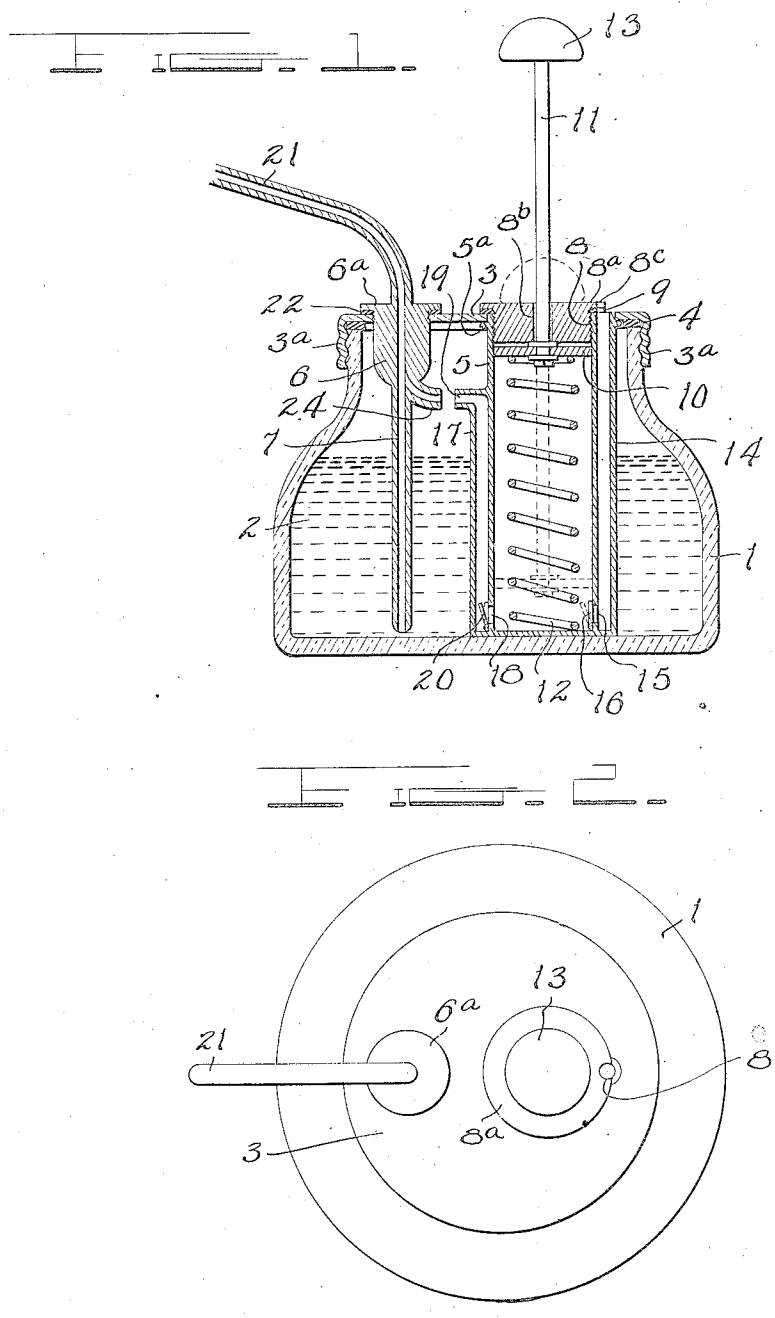
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ATOMIZER.

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1,145,029. Patented July 6, 1915.



Witnesses

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ATOMIZER.

1,145,029. Specification of Letters Patent. Patented July 6, 1915.

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To all whom it may concern:

Be it known that I, WILL RONALD MUNRO, a citizen of the United States, residing at Mayville, in the county of Traill and State of North Dakota, have invented certain new and useful Improvements in Atomizers, of which the following is a specification.

The present invention relates to certain new and useful improvements in atomizers, and has for its object to provide a device of this character which embodies novel features of construction whereby it can be readily manipulated by pressing upon a plunger without difficulty and without danger of soiling the fingers.

Further objects of the invention are to provide a device of this character which is comparatively simple and inexpensive in its construction, which is compact and durable in its design, which can be easily assembled or taken apart, and which will operate in an effective manner to produce a fine spray.

With these and other objects in view, the invention consists in certain novel combinations and arrangements of the parts as will more fully appear as the description proceeds, the novel features thereof being pointed out in the appended claims.

For a full understanding of the invention, reference is to be had to the following description and accompanying drawing, in which:—

Figure 1 is a vertical sectional view through an atomizer constructed in accordance with the invention. Fig. 2 is a top plan view of the same.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawing by the same reference characters.

