

June 8, 1965

T. PAUL
HANDLE SOAP SPONGE

3,187,365

Filed March 6, 1964

3 Sheets-Sheet 1

FIG. 1

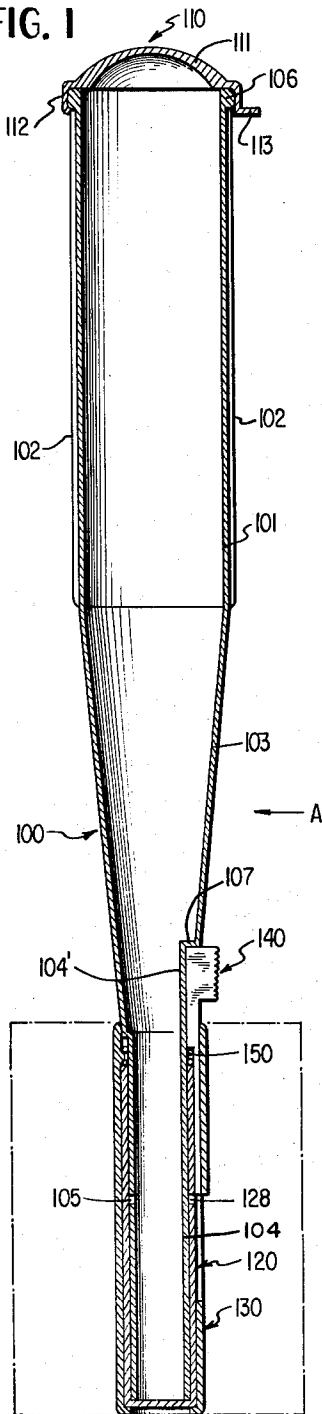


FIG. 2

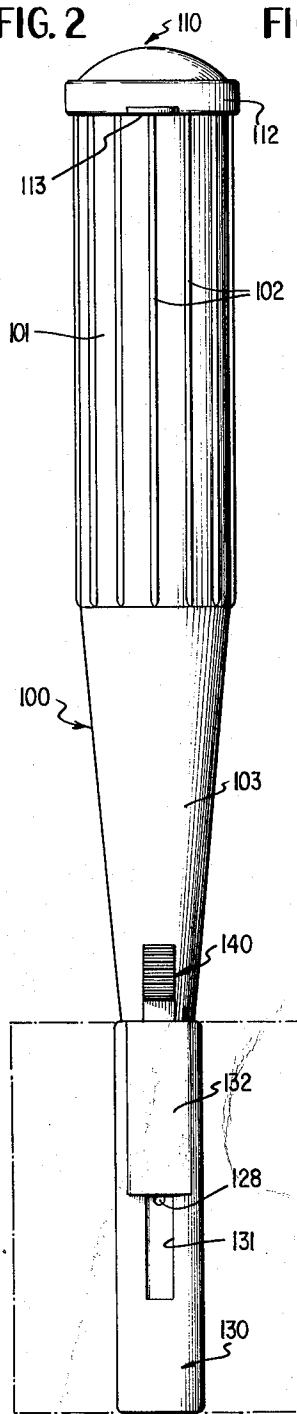
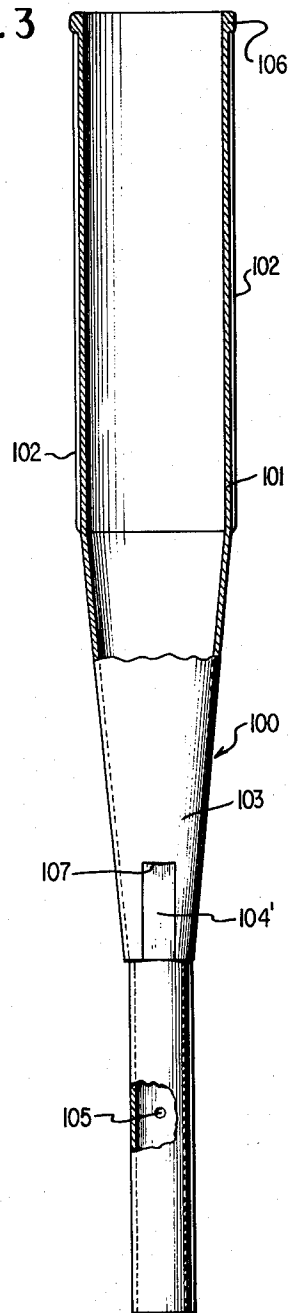


