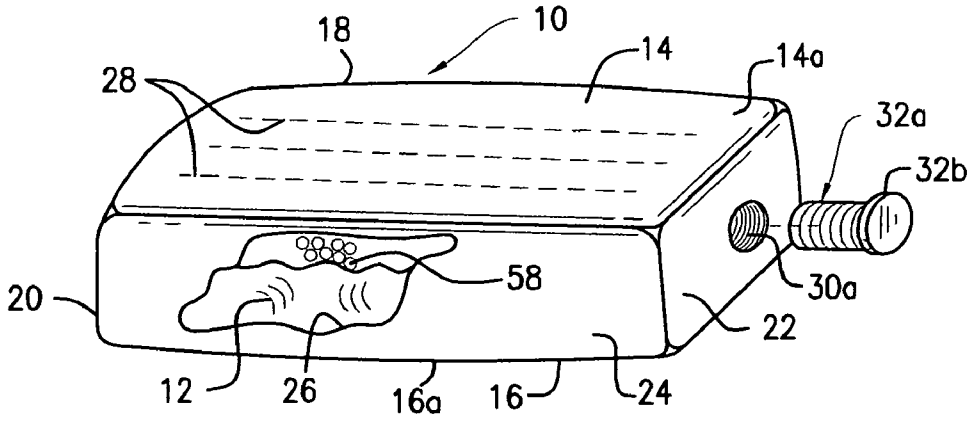


FIG. 2

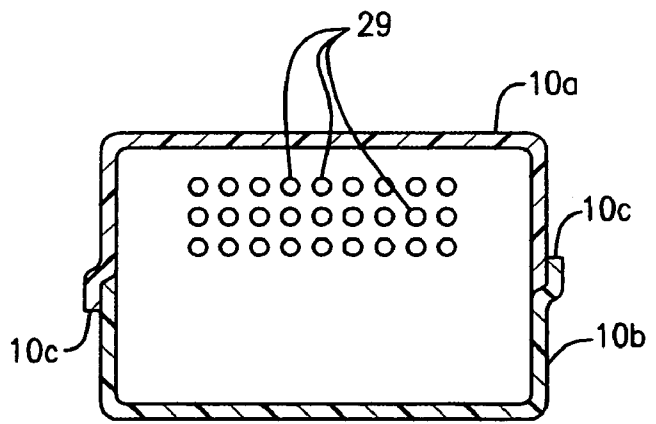


FIG. 3

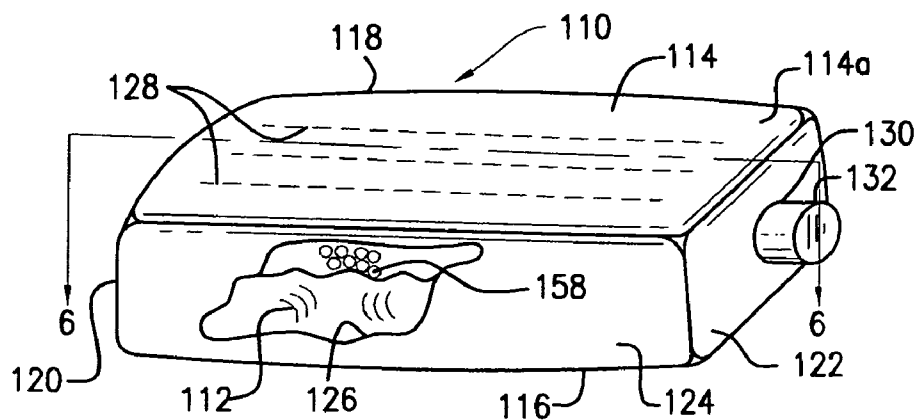


FIG. 4

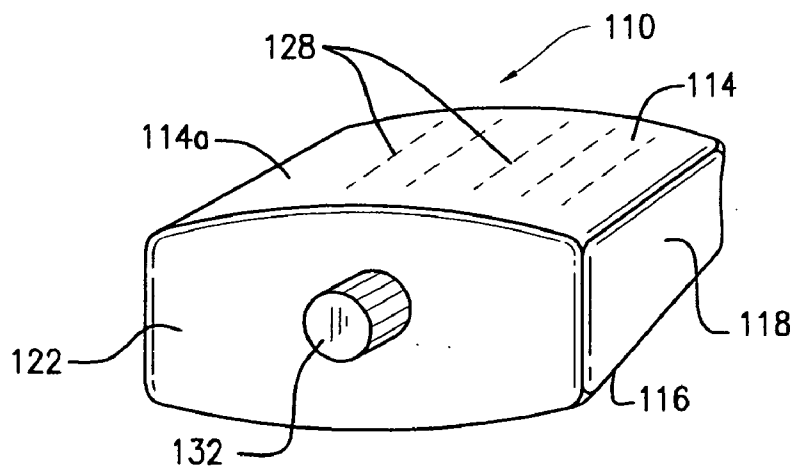


FIG. 5

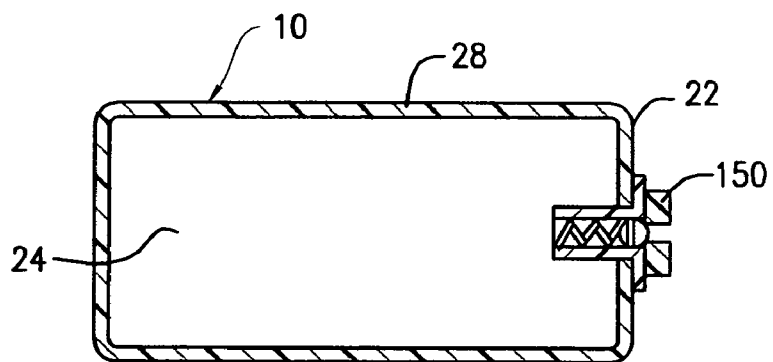


FIG. 6

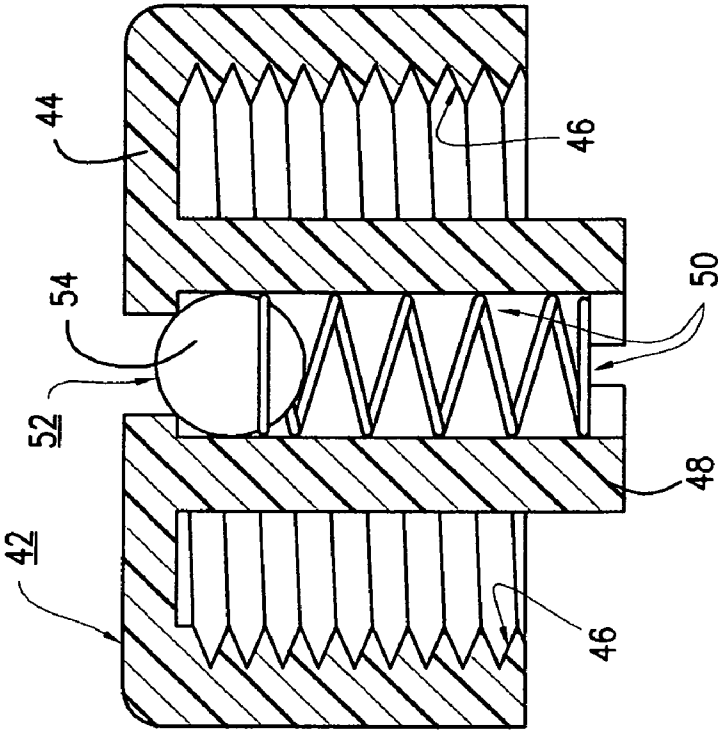


FIG. 8

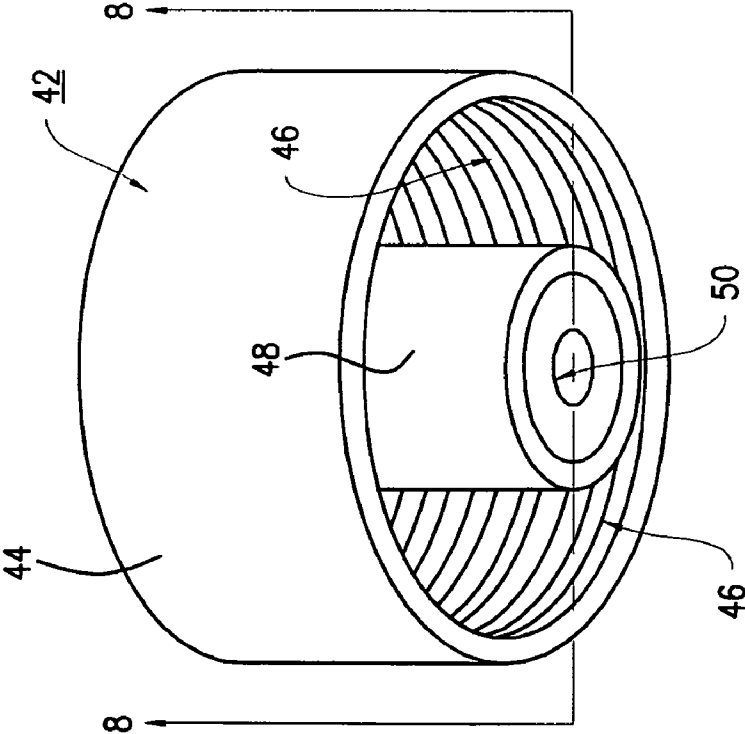


FIG. 7

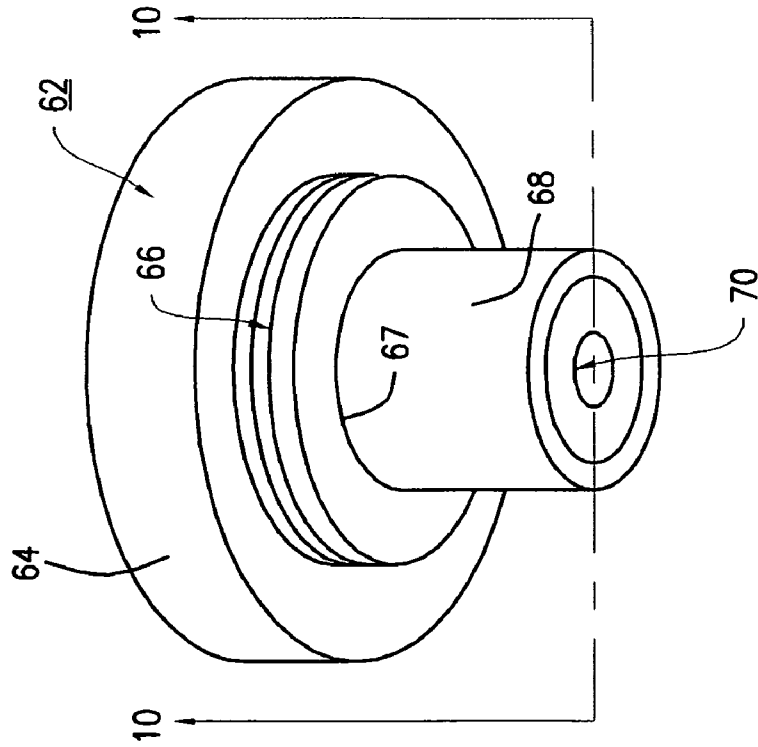


FIG. 9

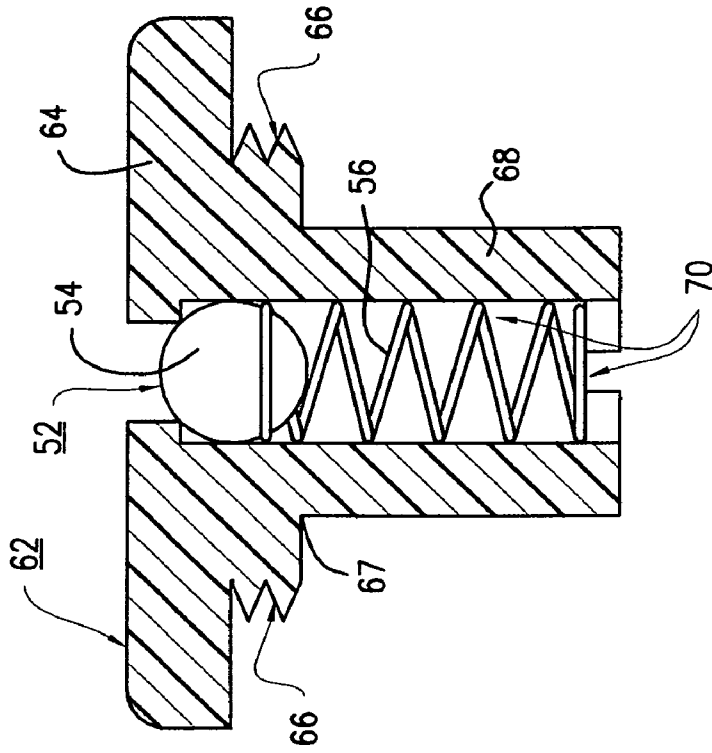


FIG. 10

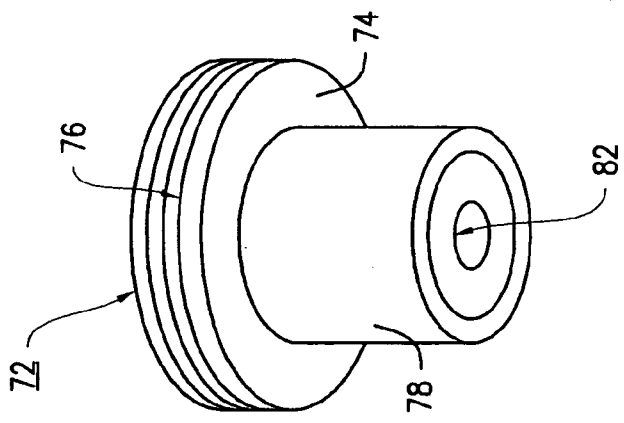


FIG. 11

