

[54] **HYGENIC DOUCHE SYSTEM**

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[52] U.S. Cl. **128/225**

[51] Int. Cl. **A61m 3/00**

[58] Field of Search **128/224, 225**

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[57] **ABSTRACT**

A hygienic douche apparatus wherein a nozzle adapted for insertion into a vaginal passage and a cooperating fluid holding container are provided. The container includes a separate compartment therein to hold a compound which is soluble in a fluid such as water and, when dissolved, form a hygienic douching fluid. The compound includes an ingredient which reacts with water to evolve a gas to pressurize the container and dispel the hygienic douching fluid through the nozzle. The compartment includes means operable from outside the container to initiate contact between the liquid and the compound. The apparatus is also adaptable to be used with an enema-type nozzle to provide a convenient readily dispensible enema.

8 Claims, 7 Drawing Figures

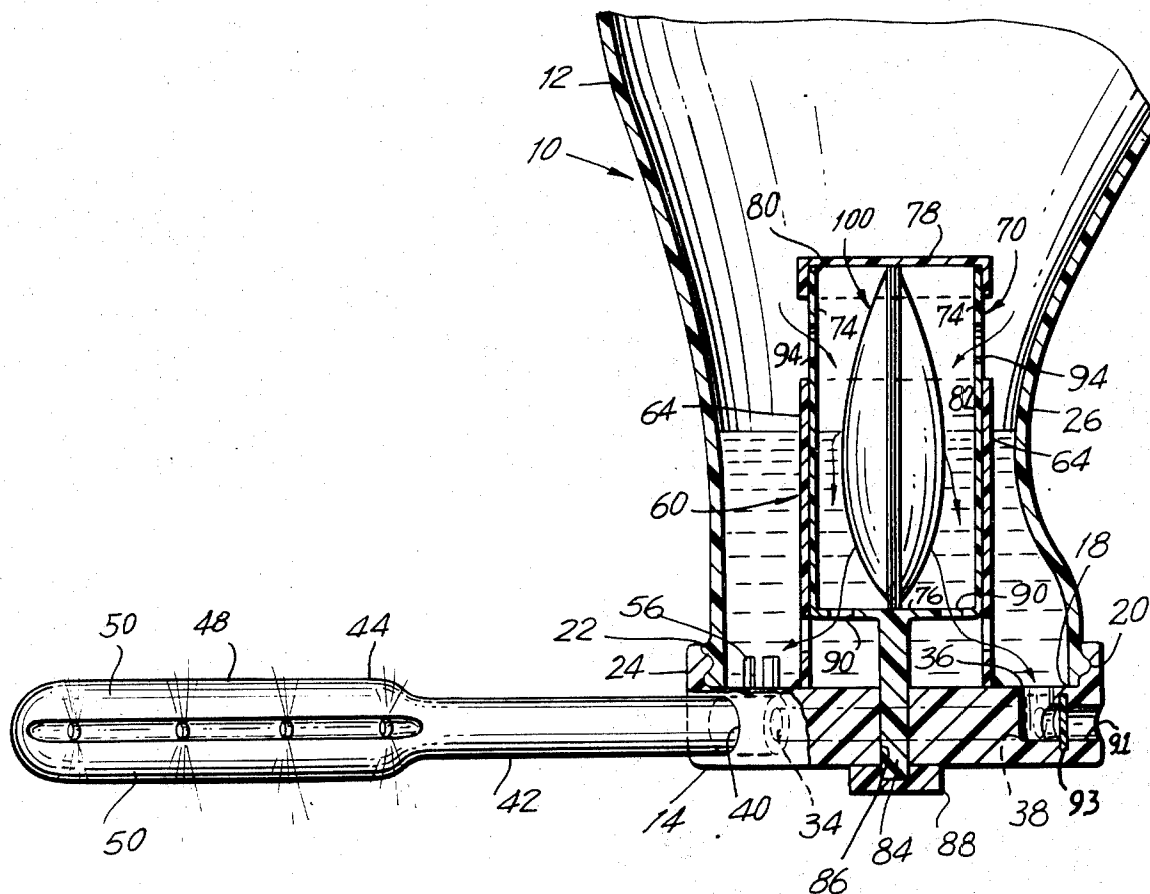


FIG. 2

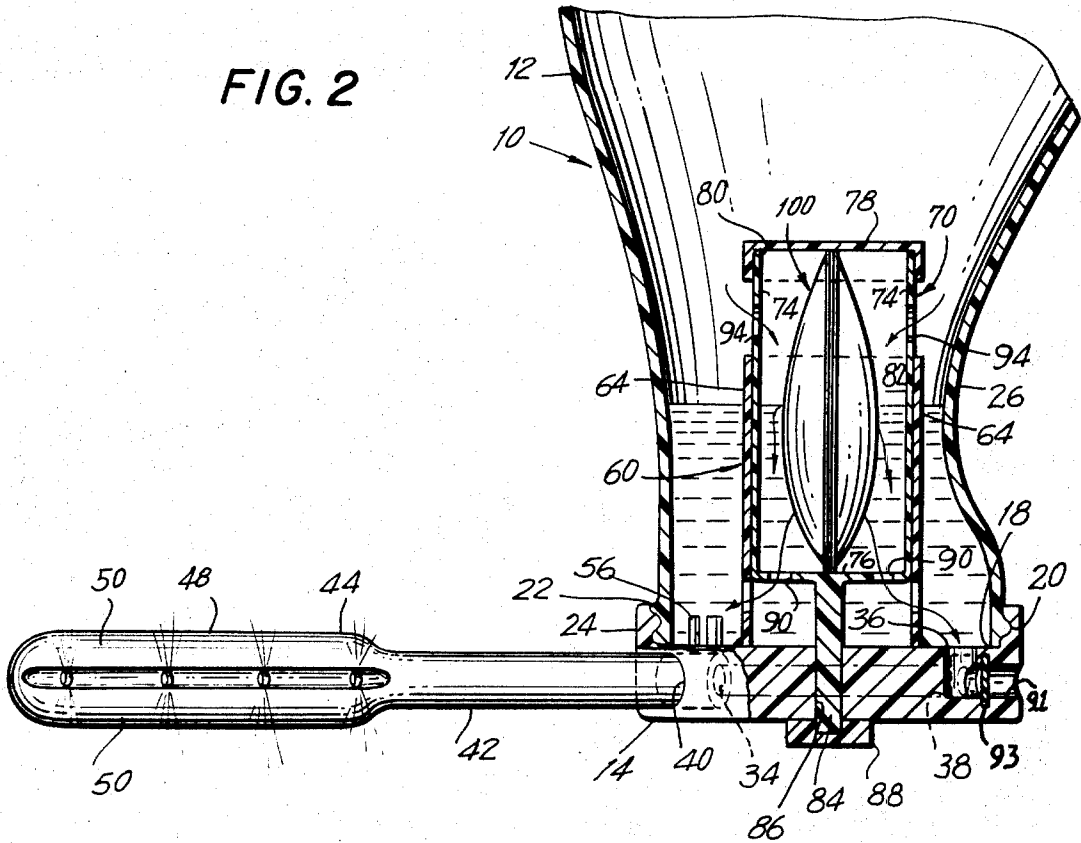


FIG. 5

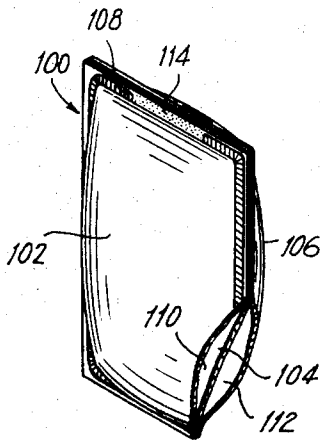


FIG. 6

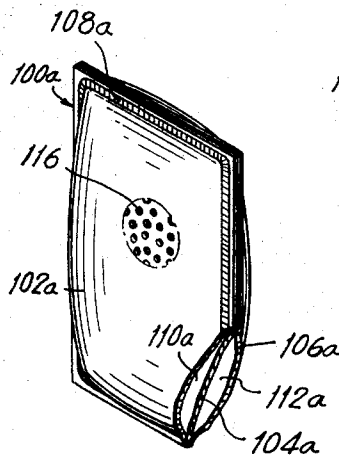
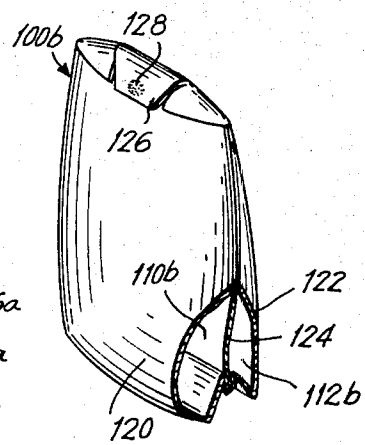


FIG. 7



HYGENIC DOUCHE SYSTEM

This application is a continuation-in-part of copending application Ser. No. 197,848, filed Nov. 11, 1971.