FIG. 3



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FIG. 4

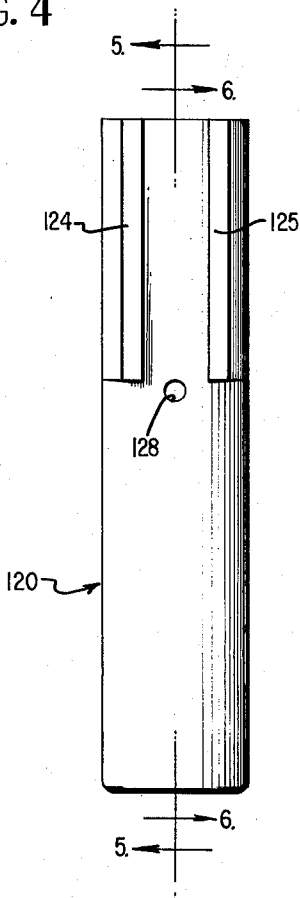


FIG. 5

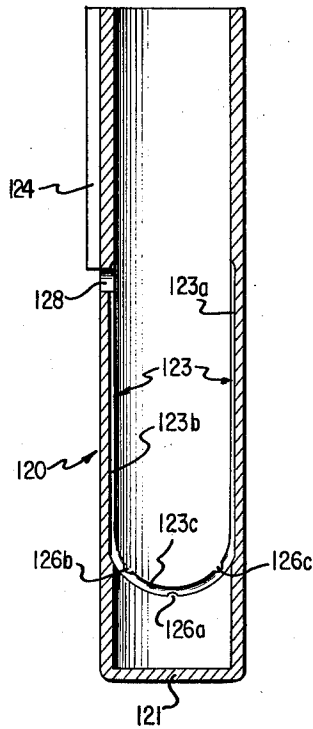


FIG. 6

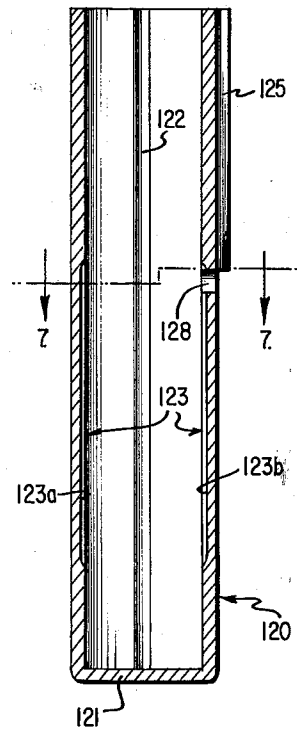


FIG. 5a

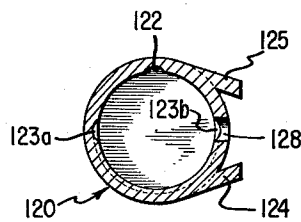
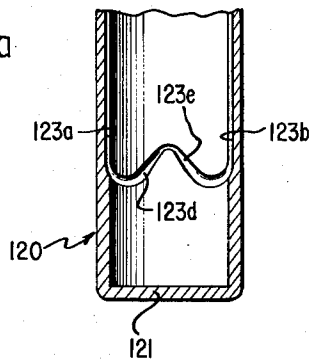