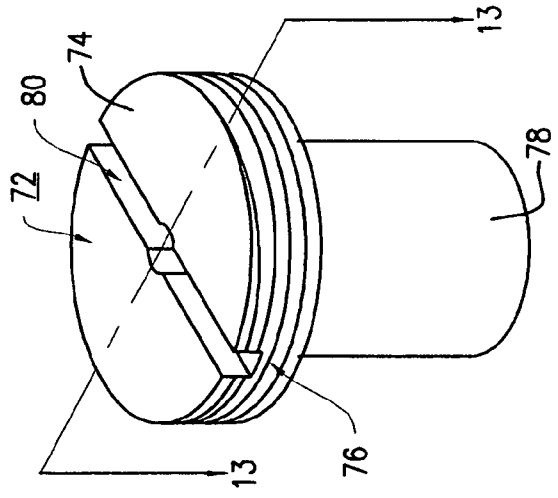


FIG. 12

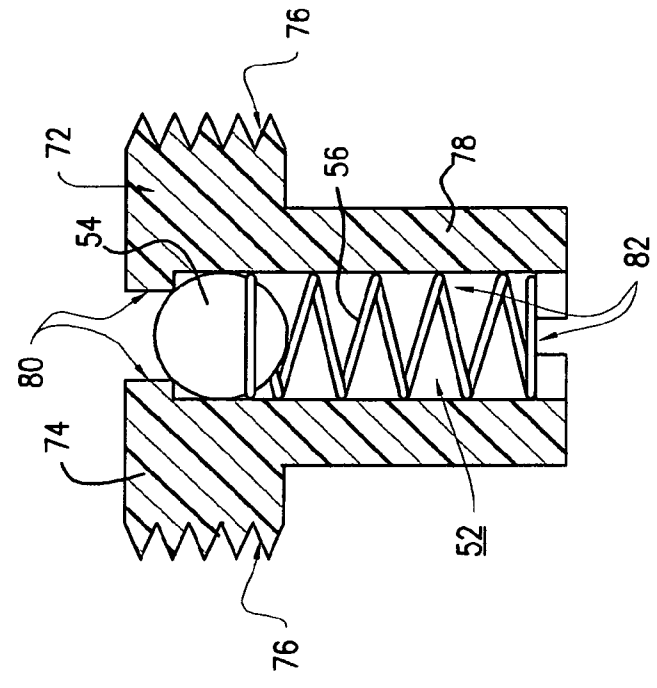


FIG. 13

**SQUEEZABLE AND REFILLABLE  
CONTAINER FOR DISPENSING LIQUID  
SOAP**

**FIELD OF THE INVENTION**

**[0001]** The present invention relates to a squeezable container having at least one squeezable wall having a plurality of slits or holes therein for dispensing liquid soap when squeezed and a dispenser passageway for refilling the container with liquid soap to allow it to be reused.

**BACKGROUND OF THE INVENTION**

**[0002]** Containers for dispensing liquid soap are known in the prior art and include walls having a permeable material with a sufficient porosity to dispense liquid soap, such as disclosed in U.S. Pat. No. 4,820,435. However, such prior art containers are not refillable and reusable and thus must be disposed of after only a single use.

**[0003]** Accordingly, it is an object of the present invention to provide a liquid soap dispenser which has at least one porous wall for dispensing liquid soap, is squeezable, includes at least one scrubbing surface, and is refillable and reusable.

**[0004]** Another object of the present invention is to provide a liquid soap dispenser that includes a detachable cap having a check valve therein for allowing air to pass into an internal chamber in order for the squeezable container to return to its original shape.

**[0005]** Another object of the present invention is to provide at least one squeezable wall having a plurality of slits or holes therein for dispensing liquid soap when the wall is squeezed by the user.

