Feb. 26, 1963 L. H. KNIBB 3,078,471

LIQUID DISPENSING APPARATUS

Filed Feb. 2, 1962

FIG. 1

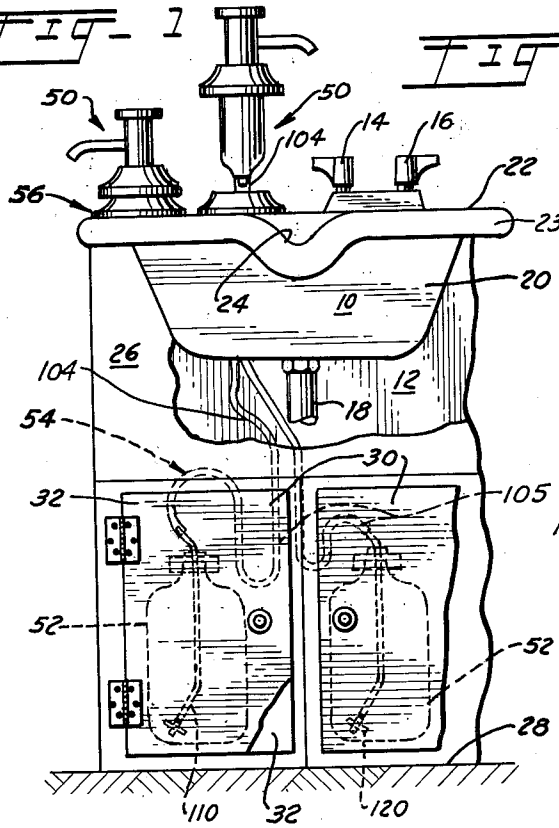


FIG. 2

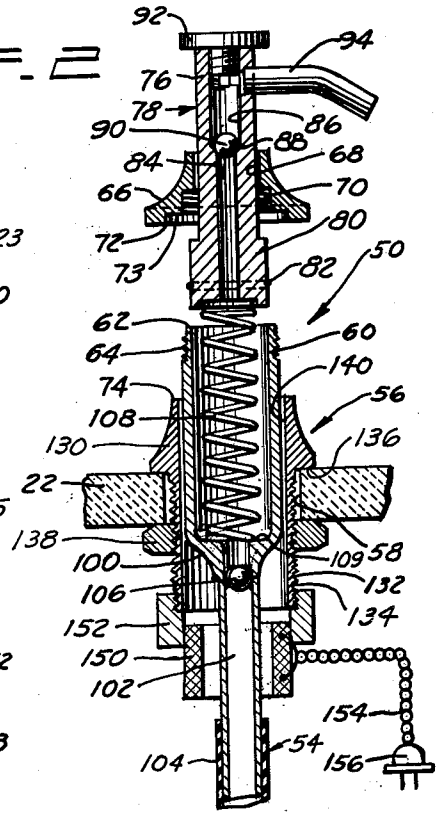


FIG. 3

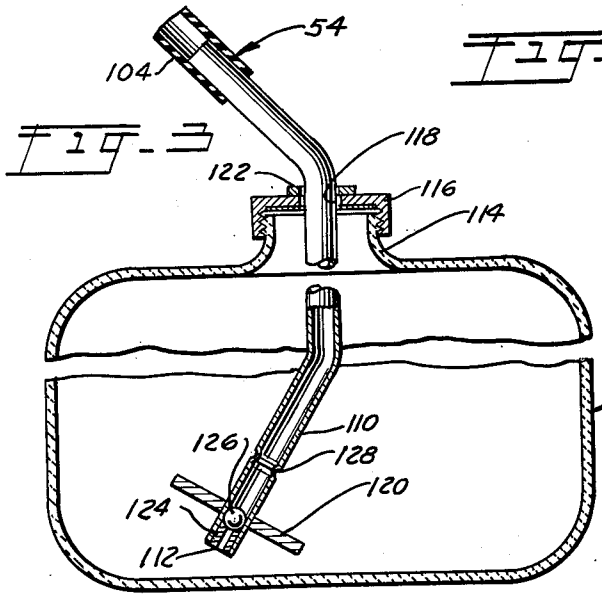
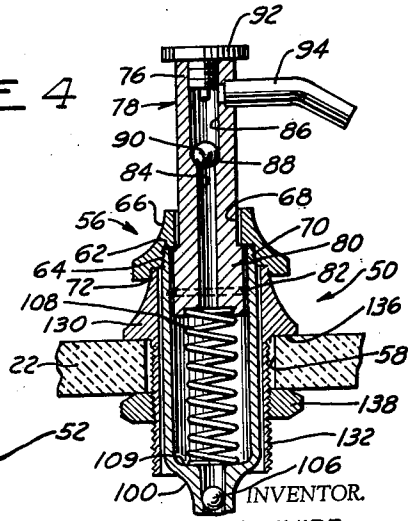