The present invention relates to hygienic douche systems and more in particular to an improved hygienic douche wherein the douching fluid is ejected from a nozzle at a controlled pressure which is generated within the system itself.

It has been found that the ideal pressure from the douche nozzle for most effective and safe cleansing action during douching should be maintained below about 2 p.s.i. and most preferably about 1 to 1.5 p.s.i. Pressures in excess of this may cause harmful bacteria which may be present in the vaginal area to be flushed into the uterus and may increase the chance of infection. Too much pressure may also cause physical damage as well. Consequently, it is recommended, when using the most popular type of douche apparatus, i.e., a bag to hold a douche solution with a tube leading from the bag to a nozzle, that the bag be held at shoulder height, approximately 23-24 inches from the nozzle. This results in a pressure head of about 1 p.s.i. However, it has been found, that due to the inconvenience of holding the bag at shoulder height when using a device such as this, most users hang the bag from the most convenient place available, which for a bathroom would be a shower rod, and thus develop a pressure head at the nozzle in excess of 2 p.s.i.

Other types of douche apparatus utilize a collapsible bag which is manually compressed by the user to create sufficient pressure on the douche solution in the bag to eject the solution through the nozzle. With this type of apparatus, the same difficulty is also encountered in that there is no control of the precise pressure which is developed and typically more than the desired 1 to 1.5 p.s.i. is developed by the user.

Similar problems are inherent in devices presently used to administer enemas in that enema administering devices also fail to provide any effective and safe method of controlling the pressure at which the enema solution leaves the enema nozzle.

In other types of douche apparatus, a pressurized container is utilized to eject the douche solution through a valve system leading to the ejection nozzle. While such devices are less cumbersome to use, no provision is made to control the pressure to a safe level and the valving systems are needlessly complex and expensive to manufacture.

Accordingly, it is an object of the present invention to provide a convenient, safe and effective apparatus which is adaptable to administer both douches and enemas.

It is another object of the present invention to provide an apparatus to administer douches and enemas in which the release pressure of the douche or enema solution is carefully maintained at a safe and effective level.

It is a further object of the present invention to provide an apparatus to administer douches and enemas which is of simple and sturdy construction and of a convenient size for storage and ready use.

It is a still further object of the present invention to provide an apparatus to administer douches and enemas which is exceedingly simple to use and which does not entail complicated or difficult procedures.

These and other objects and advantages will be more readily apparent after consideration of the following specification and drawings:

FIG. 1 is an elevational view partly in section showing the apparatus of the present invention in a storage position;

FIG. 2 is a fragmentary elevational view partly in section showing the nozzle in position and the apparatus in use;

FIG. 3 is a sectional view taken along line 3-3 of FIG. 1;

FIG. 4 is a sectional view taken along line 4-4 of FIG. 1; and

FIGS. 5-7 are perspective views of various embodiments of the powder envelopes which may be utilized in the present invention.

With reference now to the drawings and particularly FIG. 1, there is shown the douche apparatus 10 of the present invention in a storage position including an open top vessel or container 12, preferably of a molded plastic material, closed by a removable cap member 14. The container 12 includes a neck portion 16 which is open as at 18 and which is provided with an external screw thread form 20 adapted to cooperate with an internal screw thread form 22 in the lower portion 24 of cap member 14.

The container 12 may be of any desired exterior shape for convenient storage and preferably includes a necked down portion 26 for easy grasping by the user. For the preferred embodiment of a douching or enema apparatus shown herein, dispenser container 12 may have an internal fluid capacity of approximately one quart although it is to be understood that any fluid capacity may also be provided if desired.

The cap member, see FIGS. 2 and 4 as well, is also preferably of a molded plastic material and includes a top wall 28 which is integral with the depending lower portion 24 of cap member 14. The depending portion 24 is provided with an internal screw form 22, as noted above, to cooperate with the threaded portion of the neck of container 12. Thus, when the cap 14 is threadably engaged on container 12, the lower surface 30 of top wall 28 abuts against the upper edge 32 of container 12 to seal the open top of the container and form a fluid type barrier to retain liquid within container 12.