**[0006]** Another object of the present invention is to provide a squeezable liquid soap dispenser that is long-lasting, durable and easy to clean for repeated use.

**[0007]** A further object of the present invention is to provide a squeezable liquid soap dispenser that can be mass-produced in an automated and economical manner and is readily affordable by the consumer.

**SUMMARY OF THE PRESENT INVENTION**

**[0008]** In accordance with the present invention, there is provided a squeezable container for dispensing liquid soap. The container includes a plurality of walls for simulating different shapes. The walls define an internal chamber for containing the liquid soap to be dispensed. One of the walls include closure means for opening and closing the container and for refilling the internal chamber with the liquid soap, wherein the closure means includes a passageway which allows liquid soap to pass into the internal chamber but not out of the internal chamber. At least one of the walls is formed of a squeezable material having a plurality of slits formed therein to allow the liquid soap to be dispensed from the internal chamber through the slits when a squeezing pressure is applied to the container. The walls have an outer surface forming a scrubbing surface for cleaning.

**BRIEF DESCRIPTION OF THE DRAWINGS**

**[0009]** Further objects, features, and advantages of the present invention will become apparent upon consideration of the detailed description of the presently-preferred embodiment, when taken in conjunction with the accompanying drawings wherein:

**[0010]** FIG. 1 is a perspective view of the squeezable container of the preferred embodiment of the present invention showing a container housing having a plurality of slits thereon and a cap for attaching to a threaded neck with a check valve therein;

**[0011]** FIG. 2 is a perspective view of the squeezable container of the present invention showing the container housing, the slits and a flush-mounted cap for attaching to an interior-threaded passageway with a check valve therein;

**[0012]** FIG. 3 is a sectional view of the squeezable container of the present invention showing the container housing; an interior compartment and a plurality of holes on a container wall;

**[0013]** FIG. 4 is a top perspective view of the squeezable container of an alternate embodiment of the present invention showing a container housing having flexible walls and a scrubbing surface and a plurality of slits on the flexible walls and a cap;

**[0014]** FIG. 5 is a side perspective view of the squeezable container of the present invention showing the slits on the scrubbing surface of the flexible walls and the cap;

**[0015]** FIG. 6 is a cross-sectional view of the squeezable container of the present invention taken along lines 6-6 of FIG. 4 in the direction of the arrows showing the container housing having an interior compartment and a semi-flush cap attached to a side wall;

**[0016]** FIG. 7 is a bottom perspective view of an exterior cap of the squeezable container of the present invention showing an interior stem and interior threading within a cap cover;

**[0017]** FIG. 8 is a cross-sectional view of the exterior cap of the squeezable container of the present invention taken along lines 8-8 of FIG. 7 in the direction of the arrows showing a check valve having a shut-off ball and compression spring within the interior stem;

**[0018]** FIG. 9 is a bottom perspective view of a semi-flush cap of the squeezable container of the present invention showing an interior stem having exterior threading on the upper end of an interior stem;

**[0019]** FIG. 10 is a cross-sectional view of the semi-flush cap of the squeezable container of the present invention taken along lines 10-10 of FIG. 9 in the direction of the arrows showing the check valve having the shut-off ball and compression spring within the interior stem;

**[0020]** FIG. 11 is a bottom perspective view of a flush-mounted cap of the squeezable container of the present invention showing an exterior stem and a cover cap having exterior threading thereon;

**[0021]** FIG. 12 is a top perspective view of the flush-mounted cap of the squeezable container of the present invention showing the exterior stem and the cover cap having a turning slot and exterior threading; and

**[0022]** FIG. 13 is a cross-sectional view of the flush-mounted cap of the squeezable container of the present invention taken along lines 13-13 of FIG. 12 in the direction of the arrows showing the check valve having the shut-off ball and compression spring within the exterior stem.

**DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

**[0023]** As shown in FIG. 1, there is a container 10 for dispensing liquid soap 12 molded in a plastic material. The container 10 is shown in the shape of a bar of soap, but the container 10 may be of any other desired shape, such as a bar of soap, a toy (ie. a baseball, a football, a hockey puck, etc.) or

a 3-dimensional character (ie. Mickey Mouse, Bugs Bunny, etc.). The container 10 includes upper wall 14, lower wall 16, and side walls 18, 20, 22, and 24. The walls define an internal chamber 26 for holding the liquid soap 12.

