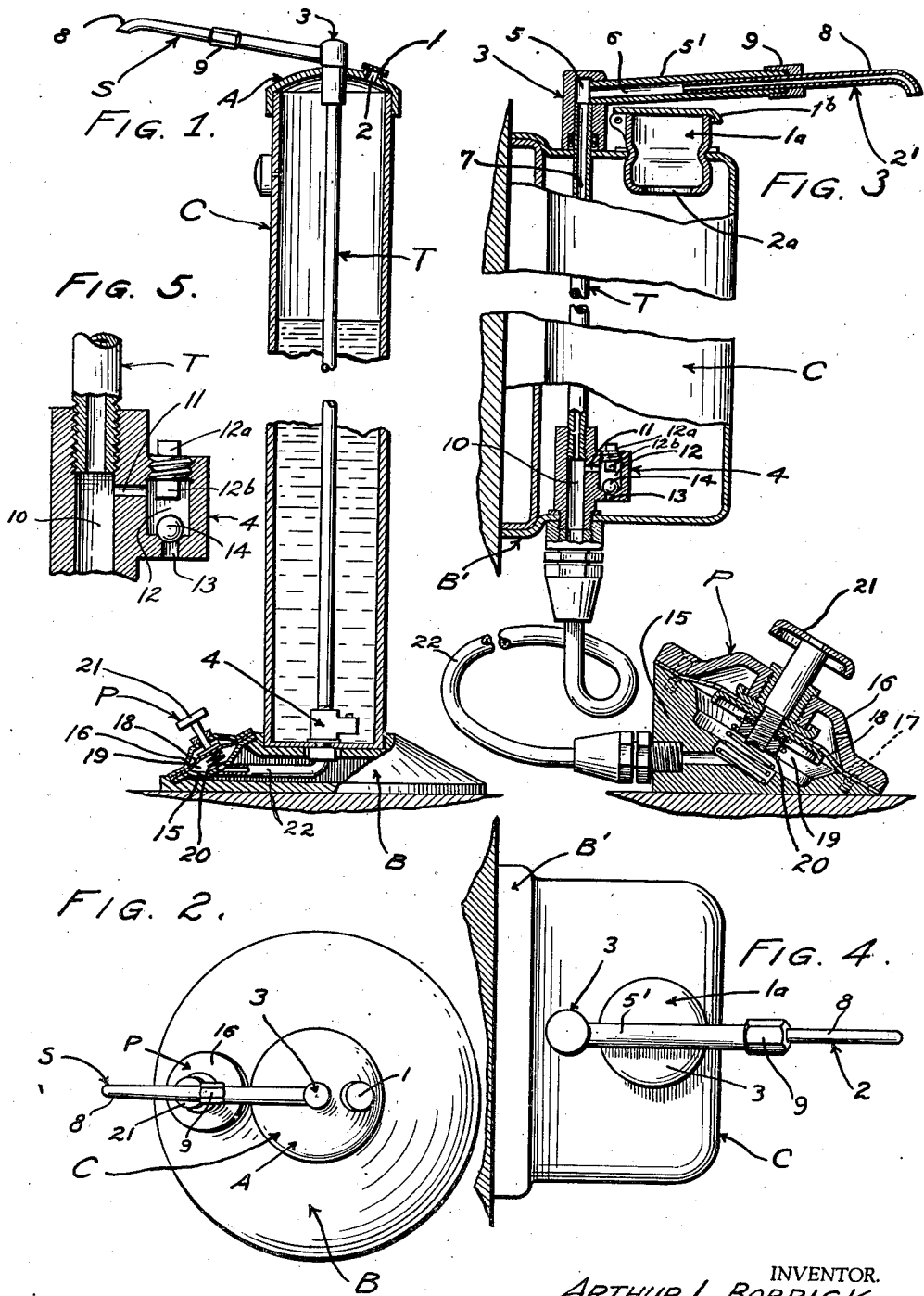


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LIQUID DISPENSER

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## LIQUID DISPENSER

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4 Claims. (Cl. 221-80)

This invention relates in general to liquid dispensers and more particularly to a form of dispenser adapted for use in hospitals, sanitariums and in other places where relatively large volumes of disinfectant, antiseptic, solutions and liquid soap are dispensed, and has for an object the provision of a container of substantial capacity arranged to be mounted either against and secured to a wall or other supporting structure or as a detached unit having a suitable base for supporting it against displacement from a predetermined position.

