

No. 692,722.

Patented Feb. 4, 1902.

C. J. SELTZER.  
ATOMIZER.

(Application filed May 11, 1900. Renewed Dec. 24, 1901.)

(No Model.)

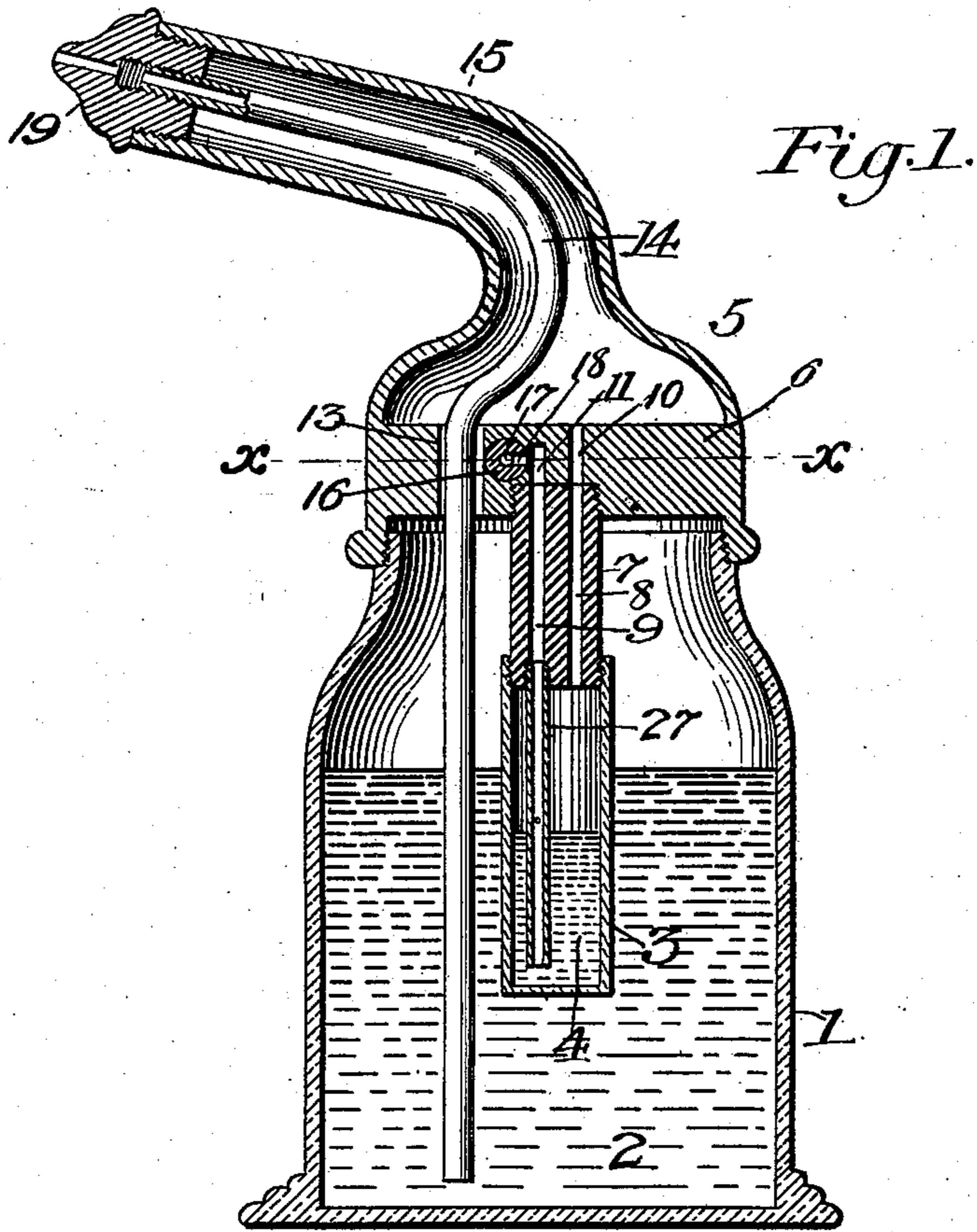


Fig. 2.

