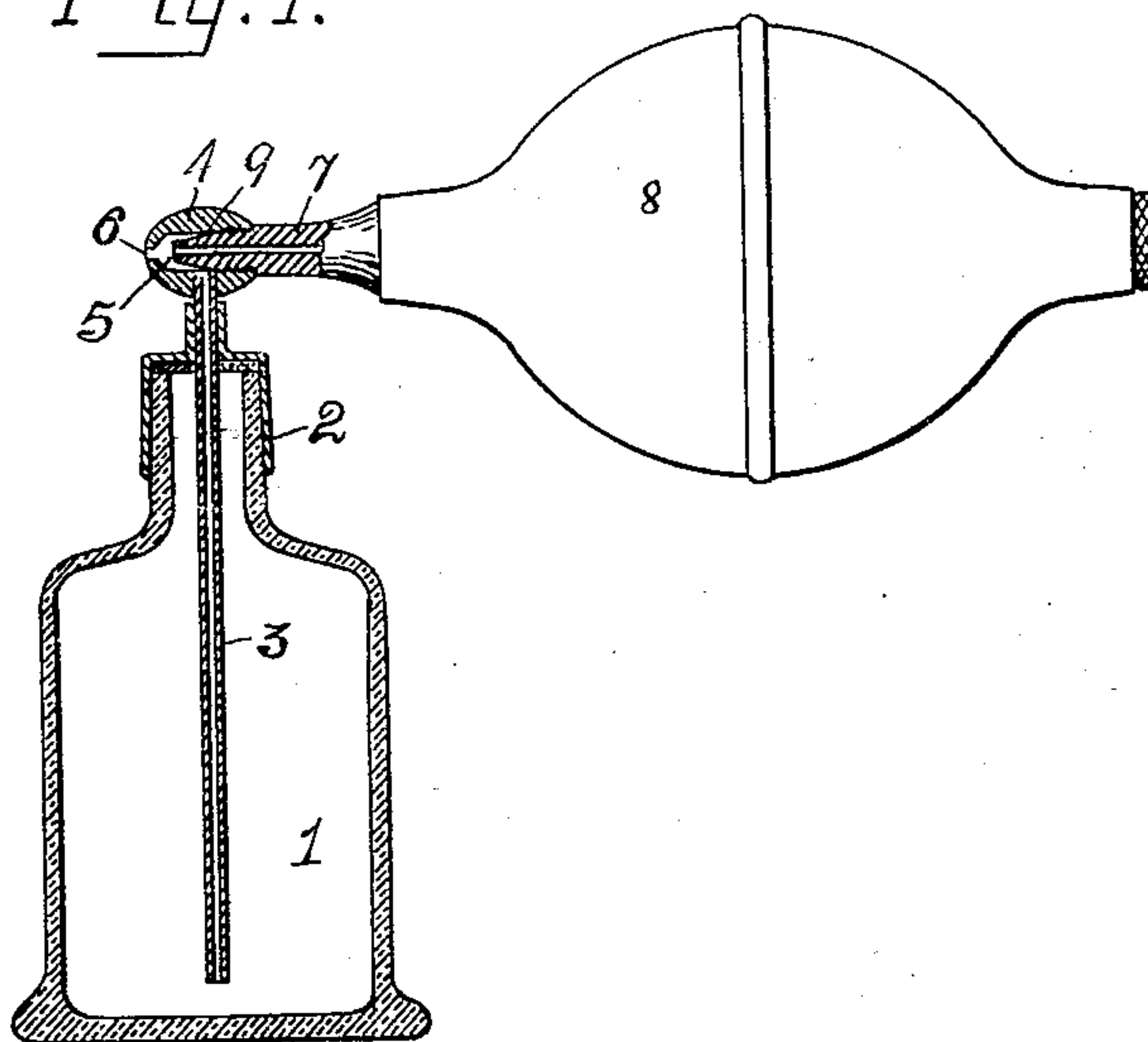


T. A. DE VILBISS.  
ATOMIZER.  
APPLICATION FILED DEC. 26, 1907.

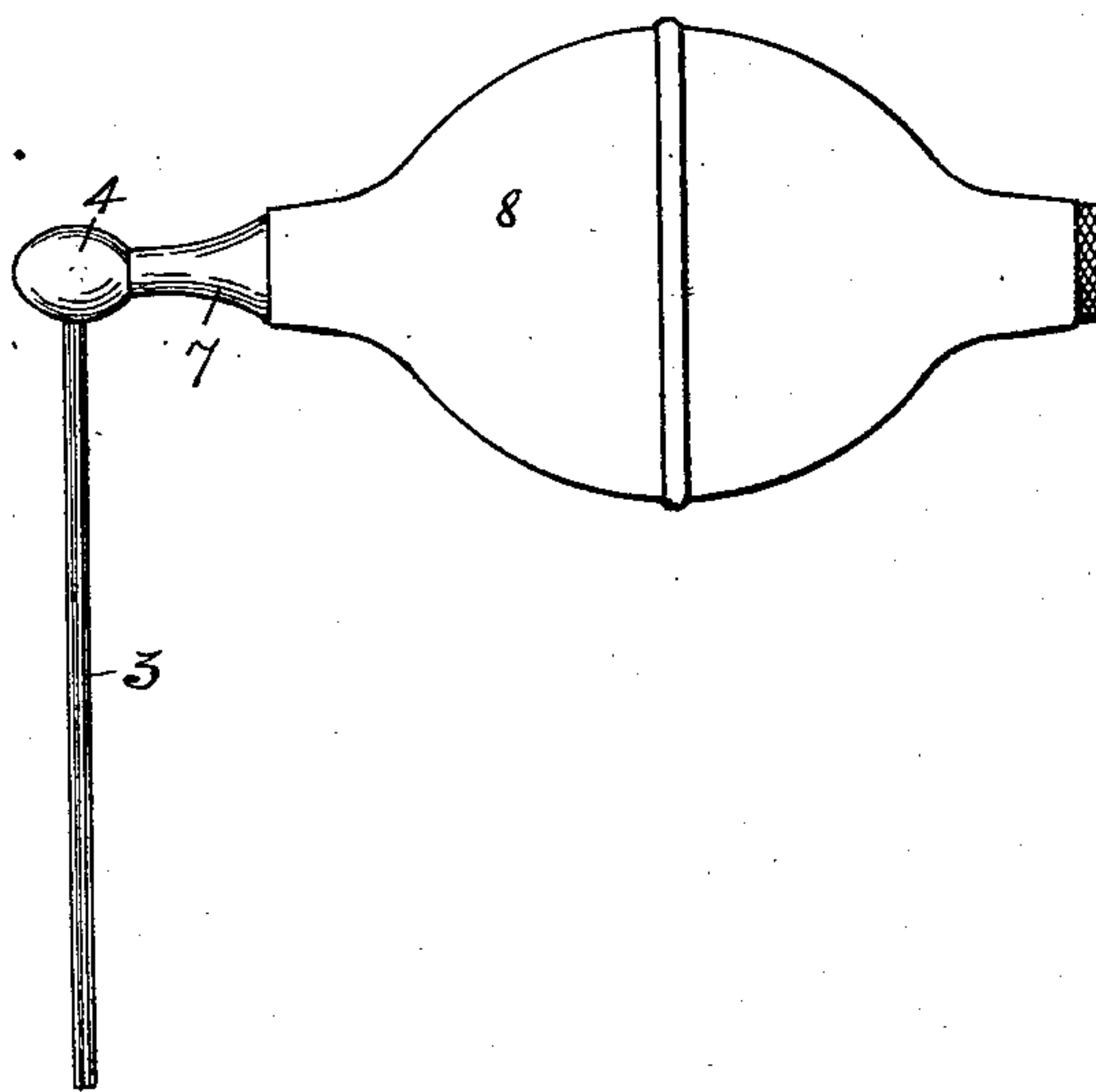
899,007.

Patented Sept. 15, 1908.

*Fig. 1.*



*Fig. 2.*



WITNESSES:

*S. C. Walter*  
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INVENTOR.

*Thomas A. DeVilbiss,*  
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*His attys.*

# UNITED STATES PATENT OFFICE.

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## ATOMIZER.

No. 899,007.

Specification of Letters Patent.

Patented Sept. 15, 1908.

Application filed December 26, 1907. Serial No. 408,006.

*To all whom it may concern:*

Be it known that I, THOMAS A. DE VILBISS, a citizen of the United States, and a resident of Toledo, in the county of Lucas and State of Ohio, have invented a certain new and useful Atomizer; and I do hereby declare, the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to atomizers of spray forming apparatus of the class in which the liquid to be sprayed is drawn from its 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 object of my invention is the provision of an apparatus of this class, which is cheap of manufacture, simple in its construction and operation, and capable of being easily cleaned, and which is particularly adapted for use as a demonstrating instrument by agents or other persons selling perfumes or the like.

A further object of my invention is the provision of an atomizer of simple construction, which is adjustable to control the amount of liquid admitted to the spray-head, and also to regulate the density of the spray emitted from the spray-head as the conditions of use or nature of the liquid may require.

