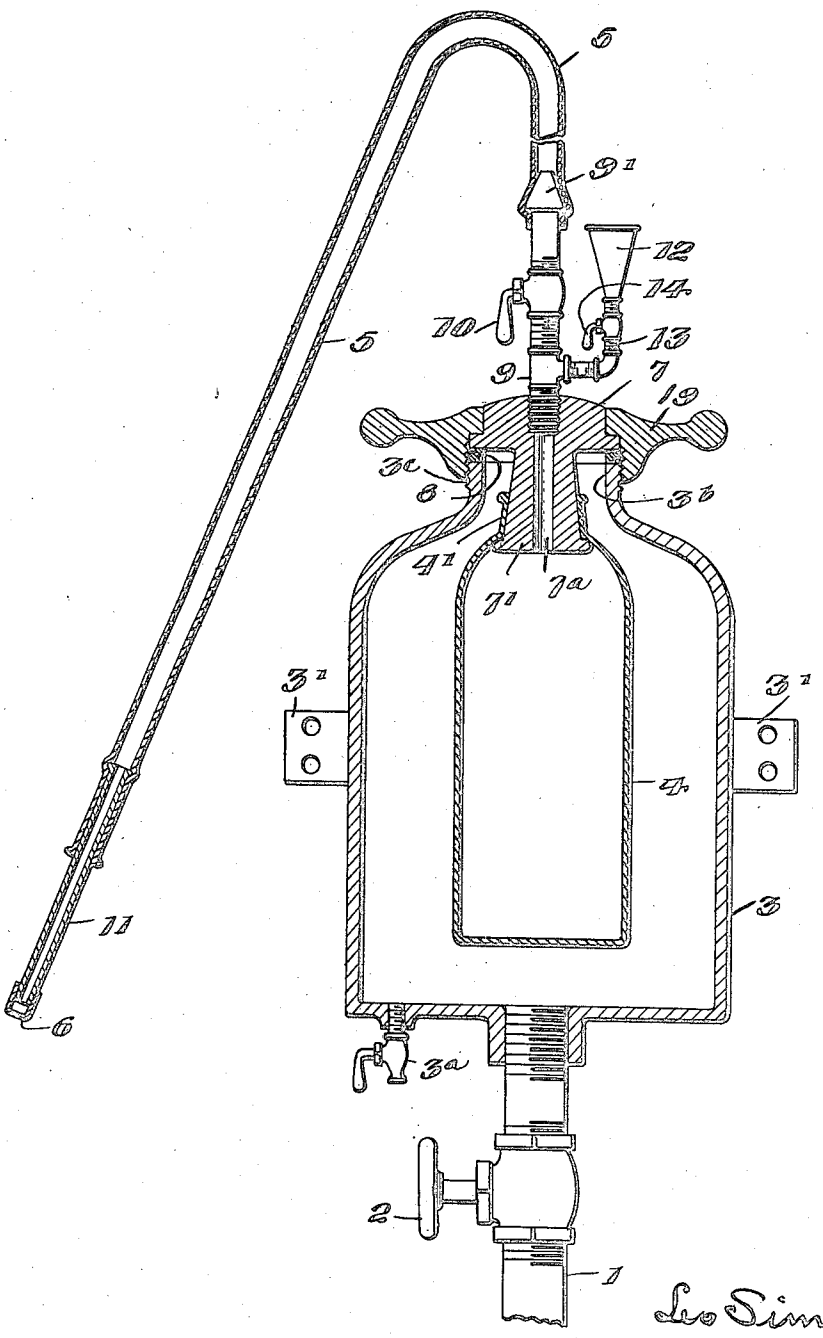
Nov. 13, 1923. 1,473,979

L. SIMMONS

APPARATUS FOR APPLYING LIQUIDS

Filed Nov. 7, 1921



Inventor

Leo Simmons

By Herbert Fleck

Attorney

Patented Nov. 13, 1923. 1,473,979

UNITED STATES PATENT OFFICE.

LEO SIMMONS, OF WASHINGTON, DISTRICT OF COLUMBIA.

APPARATUS FOR APPLYING LIQUIDS.

Application filed November 7, 1921. Serial No. 513,574.

To all whom it may concern:

Be it known that I, LEO SIMMONS, a citizen of the United States of America, and a resident of Washington, District of Columbia, have invented certain new and useful Improvements in and Relating to Apparatus for Applying Liquids, of which the following is a specification.