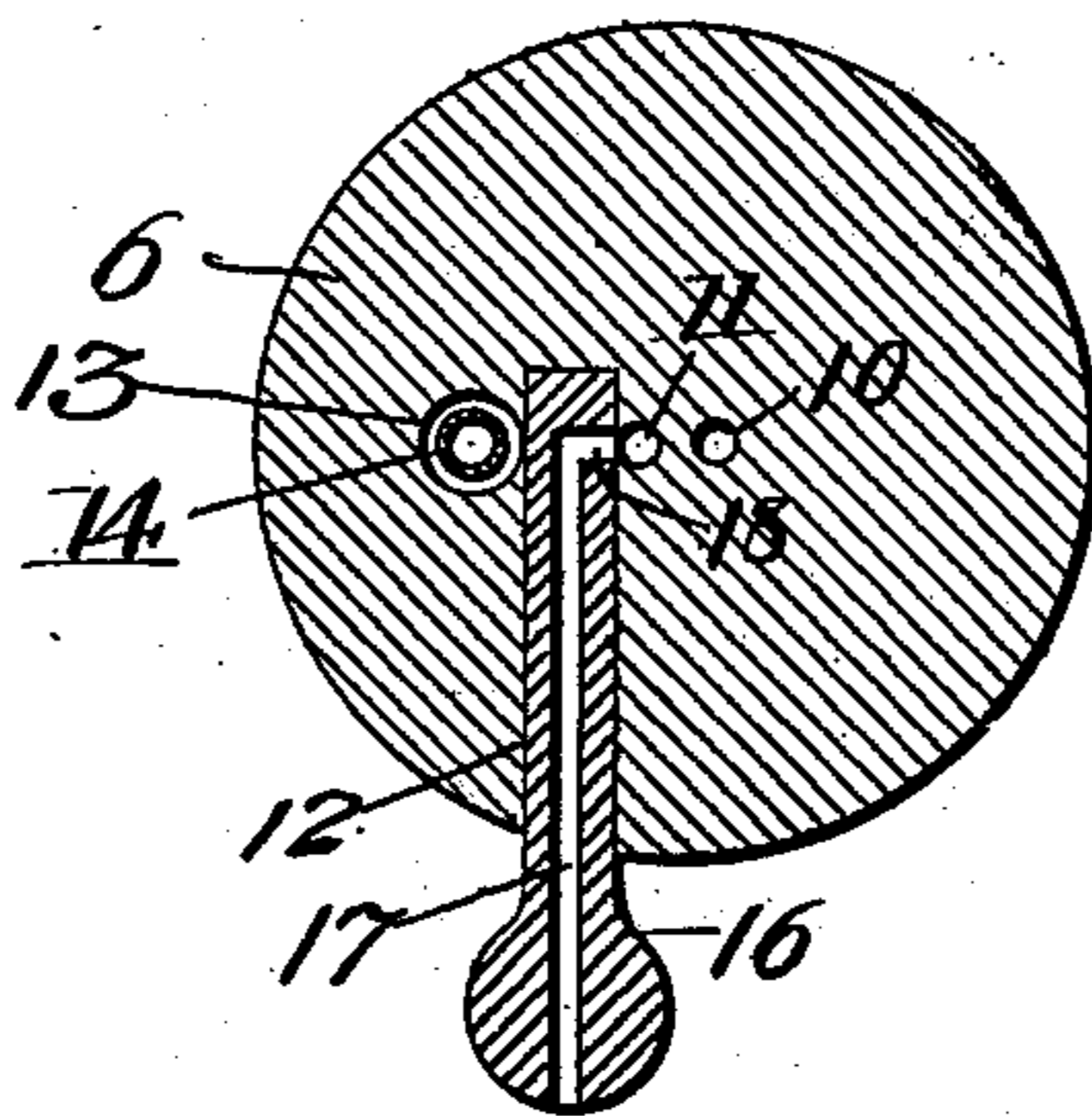