A fluid passage 34 is provided through the cap member 14 and is defined by an axially oriented cylindrical bore segment 36 which intersects with a laterally oriented cylindrical bore segment 38 communicating with a fluid exit port 40 in portion 24 of cap 14. Thus, fluid communication is provided between the exterior of the cap 14 and the interior of container 12.

In use, see FIG. 2, the shank portion 42 of a douche nozzle 44 fits tightly within and is snugly retained in exit port 40 so that a continuous fluid passage is provided from the interior of container 12 through the fluid outlet port 40 and through the nozzle 44. Nozzle 44 is of standard construction and includes a central longitudinal fluid passage 46 extending through the shank and into a bulbar portion 48 which includes longitudinal rib members 50 with a plurality of outlet apertures 52 provided in the bulbar portion 48 between the raised rib members 50.

Provision to store the nozzle within the container when the apparatus is not in use is also provided and includes a plurality of arcuate extending segments 56 (see FIG. 3) which depend from lower surface 30 on

cap member 14 and which are spaced and oriented to fit snugly within the fluid passage 46 in the shank 42 of nozzle 44. Thus, a friction fit is maintained between the depending segments 56 and the nozzle to snugly retain the nozzle in a storage position disposed within container 12 when the cap member 14 is engaged thereon.

To use the douche apparatus, cap 14 is removed from the container 12, nozzle 44 is withdrawn from its engagement on the underside of cap 14 and inserted within outlet port 40 so that a continuous fluid passage is provided from the interior of container 12 to the fluid outlet apertures 52 in the bulbar portion of the nozzle. The shank 42 of the nozzle is adapted to fit snugly within outlet port 40 and to be tightly retained therein to preclude leakage of fluid when the apparatus is in use.

After cap 14 is removed from container 12, the container is filled with a suitable liquid, such as water, and cap 14 is reassembled so that the water within container 12 can react with a suitable compound which, when dissolved in water, provides an aqueous physiologically inert douche or enema solution. The compound also includes an effervescent ingredient to react with the water and generate a gas to pressurize the container to drive the fluid through the fluid passage within cap 14 and then through the nozzle 44 and out the fluid outlet apertures 52 therein.

Accordingly, a compound receiving chamber is provided which is initially sealed against the fluid within the container 12 but which can be selectively opened to allow the water within the container to react with the compound.

Thus, cap 14 is provided with an integral housing 60 depending from the underside 30 of wall member 28 of cap member 14. Housing 60 may be of any cross-sectional configuration but for the embodiment shown herein is preferably rectangular in cross-section and includes opposed depending lateral side walls 62 joined to opposed depending longitudinal side walls 64. Walls 62 and 64 along with surface 30 of cap 14 define an enclosure 66 which is open at one end as at 68.

Slidably disposed within enclosure 66 is a housing 70 comprising opposed lateral side walls 72 interconnected by opposed longitudinal side walls 74 and including an end wall 76 integral with each of the pair of side walls 72 and 74. The outer periphery of housing 70 is dimensioned to fit snugly within housing 60, for example with a friction sliding fit, so that housing 70 may be readily moved with respect to housing 60. The side walls 72 and 74 are longer than side walls 62 and 64 of housing 60 and thus extend beyond the open end 68 of housing 60 and a removable end cap member 78 is provided to snugly telescope over the open end 80 of housing 70. Thus, the side walls 72 and 74 and end wall 76 define a chamber 82 which is closed by end cap 78 to accommodate the douche compound, as will be explained more fully hereinbelow.

A rod-like member 84 is formed integral with and extends from end wall 76 of housing 70 and is slidably disposed within a through bore 86 in end wall 28 of cap member 14 and is provided with a contact button 88 on its free end. Pressure on the contact button 88 is transmitted through the rod-like member 84 to housing 70 to slide housing 70 relative to outer housing 60 from the position shown in FIG. 1 to the position shown in FIG. 2.

End wall 76 of housing 70 is provided with a plurality of fluid access ports 90 and fluid access ports 92 are also provided within the side walls 62 and 64 of housing 60. In addition fluid access ports 94 are provided in the side walls 72 and 74 of housing 70. The access ports 92 and 94 are oriented so that when the housings 60 and 70 are oriented in the position shown in FIG. 1 the lower portion of the side walls 72 and 74 are closed to fluid communication from within the container 12 by side walls 72 and 74 of the housing 70 and access ports 94 are closed to fluid communication by the side walls 62 and 64 of housing 60. In like manner, access ports 90 are closed to fluid communication because of the juxtaposition of the end wall 76 against the end wall 28 of cap member 14.