[0024] At least one of the walls 14 is formed of a squeezable material, being a nonwoven porous material, or a high-density polyethylene or polypropylene. The outer surface 14a of squeezable wall 14 forms a scrubbing surface for cleaning. In another embodiment, lower wall 16 is also squeezable, and its outer surface 16a forms a scrubbing surface. In still another embodiment, all the walls are squeezable and form outer scrubbing surfaces. It is understood that depending upon the viscosity of the liquid soap 12, the size of the slit or hole will vary. For example, if a liquid soap 12 with a high viscosity is used, then the slit or hole size will have to be made larger to release the soap 12 from the container 10 when it is squeezed during use, and to prevent leaking of the soap 12 from the container 10 when it is not squeezed.

[0025] In the preferred embodiment, the squeezable walls 14 and 16 are high-density polyethylene (HDPE). The dispensing slits are shown at 28, and the preferred slit size is at least  $\frac{1}{8}$  of an inch but can be in the range of  $\frac{1}{16}$  of an inch to  $\frac{1}{4}$  of an inch. The thickness of the squeezable walls is preferably  $\frac{1}{8}$  of an inch but can be in the range of  $\frac{1}{32}$  of an inch to  $\frac{1}{4}$  of an inch. For example, when the liquid soap 12 has a low viscosity of between 10,000 to 25,000 centipoise, the slit size is in the range of  $\frac{1}{16}$  of an inch to  $\frac{3}{16}$  of an inch in order to release the low viscosity liquid soap 12 from the container 10 when squeezed during use. When the liquid soap has a high viscosity of between 25,001 to 40,000 centipoise, the slit size 28 is larger being in the range of over  $\frac{3}{16}$  of an inch to  $\frac{1}{4}$  of an inch in order to release the higher viscosity liquid soap from the container 10 when squeezed during use.

[0026] In an alternate embodiment, the dispensing hole 29, as shown in FIG. 3, in squeezable walls 14 and 16, have a diameter of at least 0.015 of an inch. For example, when the liquid soap 12 has a low viscosity of between 10,000 to 25,000 centipoise, the hole size is in the range of 0.015 of an inch to 0.032 of an inch in order to release the low viscosity liquid soap 12 from the container 10 when squeezed during use. When the liquid soap 12 has a high viscosity of between 25,001 to 40,000 centipoise, the hole size is larger being in the range of over 0.032 of an inch to 0.064 of an inch in order to release the higher viscosity liquid soap 12 from the container 10 when squeezed during use.

[0027] The outer surfaces 14a and 16a cannot be too abrasive to the skin and preferably are of the fine or extra fine grade of HDPE. Of course, other similar or equivalent soft plastic materials may be employed within the scope of the invention.

[0028] The squeezing pressure to be applied to container 10 to dispense the liquid soap 12 from internal chamber 26 through the squeezable walls 14 and 16 varies with the slit size, the material, the thickness of the material, surface characteristics, and the viscosity of the liquid soap. Ivory liquid soap has a suitable viscosity for the slit size and thickness of the preferred embodiment. The squeezing pressure to dispense the liquid soap 12 can be as low as 0.2 PSI but preferably is in the range of 1 PSI to 10 PSI. When no pressure is applied to the container, the porosity of the slit size of the squeezable wall 14 is such that no liquid will be dispensed or seep (leak) through the squeezable walls of the container 10. Thus, the container has a long shelf life.

[0029] After all or part of the liquid soap 12 has been dispensed and used, the container 10 may be refilled and reused. As shown in FIG. 1, the container 10 includes a passageway 30 having exterior threading 31 (threaded exterior neck) through side wall 22 and into internal chamber 26, and a removable filler cap 32 which is screwed on the exterior threading 31 for closing passageway 30 after the internal chamber 26 is refilled. To fill chamber 26, the liquid soap 12 may be poured or squeezed through passageway 30.

[0030] Alternatively, a one-way recessed, plastic, check valve may be placed in passageway 30 to allow liquid soap 12 to pass into, but not out of, internal chamber 26. In such an embodiment, the soft filler cap 32 is optional.

[0031] FIG. 2 shows an alternative cap closure, wherein passageway 30a is recessed into the container, and cap 32a is a flush, molded cap having a flush head 32b.

[0032] FIG. 3 illustrates an alternative method of making the container, wherein upper container section 10a is molded separately from lower container section 10b, and the two sections snap together or are heat sealed or glued along a seam 10c to form the container 10.