This invention relates to improvements in devices for discharging liquids such as for toilet, medical, or other treatment of the human body; and the objects and nature of my invention will be readily understood by those skilled in the art in the light of the following explanations of the accompanying drawings illustrating what I now believe to be the preferred mechanical expression or embodiment of my invention from among other forms, constructions and arrangements within the spirit and scope thereof.

An object of the invention is to provide means whereby the pressure of municipal and other water supply systems can be conveniently utilized as the power for expelling liquids for various purposes from containers that maintain such liquids from communication with and from dilution by the power-supplying water.

With this and other objects in view my invention consists in certain novel features of construction and in combinations and arrangements as more fully and particularly set forth and specified hereinafter.

The accompanying drawings show an embodiment of my invention, in longitudinal section, for purposes of explanation but without thereby intending to limit the invention to this particular embodiment.

In the drawings I show a water supply pipe 1 connected with any suitable supply of water (or other fluid) under pressure. This pipe is provided with any suitable cut-off valve controlled by handle 2, whereby the pipe can be opened to flow of fluid, and can be closed to stop the flow of fluid, to any suitable pressure tank or chamber 3, in which is arranged any suitable flexible wall or otherwise compressible liquid container 4 having a valve controlled outlet to a flexible or other suitable tube 5, terminating in any suitable discharge nozzle 6.

In the particular example illustrated, I show a vertical metal tank 3 adapted to be secured at any suitable or convenient location, in a bath or toilet room for instance. If so desired, the tank can have exterior supporting brackets or arms such as 3′, to fit the wall or any other support, and receive securing screws or other suitable fastenings. In this instance, the water supply pipe 1 depends from the tank bottom and extends therethrough, and is intended to be coupled to and receive its water supply from any convenient house water pipe, such as any pipe in a bath room that contains water under pressure. As the tank 3 is comparatively small, it can be arranged with the various valves within convenient reach, and yet so as to be out of the way and not interfere with the free use of the lavatory, and also to permit the lavatory to catch and carry off water drained from the tank through drainage pet cock or other suitable valve 3^a. Such drainage device is shown in the form of a normally-closed pet cock 3^a depending from the tank bottom to discharge the water from the tank (when the stop cock in pipe 1 is closed) after a liquid expelling operation. Any suitable compressible container for the liquid to be expelled, is exposed to the water pressure in the closed substantially liquid tight tank 3.

As an example of one among other liquid containers that can be employed, I show a liquid tight flexible bag, such as an impervious flexible rubber bag 4, depending in the tank, and of small size or capacity with respect to the internal dimensions or capacity of the pressure water tank 3. The container 4 shown is a one-piece rubber bag at its upper end having an elastic contracted bag supporting mouth or neck 4′ by which the bag is suspended in the tank. The bag is supported by and suspended from the tank top or closure which embodies an exterior removable cap or plug 7 closing the contracted mouth 3^b of the tank, and gasket 8 normally compressed between the bottom face of the cap and the top edge of the tank mouth 3^b to provide a liquid tight closure for the tank. The cap is released and clamped in sealing position, by any suitable means, although I show a wing or other hand nut 19 for this purpose, removably overlapping the cap and screwing on the exterior screw thread 3^c of the tank mouth, as will be readily understood by those skilled in the art.

The cap is formed with a liquid duct 7^a extending longitudinally therethrough and open at its lower end into the liquid bag 4 and at its upper end into vertical rigid

tube section 9. The cap 7 is, in this example, formed with a reduced coupling nipple 7' depending in the tank, and annularly enlarged exteriorly at its lower end, to exteriorly and longitudinally receive the contracted mouth 4' of the bag 4 and form a liquid tight joint therewith. The elastic mouth of the bag is expanded and forced onto the coupling nipple so as to maintain its position thereon under tension. The bag can thus be readily removed and a new bag applied, by removing the nut 19 and lifting the cap carrying the bag from the tank. The parts can be as easily reassembled in operative positions.

The upper end of the bore or duct 7ª is usually enlarged and screw threaded and the stiff or rigid tube 9 is screwed thereinto to provide a liquid tight joint between cap and tube.

The tube 9 forms a part of the liquid discharge or delivery piping which can be of any suitable construction to deliver the expelled liquid at any suitable point and in any desired form or manner.

In the particular example shown, the upstanding rigid tube section is provided at its upper end with coupling head 9' entering and forming a liquid tight joint with rubber or other flexible tubing 5 of any desirable length, and the free end of this flexible tubing carries a stiff tube length 11 that terminates in any suitable spray nozzle 6.

