

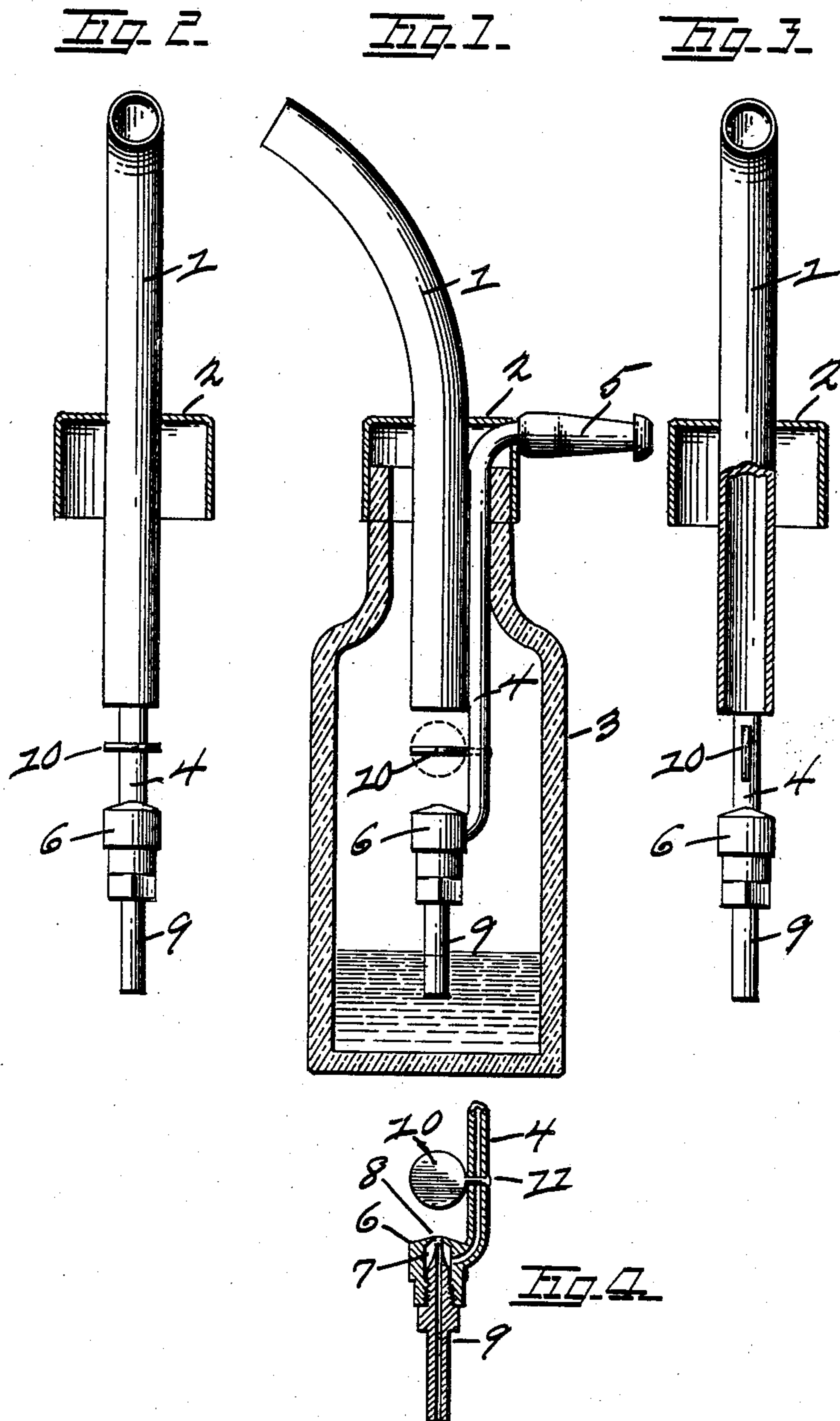
No. 735,723.

PATENTED AUG. 11, 1903.

T. DE VILBISS.
NEBULIZER.

APPLICATION FILED JUNE 13, 1903.

NO MODEL.



WITNESSES

Chas E DeFaubaux
J. D. Wright

INVENTOR

Thomas De Vilbiss
By *Carroll Keller* atty.

UNITED STATES PATENT OFFICE.

THOMAS DE VILBISS, OF TOLEDO, OHIO.

NEBULIZER.

SPECIFICATION forming part of Letters Patent No. 735,723, dated August 11, 1903.

Application filed June 13, 1903. Serial No. 161,270. (No model.)

To all whom it may concern:

Be it known that I, THOMAS DE VILBISS, of Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful
 5 Improvements in Nebulizers; and I do hereby declare that the following is a full, clear, and exact description of the invention, which 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 part of this specification.

My invention has reference to a nebulizer for liquids, and is especially adapted for converting liquid medicinal preparations into
 15 nebulous vapor.

The object of my invention is to produce a nebulizer which shall be simple and inexpensive in construction and which may by a simple change in the position of one of its parts be made to spray either a light or a heavy vapor, a condition most desirable to practitioners in both the medical and dental professions.

