Sept. 6, 1932. E. C. YOST 1,876,441

ATOMIZER

Filed Sept. 13, 1929

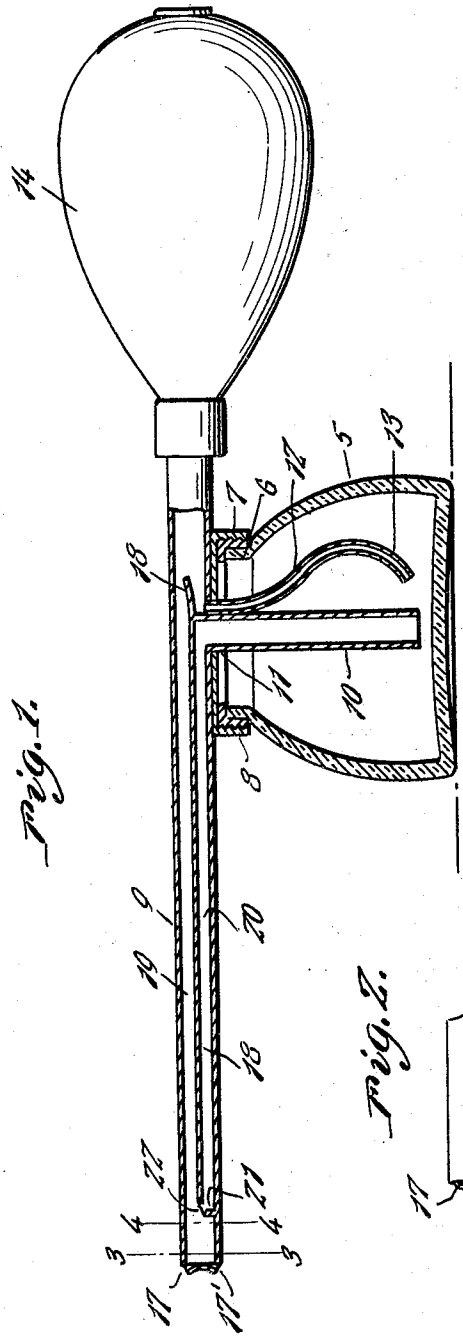


Fig. 1.

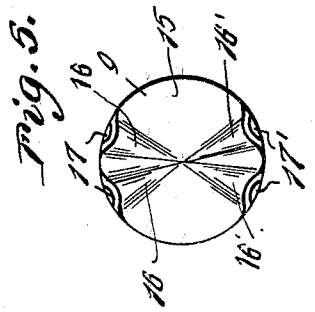


Fig. 5.

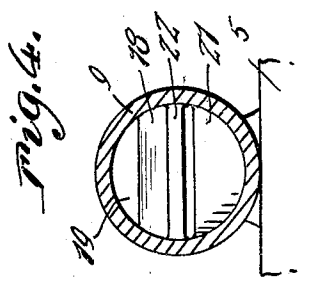


Fig. 4.

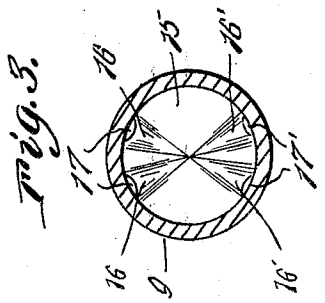


Fig. 3.

Fig. 2.

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UNITED STATES PATENT OFFICE

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ATOMIZER

Application filed September 13, 1929. Serial No. 392,460.

This invention relates to atomizers, and has particular reference to atomizers of spray forming type, in which the liquid to be sprayed is drawn from the receptacle through a suitable conduit by the vacuum action of a stream of air on the discharge end of such conduit and with which the liquid mingles and is discharged in the form of a spray or vapor.

The primary object of the invention is to provide an apparatus of this character, which is simple yet thoroughly reliable, practical and efficient in operation, easily kept in order and handled, consistent with comparatively few parts and is particularly adapted for use in the treatment of widely prevalent diseases of the mucous membranes of the mouth.

Other objects and advantages of the invention will become apparent during a study of the following description, taken in connection with the accompanying drawing, wherein:

Figure 1 is a longitudinal vertical sectional view taken through the apparatus, the bulb of the atomizer being shown in elevation,

Figure 2 is a top plan view of the outlet or jet end of the spray tube,

Figure 3 is a vertical transverse sectional view taken substantially on the line 3—3 of Figure 1,

Figure 4 is a similar view taken substantially on line 4—4 of Figure 1,

Figure 5 is an end view of the spray tube.

Referring more in detail to the drawing, it will be seen that my improved atomizer comprises a liquid container designated generally by the reference character 5, and it is preferable that the liquid container be formed of glass or like material.

The container 5 is provided with a reduced filler neck 6 surrounded by an externally grooved flanged ring 7 formed integral with the neck, which ring acts in the capacity of a packing ring.

A cap 8 is threaded on the ring for closing the filler neck of the receptacle. An elongated tube 9 is adapted to rest adjacent one end thereof on the cap 8, and at said one end the tube 9 is provided with a laterally extending tube 10 which tube 10 extends at substantially right angles to the tube 9.

The tube 10 is adapted to extend through a suitable opening 11 formed in the cap 8 to extend down into the liquid container 5. At said one end, the tube 9 is also provided with a laterally extending tube 12, which tube 12 is of a diameter less than the diameter of the tube 10 and this tube 12 is curved toward its free end as at 13.