FIG. 7

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FIG. 8

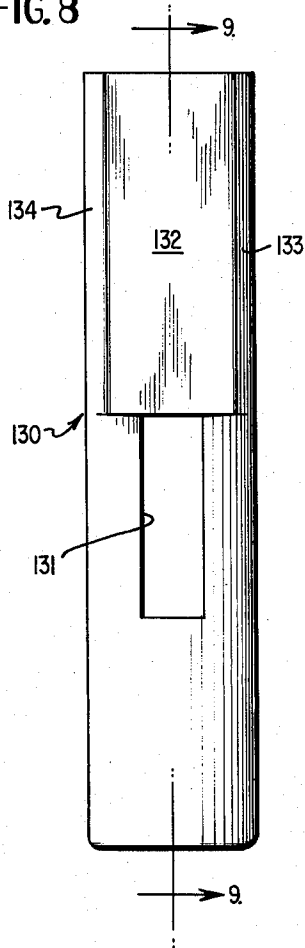


FIG. 9

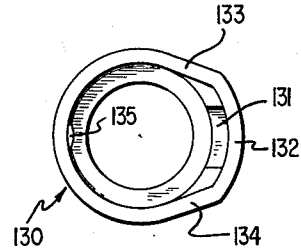
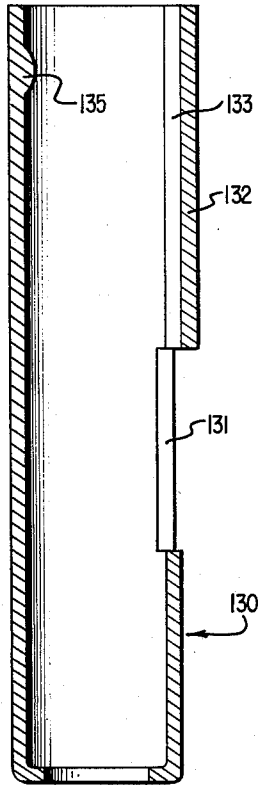


FIG. 10

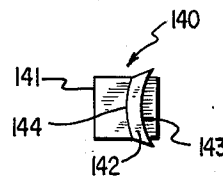


FIG. 13

FIG. 11

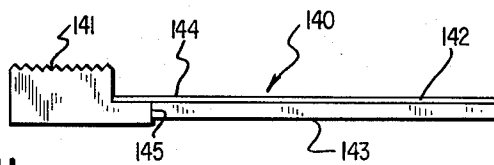
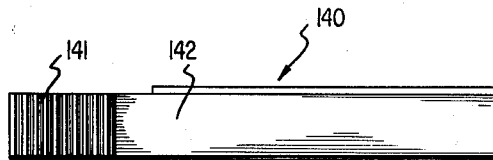


FIG. 12



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3,187,365
HANDLE SOAP SPONGE
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Filed Mar. 6, 1964, Ser. No. 349,935
12 Claims. (Cl. 15—542)

My copending application Serial No. 216,938, now U.S. Patent 3,128,493, the contents of which are incorporated herein by reference, describes a new and improved handle-sponge combination, and more particularly relates to an assembly consisting of a handle and a removable sponge in which the handle simultaneously serves as reservoir for the liquid soap, detergent or the like, adapted to be selectively dispensed by compressing a squeezable cap or end member. As pointed out in my copending application Serial No. 216,938, difficulties had been experienced prior to my invention to prevent by simple and operationally reliable means any undesired excessive flow or discharge of liquid soap from the container to the sponge. The prior art devices utilized for the most part mechanical means in the form of diaphragms, slots, valve-like structures, etc. to seek to prevent unintentional discharge of the liquid. However, these prior art devices were rather complicated and therewith expensive, and additionally were either ineffectual for the intended purposes from the very beginning or prone to rapid wear so as to render the same ineffectual after relatively short use thereof.

In contradistinction to the prior art, my prior application Serial No. 147,992, now abandoned and Serial No. 216,938 disclosed a handle-sponge assembly consisting of an elongated hollow body portion forming a handle and of a detachable sponge in which means operable substantially exclusively by principles of physics were relied upon to prevent excessive or unintentional discharge of the liquid from the reservoir to the sponge, such means being constituted by oppositely directed channel or conduit sections through which the liquid has to travel from the reservoir to the discharge orifice leading into the sponge, properly speaking. By reason of the fact that only part of the body was utilized as liquid reservoir in my prior applications while the solid bottom part, receiving thereon the detachable sponge, was utilized for the accommodation therein of the oppositely directed conduit sections constituting the means to prevent excessive and undesired discharge of the liquid, and by reason of the desirability to supply the liquid to the sponge substantially in the center of the latter, the two channel or conduit sections disposed within the bottom section of the handle body were of unequal length.