To this end my invention comprises the novel arrangement of the parts hereinafter shown, described, and claimed.

In the drawings, Figure 1 is an elevation showing the arrangement of the nebulizer, the liquid-receptacle being shown in section. Fig. 2 is a front elevation showing the pivoted table which I employ in a position transverse to the direction of the spray from the liquid-ejector. Fig. 3 is a like view showing the position of the table altered to present its edge to the spray. Fig. 4 is a detail in sectional elevation of the liquid-ejector. In this figure is also shown the preferred means for mounting the pivoted table above the ejector to permit of turning the same to present either its face or its edge to the spray from the ejector.

Referring to the parts, 1 is a vapor-conducting tube extending centrally through and secured to the cap 2 of the receptacle 3. The reduced upper end of the receptacle 3 is preferably tapered slightly, and the cap 2 is of a size to fit the same snugly to insure a tight joint, being held in position by frictional engagement and being, as a consequence of this construction, quickly and conveniently removable.

4 is an air-tube leading downwardly from a nipple 5, projecting laterally from the cap 2 and adapted to permit the attachment of a compressible bulb or a flexible tube leading from a tank containing compressed air. At its lower end the tube 4 is arranged with an ejector comprising a head 6, hollow on the interior to form a chamber 7, into the side of which the tube 4 enters, and 8 is a discharge-orifice adapted to direct the spray in the direction of the central longitudinal axis of the conducting-tube 1.

9 is a liquid-conducting tube having a conical upper end adapted to take a position within the chamber 7 and deliver the liquid at the orifice 8 when air under pressure is supplied to the chamber through the air-tube 4. Interposed between the lower end of the vapor-conducting tube and the ejector is a table 10, preferably disk-shaped and adapted to be turned, so as to present either its flat face or its edge to the spray as it is delivered by the ejector. To permit of turning the table, the preferred construction consists in forming a laterally-extending pivot 11 on the body of the same adapted to be mounted in the air-tube 4. The table may, however, be formed with a perforation extending diametrically through its opposite edges and then mounting the same upon a stud or pin secured upon the air-tube.

The operation of the nebulizer is as follows: It being desired to employ a heavy or moist vapor the nebulizer parts carried by the cap 2 are removed from the liquid-receptacle, and the table 10 is turned upon its pivot to take the position shown in Figs. 3 and 4. The parts are then replaced as they were, the liquid-receptacle having been previously filled with the liquid to the required level below the point of discharge of the ejector. Upon supplying compressed air thereto the spray is discharged upwardly from the ejector in the form of an inverted cone and enters the lower end of the vapor-tube 1 and is conducted therethrough to be discharged at its upper end. The edge of the table being presented to the ejector while in the position indicated, the same offers but little obstruction to the passage of the spray into the vapor-tube. Should it now be desired to use a very light instead of a heavy vapor, the position of the table is altered, as shown in Figs. 1

and 2, transverse to the direction of the spray from the ejector. The spray is consequently discharged directly against the flat face of the table 10, and as a result of this impingement a portion of the spray ejected is converted into a very light, nebulous vapor, completely filling the space in the liquid-receptacle not occupied by the liquid. This light vapor is conducted from the receptacle by the vapor-tube 1, owing to the slight pressure created within the receptacle by the air discharged from the ejector. As only a portion of the spray is converted into light vapor, the remainder is condensed immediately upon coming into contact with the face of the table and drops therefrom to rejoin the liquid contained in the receptacle.

From the foregoing it becomes clear that I provide a convertible nebulizer for spraying either light or heavy vapor and that the same is simple in construction, inexpensive, and, furthermore, easily operated and maintained in antiseptic condition. Since the spray-conducting tube extends within the liquid-receptacle a considerable distance, and there being no openings in the cap through which liquid may be discharged, the nebulizer is perfectly invertible without danger of spilling the liquid.

The novelty, utility, and advantages of my invention will be apparent.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a nebulizer for converting liquids

into light or heavy vapor, a vapor-conducting tube, an ejector adapted to discharge spray in the direction of the central axis of said tube, and a table arranged in the path of the spray adapted to be turned to present either its flat face or its edge to the spray, substantially as described.

2. In a nebulizer for converting liquids into light or heavy vapor, a vapor-conducting tube, open at its ends and providing a continuous passage for vapor, an ejector arranged below said tube adapted to discharge spray in the direction of its central axis, and a pivoted table interposed between the lower end of the tube and the ejector, substantially as described.

3. In a nebulizer for converting liquids into light or heavy vapor, a vapor-conducting tube, an air-tube adjoining the vapor-conducting tube in parallel relation and extending below the lower end of said tube, an ejector communicating with the air-tube and adapted to discharge spray in the direction of the central axis of the vapor-tube, and a pivoted table mounted upon the section of the air-tube extending below the vapor-tube in the path of the spray from the ejector, substantially as described.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

THOMAS DE VILBISS.

Witnesses:

CARL H. KELLER,
EDWARD O. MILLER.