Another object is to provide in a dispenser of the character and for the purpose mentioned, a container having a dispensing spout at its top and a foot operated pressure creating unit at its bottom and so connected with the interior of the container and with the dispensing spout that at each operation of the foot controlled pressure unit a substantial quantity of liquid will be dispensed from said spout by reason of the pressure created in the dispenser.

A more detailed object is to provide within the container and near its bottom a submerged check valve connected with the discharge chamber of said pressure unit and also with a tube leading upwardly within the container to and connected with the dispensing spout so that when pressure is applied to the tube through the medium of the pressure unit the column of liquid in the tube will be elevated to a point of discharge from the spout and when pressure is relieved the liquid in the tube will be held against draining backwardly into the container, due to the presence in the supply line to the spout of said check valve.

Other objects of invention may appear as the description of my improvements progresses.

I have shown in the accompanying drawing a preferred form of device, subject to modification, within the scope of the appended claims, without departing from the spirit of my invention. In said drawing:

Fig. 1 is a sectional elevation of an assembled dispenser embodying my improvements showing one form of unit;

Fig. 2 is a top plan thereof;

Fig. 3 is an elevation of a wall type dispenser, partly in section;

Fig. 4 is a top plan of the same; and

Fig. 5 is an enlarged sectional elevation of the valve housing of Fig. 1, showing details of construction.

It will be noted that the two forms of dispenser shown in the drawing are exactly the same in principle and they differ in structure only as may

be necessary to adapt one form to use as a detached unit, as in Fig. 1, and the other form as a wall unit, as in Fig. 3.

Briefly described, my improved dispenser includes a vertically disposed container C of sufficient size and capacity to hold several gallons of liquid. Said container is adapted to be supported as by means of a suitable base B, as in Fig. 1, wherein the container is shown as of cylindrical form attached to the base at its bottom and having a cap A with a filler plug or cover 1 adapted to cover a suitable opening 2 through which the contents of the container may be replenished, and a dispensing spout S extending outwardly from said cap, as shown. Or, as shown in Fig. 3, the container C may be of rectangular or other cross sectional form and have a bracket B' formed thereon or attached thereto for the purpose of supporting the container on a wall or other suitable supporting structure. In the latter form a filler 1a is provided at the top of the container and covered by a closure 1b, said filler having an opening 2a in the bottom thereof, and a dispensing spout 2 similar to or different from the form shown in Fig. 1 is attached to the top of the container as hereinafter described.

In each of the herein described forms of device a foot operated pressure unit P is provided for association with the container and may be mounted in the base B of the form shown in Fig. 1 or supported on the floor and detached from the container mounting, as shown in Fig. 3. Container C, in either case, has a vertically disposed tube T mounted therewithin and connected at its upper end to a fitting 3 and at its lower end to a valve housing 4 which is submerged in the liquid of the container and is positioned near the bottom of the container, as shown.

Fitting 3 has a chamber 5 therein and carries an outwardly extended tube 5 which forms a part of the dispensing spout S and the passage 6 thereof is in constant communication with chamber 5 and the vertical passage 7 of tube T. Spout S also includes an elongated outer section of tube 8, the outer end of which is bent downwardly to form a spout and the inner portion of which is telescopically extended into the passage 6 of tube 5 and is held in adjusted position by means of a coupling 9 which is threaded onto the outer end of tube 5.

Valve housing 4 has a vertical chamber 10 therein which is in constant communication with an offset passage 7 of tube T and also has a transverse part 11 affording communication be-

tween chamber 10 and a valve chamber 12 in the offset portion of housing 4, said chamber 12 having an inlet port 13 in the bottom thereof adapted to be closed by means of a ball check valve 14 which finds a seat over the upper end of said port in the bottom of chamber 12. Chamber 12 has a plug 12a forming a top closure and is removable for inserting ball 14. Plug 12a has a depending portion 12b which limits the upward movement of ball 14 so as not to close port 11.

Pressure element P includes a base 15 either as a unit as in Fig. 3, or formed in the base B, as in Fig. 1, and a detachable cover 16 secured thereto as by means of screws 17. A flexible diaphragm 18 is clamped between the members 15 and 16 so as to provide a pressure chamber 19 in which a compression spring 20 is mounted for urging the diaphragm outwardly in the direction of the cover 16, as shown. A foot operated plunger 21 is slidably mounted on member 16 for operating the diaphragm so as to create pressure in chamber 19, and said chamber is in communication with chamber 10 of valve housing 4 through the medium of a tube 22.