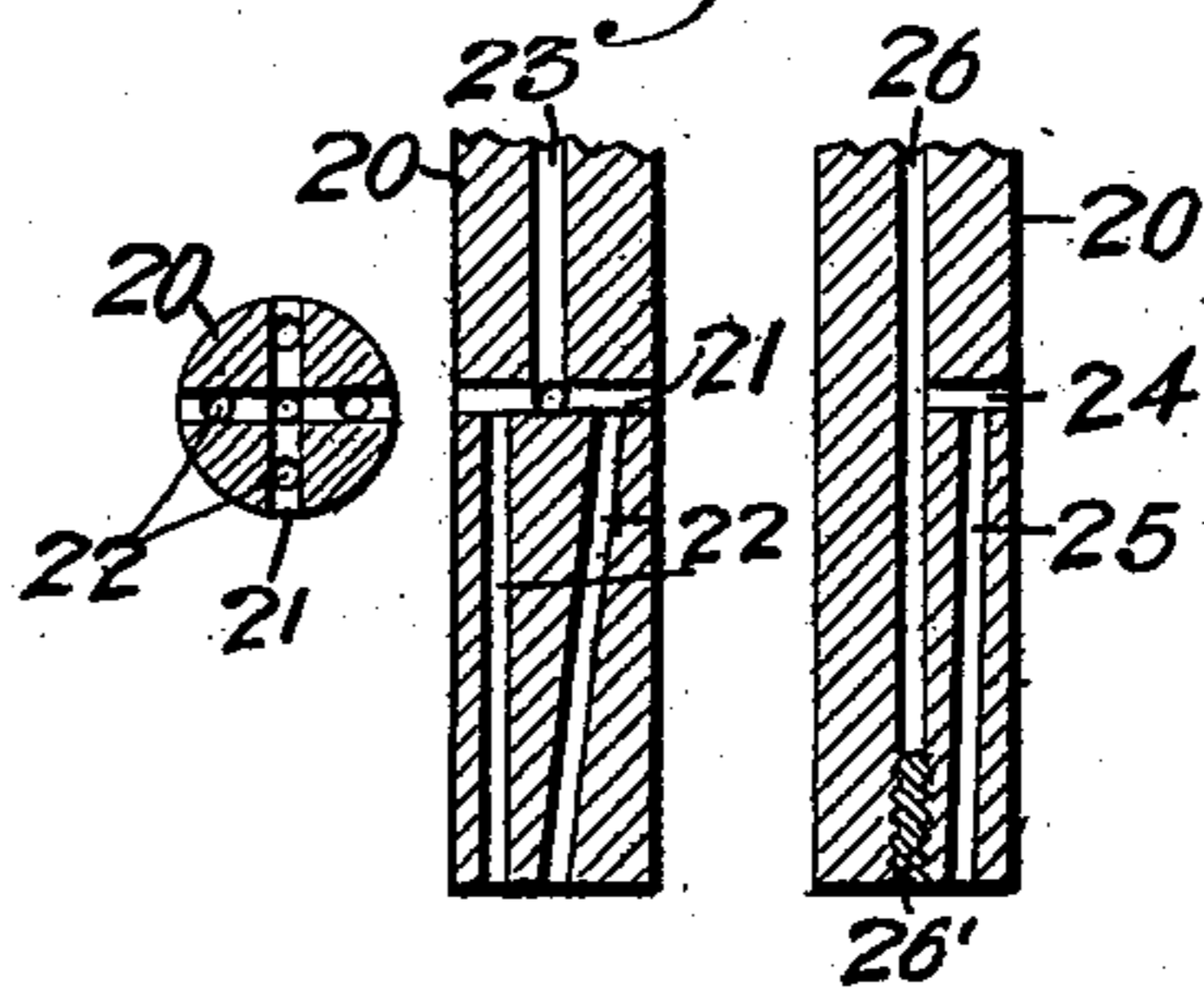