In adapting the basic principle of the invention disclosed in my parent applications to mass production techniques, I have found that the provision of the channels or conduits within the lower handle body presents difficulties, especially when utilizing injection molding processes or the like. To eliminate the difficulties encountered with the particular structure disclosed in my parent copending application, I have invented a modified structure of a handle-sponge assembly which not only eliminates the difficulties as regards mass production and ease of manufacture but also entails numerous other operational advantages as well as a possibility of locating and designing the oppositely directed channels or conduits of any length and shape, such as of unequal or equal length, provided these channels are of sufficient length to perform the intended functions.

Accordingly, it is an object of the present invention to provide a handle sponge of the type described above utilizing principles of physics to control the outflow of liquid from the container to the sponge, which is simple to

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manufacture and readily adaptable to mass production techniques.

Another object of the present invention resides in the provision of a handle sponge which is not only relatively inexpensive to manufacture and inexpensive to assemble but is also extremely reliable in operation to fulfill the intended functions.

A still further object of the present invention resides in the provision of a handle sponge of the type described hereinabove which is provided with selectively operable means to prevent, during filling of the container or reservoir, any undesired outflow of liquid into the sponge.

A still further object of the present invention resides in the provision of a handle sponge assembly which not only permits the use of oppositely directed channels or conduits of either similar or dissimilar length but also permits the realization thereof by using complementary surfaces of separately manufactured parts.

Still another object of the present invention resides in the provision of a handle-sponge assembly that may be readily molded of plastic material, especially by injection molding, in several separately made parts that can be easily assembled for realizing the finished product.

These and further objects, features, and advantages of the present invention will become more obvious from the following description when taken in connection with the accompanying drawing, which shows, for purposes of illustration only, several embodiments in accordance with the present invention and wherein:

FIGURE 1 is a longitudinal cross-sectional view through an improved handle-sponge assembly in accordance with the present invention;

FIGURE 2 is a side-elevational view of the handle-sponge assembly of FIGURE 1 as viewed in the direction of arrow A in FIGURE 1;

FIGURE 3 is an elevational view, partly in cross section, of the main body member of the handle-sponge assembly in accordance with the present invention;

FIGURE 4 is an elevational view, on an enlarged scale of the sleeve member for the sponge-handle assembly in accordance with the present invention;

FIGURE 5 is a cross-sectional view of the sleeve member taken along line 5—5 of FIGURE 4;

FIGURE 5a is a partial cross-sectional view, similar to FIGURE 5, of a modified embodiment of a sleeve member in accordance with the present invention;

FIGURE 6 is a cross-sectional view of the sleeve member taken along line 6—6 of FIGURE 4;

FIGURE 7 is a cross-sectional view taken along line 7—7 of FIGURE 6;

FIGURE 8 is a front elevational view, on an enlarged scale, of the outer casing or sleeve member for the sponge-handle assembly in accordance with the present invention;

FIGURE 9 is a cross-sectional view taken along line 9—9 of FIGURE 8;

FIGURE 10 is a top plan view on the external sleeve or casing member of FIGURES 8 and 9;

FIGURE 11 is a side-elevational view of the manually actuated plunger member for the handle sponge assembly in accordance with the present invention;

FIGURE 12 is a top plan view on FIGURE 11; and
FIGURE 13 is a right side-elevational view of FIGURE 12.

Referring now to the drawing wherein like reference numerals are used throughout the various views to designate corresponding parts, and more particularly to FIGURE 1, the improved handle-sponge assembly in accordance with the present invention illustrated therein consists of several parts that can be separately manufactured in any suitable manner by utilizing mass production techniques, such as injection molding or the like. More par-

particularly, the improved handle-sponge assembly of the present invention comprises a main body member generally designated by reference numeral 100, a squeezable cap member generally designated by reference numeral 110, an interior sleeve member generally designated by reference numeral 120, an exterior casing or sleeve member generally designated by reference numeral 130 and a plunger-type closure member generally designated by reference numeral 140. The main body member 100 which may be hollow throughout consists of an approximately cylindrical upper section 101, possibly provided with external ribs 102 to prevent slipping and facilitate handling, of a tapered intermediate section 103 and of a cylindrical bottom section 104 of reduced diameter. The reduced bottom section 104 is again provided with a cross bore 105 located approximately in the center region thereof. The upper end of the cylindrical portion 101 is provided with a rounded-off annular bead 106 which serves for the detachable connection of the squeezable cap generally designated by reference numeral 110. As may be seen in FIGURE 1, a step is effectively formed by the approximately horizontally and inwardly extending recessed portion 107 and the extension 104' of the cylindrical walls of the lower section 104. The step thus formed serves as abutment for the plunger-type member 140 as will be described more fully hereinafter.