The stiff section 11 can be used as a handle in manipulating the tube and nozzle to spray the body with any desired liquid expelled from the bag 4, or to subject any part of the body, or other object, to any suitable or desired liquid supplied to the bag 4.

The flow of liquid from the collapsible container 4 can be controlled and cut off in any suitable manner or by any suitable means, although I show a valve in the upstanding tube section 9 for this purpose, said valve having an exposed accessible operating handle 10.

Any suitable provision can be made for introducing the antiseptic, toilet, medicinal, perfume or other liquid into the container 4. Of course, the liquid can be introduced by removing the tank cap and separating the container therefrom and filling the container through its open mouth, or without disturbing the cap from its condition sealing the tank, the pipe section 9 can be unscrewed from the cap and the liquid introduced through duct 7ª. However, I prefer to provide means for filling the container 4 without disturbing the cap and piping, and hence show a filling cup or funnel 12 supported by a branch or filling tube 13 joined to and opening into the tube 9 so that the liquid can drain by gravity from the cup 12 through branch tube 13 into tube 9 and from thence into container 4. The branch tube 13 is provided with a normally closed cut off valve having exterior operating handle 14. During the filling operation, the valve of handle 10 is open to permit outflow of air as the liquid drains into the container, and the valve of handle 2 is closed and the water has been drained from tank 3, the pet cock being then usually open. After the filling operation, the pet cock and the valves of handles 10, 14, are closed. The pressure water controlling valve of handle 2, can then be opened, to permit flow of water under pressure into the closed pressure tank 3 to establish the desired pressure in said tank, and the consequent compressing action on the container 4.

By manipulating the valve handle 10 the operator can start, stop and control the flow of the expelled liquid from nozzle 6 while the handle section 11 is manipulated to direct the liquid spray where desired. A single charge of liquid in the container 4, will ordinarily supply a large number of spray applications and last for a considerable length of time as the ordinary flow through nozzle 6 as to volume is exceedingly slow, and furthermore can be controlled as desired by the valve of handle 10. The water pressure in the tank 3 is maintained by leaving the pressure water cut off valve open, although if preferred the valve of handle 2 can be closed after each liquid expelling operation. The apparatus can be ultilized for spraying or otherwise applying any suitable liquid to the human body or any other body or object for any desirable purpose.

It is evident that various changes, modifications and variations might be resorted to without departing from the spirit and scope of my invention and hence I do not wish to limit my invention to the exact disclosures hereof.

What I claim is:—

1. A liquid expelling apparatus comprising a closed pressure tank, means for introducing fluid under pressure into said tank, and a compressible liquid container exposed to the pressure in said tank for compressing the container to expel liquid therefrom, said container having a controlled liquid discharge and an exteriorly accessible valved filling device carried by said tank.

2. A closed pressure tank having means for introducing water under pressure thereinto and for draining the water therefrom, in combination with a compressible liquid container exposed to the pressure in the tank and sealing the liquid in the container from the water in the tank, and liquid discharge tubing from said container having a controlling valve and provided with container filling means discharging thereinto from the exterior of the tank.

3. A closed pressure tank adapted to be

coupled into a house pressure water system, in combination with a collapsible bag extending into said tank and adapted to contain liquid to be expelled and to seal the liquid from the interior of the tank, means being provided whereby the liquid can be introduced into said bag through the liquid outlet from the bag, and a valved liquid discharge from said bag.

4. A liquid expelling apparatus comprising a closed pressure tank having means for introducing thereinto fluid under pressure, and a rubber liquid containing bag exposed to the pressure in said tank and having a valved discharge tube and a valved filling tube for flowing liquid into the discharge tube.

5. A liquid expelling apparatus comprising a closed pressure tank having means for introducing thereinto fluid under pressure, and means for draining such liquid therefrom in combination with a collapsible flexible impervious liquid containing bag suspended in said tank and provided with a valved discharge tube, means being provided for introducing the liquid into said bag through the outlet end of the bag.

6. A liquid expelling apparatus comprising a closed pressure tank having means for introducing thereinto liquid under pressure, a closure for sealing said tank, an impervious flexible removable liquid containing bag supported in said tank by and depending from said closure, a valved connection from the exterior of the tank for introducing liquid into said bag through a portion of the liquid discharge passage from the bag, and a liquid discharge tube from said bag extending to the exterior of the tank and provided with a manually actuated controlling valve.

LEO SIMMONS.