FIG. 4



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LIQUID DISPENSING APPARATUS

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The improved dispensing apparatus comprising the present invention has been designed for use primarily in connection with the dispensing of liquid shampoo preparations directly onto the head or hair of the person undergoing shampoo treatment. The invention is, however, capable of other uses and dispensing apparatus constructed in accordance with the principles of the present invention may be employed, with or without modification as required, for dispensing other liquids as liquid soap, hand or facial creams, liquid deodorants and a wide variety of similar cosmetic preparations of a liquid or semi-liquid nature. Irrespective, however, of the particular use to which the present invention may be put, the essential features thereof are at all times preserved.

The invention will be found particularly useful in connection with lavatory bowls such as are utilized in barber shops, beauty parlors and other places where the hair and scalp are the subject of treatment, and over which bowls shampooing operations take place. Accordingly, the invention has been disclosed herein as being applied to such a lavatory bowl.

Heretofore, in connection with the lavatory bowls of professional establishments of the heretofore mentioned type, such bowls are invariably provided with hot and cold water taps for hair wetting and rinsing purposes and usually the preparations which are to be applied to the hair of a customer are kept on a remote shelf in individual bottles having shaker tops so that it is necessary to transport them to the scene of operations. After the required quantity of the preparation has been applied to the hair of the customer, the bottle is temporarily placed on the ledge region of the lavatory bowl while the actual shampoo massage is performed, the bottle thus being available for repeated applications of its contents if desired. Ordinarily the bottle is not restored to its position on the shelf until the final rinse and the preliminary drying operation with a towel has been completed. Inasmuch as liquid shampoo preparations are invariably of a saponaceous nature, they are slippery to the touch and bottles thus temporarily positioned on the ledge region of a lavatory bowl frequently are dropped during handling or are knocked over inadvertently during normal shampooing operations with the resultant danger of bottle fracture and loss of the contents. To obviate this difficulty, some establishments employ lavatory bowls having built-in shampoo pumps, these consisting of conventional faucet type lift or suction pumps or, in some instances, force pumps, by means of which the shampoo liquid, which is stored in quantity in a container beneath the lavatory bowl, is raised above the level of the bowl where it may be deposited in the hand of the operator for application to the hair or applied directly onto the hair. Such lift or force pumps employ depressible plungers which are permanently installed in openings in the bowl rim surface and cannot be removed therefrom during normal operation thereof so that much liquid is lost in transferring the shampoo preparation by hand from the pump faucet to the hair. Additionally, due to the permanency of the installation, the pump fittings are difficult to clean and are thus subject to accumulation of dried liquid. Finally, installations of this character draw the liquid from the lower regions of the container beneath the lavatory bowl so that, in the absence of a means for agitating the contents of the container, settled concentrations of the liquid are frequently pumped

to the bowl with a consequent loss of liquid strength for subsequent applications.

The present invention is designed to overcome the above-noted limitations that are attendant upon the construction and use of conventional shampoo dispensing systems for lavatory bowls and, toward this end, the invention contemplates the provision of a novel liquid dispensing apparatus or system which incorporates as a functional element thereof a portable pump assembly which normally seats or rests by gravity upon a specific fitting provided for it on a lavatory bowl and which thus remains accessible at all times for limited transportation from its seated position on the bowl to the head of the customer, the pump assembly being adapted for return to its normally seated position immediately after use where it may remain during the shampoo massage operation or during rinsing operations and in readiness for a subsequent use.

The provision of a portable pump assembly and seat fitting therefor as briefly outlined above being the principal object of the invention, it is a further object to provide such an assembly wherein the seat fitting is permanently installed within an opening in the rim ledge of the lavatory bowl and is itself provided with an opening therethrough for passage of a flexible riser tube whereby the pump may be operatively connected through the fitting to a source of the shampoo liquid beneath the bowl.

Another object of the invention is to provide in an apparatus of this character a pump assembly and seat fitting wherein means are provided for deflecting drippings away from the central opening in the fitting so that such drippings will not pass through the bowl and be deposited on the floor therebeneath.

A still further object of the invention is to provide a portable pump arrangement of this character and wherein the riser tube which extends from the storage bottle or other container to the pump proper is provided with agitating means for the contents of the container, such agitating means being capable of manipulation by the operator from above the lavatory bowl so that it is not necessary for the operator to stoop for the purpose of shaking the container beneath the bowl or otherwise effecting agitation of the liquid contents of the container.