When button 88 is depressed to move housing 70 to the position shown in FIG. 2, end wall 76 is moved past the access ports 92 and access ports 94 are moved past the termination 68 of the side walls 62 and 64. Thus, fluid communication is afforded from the interior of container 12 to the interior of chamber 82 with the flow of fluid being through access ports 92 and 90 at one end of chamber 82 and through the now exposed access ports 94 at the other end of the chamber 82.

Preferably, provision is made to abort the flow of douche solution once the reaction is started if it is found desirable for any reason to discontinue ejection of the solution through nozzle 44. Thus, an abort valve assembly 89 is provided within cap member 14 to divert the flow of fluid from fluid passage 34. Abort valve assembly 89 includes an access passage 91 affording fluid communication between passage 36 and the exterior of the cap. A manually operated slide member 93 having an aperture 95 therein is slidably disposed within a channel 97 within cap member 14 and is movable from a first position where the solid portion 99 of slide 93 effectively seals passage 91 to a second position where the aperture 95 is in register with passage 91 to afford fluid communication between the interior of container 12 and the exterior through passage 91.

Because passage 91 when it is open to fluid communication provides a shorter unrestricted flow path for fluid dispelled from container 12, fluid will have a tendency to flow out passage 91 rather than out passage 38 and nozzle 44. Hence, once the reaction is initiated and slide 93 actuated from its blocking position to its fluid passage position, fluid will be diverted from its normal path through nozzle 44 to the abort valve passageway 91.

According to the present invention, the ingredients which when dissolved in a liquid such as water to form an aqueous solution are packaged in an envelope and are premeasured to react with a predetermined quantity of water, for example one quart of water. Included in the ingredients within the envelope is an ingredient to provide a cleansing action for douching and, also, an ingredient to provide an effervescent effect to build up the internal pressure within container 12 to completely eject the volume of liquid in the container through the nozzle 44. Necessarily, this ingredient releases a physiologically inert gas when reacted with water and the effervescent effect should preferably be sufficient to completely dispense the volume of water stored in container 12 and maintain between 1 to 1.5 p.s.i. pressure.

While it is to be understood that many ingredients may be selected to provide the cleansing function for douching, it has been found that granulated sodium bi-

carbonate is particularly effective as a light douce solution and anhydrous citric acid when dissolved in water in the presence of sodium bicarbonate has been found to be particularly effective to provide the effervescent effect. For the illustration of the present invention described herein, where the volume of water within container 12 is approximately one quart, it has been found that the combination of ingredients made up in the ratio of about 5.88 grams of sodium bicarbonate to 7.35 grams of citric acid provides a desirable and effective douche solution which releases gas when reacted in water to fully dispense one quart of water at the desired pressure and have sufficient gas pressurization to provide a gas "blow by" after all the fluid has been ejected from the container.

It has also been found that to avoid problems associated with compacting the two ingredients into a single tablet or capsule and also to prolong the shelf life of the compounds to avoid the propensity of the sodium bicarbonate to absorb moisture from the citric acid, it is best to segregate the sodium bicarbonate from the citric acid. Accordingly, the envelope package containing the ingredients is provided with means to segregate one compound from the other.

Also, in order to maximize the speed of the reaction and completely dissolve the sodium bicarbonate and the citric acid means must be provided to ensure rapid and complete contact of the ingredients by the water within container 12.

With reference to FIG. 5, wherein there is shown one embodiment of the packaged envelope for the ingredients of the present invention, it is seen that the envelope 100 comprises three panels 102, 104 and 106 of a paper membrane, for example tea bag paper such as 9% Berkshire heat-sealed paper, grade 1069 made by Kimberly-Clark, or the like, which are heat sealed around a substantial portion of the perimeter, as at 108, to form a pouch having two compartments 110 and 112. One of the ingredients, such as sodium bicarbonate, is placed in one pouch 110 and the other ingredient, such as citric acid, is placed in the other pouch 112 and the open side 114 of the envelope is then closed, for example with a water soluble cement, to form the completed partitioned envelope which may be suitably packaged with a number of prepared envelopes for use.