The main handle body may be made of any suitable plastic material, for example, low pressure polyethylene that is substantially rigid and inflexible. On the other hand, the cap 110 is made of flexible material, for example, of flexible polyvinyl chloride and is provided with a central portion 111 to be squeezed, for instance, by the user's thumb; the central portion 111 increases in cross section radially outwardly and terminates in a rim portion 112 of such shape and dimensions as to snap over the annular bead 106 when assembled to thereby form a hermetic seal between the cap 110 and the main body 100. To facilitate removal of the cap 110 for purposes of filling or refilling the reservoir formed within the main body 100, the cap 110 is provided with an outwardly extending handle portion 113 whereby application of a force in the upward direction will lift off the cap 110 from the upper end of the cylindrical handle body portion 101. The main body member 100 may be hollow throughout or may also be filled with plastic material, either in the form of an insert or molded integrally, below the cross bore 105 so that the reservoir terminates at a joint just below the cross bore 105.

A sleeve member generally designated by reference numeral 120 (FIGURES 4-7) is mounted over the lower cylindrical portion 104 of the main handle body 100. The internal dimension of the sleeve 120 is thereby such that it will form a press or tight fit and therewith a hermetic seal when assembled over the lower cylindrical portion 104 of the main body 100. The sleeve 120 is closed at the bottom thereof by bottom portion 121 and is thus securely held in place in the assembled position by the press fit. Furthermore, the material such as low pressure polyethylene from which the sleeve member 120 is made helps by its slight resiliency to establish a tight sealing fit. The sleeve member 120 is provided on the inside thereof with an alignment groove 122 extending over the entire height thereof and engaging with a complementary projecting rib (not shown) on the lower portion 104 of the main body member 100 to assure proper alignment of cross bore 105 with the discharge channel as will be described more fully hereinafter. In a plane at right angle to the groove 122, the sleeve member 120 is provided along the internal walls thereof with an open, relatively shallow channel or groove generally designated by reference numeral 123 and constituted by the downwardly extending section 123a, the upwardly extending section 123b, and a semi-circular interconnecting section 123c. The downwardly extending section 123a and the upwardly extending section 123b are located in diametrically opposite wall

parts of the sleeve member 120 so that with the sleeve member 120 assembled over the lower portion 104 of the main body 100, the cross bore 105 is in communication with the downwardly extending section 123a. The outer smooth surfaces of the cylindrical portion 104 of the main body 100 thereby closes the open channel or groove sections 123a, 123c and 123b so that the latter form a hermetically sealed discharge channel or conduit. The upwardly extending channel section 123b terminates in bore 128.

As may be seen particularly from FIGURE 7, substantially tangentially outwardly projecting portions 124 and 125 constitute lateral walls which, together with the external surface of the sleeve member 120 disposed therebetween, form an approximately dove-tailed socket-like channel for slidably receiving therein the plunger-like closure member 140 as will be described more fully hereinafter.

If the reservoir within the main body portion 101 is made relatively long and/or wide, so that the pressure head of the liquid, when filled to the top, becomes relatively large, it may happen that due to the large pressure head, a few drops of liquid may be unintentionally discharged into the sponge even though no pressure is applied to the cap 110. To prevent this, the connecting channel section 123c may be provided with several, for example, three spaced constricting members 126a, 126b, and 126c, of which one is disposed at the bottom wall of the channel section 123c and projects upwardly and, while two are disposed along the top wall and extending downwardly spaced along the arc of section 123c at a distance from the member 126a slightly less than 90°. These constricting members 126a, 126b, and 126c, which may be in the form of molded-in plastic projections, in effect form constrictions within the channel 132. Of course, the number and location of these projections may be varied at will as known to a person skilled in the art.

In the alternative, as shown in FIGURE 5a, the downwardly extending channel section 123a may be connected with the upwardly extending channel sections 123b by two sections 123d and 123e which extend upwardly toward each other to form approximately a cone and become narrower in cross section as they approach one another. The effect of such an arrangement is the same as section 123c with obstructions 126a, 126b, and 126c, but obviates the need of the projections. It is, of course, understood that FIGURES 5 and 5a may also be combined in any suitable manner.