Yet another object of the invention is to provide a novel means for heating the individual pumped quantities or charges of the dispensed liquid so that they may be applied to the head of the customer at an elevated temperature.

The provision of a dispensing apparatus for shampoo liquids and similar cosmetic preparations which is comprised largely of standard or commercially available materials, parts and assemblies and, therefore, may be manufactured at a relatively low cost; one which is simple in its construction and, therefore, is unlikely to get out of order; one which is rugged and durable and, therefore, will withstand rough usage; one which is capable of ease of assembly and dismantlement for purposes of inspection of parts, replacement or repair; one which may be supplied as original equipment on a lavatory bowl or applied to an existing bowl; one which is capable of being easily cleaned; one which is attractive in its appearance and pleasing in its design; and one which, otherwise, is well adapted to perform the services required of it, are further desirable features which have been borne in mind in the production and development of the present invention.

Numerous other objects and advantages of the invention, not at this time enumerated, will become more readily apparent as the following description ensues.

In the accompanying single sheet of drawings form-

ing a part of this specification, one illustrative embodiment of the invention has been shown.

In these drawings:

FIG. 1 is a fragmentary front elevational view of a portion of a typical lavatory bowl installation embodying the improved pumping and dispensing apparatus of the present invention;

FIG. 2 is an enlarged sectional view taken substantially centrally and vertically through a portable pump assembly and a seat fitting therefor, the pump assembly and fitting being constructed according to the present invention; and

FIG. 3 is an enlarged fragmentary sectional view taken substantially centrally and vertically through a container employed in connection with the present apparatus.

Referring now to the drawings in detail and in particular to FIG. 1, the dispensing apparatus of the present invention is shown as being operatively installed in connection with a lavatory bowl **10**. The latter may be one of the bowls in use in a barber shop or beauty parlor where hair shampoo operations are conducted in the course of business. It is of conventional design and is shown as being operatively mounted upon a wall structure **12** and provided with the usual hot and cold water faucet controls **14** and **16** and a drain pipe **18**. The bowl portion proper **20** is provided with the usual rim ledge **22** having a rolled edge **23**. The forward central region of this ledge is provided with a trough-like depression **24** to accommodate the neck of a user when the head is centered above the bowl portion proper for shampooing operations such as the massage or the rinsing operation.

The lavatory bowl **10** is seated in the usual manner upon the upper rim portion of a cabinet structure **26** which extends to the floor surface **28** and is provided with hinged cabinet doors **30** leading to an internal cabinet enclosure **32**.

The arrangement of parts thus far described is purely conventional and no claim is made herein to any novelty associated with the same, the novelty of the present invention residing rather in the particular liquid dispensing apparatus which is associated with the bowl **10** and the cabinet structure **26** and will now be more fully described.

Still referring to FIG. 1, the bowl and the cabinet structure are shown as having operatively installed thereon a dual dispensing arrangement or system wherein two different shampoo or other liquid hair preparations may be selectively applied to the hair of a user. This dual dispensing arrangement is composed of two individual liquid pumping systems which in no way are related to each other except for their mutual installation on the same bowl and cabinet assembly. The two systems are identical and, therefore, a description of one of them will suffice for the other. Each system involves in its general organization a pump assembly **50** (see FIG. 2), a container **52** for the liquid shampoo or other hair preparation, a conduit assembly **54** for conducting liquid from the container to the pump assembly **50**, and a seat fitting **56** for the pump assembly. The seat fitting **56** is operatively installed within an opening **58** in the rim ledge **22** of the bowl **10**; the pump assembly is adapted to seat removably upon the fitting **56**; the conduit assembly **54** is, in part, flexible and extends between the inlet side of the pump assembly and the container **52**; while the container is adapted to be removably stored within the cabinet enclosure **32**.

The pump assembly **50** is of more or less conventional design except for the novel cooperation thereof with the seat fitting **56** whereby it may, at will and conveniently, be applied to and removed from the fitting when occasion demands. It may be in the form of a conventional lift pump, or it may assume the form of a conventional force pump but in the illustrated form of the invention the assembly **50** is shown as being in the form of a lift pump

having an outer pump casing **60** (see FIG. 2) of generally cylindrical design and provided with an open upper rim **62**. The upper end region of the casing is exteriorly threaded as at **64** for threaded reception thereover of a combined closure head and seating ring **66**. The seating ring **66** is formed with a vertical bore **68** therethrough and a threaded counterbore **70** which is threadedly received over the exteriorly threaded upper end region **64** of the casing **60**. A second counterbore **72** affords a downwardly facing annular seating flange **73** which is designed for removable engagement with the upper rim **74** of the seat fitting **56** in a manner and for a purpose that will be set forth presently.