[0033] FIGS. 4 and 5 show another embodiment of the invention. Container 110 has walls 114, 116, 118, 120, 122, and 124 which define an internal chamber 126 for holding the liquid soap 112. Container 110 is molded from a soft, squeezable plastic material, such as polyethylene or polypropylene. Dispensing slits 128 are molded into container wall 114 or punctured into wall 114. Outer surface 114a forms a scrubbing surface, and it is pressed against the body with a squeezing pressure applied to container 110 to dispense the liquid soap 112 from internal chamber 126 through dispensing slits 128. When not in use, the squeezable wall 114 may face upward to help prevent the liquid soap 112 from seeping out. In addition, a closing cap 132 with internal threads is employed to close passageway 130 after the internal chamber 126 is refilled. The dimensions discussed above are also applicable to this embodiment.

[0034] FIGS. 6 to 10 show the embodiment of FIG. 1, except that alternative closures are illustrated in side wall 22. For example, in FIG. 6, a plastic insert 150 having threads is molded into the wall 22 of container 10. The plastic insert 150, on its interior, may be heat sealed or glued to the wall 22 of the container.

[0035] FIGS. 7 and 8 show a second alternate cap closure design, wherein a molded exterior cap 42 includes a cap head cover 44 having interior threading 46 for attaching to the exterior threading 31 of passage 30 (see FIG. 1). Cap head cover 44 also includes an interior stem 48 having a stem passageway 50 for receiving a check valve 52 therein. Check valve 52 includes a shut-off ball 54 and a compression spring 56 within the cap passageway 50 of interior stem 48, as depicted in FIG. 8 of the drawings. Check valve 52 is used to allow air 58 to pass into the internal chamber 26 in order for the squeezable container 10 to return to its original shape.

[0036] FIGS. 9 and 10 show a third alternate cap closure design, wherein a molded semi-flush exterior cap 62 includes a cap head cover 64 having exterior threading 66 at an upper end 67 of an interior stem 68. Interior stem 68 includes a cap passageway 70 for receiving check valve 52 therein.

[0037] FIGS. 11, 12 and 13 show a fourth alternate cap closure design, wherein a molded flush-mounted cap 72 includes a cap head cover 74 having exterior threading 76 thereon. Cap head cover 74 also includes an exterior stem 78

and a turning slot **80** thereto. Exterior stem **78** includes a cap passageway **82** for receiving check valve **52** therein.

#### ADVANTAGES OF THE PRESENT INVENTION

**[0038]** Advantageously, in accordance with the present invention, there has been provided a unique squeezable container for dispensing liquid soap, which is refillable and reusable, has a removable closure, and includes one or more scrubbing surfaces.

**[0039]** Another advantage of the present invention is that it provides for a liquid soap dispenser that includes a detachable cap having a check valve therein for allowing air to pass into an internal chamber in order for the squeezable container to return to its original shape.

**[0040]** Another advantage of the present invention is that it provides for at least one squeezable wall having a plurality of slits or holes therein for dispensing liquid soap when the wall is squeezed by the user.

**[0041]** Another advantage of the present invention is that it provides for a squeezable liquid soap dispenser that is long-lasting, durable and easy to clean for repeated use.

**[0042]** A further advantage of the present invention is that it provides for a squeezable liquid soap dispenser that can be mass-produced in an automated and economical manner and is readily affordable by the consumer.

**[0043]** 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. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope and of the invention herein.

What is claimed is:

1. A squeezable container for dispensing liquid soap, comprising:

- a) a plurality of walls for simulating different shapes;
- b) said walls defining an internal chamber for containing the liquid soap to be dispensed;
- c) one of said walls including closure means for opening and closing said container and for refilling said internal chamber with the liquid soap, wherein said closure means includes a passageway in one of said walls which allows the liquid soap to pass into said internal chamber but not out of said internal chamber;
- d) at least one of said walls being formed of a squeezable material having a plurality of slits formed therein to allow the liquid soap to be dispensed from said internal chamber through said slits when a squeezing pressure is applied to said container; wherein the size of each of said slits is dependent upon the viscosity of the liquid soap;
- e) said walls having an outer surface forming a scrubbing surface for cleaning.

2. A container in accordance with claim **1**, wherein each of said slits has a length of at least  $\frac{1}{16}$  of an inch.

3. A container in accordance with claim **1**, wherein the viscosity of the liquid soap is in the range of 10,000 to 40,000 centipoise.

4. A container in accordance with claim **1**, wherein the liquid soap has a viscosity of between 10,000 to 25,000 centipoise and said slit size is in the range of  $\frac{1}{16}$  of an inch to  $\frac{3}{16}$  of an inch in order to release the liquid soap from said container when squeezed during use.