The operation, construction and arrangement of the parts of the invention are fully described in the following specification, and illustrated in the accompanying drawing, in which,—

Figure 1 is a central vertical section of a portion of the atomizer comprising my invention and an associated receptacle, and Fig. 2 is a side view thereof separate from the receptacle.

Referring to the drawing, 1 designates any suitable form of liquid receptacle, which is shown as having its neck opening closed by a removable cap or other suitable closure member 2, through which the liquid-tube 3 of the atomizer passes, forming a close joint therewith.

The liquid-tube 3 is intended to extend down into the receptacle 1 to submerge its lower end in the liquid and has its upper end penetrating the side of the spray-head or nozzle-member 4, which is shown as being of elliptical shape but is not restricted to such form. The nozzle-member 4 is longitudinally bored from one end thereof, to form the discharge-throat or chamber 5 into which the upper end of the liquid-tube 3 opens, the forward end of said bore being reduced to form the restricted discharge orifice 6, as shown.

The air-tube 7, which carries the air-bulb 8 at its outer end, has its discharge end projected into the bore or thread 5 of the spray-head, and preferably threaded thereto to adapt it to be removed from the spray-head for the purpose of cleaning, or to facilitate a longitudinal adjustment thereof relative to the discharge-orifice 6 of the head to change the spray density. As the tendency of the air discharged under pressure from a nozzle is to expand when liberated, thus forming a stream which gradually increases in size from the nozzle outwardly, the discharge orifice 6 of the spray-head is made larger than the air-tube channel at its discharge-end. With this in mind it will be apparent that the nearer the discharge end of the air-tube to the orifice 6 the less will the air-stream emitted from the air-tube impinge against the walls of said orifice, thereby reducing accordingly the vacuum energy within the spray-head and effecting a consequent reduction of the spray density. The admission of liquid to the spray-head may also be controlled by projecting the discharge-end of the air-tube over the discharge-end of the liquid-tube and fashioning the air-tube end, as by annularly tapering it, so that it will be adapted to act as a valve to restrict or enlarge the communicating passage between the liquid-tube and spray-head throat as the air-tube is screwed inward or outward relative to the head. It will thus be apparent that by adjusting the air-tube outwardly in the spray-head, both the spray density and the permissible flow of the liquid into the spray-head will be increased in proper proportion.

In the operation of my invention, air is forced, by a compression of the bulb 8, through the air-tube or injector 7 into the throat 5 of the nozzle-member 4 in advance of the point



of entrance thereto of the liquid-tube 3, and is ejected through the restricted discharge orifice 6, which is preferably in line with the air-discharge. As the air rushes through the discharge orifice a vacuum is created thereby within the nozzle throat around the air-stream and causes the liquid to be drawn from the receptacle through the liquid-tube, and to mingle with the air and be discharged in the form of a spray or vapor from the orifice 6. An adjustment of the air-tube in the spray-head to regulate the density of the spray and flow of the liquid is accomplished as above described.

It is apparent that this form of atomizer is very much simplified over those heretofore used, as it obviates the expensive and very difficult needle boring of the spray-head or nozzle-member to provide the air and liquid channels therein, and enables the air-tube to be easily and quickly removed for the purpose of cleaning the discharge end thereof of accumulated matter, and also cleaning out the nozzle throat or bore 5. This construction of atomizer also very materially simplifies and lessens the cost of manufacture thereof, and provides an apparatus which is admirably adapted for the use of agents or salesmen for the demonstration of perfumes or the like.

Having thus described my invention, what

I claim as new and desire to secure by Letters Patent, is,—

1. In an atomizer, a spray-head having a throat bore restricted at one end to provide a discharge orifice, a liquid-tube having its discharge end opening into said throat bore, and an air-tube having its discharge end adjustably projected into the throat bore in the direction of the discharge orifice and constructed to restrict or enlarge the communicating passage between the liquid-tube and the spray-head throat as the air-tube and spray-head are relatively adjusted.

2. In an atomizer, a spray-head having a bore therethrough which is restricted at one end to form a discharge orifice, an air-tube threaded into the large end of said bore, said tube having its discharge end terminating short of the restricted end of the bore and reduced to form a surrounding vacuum chamber, and a liquid-tube projecting laterally from the head with its channel opening into said bore at the side of the reduced portion of the air-tube to the rear of its end.

In testimony whereof I have hereunto signed my name to this specification in the presence of two subscribing witnesses.

THOMAS A. DE VILBISS.

Witnesses:

C. W. OWEN,  
CORNELL SCHREIBER.