The bore **68** in the seating ring **66** is adapted slidably to receive therethrough the stem portion **76** of a pump plunger **78**, the plunger having at its lower end an enlarged head portion **80** which is reciprocable within the cylindrical pump casing **60**. An elastomeric O-ring **82** is carried by the head portion **80** and serves to effect a sliding seal between the head portion **80** and the wall of the casing **60**. The plunger **78** is formed with a central bore **84** therethrough and an enlarged counterbore **86** at the upper end of the bore **84**. A shoulder **88** at the juncture between the bore **84** and the counterbore **86** affords a seat for the ball **90**, the ball and seat constituting a check valve within the plunger **78**. A closure cap **92** is threadedly received in the upper end of the counterbore **86**. The counterbore **86** communicates through a dispensing spout **94** with the atmosphere around the pump assembly **50**.

The lower end region of the casing **60** is reduced as at **100** and communicates with an elongated tubular inlet nipple **102** which depends from the casing. The lower end of the nipple receives thereover one end of a flexible hose **104** having an appreciable extent of slack as indicated at **105** and constitutes an element of the previously mentioned conduit assembly **54**. A ball **106** seats upon the open upper end of the nipple **102** and, in combination therewith, constitutes a second check valve for the pump assembly. A helical compression spring **108** has its lower end seated on a shoulder **109** and its upper end which serves yieldingly to urge the plunger **78** upwardly and maintain the same in its extended position wherein the upper end of the head portion **80** abuts against the shoulder at the upper end of the counterbore **70** in the seating ring **66** at the upper end of the casing **60**.

In the operation of the pump assembly **50**, downward pressure on the closure cap **92** will operate to depress the plunger **78**, whereupon the ball **90** will become unseated and any liquid which may be present in the casing **60** will pass upwardly through the bore **84** and the counterbore **86** and be expelled through the dispensing spout **94**. Upon release of such downward pressure, the spring **108** will restore the plunger to its up or extended position and, during restoration thereof, the ball **90** will become seated and exclude the entrance of air into the casing **60** while the ball **106** will become unseated and hence permit a fresh charge of the liquid to be admitted into the casing **60** under the influence of the subatmospheric pressure which is developed within the casing.

The liquid which is thus drawn upwardly into the pump casing **60** is obtained from the container **52**. Accordingly, in addition to the flexible hose **104**, the conduit assembly **54** includes a draw pipe **110** which projects into the container and has its lower end **112** open and normally disposed adjacent to the bottom of the container. The container which has been selected for illustration in the drawings hereof is in the form of a bottle having a restricted, externally threaded neck portion **114** which is closed by means of a threaded closure cap **116**. The draw pipe projects loosely through an opening **118** in the top wall of the closure cap **116** and carries at its lower end region a fixed washer **120** which serves as an agitator fin when the draw pipe **110** is worked up and

down through the opening 118. Up and down movement of the draw pipe operates through the medium of the washer to stir or agitate the contents of the container and thus disperse any material which may have settled out in liquid and accumulated in the bottom region of the container. The lower end 112 of the draw pipe 110 is maintained slightly elevated from the bottom wall of the container 52 by means of a washer 122 which is attached to the medial portion of the draw pipe, this washer being adapted to seat upon the closure cap 116 as shown in FIG. 3.

The extreme lower end region of the draw pipe 110 is provided with a valve seat 124 for a ball 126, the ball and seat constituting a check valve which serves to inhibit downflow of liquid in the draw pipe when the pump assembly 50 is not in operation. The draw pipe 110 is crimped as at 128 at a region directly above the ball 126 so as to limit the upward movement of the ball within the draw pipe.

The seat fitting 56 is in the form of a tubular member having an enlarged head portion 130 and, in addition, a reduced shank portion 132 which depends from the head portion and is exteriorly threaded as at 134. A downwardly facing annular shoulder 136 is provided at the juncture of the head and shank portions and is adapted to seat upon the rim ledge 22 of the bowl 10 when the shank portion 132 is projected through the hole 58. A nut 138 is threadedly received on the shank portion 132 and serves to retain the seat fitting in operative position on the bowl 10. The head portion 130 is of upwardly tapering design and terminates in the previously mentioned narrow rim 74. This rim 74 constitutes a seat proper for the annular seating flange 73 of the seating ring 66 and, consequently, for the entire pump assembly 50 as a whole. The fitting 56 is formed with a central vertical bore 140 therethrough and within this bore the pump casing 60 is adapted to be removably and telescopically received with a fairly loose fit as shown in FIG. 2.