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 692,722, dated February 4, 1902.

Application filed May 11, 1900. Renewed December 24, 1901. Serial No. 87,049. (No model.)

*To all whom it may concern:*

Be it known that I, CYRUS JAY SELTZER, of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Atomizers and Nebulizers, of which the following is a specification.

My invention relates to atomizers and nebulizers; and it consists in the parts and improvements hereinafter described and claimed.

In the accompanying drawings, forming part of this specification, Figure 1 is a central vertical sectional view of my combined atomizer and nebulizer. Fig. 2 is a sectional view taken on line *xx* of Fig. 1. Fig. 3 illustrates two modifications of the air and liquid tubes constituting a part of my improved nebulizer.

In the several figures like reference-numerals indicate similar parts.

My combined atomizer and nebulizer consists of an outer receptacle 1 for the liquid 2 to be atomized, an inner receptacle 3 for the liquid 4 to be nebulized, and their cooperating parts.

5 is a cap attached to the outer receptacle 1 and provided with a portion or diaphragm 6.

7 is a block secured to the portion 6 of the cap and provided with two passages 8 and 9. The passage 8 communicates at one end with the interior of receptacle 3 and at the other end with an aperture 10 through the diaphragm 6. The passage 9 is connected at one end to a nebulizing-tube 27 within receptacle 3 and at the other end with a passage 11 in diaphragm 6.

12 is a recess in the diaphragm 6 for the reception of a three-way cock or valve 16.

The valve 16 is provided with a passage 17, arranged in communication with an aperture 18 through the wall of said valve. The outer end of valve 16 is adapted to be placed in communication with any suitable source of fluid-pressure supply.

14 is the usual inner or liquid atomizer-tube, extending through an aperture 13 in the diaphragm 6 and through the outer atomizer-tube 15.

19 is any well-known form of detachable atomizing-tip secured at the outer ends of the tubes 14 and 15.

The operation of my improved atomizer and nebulizer is as follows: When it is desired to use my device for nebulizing the liquid 4, the tip 19 is detached and the valve 16 is turned, as shown in Fig. 1, with its aperture 18 in communication with the nebulizing-tube 27 through passages 11 and 9. In this position of the valve the fluid under pressure entering passage 17 of said valve will nebulize the fluid 4, and the nebulized fluid will issue by way of passages 8 and 10 and outer tube 15.

In using my device for atomizing the liquid 2 the cap 19 is properly attached and the valve 16 is turned, as shown in Fig. 2, with its aperture 18 in communication with the passage 13 through the diaphragm 6. In this position of the valve the fluid under pressure entering passage 17 of said valve will issue into the passage 13. A portion of the fluid will pass downward through passage 13 and exert sufficient pressure on the liquid 2 to force it up through the tube 14. Another portion of the fluid under pressure will pass upward from passage 13 through the outer tube 15 and escape through the atomizer-tip 19. This portion of the fluid will impinge in the usual manner on the liquid rising through the tube 14 into the tip 19 and cause said liquid to issue from the tip in a jet of spray.

Fig. 3 illustrates two modifications in which the nebulizer-tube is formed of an ordinary commercial rod or bar 20 of suitable material. Referring first to the construction shown at the left in Fig. 3, two intersecting passages 21 are drilled or otherwise formed through the rod 20, the peripheral openings of these two passages constituting four jet-passages. Four passages 22 are then formed in the rod, the four passages 22 extending from the bottom of the rod into communication with passages 21 at points adjacent to the periphery of the rod, these passages 22 thus constituting four liquid-passages, one for each jet-passage. I then form the air or other fluid passage 23 from the top of the rod to the point of intersection of the passages 21. While I have shown only two intersecting passages 21, and therefore four jet-passages, it is obvious that a greater number could be employed, if found desirable, or that a single passage 21 could be employed.

In the construction shown at the right in Fig. 3 a passage 24 is first formed partly through the rod 20. The liquid-passage 25 and air-passage 26 are then formed, extending, respectively, from the bottom and the top of rod 20 into communication with the passage 24, as shown. By thus constructing my nebulizer-tube containing the air, liquid, and jet passages of a single integral piece of straight rod it can be made exceedingly small to adapt it for use with very small bottles, and the cost of manufacturing the tube is greatly reduced.

As shown, the air-passage 26 has been drilled or otherwise formed entirely through the rod 20 and its lower end then closed by a plug 26' of suitable material. In this modification a tube could be employed instead of the rod, in which case the bore of the tube would constitute the air-passage and would be closed at the bottom by a plug, as 26'.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

In a combined atomizer and nebulizer, an outer receptacle for containing the liquid to be atomized, a cap on the outer receptacle and provided with the portion 6, apertures

10, 13 and recesses 11, 12 in said portion, a block 7 secured to said cap and having passages 8 and 9 connected respectively to aperture 10 and recess 11, an inner receptacle 3 secured to the block 7, a nebulizing-tube in said inner receptacle and in communication with the passage 9, a valve provided with a longitudinal passage and a lateral aperture communicating therewith, said valve being so located in the recess 12 that it can be adjusted to place said lateral aperture in communication with either the recess 11 or the passage 13, an outer atomizer-tube carried by said cap, an inner atomizer-tube passing through said outer tube and passage 13 and extending into the outer receptacle, and a detachable atomizer-tip carried at the outer ends of the atomizer-tubes, substantially as shown and described.

In testimony whereof I hereunto set my hand, this 7th day of May, 1900, in the presence of two attesting witnesses.

CYRUS JAY SELTZER.

Witnesses:

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