Referring to the drawings, which illustrate one embodiment of the invention, the numeral 1 designates a container or receptacle adapted to receive the liquid 2 to be discharged through the atomizer, and 3 an air-tight cover which closes the receptacle 1. In the present instance the cover 3 is formed with a flange 3^a which has a threaded engagement with the neck of the receptacle, suitable packing means such as the washer 4 being interposed between the cover and the mouth of the receptacle so as to insure an air-tight joint between the two members.

The cover 3 is provided toward one side thereof with a comparatively large opening which receives the upper end of a pump barrel 5 and toward the other side thereof with a smaller opening which receives and has a threaded engagement with an enlargement 6 upon the atomizer tube 7, both the pump barrel 5 and atomizer tube 7 being carried by the cover 3 and being pendent therefrom. The pump barrel 5 may be provided toward the upper end thereof with an exterior rib 5^a adapted to engage the inner side of the cover 3, the interior of the said upper end of the pump barrel being threaded to receive a flanged plug 8 which coöperates with the rib 5^a to secure the pump barrel to the cover and provide an air-tight joint between the two members. A suitable packing ring or washer 9 may be interposed between the flange 8^a of the plug 8 and the upper face of the cover 3, if desired.

Mounted to reciprocate within the pump barrel 5 is a piston 10 which may be of any conventional construction and is carried by a piston rod or plunger 11 which passes loosely through an axially disposed opening 8^b in the plug or cylinder head 8. A coil spring 12 is interposed between the piston 10 and the lower end of the pump cylinder 5 and normally tends to move the piston to the top of the pump cylinder. A knob or finger piece 13 is applied to the upp end of the plunger 11 and by applying sufficient pressure to the said knobs to overcome the action of the spring 12 the piston 10 can be forced downwardly in the pump barrel 5. As soon as this pressure upon the knob 13 is released, however, the spring 12 will again return the piston to its original position at the upper end of the pump barrel.

An air inlet conduit 14 extends along one side of the pump cylinder 5 from the top to the bottom thereof, the upper end thereof opening through the cover 3 while the lower end thereof communicates through an air inlet port 15 with the bottom of the pump cylinder 5, said port 15 being controlled by some conventional construction of inwardly opening check valve 16. It will be observed that the flange 8^a of the plug or cylinder head 8 is suitably notched at 8^c to provide a clearance space for the upper end of the air inlet conduit 14. Extending longitudinally along the opposite side of the pump barrel 5 is a somewhat similar air conduit 17 which communicates at its lower end with the bottom of the pump cylinder 5 through a port 18, and terminates at its upper end in a laterally projecting

air nozzle arranged within the receptacle 1 at a point above the level of the liquid contents 2 thereof. The port 18 is controlled by some conventional construction of outwardly opening check valve 20. Upon the downward stroke of the piston 10 the check valve 16 is closed and the check valve 20 opened so that the air within the pump cylinder is forced through the air outlet conduit 17 and discharged in a jet through the air nozzle 19, while upon the upward stroke of the piston 10 the check valve 20 is closed and the check valve 16 opened so that a fresh supply of air is drawn into the cylinder through the air inlet conduit 14.

The atomizer tube 7 projects downwardly from the cover 3 and terminates at a point slightly spaced from the bottom of the receptacle, the upper end of the atomizer tube communicating with a laterally deflected spraying nozzle 21. The enlargement 6 of the atomizer tube may be threaded in the opening of the cover 3, and is shown in the present instance as formed with a flange 6^a, a washer 22 being interposed between the flange and the cover so as to insure an air-tight joint. At the base of the enlargement 6 the atomizer tube is provided with a laterally deflected branch 24 which terminates at a point slightly spaced from and directly opposed to the mouth of the air nozzle 19. With this construction it will be obvious that a jet of air issuing from the air nozzle 19 will enter the branch 24 and flow through the upper end of the atomizer tube 7 and the spraying nozzle 21 thereof in such a manner as to draw the liquid upwardly through the atomizer tube by suction. Also, the jet of air issuing from the nozzle 19 will tend to produce a slight compression of the air confined in the top of the receptacle 1 so that the liquid contents of the receptacle will be forced upwardly through the atomizer tube 7 by increased pressure upon the surface of the liquid. The combined action of pressure on the surface of the liquid and suction through the atomizer tube 7 is thus utilized in causing the liquid to flow through the tube 7 and be discharged in a fine spray through the atomizer nozzle 21.