5. A container in accordance with claim **1**, wherein the liquid soap has a viscosity of between 25,001 to 40,000 cen-

tipoise and said slit size is in the range of  $\frac{3}{16}$  of an inch to  $\frac{1}{4}$  of an inch in order to release the liquid soap from said container when squeezed during use.

6. A container in accordance with claim **1**, wherein said squeezable wall has a thickness in the range of  $\frac{1}{32}$  of an inch to  $\frac{1}{4}$  of an inch.

7. A container in accordance with claim **1**, wherein said squeezable wall is formed of a porous material.

8. A container in accordance with claim **1**, wherein said squeezable wall is formed of high-density polyethylene (HDPE).

9. A container in accordance with claim **1**, wherein said squeezing pressure to dispense the liquid soap is in the range of 0.2 PSI to 14 PSI.

10. A container in accordance with claim **1**, wherein two opposite walls of said container are formed of said squeezable material and the outer surfaces form scrubbing surfaces for cleaning.

11. A container in accordance with claim **10**, wherein said scrubbing surfaces are abrasive for cleaning skin with said liquid soap.

12. A container in accordance with claim **1**, wherein said passageway includes a closing cap for not allowing said liquid soap to pass from said internal chamber.

13. A container in accordance with claim **1**, further including a closing cap for said passageway, wherein said closing cap includes a cap passageway having a check valve therein and having a shut-off ball and a compression spring therein for allowing said check valve to pass air into said internal chamber in order for said squeezable container to return to its original shape.

14. A container in accordance with claim **13**, wherein said closing cap is in the form of an exterior cap, a semi-flush exterior cap or a flush-mounted cap.

15. A squeezable container for dispensing liquid soap, comprising:

- a) a plurality of walls for simulating different shapes;
- b) said walls defining an internal chamber for containing the liquid soap to be dispensed;
- c) one of said walls including closure means for opening and closing said container and for refilling said internal chamber with the liquid soap, wherein said closure means includes a passageway in one of said walls which allows the liquid soap to pass into said internal chamber but not out of said internal chamber;
- d) at least one of said walls being formed of a squeezable material having a plurality of holes formed therein to allow the liquid soap to be dispensed from said internal chamber through said holes when a squeezing pressure is applied to said container; wherein the size of each of said holes is dependent upon the viscosity of the liquid soap; and
- e) said walls having an outer surface forming a scrubbing surface for cleaning.

16. A container in accordance with claim **15**, wherein each of said holes has a diameter of at least 0.015 of an inch.

17. A container in accordance with claim **15**, wherein the viscosity of the liquid soap is in the range of 10,000 to 40,000 centipoise.

18. A container in accordance with claim **15**, wherein the liquid soap has a viscosity of between 10,000 to 25,000 centipoise and the diameter of said hole is in the range of 0.015 of an inch to 0.032 of an inch in order to release the liquid soap from said container when squeezed during use.

19. A container in accordance with claim 15, wherein the liquid soap has a viscosity of between 25,001 to 40,000 centipoise and the diameter of said hole is in the range of 0.032 of an inch to 0.064 of an inch in order to release the liquid soap from said container when squeezed during use.

20. A container in accordance with claim 15, wherein said squeezable wall has a thickness in the range of  $\frac{1}{32}$  of an inch to  $\frac{1}{4}$  of an inch.

21. A container in accordance with claim 15, wherein said squeezable wall is formed of a porous material.

22. A container in accordance with claim 15, wherein said squeezable wall is formed of high-density polyethylene (HDPE).

23. A container in accordance with claim 15, wherein said squeezing pressure to dispense the liquid soap is in the range of 0.2 PSI to 14 PSI.

24. A container in accordance with claim 15, wherein two opposite walls of said container are formed of said squeezable material and the outer surfaces form scrubbing surfaces for cleaning.

25. A container in accordance with claim 24, wherein said scrubbing surfaces are abrasive for cleaning skin with the liquid soap.

26. A container in accordance with claim 15, wherein said passageway includes a closing cap for not allowing the liquid soap to pass from said internal chamber.

27. A container in accordance with claim 15, further including a closing cap for said passageway, wherein said closing cap includes a cap passageway having a check valve therein and having a shut-off ball and a compression spring therein for allowing said check valve to pass air into said internal chamber in order for said squeezable container to return to its original shape.

28. A container in accordance with claim 27, wherein said closing cap is in the form of an exterior cap, a semi-flush exterior cap or a flush-mounted cap.

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