As shown in FIG. 2, means are provided for heating each charge of liquid immediately prior to its introduction thereof into the pump casing 60. This means assumes the form of an annular heating coil 150 which surrounds the nipple 102 and is suspended by means of a flanged suspension ring 152 from the lower end of the shank portion 132 of the seat fitting 56. The heating coil 150 is adapted to be electrically energized and, accordingly, it may be operatively connected to a source of electrical current through the medium of a conventional cord 154 and a wall plug 156.

When it is desired to put to use either of the two pump assemblies 50 in order to dispense the shampoo or other liquid contained in its associated container 52, it is merely necessary for the operator to lift the selected assembly from its position on the associated seat fitting 56, the assembly being freely movable vertically so that the nipple 102 will be drawn upwardly through the bore 140 after the pump casing 60 has been removed therefrom. The flexible tube 104 will also be drawn through the bore 140 in the seat fitting 56 to the extent necessary to allow the dispensing spout to be brought into proximity with the head of the person being operated upon. By grasping the casing 60 in the palm of the hand and utilizing the thumb for plunger-depressing purposes, the pump assembly may be operated in the usual manner to apply measured quantities of the liquid to the hair and scalp. The liquid will be drawn upwardly from the lower region of the container 52 through the conduit assembly 54, as previously described, for application purposes. After the pump assembly has served its purpose, it may be replaced in the seat fitting 56 and, when so replaced, the downwardly facing annular flange 73 will rest upon the rim 74 of the seat fitting 56 and the cylindrical counterbore 72 will encompass this rim and prevent lateral shifting of the pump assembly so that the latter will always seat squarely upon said fitting. The seating ring 66 forms an umbrella-like closure for the upper rim 74 of the seat fitting so that extraneous liquid will not seep downwardly through the bowl opening 58. The heating coil 150 radiates heat inwardly toward the elongated nipple 102 and, inasmuch as this nipple, as well as the pump casing 60 thereabove, is formed of a metal which possesses high heat-conducting characteristics, heat will flow upwardly to maintain the entire pump casing 60 warm so that each charge of liquid introduced thereinto through the lower check valve opening will enter the casing in a heated condition and remain heated until used.

From time to time, the operator may agitate the contents of either container 52 merely by vertically reciprocating the conduit assembly 54 associated therewith, the operation being performed from below the bowl upon opening the cabinet doors 30. Such vertical movements of the assembly 54 will cause the washer 120 within the container 32 to function in the manner of a paddle or agitator fin to agitate the contents of the container.

The invention is not to be limited to the exact arrangement of parts shown in the accompanying drawings or described in this specification as various changes in the details of construction may be resorted to without departing from the spiirt or scope of the invention. Therefore, only insofar as the invention has particularly been pointed out in the accompanying claims is the same to be limited.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. In a dispensing apparatus for liquid shampoo and similar preparations, the combination with a lavatory bowl or the like having a vertically disposed opening provided through the ledge portion thereof, of a tubular seat fitting having an enlarged head portion supported upon the upper rim region of the opening and a shank portion projecting into the opening, means fixedly securing said shank portion within said opening, said head portion presenting a narrow upwardly facing seating rim, a pump assembly removably disposed on said seat fitting and including a pump casing provided with a lateral seating flange, said casing being designed for telescopic reception within the tubular seat fitting so that said seating flange rests by gravity upon said upwardly facing seating rim, a depressible plunger provided with a discharge spout and having a plunger head reciprocable in the casing and a plunger stem projecting outwardly of the casing, an inlet nipple depending from said casing, a liquid container disposed beneath said lavatory bowl, and a flexible conduit assembly operatively connecting said liquid container and inlet nipple.

2. A dispensing apparatus as set forth in claim 1 and wherein the seat fitting is provided with a cylindrical bore therethrough and the pump casing is of generally cylindrical configuration and normally fits loosely in the bore.

3. A dispensing apparatus as set forth in claim 1 and wherein said flexible conduit assembly includes a draw pipe which projects downwardly and loosely into the container, and extends normally to a region adjacent to the bottom of the latter, and is provided on its lower end with an agitator fin.

4. A dispensing apparatus as set forth in claim 1 and including, additionally, a heating coil effectively suspended from said lavatory bowl and normally surrounding said inlet nipple.

5. A dispensing apparatus as set forth in claim 1 and including, additionally, means associated with the pump casing and defining a marginal wall surrounding said seating flange, said marginal wall normally encompassing said upwardly facing seating rim of the head portion of the seat fitting when the pump assembly is disposed on said seat

fitting and serving to prevent lateral displacement of the pump assembly with respect to the seat fitting.

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