Thus, when the apparatus is arranged as shown and described, the tube T, valve housing 4, tube 22 and chamber 19 of the pump will at all times be filled with liquid from the container, after the priming of said elements by the initial operation of pressure unit P subsequent to the filling of the container with liquid. Valve 14 will be raised sufficiently at each operation of the pressure unit to replenish the quantity of liquid in tube T and associated parts but closes port 13 at the completion of each operation so as to retain the liquid in said parts.

It is quite apparent that at each operation of pressure unit P a substantial quantity of liquid will be ejected from spout S and the continued operation thereof will provide ample quantities of liquid for any requisite use and far greater quantities than could be obtained from well known types of hand operated dispensers such as are employed in laboratories or lavatories for individual usage.

If desired the spout S may be arranged so as to swing to any desired position over the top of the container C by merely providing the member 3 with a swivel mounting or arranging said member so as to rotate on the top of the container.

The application and use of my improved dispenser will be recognized by those familiar with sanitary appliances in hospitals and other public and private institutions.

As shown in Fig. 1, only but equally adaptable to the form of dispenser shown in Fig. 3, I provide in the bore of tube T, a fine wire W extending from top to bottom of said tube which serves, by reason of its occasional engagement with the wall of the passage, to reduce surface tension of the liquid in tube T, and thereby permit the lowering of the level of liquid in said tube at least to that of the liquid in the container. Otherwise, I have found that after each dispensing operation that portion of the tube T above the level of liquid in the container will be only partially evacuated of liquid and will contain alternate quantities of liquid and air, thus tending to impair the dispensing of requisite quantities of liquid.

What I claim is:

1. A liquid dispenser comprising: a container for holding a quantity of dispensable liquid, a valve body formed with a main chamber and an off-set valve chamber in continuous communi-

tion, said valve body having a portion attached to the bottom of said container and provided with a pressure inlet, a tube extending upwardly from the top of the valve body to the top of the container and providing with the valve body a continuous passage from the inlet to the top of the container, a dispensing spout attached to the upper end of said tube, and a valve seated in said valve chamber for controlling the admission of liquid from the container to the valve chamber and thence to the main chamber of said body.

2. A liquid dispenser comprising: a container for holding a quantity of dispensable liquid, a valve body extended upwardly from and attached to the bottom of the container and formed with a main chamber and an off-set valve chamber in continuous communication, said valve body having a pressure inlet adjacent the bottom of the container, a tube attached to the top of the valve body forming a continuation of said main chamber and extending to the top of the container, a dispensing spout attached to the upper end of said tube, a valve seated in said valve chamber for controlling the admission of liquid from the container to the valve chamber and thence to the main chamber of said body, and means adjustable in said valve chamber for limiting the movement of said valve so as to prevent closing communication between the valve chamber and the main chamber of said body, said valve being located above the bottom of the container so as to be submerged in the liquid held by the container.

3. A liquid dispenser comprising: a container for holding a quantity of dispensable liquid, a valve body formed with a main chamber and an off-set valve chamber in continuous communication, said valve body having a portion attached to the bottom of said container and provided with a pressure inlet, a tube connected with the top of the valve body and extending to the top of the container, a dispensing spout attached to the upper end of said tube, a valve seated in said valve chamber for controlling the admission of liquid from the container to the valve chamber and thence to the main chamber of said body, and a valve seat having an inlet from said container and an adjustable stop in said valve chamber for limiting the movement of the valve to prevent closing communication between the valve chamber and the main chamber, said valve and its chamber being located at points intermediate said inlet and said spout.

4. A liquid dispenser comprising: a container for holding a quantity of dispensable liquid, a valve body formed with a main chamber and an off-set valve chamber in continuous communication, said valve body having a portion attached to the bottom of said container and provided with a pressure inlet, a tube extended upwardly from the top of the valve body to the top of the container and providing a continuation of said main chamber, a dispensing spout attached to the upper end of said tube, a valve seated in said valve chamber at a point above the lowermost level of the liquid in the container for controlling the admission of liquid from the container to the valve chamber and thence to the main chamber of said body, and a pressure creating mechanism operatively connected with said pressure inlet for dispensing substantially uniform quantities of liquid from the container at each operation thereof.

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