The tube 12 may be termed as an air conducting tube, and communicates with said one end of the tube 9 adjacent the tube 10, said tube 12 is also adapted to extend through the opening 11 in the cap 8 to extend downwardly into the fluid container 5.

At its outlet end the tube 12 terminates adjacent the lower end of the tube 10 as clearly shown to advantage in Figure 1. The tube 9 may have said one end portion either formed integrally with the cap 8 or secured thereto in any well known manner such as welding or any other way preferable or may be detachably secured to the cap as may be desired, and as is obvious.

At that end which rests upon the cap 8, the tube 9 is provided with a suitable bulb 14, while at that end farthest remote from the receptacle 5 the tube 9 is closed through the medium of a suitable disk 15, which disk 15 is of a peculiar construction, which construction will be recited more in detail, fashioned as a jet for the discharge end of the tube 9.

The disk 15 has the body portion thereof bowed outwardly as at 16—16 to provide discharge openings 17—17 at spaced points on the upper periphery of the disk 15, while the disk is also pressed outwardly or bulged as at 16′—16′ to provide discharge openings 17′—17′ at spaced points on the lower periphery of the disk 15 to provide lower discharge openings for the tube 9.

The pressed out portions 16—16 and 16′—16′ taper inwardly from the outer periphery of the disk 15 to merge into one another substantially at a center point in the disk 15.

An elongated, longitudinally extending partition member 18 extends transversely of

the tube 9, and said partition member 18 terminates at its opposite end inwardly from the adjacent end of the tube 9 for a purpose to be hereinafter more clearly set forth.

This partition member 18 divides the tube 9 into an upper air passage 19 and a lower fluid passage 20. The partition member 18 at one end terminates in a rearwardly and upwardly inclined extension 18′ to provide a baffle plate or deflector at the entrance end of the tube 9, or at that end of the tube to which the bulb 14 is attached, and this deflector plate 18′ extends above the end of the tube 12 so that obviously when the bulb 14 has been depressed then expanded a part of the air forced therefrom into the tube 9 will be deflected downwardly by the deflector baffle plate 18′ into the tube 12 to the bottom of the receptacle 5, and the air discharged from the tube 12 will act as an agitator to disturb whatever sediment of the liquid in the container 5 that may have settled on the bottom of the container, thus keeping the material in the container 5 continually agitated.

At its opposite end, the partition member 18 is spaced above and rearwardly with respect to a transversely extending vertical partition 21 to provide for the fluid passage 20 an outlet 22 inwardly of the tube and rearwardly of the jet or disk 15.

Obviously then certain of the air through the tube 9 which has not been deflected by the plate 18 will continue through the passage 19, and as it passes over the opening 22 will set up a suction action through the passage 20 and tube 10 for drawing the liquid in the receptacle 5 up through the tube 10 and the passage 18 through the opening 22 to mingle with the air passing over said opening 22 and thus be discharged through the upper and lower jet openings 17 and 17′ respectively to be discharged from the tube 9 in a fine thin spray or vapor, there being two of the sprays directed upwardly and two of the sprays directed downwardly as is obvious from the position of the openings 17 and 17′ respectively.

This discharge of the solution or liquid in the container 5 in opposite directions and in spray form greatly enhances an atomizer of this type rendering the same particularly adapted for use in the treatment of widely prevalent diseases of the mucous membrane of the mouth.

It is believed that from the foregoing description, taken in connection with the accompanying drawing a clear understanding of the construction, operation, utility and advantages of an atomizer of this nature will be had by those skilled in this art, and a more detailed description thereof is therefore deemed unnecessary.

Even though I have herein shown and described the preferred embodiment of my invention, it is to be understood that the same is susceptible of changes fully comprehended by the spirit of the invention as herein described, and the scope of the appended claims.

Having thus described my invention, what I claim as new is:

1. Atomizer comprising a container and an atomizing nozzle including a tube mounted on said container having a bulb at one end and discharge apertures at the other, a partition extending longitudinally within said tube defining an inner conduit terminating at both ends short of the ends of said tube, having an opening at the end adjacent said discharge aperture and having an angularly disposed portion adjacent its other end extending into said container, said tube having a lateral branch, opening in the bottom wall thereof adjacent the angularly disposed portion of said inner conduit, and extending into said container, the said partition extending beyond said angularly disposed portion and over the point of communication of said lateral branch with said tube, forming a baffle directed toward said bulb for deflecting a part of the air jet created by said bulb through said lateral branch into said container.

2. Atomizer comprising a container and an atomizing nozzle including a tube mounted on said container having a bulb at one end and discharge apertures at the other, a partition extending longitudinally within said tube defining an inner conduit terminating at both ends short of the ends of said tube, having an opening at the end adjacent said discharge apertures, and having an angularly disposed portion adjacent its other end extending into said container, said tube having a lateral branch opening in the bottom wall thereof adjacent the angularly disposed portion of said inner conduit and extending into said container, the discharge end of said tube being closed centrally with the discharge apertures opening peripherally, and the adjacent end of said inner conduit having its opening defined by a wall occluding its lower half and terminating in a transverse edge.

In testimony whereof I affix my signature.

EDWIN C. YOST.