An external casing generally designated by reference numeral 130 (FIGURES 8-10), which may be either closed or open at the bottom fits over the sleeve member 120. The external casing member 130 is substantially semi-circular in the lower portion thereof, is provided with a substantially rectangular aperture 131 in the middle region thereof, and is provided with a web portion 132 along the upper portion thereof connected with the circular base configuration by side portions 133 and 134. An internal bulge portion or bead 135 is provided near the upper end of the external sleeve-like casing member 130 opposite the web portion 132 so as to snap into engagement behind the upper end of the sleeve member 120 as shown in FIGURE 1.

A plunger-like obturator 140 (FIGURES 11-13) having a serrated handle portion 141 of substantially rectangular cross section and an obturator portion 142 is slidably received in the space between the web portion 132 of the external casing member 130 and the dove-tailed channel between projections 124 and 125 of the sleeve member 120. As can be readily seen from FIGURE 13, the lower surface 143 of obturator portion 142 is curved so as to conform to the radius of curvature of the outer surfaces of the sleeve member 120 and the outer surface 144 of obturator portion 142 has a radius of curvature substantially corresponding to the internal radius of curvature of the web portion 132. As

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a result thereof, the plunger-like closure member 140 when being manually displaced downwardly, as viewed in FIGURE 1, is operable to close off the aperture 131 provided in casing member 130 which is desirable when refilling the container of the main body 100 as atmospheric pressure is admitted to the top of the liquid column within the main body 100 once the cap 110 is removed. If so desired, the plunger 120 may be spring-loaded in any suitable manner to normally hold the same in the upper position against the stepped abutment 107, 104' as shown in FIGURE 1. This can be obtained, for instance, by a small coil spring 150 (FIGURE 1) inserted between the upper end of the sleeve member 120 and the step 145 formed between the lower surface of the handle portion 141 and the inner surface 143 of the obturator portion 142.

In operation, the cap 110 is removed, the obturator 140 is pressed downwardly and liquid is filled to the desired extent. The cap 110 is thereupon placed again into position as shown in FIGURE 1, and the plunger 140 is moved upwardly, if no spring is provided therefor. Upon depressing the surface 111 of the cap 110, liquid in metered amounts is dispensed which flows through aperture 105, section 123a, section 123c—or sections 123d and 123e—section 123b, bore 128, and aperture 131 into the sponge (not shown) which is placed over the outer sleeve-like casing 130 in similar manner as disclosed in my prior copending application. For sake of clarity, the detachable sponge mounted over the external casing 130 and of complementary shape thereto is indicated only in phantom lines in FIGURES 1 and 2 since it may be of any known construction, either integral with or preferably detachable from the casing member, and, more particularly, as disclosed in my copending application, the detachable sponge may thus include again an elastic supporting frame provided with or forming suitable guide and/or anchoring and securing means to assure proper installation of the sponge in correct position relative to discharge apertures 128, 131, as disclosed more fully in my copending application.

While I have shown and described several embodiments in accordance with the present invention, it is understood that the same is not limited thereto but is susceptible of numerous changes and modifications. For example, the length of the sections 123a and 123b need not be equal but may be different, and the connecting section 123c need not be rigidly semi-circular but may assume any other contour. The length of the sections 123a and 123b may also be varied provided they are of sufficient length to establish the seal means preventing inadvertent discharge of liquid based on principles of physics as explained in my copending application. Additionally, any suitable material may be used for the various parts which may also be changed in their actual construction as to shape and dimensions.

Thus, while I have shown and described several embodiments in accordance with the present invention, it is understood that the same is not limited thereto but is susceptible of numerous changes and modifications, and I therefore do not wish to be limited to the details shown and described herein but intend to cover all such changes and modifications as are encompassed by the scope of the appended claims.

