

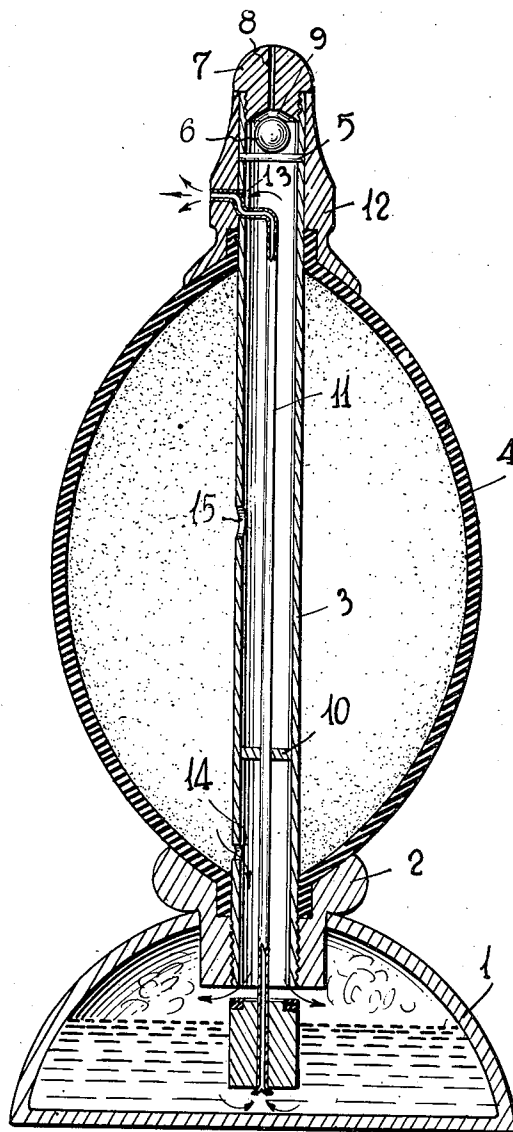
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ATOMIZER

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ATOMIZER

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The present invention is particularly directed to an atomizer in a form which may be convenient for dispensing perfume, toilet water and the like. It preferably is of a type which may be made small enough to be conveniently handled, carried and manipulated. The construction is adapted to an atomizer which may be entirely operated by one hand. Thus it may be lifted and directed or aimed by one hand and the same hand may cause the liquid to be atomized while the device is being held and directed. The device is simple in construction and consists of a relatively small number of parts each of which directly and surely performs its function in the operation of the entire apparatus.

One specific form of apparatus embodying the invention is shown in the accompanying drawing which is a transverse vertical section of an atomizer embodying the present invention.

The device may consist of a base member 1 which preferably will have a flat bottom and may be of any suitable plain or ornamental shape. The member 1 is hollow and forms the tank to contain the liquid to be dispersed or atomized. As shown a thimble 2 may be fastened in a hole at the top of the tank 1. Any suitable opening for supplying liquid to the tank may be employed or liquid may be fed through the thimble 2. Preferably threaded in the thimble 2 is a pipe 3 which extends upwardly more or less vertically therefrom. Carried by the pipe 3 is a bellows member 4 extending upwardly from the thimble 2 but terminating below the upper end of the pipe 3. At its upper end the pipe 3 is provided with a transversely arranged rod 5 on which rests a ball 6. The ball 6 is smaller in diameter than the inside of the pipe 3 but so large that it may not pass between the rod 5 and the inner wall of the pipe 3. Above the ball 6 is inserted, preferably threaded, a thimble or nipple 7 having a preferably centrally disposed passage 8 there-through considerably smaller in diameter than the pipe 3 and provided at its lower end with a more or less concave seat 9. The ball 6 will preferably be made of very light material so that slight air pressure from below will lift it against the seat 9 and close the channel 8 against outward passage of air. Within the portion of the pipe 3 enclosed by the bellows 4 is a transverse baffle plate 10 which extends entirely across the pipe 3 and is solid so as to divide the pipe 3 into two portions, an upper portion and a lower portion, in such a way that there is substantially no leakage of air past the baffle plate 10 between the two portions of the tube or pipe 3. Mounted

within the pipe 3 and preferably centrally disposed is a smaller tube 11 which passes through the baffle plate 10 which may act as a brace or holding means therefor. The tube 11 extends beyond the lower end of the pipe 3 to near the bottom of the liquid chamber 1. Thus normally the lower end of the tube 11 is buried in the liquid in the tank. The tube 11 rises within the pipe 3 to a point above the upper end of the bellows 4 but below the cross-bar 5 where it is turned or bent sideways preferably with a double bend, passing through the wall of the tube 3 and to the atmosphere through the ornamental or bracing member 12 applied to the pipe 3 above the bellows 4. The outer end of the liquid tube 11 is open to the atmosphere. Where the tube 11 passes through the wall of the pipe 3 there is a small opening 13 communicating with the pipe 3 above the baffle plate 10. Below the baffle plate 10 is an opening 14 in the pipe 3 allowing communication between the inside of the pipe 3 and the inside of the bellows 4. Above the baffle plate 10 is an opening 15 allowing communication between the inside of the pipe 3 above the baffle plate 10 and the inside of the bellows 4.