An important factor in controlling the speed of the reaction and the maximum pressure attainable to dispel the liquid is to control the rate of contact between the ingredients and the water when chamber 82 is open to liquid communication. In the embodiment described hereinabove such control is accomplished by limiting the size of opening in side 114 of envelope 100. Thus, the size of the opening is selected to allow for a controlled reaction rate between the ingredients and the water so as to avoid immediate total contact between the ingredients and the water yet provide sufficient contact to sustain a controlled rate of reaction.

An additional factor to be considered is that the preferred membrane for envelope 100, i.e. tea bag paper, has the property of being initially water porous but once wet the paper resists water flow therethrough. Hence, upon contact of envelope 100 by the water there is an initial flow of water through the membrane to initiate the reaction but after the membrane is completely wetted substantially all contact between the ingredients within envelope 100 and the water occurs through the open side 114 of the envelope after the

water soluble bond has dissolved to permit the envelope to open.

As noted above to use the apparatus of the present invention, cap 14 is removed from container 12 and the container filled with water. The nozzle 44 is inserted within the outlet port 40, the housings 60 and 70 are positioned as shown in FIG. 1 to preclude fluid flow to the interior chamber 82, end cap 78 is removed from its telescoped position over housing 70, an envelope 100 with the ingredients in separate compartments 110 and 112 is placed in chamber 82 and end cap 78 placed thereover to ensure a fluid tight seal. Screw cap 14 is then engaged over container 12 and the apparatus is ready for use. No reaction occurs until actuating button 88 is depressed to move the interior housing from the position shown in FIG. 1 to the position shown in FIG. 2 to allow water from within container 12 to enter chamber 82.

The water upon contacting the ingredients within envelope 100 through the porous membrane begins to react to evolve carbon dioxide. Water contacting envelope 100 also dissolves the cement bond along side 114 of the envelope and the gas pressure building up within the envelope opens the mouth of the envelope to allow more intimate and full contact with the water which is now completely flooding chamber 82 to ensure complete dissolving of both the sodium bicarbonate and the citric acid to maximize the efficiency of the reaction and ensure that the liquid within container 12 is completely dispensed.

With reference now to FIG. 6, an alternate construction for the envelope 100a is shown. Construction of the envelope 100a is similar to the envelope 100 shown in FIG. 5 in that three porous membrane panels 102a, 104a and 106a are joined to form separate compartments 110a and 112a and after the compound is placed in the respective compartments the three panels are joined by a heat seal 108a around their periphery. In order to ensure sufficient intimate contact between the powdered ingredients and the water the membranes 102a and 106a are perforated with a plurality of small perforations 116. The perforations 116 are sufficiently small so that the powdered ingredients within the envelope 100a are contained within the envelope but are sufficiently large to ensure adequate water penetration to the interior of the envelope to completely react with the ingredients and to allow flow of liquid through the membrane.

With reference now to FIG. 7 an alternate embodiment is shown wherein the envelope 100b comprises separate pouches 120 and 122 to provide compartments 110b and 112b for the ingredients. Pouches 100 and 122 may be joined along a common panel, as at 124, and one of the separate pouches 122 is provided with an extending flap member 126 which is folded over the adjacent pouch 120 and bonded thereto by a small dab of water soluble cement 128. Thus, when the envelope 100b comes in contact with water, the initial contact of the water with the ingredients in pouches 110b and 112b releases sufficient gas to open the flap 126 after the dab of water soluble cement 128 has been dissolved. With flap 126 forced open by the escaping gas, intimate contact of the liquid with the powdered ingredients within the envelope 100b is assured.

The present invention provides an apparatus to administer a hygienic douche or enema in a manner which is safe and simple and wherein the pressurization

of the douche or enema solution can be controlled below a predetermined maximum level without requiring any attention or control of the user. In addition, the apparatus is convenient to use in that the apparatus may be prepared for use by enclosing a package of ingredients in a sealed chamber and no reaction occurs until the user activates the apparatus.

Once activated the reaction proceeds rapidly and the full contents of the liquid container are dispelled without requiring any complicated valving or control by the user.

While a preferred embodiment has been described herein in which an ingredient such as sodium bicarbonate to perform the cleansing function is included as part of the ingredients to be utilized in chamber 82 it is expressly understood that the cleansing ingredient could be omitted from the ingredients utilized in chamber 82 and a liquid solution of sodium bicarbonate or any other suitable physiologically inert solution may be added as a solution to container 12. In that event only one ingredient such as citric acid need be provided in chamber 82 to pressurize the container once contacted by the water to dispel the solution.