In order to operate the atomizer it is merely necessary to force the pump piston 10 downwardly by applying pressure to the finger piece or knob 13. This downward movement of the pump piston will actuate the atomizer, and as soon as the pressure is removed from the knob 13 the pump piston 10 will be returned to its original position by the action of the spring 12.

The entire atomizer mechanism is carried by the cover 3 so that the receptacle can be easily refilled at any time by merely removing the cover, and the pump mechanism and atomizer tube are detachably connected to the cover in such a manner that repairs and adjustments can be easily made when necessary.

The necessity for using a soft rubber bulb which must be squeezed to operate the atomizer is eliminated, and the entire mechanism of the present atomizer is compactly disposed so that a neat and substantial atomizer is produced.

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

1. An atomizer including a receptacle, a tight cover therefor, an atomizer tube provided at a point within the receptacle with a laterally projecting branch, an atomizer nozzle communicating with the outer end of the atomizer tube, an air pump, and an air nozzle communicating with the pump and arranged within the receptacle with the discharge end thereof slightly spaced from and opposed to the mouth of the before mentioned branch of the atomizer tube.

2. An atomizer including a receptacle, a tight cover therefor, an atomizer tube carried by the cover and pendent therefrom, said atomizer tube being provided at a point within the receptacle with a laterally projecting branch, an atomizer nozzle communicating with the upper end of the atomizer tube, an air pump carried by the cover, and an air nozzle communicating with the air pump and arranged within the receptacle with the discharge end thereof slightly spaced from and opposed to the mouth of the before mentioned branch of the atomizer tube.

3. An atomizer including a receptacle, a tight cover therefor, an atomizer tube pendent from the cover and provided at a point within the receptacle with a laterally projecting branch, an atomizer nozzle communicating with the upper end of the atomizer tube, a pump barrel carried by the cover and pendent therefrom, a piston mounted within the pump barrel, a plunger for operating the piston, an air inlet conduit extending along one side of the pump barrel and opening through the cover, an air outlet conduit extending along a side of the pump barrel, and a laterally projecting air nozzle at the end of the air outlet conduit, said air nozzle being arranged within the receptacle with the discharge end thereof slightly spaced from and opposed to the mouth of the before mentioned branch of the atomizer tube.

4. An atomizer including a receptacle, a tight cover provided with an opening, a pump barrel pendent from the cover and having the upper end thereof fitted within the said opening, said pump barrel being formed with a rib engaging the lower surface of the cover, a flanged plug fitted in the upper end of the pump barrel and co-

operating with the before mentioned rib to secure the pump barrel to the cover, a piston mounted within the pump barrel, a plunger passing through the flanged plug and connected to the piston, an air inlet conduit extending along one side of the pump cylinder and opening through the cover, an air outlet conduit extending along one side of the cylinder, a laterally projecting air nozzle arranged within the receptacle and communicating with the air outlet conduit, an atomizer tube pendent from the cover and provided at a point within the receptacle with a laterally projecting branch having the mouth thereof opposed to and slightly spaced from the before mentioned air nozzle, and an atomizer nozzle communicating with the atomizer tube.

5. An atomizer including a receptacle, a cover provided with an opening, an atomizer tube pendent from the cover and provided with an enlargement which is removably fitted within the opening of the cover, said atomizer tube being provided at the base of the said enlargement with a laterally projecting branch, an atomizer nozzle communicating with the atomizer tube, a pump carried by the cover, and an air nozzle communicating with the pump and arranged within the receptacle with the discharge end thereof opposed to and slightly spaced from the mouth of the laterally projecting branch of the atomizer tube.

6. An atomizer including a receptacle, a tight cover applied thereto and formed with a pair of openings, a pump barrel pendent from the cover and having the upper end thereof fitted within one of the openings, said pump barrel being formed with a rib to engage the lower face of the cover, a flanged plug fitted within the end of the pump barrel for coöperation with the before mentioned rib to secure the pump barrel to the cover, a piston mounted to reciprocate within the pump barrel, a plunger secured to the piston and passing slidably through the flanged plug, an air inlet conduit extending along one side of the pump barrel and opening through the cover, an air outlet conduit extending along one side of the pump barrel, a laterally projecting air nozzle arranged within the receptacle and communicating with the air outlet conduit, an atomizer tube pendent from the cover and provided with an enlargement which is removably fitted within the other opening of the cover, said atomizer tube being provided at the base of the enlargement with a laterally projecting branch having the mouth thereof slightly spaced from and opposed to the discharge end of the before mentioned air nozzle, and an atomizer nozzle communicating with the atomizer tube.

In testimony whereof I affix my signature in presence of two witnesses.

WILL RONALD MUNRO.

Witnesses:
O. J. Petterson,
G. W. Milne.