I claim:

1. A sponge handle assembly for supporting thereon a sponge which forms a reservoir for liquid soap, detergent or the like and which is operable to selectively discharge the liquid into the sponge, comprising:

a main handle body which is hollow at least over part of its length and forms on the inside thereof a reservoir for the liquid,

said main handle body being open at one end thereof and forming on the opposite end thereof a sponge receiving portion,

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squeezable cap means closing said one end of the main handle body,

sleeve means mounted over the sponge receiving portion of said main handle body,

and means in said assembly for selectively discharging the liquid from said reservoir to the sponge including first cross bore means in the sponge receiving portion of said main handle body, second cross bore means in said sleeve means and liquid seal means connecting the first cross bore means in the sponge receiving portion with the second cross bore means in said sleeve means and operable substantially exclusively by principles of physics to prevent the discharge of the liquid through said second cross bore means in the absence of pressure on the side of the liquid facing said open end.

2. A sponge handle assembly for supporting thereon a sponge which forms a reservoir for liquid soap, detergent or the like and which is operable to selectively discharge the liquid into the sponge, comprising:

a main handle body which is hollow at least over part of its length and forms on the inside thereof a reservoir for the liquid,

said main handle body being open at one end thereof and forming on the opposite end thereof a sponge receiving portion,

squeezable cap means closing said one end of the main handle body,

sleeve means mounted over the sponge receiving portion of said main handle body,

and means in said assembly for selectively discharging the liquid from said reservoir to the sponge including first cross bore means in the sponge receiving portion of said main handle body, second cross bore means in said sleeve means and liquid seal means connecting the first cross bore means in the sponge receiving portion with the second cross bore means in said sleeve means and operable substantially exclusively by principles of physics to prevent the discharge of the liquid through said second cross bore means in the absence of pressure on the side of the liquid facing said open end,

said liquid seal means being constituted by substantially oppositely directed channel sections formed by complementary surface portions of the internal wall surfaces of said sleeve means and the external wall surfaces of said handle portion,

said channel sections being connected with each other at one end thereof and being in communication with a respective cross bore means at the other end thereof.

3. A sponge handle assembly for supporting thereon a sponge which forms a reservoir for liquid soap, detergent or the like and which is operable to selectively discharge the liquid into the sponge, comprising:

a main handle body which is hollow at least over part of its length and forms on the inside thereof a reservoir for the liquid,

said main handle body being open at one end thereof and forming on the opposite end thereof a sponge receiving portion,

squeezable cover means closing said one end of the main handle body, said cover means being adapted to be opened for filling said reservoir from the open end thereof,

means in said assembly for selectively discharging the liquid from said reservoir to the sponge including liquid seal means operable substantially exclusively by principles of physics to prevent the discharge of the liquid,

and closure means including a slidable closure member for selectively closing discharge of said liquid seal means when filling the reservoir by opening said cover means.

4. A sponge handle assembly for supporting thereon a sponge which forms a reservoir for liquid soap, detergent

or the like and which is operable to selectively discharge the liquid into the sponge, comprising:

a main handle body which is hollow at least over part of its length and forms on the inside thereof a reservoir for the liquid,

said main handle body being open at one end thereof and forming on the opposite end thereof a sponge receiving portion,

squeezable cover means closing said one end of the main handle body, said cover means being adapted to be opened for filling said reservoir from the open end thereof,

means in said assembly for selectively discharging the liquid from said reservoir to the sponge including liquid seal means operable substantially exclusively by principles of physics to prevent the discharge of the liquid,

said liquid seal means being constituted by substantially oppositely directed channel sections,

said channel sections being connected with each other at one end thereof and being in communication with a respective cross bore means at the other end thereof,

and closure means including a slidable closure member for selectively closing discharge of said liquid seal means when filling the reservoir by opening said cover means.

5. A sponge handle assembly for supporting thereon a sponge which forms a reservoir for liquid soap, detergent or the like and which is operable to selectively discharge the liquid into the sponge, comprising:

a main handle body which is hollow at least over part of its length and forms on the inside thereof a reservoir for the liquid,

said main handle body being open at one end thereof and forming on the opposite end thereof a sponge receiving portion,

squeezable cover means closing said one end of the main handle body, said cover means being adapted to be opened for filling said reservoir from the open end thereof,