With the parts in the condition illustrated in the drawing the inside of the bellows 4 is in communication with the atmosphere through the openings 8 and 15. The space in the liquid tank 1 above the liquid is in communication with the inside of the bellows 4 through the opening 14 and the open lower end of the pipe 3. Compression of the bellows 4 causes sufficient air pressure to lift the ball 6 and close the air channel 8. The air under pressure from the bellows is also forced through the opening 14 and the open end of the pipe 3 to the surface of the liquid in the tank 1. This may tend to cause liquid to enter and rise in the pipe 11. The air under pressure in the bellows 4 communicates through the opening 15 with the upper end of the pipe 3 and above the baffle plate 10 and may be forced through the opening 13 into and through the outlet of the liquid tube 11 atomizing and forcing outward liquid from the device.

Preferably the hole 14 will be somewhat smaller than the hole 15 so that as the bellows member 4 is collapsed or compressed a larger portion of the contained air will tend to come out through the portion of the pipe 3 above the baffle plate 11 thus tending to supply air under sufficient pressure through the opening 13 to cause proper operation of the apparatus.

As the bellows 4 is released the air pressure on the surface of the liquid in the tank 1 may

be relieved while the ball 6 may fall against the rod 5 and open the channel 8 for the admission of air under atmospheric pressure to the bellows 4 as it returns to its normal condition to thus be in position for another atomizing operation.

The specific details of the parts shown are not essential to the apparatus nor are any specific sizes, forms, shapes, etc., essential since the invention may be embodied in numerous types of apparatus.

I claim as my invention:

1. In an atomizer, a liquid chamber having an outlet for the liquid, means for furnishing air under pressure to the chamber and its outlet comprising an air tube opening into the liquid chamber and a pressure chamber for air surrounding the air tube, an intake tube for air at the top of the air tube, a ball valve at the base of the intake tube to prevent passage of air from the air tube through the intake tube, and a baffle plate in the air tube, the air tube having an opening above the baffle plate to allow air to enter the pressure chamber, and having an opening below the baffle plate to allow air under pressure to enter the liquid chamber.

2. In a device for dispensing liquid, a chamber for holding liquid, an air tube opening into the liquid chamber and having two openings therein for the admission of air to the tube, a baffle plate in the tube between the openings causing air entering the two openings to go in different directions, and an outlet tube for the liquid extending from near the bottom of the liquid chamber through the air tube to the side of the device, and having an opening near its outer end to admit air under pressure from the part of the air tube above the baffle.

3. In an atomizer, a liquid chamber, an outlet tube for liquid from the chamber, a pipe for admitting air under pressure to the chamber and its outlet tube, a port for admitting air to the liquid outlet tube near its top, and a pressure chamber for air surrounding the liquid outlet tube and the air admitting pipe.

4. In an atomizer, a liquid chamber, an air tube opening into the liquid chamber and supported thereby and extending upwardly therefrom, an automatic valve controlling an air inlet opening at the upper end of the tube, a transverse baffle plate in the tube above the chamber, means surrounding the tube above the

chamber for furnishing air under pressure to the tube through two openings therein one being above and the other below the baffle, and a pipe for carrying liquid extending from near the bottom of the chamber and through the tube past the baffle to an outlet opening above the air furnishing means and provided with an opening near its outlet and within the tube above the baffle.

5. In an atomizer, a liquid chamber, an air tube opening into the liquid chamber and supported thereby and extending upwardly therefrom, an automatic valve controlling an air inlet opening at the upper end of the tube, a transverse baffle plate in the tube above the chamber, an elastic ball surrounding the tube above the chamber for furnishing air under pressure to the tube through two openings therein one being above and the other below the baffle, and a pipe for carrying liquid extending from near the bottom of the chamber and through the tube past the baffle to an outlet opening above the ball and provided with an opening near its outlet and within the tube above the baffle.

6. In an atomizer, a liquid chamber having an outlet for the liquid, means for furnishing air under pressure to the chamber and its outlet comprising an air tube opening into the liquid chamber and a pressure chamber for air surrounding the air tube, an intake tube for air at the top of the air tube, a ball valve at the base of the intake tube to prevent passage of air from the air tube through the intake tube, and a baffle plate in the air tube, the air tube having an opening above the baffle plate to allow air to enter the pressure chamber, and having a smaller opening below the baffle plate to allow air under pressure to enter the liquid chamber.

7. In a device for dispensing liquid, a liquid chamber, an outlet tube for the liquid extending from the chamber, a second tube surrounding the outlet tube and having an opening in its wall through which air may be forced to go on to the liquid in the chamber and a larger opening toward its top through which air may enter to go to the outlet tube to atomize the liquid as it passes from the mouth of the outlet tube, and means surrounding the second tube for furnishing air under pressure.

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