Additionally, as noted above, the rate of the reaction to dispel the liquid contents completely from container 12 and the maximum pressurization attainable are dependent upon several factors. A primary factor is the rate at which the liquid contacts and dissolves the powdered ingredients. This can be controlled by use of a membrane envelope which allows for a controlled rate of contact between the liquid and the powdered ingredients as described above or, alternatively, could be controlled by limiting the liquid flow path into chamber 82.

In this alternative method the size and number of the fluid access ports into chamber 82 are limited so that water floods chamber 82 to react with the ingredients at a controlled rate. Since the rate of liquid flow into chamber 82 is limited the ingredients need not be in an envelope but may be placed within chamber 82 in loose form, for example by emptying a premeasured packet of ingredients into the chamber. Thus, the ingredients may be packaged in a moisture resistant package and emptied into chamber 82 prior to use.

What is claimed is:

1. A hygienic douche apparatus comprising:

a container open at one end adapted to hold a quantity of liquid,

a closure member for sealing said open end of said container,

means defining a chamber within said container when said closure member is in sealing relationship on said container comprising a housing integral with said closure member open at one end,

said chamber adapted to hold a predetermined quantity of a compound capable of generating gas pressure to dispel completely the said quantity of liquid from said container when said compound is contacted by said liquid,

means cooperable with said chamber for sealing said chamber to preclude liquid contacting said compound in said chamber comprising a second housing telescoped within and fitting closely against said first named housing,

said second housing defining said chamber to hold said compound,

said second housing being movable from a first position to effectively seal said housing to preclude fluid communication between the interior and exterior of said chamber to a second position to allow fluid communication between the interior and exterior of said chamber,

means operable from the exterior of said chamber to move said second housing from said first position to said second position to cause liquid within said container to contact said compound and generate sufficient gas pressure within said container to dispel the said quantity of liquid from said container, and

means affording fluid communication between the interior of said container and the exterior for the passage of said quantity of liquid from said container after said compound is contacted by said liquid.

2. A hygienic douche apparatus as defined in claim

1 wherein said closure member includes a wall member adapted to seal said open end of said container, said wall member including said means affording fluid communication between the interior of said container and the exterior.

3. A hygienic douche apparatus as defined in claim

1 wherein said second housing includes an end wall which is juxtaposed against said closure member in said first position and spaced from said closure member in said second position, said first housing including at least one fluid access port in said first housing spaced from said closure member and at least one fluid access port in said end wall of said second housing, each said access ports oriented such that when said second housing is positioned in said first position said access ports are effectively sealed against fluid communication and when said housing is in said second position said end wall is positioned past said access port in said first housing to afford fluid communication from the interior of said chamber to the exterior through the access port in said end wall and said first housing.

4. A hygienic douche apparatus as defined in claim 3 wherein said first and second housings each comprise side wall members said first housing being open at one end and the side wall members of said second housing extending beyond the side wall members of said first housing, said second housing including at least one fluid access opening in said second housing side wall member oriented so that when said second housing is in said first position said access opening is effectively sealed by the side wall member of said first housing and when said second housing is in said second position said access opening affords fluid communication between the interior and exterior of said chamber.

5. A hygienic douche apparatus as defined in claim

4 wherein said second housing is open at the end opposite said end wall and said second housing is provided with a removable end cap member to afford access to said chamber when said end cap is removed to place said compound therein and to effectively seal said second housing open end against fluid communication between the interior and exterior of said chamber when said end cap is placed thereon.

6. A hygienic douche apparatus as defined in claim

1 including means separate from said first named means affording fluid communication between the interior and exterior of said container to selectively afford fluid communication between the interior and exterior

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of said chamber to bypass said first named fluid communication means after said compound is contacted by said liquid to divert the flow of liquid from said container from said first named communication means to said second named communication means.

7. A hygienic douche apparatus as defined in claim 1 wherein said compound comprises a first ingredient soluble in water to form a physiological inert cleansing solution and a second ingredient soluble in water which generates a gas as it dissolves in a liquid in the presence

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of said first ingredient and wherein said first and second ingredients are packaged in predetermined quantities in a liquid-porous envelope and said envelope is sealed within said chamber to preclude contact of said envelope by said liquid prior to activation of said apparatus.

8. A hygienic douche apparatus as defined in claim 7 wherein said envelope is provided with means to segregate said first ingredient from said second ingredient to preclude intermixing of said ingredients.

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