sleeve means mounted over the sponge receiving portion of said main handle body,

means in said assembly for selectively discharging the liquid from said reservoir to the sponge including first cross bore means in the sponge receiving portion of said main handle body, second cross bore means in said sleeve means and liquid seal means connecting the first cross bore means in the sponge receiving portion with the second cross bore means in said sleeve means and operable substantially exclusively by principles of physics to prevent the discharge of the liquid through said second cross bore means in the absence of pressure on the side of the liquid facing said open end by application of pressure on said cap means,

said liquid seal means being constituted by substantially oppositely directed channel sections formed by complementary surface portions of the internal wall surfaces of said sleeve means and the external wall surfaces of said handle portion,

said channel sections being connected with each other at one end thereof and being in communication with a respective cross bore means at the other end thereof,

and closure means including a slidable closure member for selectively closing discharge of said liquid seal means when filling the reservoir by opening said cover means.

6. A sponge handle assembly for supporting thereon a sponge which forms a reservoir for liquid soap, detergent or the like and which is operable to selectively discharge the liquid into the sponge, comprising:

a main handle body which is hollow at least over part

of its length and forms on the inside thereof a reservoir for the liquid,

said main handle body being open at one end thereof and forming on the opposite end thereof a sponge receiving portion,

squeezable cover means closing said one end of the main handle body, said cover means being adapted to be opened for filling said reservoir from the open end thereof,

sleeve means mounted over the sponge receiving portion of said main handle body,

means in said assembly for selectively discharging the liquid from said reservoir to the sponge including first cross bore means in the sponge receiving portion of said main handle body, second cross bore means in said sleeve means and liquid seal means connecting the first cross bore means in the sponge receiving portion with the second cross bore means in said sleeve means and operable substantially exclusively by principles of physics to prevent the discharge of the liquid through said second cross bore means in the absence of pressure on the side of the liquid facing said open end by application of pressure on said cap means,

said liquid seal means being constituted by substantially oppositely directed channel sections formed by complementary surface portions of the internal wall surfaces of said sleeve means and the external wall surfaces of said handle portion,

said channel sections being connected with each other at one end thereof and being in communication with a respective cross bore means at the other end thereof,

casing means mounted over said sleeve means including a web portion of larger diameter than the outer surface of said sleeve means and provided with aperture means aligned with the second cross bore means,

and closure means including a slidable closure member slidable within the guide means effectively formed by the space between the web portion of said casing means and adjacent external surface portions of said sleeve means for selectively closing discharge of said liquid seal means formed by the second cross bore means when filling the reservoir by opening said cover means.

7. A sponge handle assembly for supporting thereon a sponge which forms a reservoir for liquid soap, detergent or the like and which is operable to selectively discharge the liquid into the sponge, comprising:

a main handle body which is hollow at least over part of its length and forms on the inside thereof a reservoir for the liquid,

said main body being made of relatively non-elastic material,

said main handle body being open at one end thereof and forming on the opposite end thereof a sponge receiving portion,

squeezable cap means closing said one end of the main handle body and made of relatively elastic material, sleeve means mounted over the sponge receiving portion of said main handle body,

and means in said assembly for selectively discharging the liquid from said reservoir to the sponge including first cross bore means in the sponge receiving portion of said main handle body, second cross bore means in said sleeve means and liquid seal means connecting the first cross bore means in the sponge receiving portion with the second cross bore means in said sleeve means and operable substantially exclusively by principles of physics to prevent the discharge of the liquid through said second cross bore means in the absence of pressure on the side of the liquid facing said open end by application of pressure on said cap means.

8. A sponge handle assembly for supporting thereon a

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ing to said sponge, and liquid seal means connecting
 the first bore means with the second bore means and
 operable substantially exclusively by principles of
 physics to prevent the discharge of the liquid through
 said second bore means in the absence of pressure 5
 on the side of the liquid facing said open end,
 said liquid seal means being constituted by substantially
 oppositely directed channel sections formed by com-
 plementary surface portions of two separate parts
 forming said sponge receiving portion, said parts be- 10
 ing mounted one over the other,
 said channel sections being connected with each other

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at one end thereof by a connecting channel section
 provided with means forming slight constrictions and
 being in communication with a respective bore means
 at the other end thereof, and closure means for se-
 lectively closing the second bore means when filling
 the reservoir upon opening said squeezable means.

References Cited by the Examiner

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CHARLES A. WILLMUTH, *Primary Examiner*.