

J. J. HOLLAND & W. DISCHER.
NEBULIZER.

APPLICATION FILED NOV. 20, 1911.

1,042,556.

Patented Oct. 29, 1912.

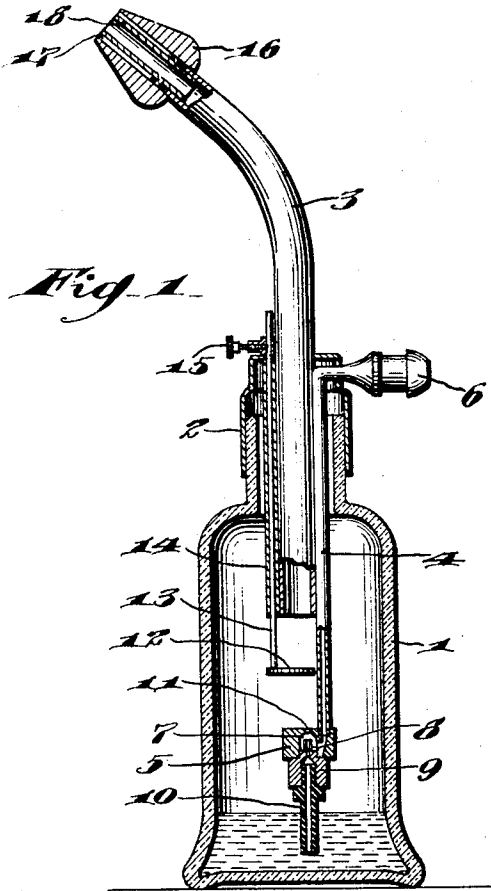


Fig. 1

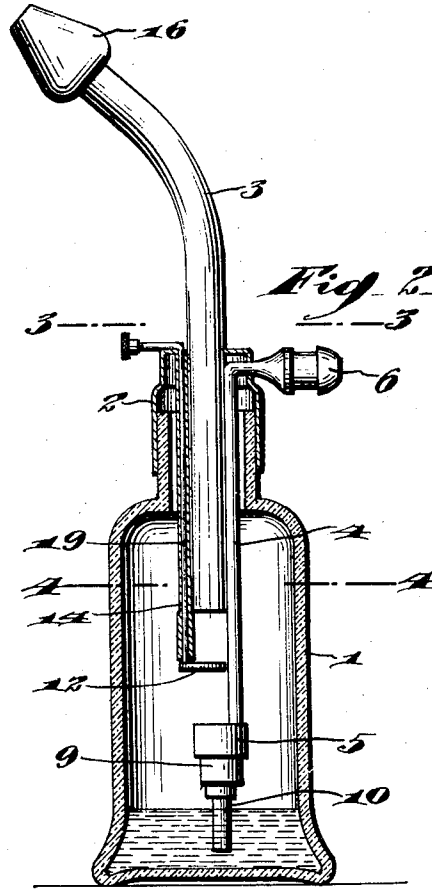


Fig. 2

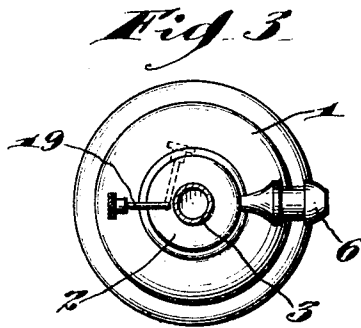


Fig. 3

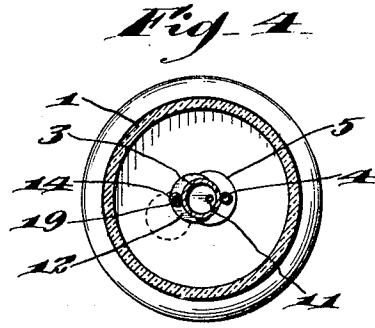


Fig. 4

Inventors

*James J. Holland
and William Discher,*

Witnesses

*Thos. Roseman
R. H. Krenkel.*

By *Joshua R. N. Toms,*
Attorney

UNITED STATES PATENT OFFICE.

JAMES J. HOLLAND, OF PHILADELPHIA, PENNSYLVANIA, AND WILLIAM DISCHER, OF TOLEDO, OHIO.

NEBULIZER.

1,042,556.

Specification of Letters Patent.

Patented Oct. 29, 1912.

Application filed November 20, 1911. Serial No. 661,235.

To all whom it may concern:

Be it known that we, JAMES J. HOLLAND and WILLIAM DISCHER, citizens of the United States, residing at Philadelphia, county of Philadelphia, and State of Pennsylvania, and Toledo, county of Lucas, and State of Ohio, respectively, have invented certain new and useful Improvements in Nebulizers, of which the following is a specification.

Our invention relates to improvements in nebulizers, the object of the invention being to provide an improved nebulizer which is especially designed for converting medicinal liquids into light and heavy sprays with improved means which can be controlled from the outside to regulate the vapor or spray.

Heretofore in the manufacture of devices of a similar nature, it has been necessary to remove from the receptacle the operative parts of the device to adjust the means which regulate the vapor or spray, and thereby compel the hands to come in contact with the liquid in the receptacle, which of course, finds its way over the mechanism.

To overcome this, and to provide a construction which enables the device to be adjusted so as to regulate the vapor or spray without the necessity of disconnecting any of the operative parts, is one of the primary objects of our invention, as will now be described in detail.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1, is a view in longitudinal section partly in elevation illustrating our improvements. Fig. 2, is a view partly in longitudinal section and partly in elevation illustrating a modification. Fig. 3, is a view in section on the line 3—3 of Fig. 2, and Fig. 4, is a view in section on the line 4—4 of Fig. 2.

1, represents a receptacle adapted to contain any suitable liquid, and on which a cap 2 is secured in any desired manner. Through this cap 2, a vapor conducting pipe 3 projects, and is rigidly secured in said cap, and an air tube 4 also projects through the cap, is preferably secured to the tube 3, and extends down below the tube where it joins with an ejector head 5. The opposite end

of the tube 4 outside of the cap is provided with the ordinary nipple 6 to be connected in any suitable manner to a source of compressed air. In the head 5, a chamber 7 is provided into which a nozzle 8 on a tubular extension 9 projects, and this extension 9 has a liquid conducting tube 10 supported therein, and projecting below the level of the liquid in the receptacle.

The head 5 has an outlet orifice 11 communicating with chamber 7, and in line with the inlet end of the vapor tube 3, so that when the air is forced through the pipe 4, and up through the chamber 7, the vaporized liquid is drawn with the air, and forced upwardly through the tube 3. To control this vapor, we provide an improved table 12 which is secured to a rod 13. This rod 13 projects upwardly through a tube 14 secured in cap 2. On the upper end of this rod 13, above the cap 2, an arm 15 is secured, and is adapted to be swung from side to side as will be explained.

The arm 15 as shown in Fig. 1, comprises two members screwed together and securely clamping the end of the rod. This enables the arm to be adjusted on the rod, so as to regulate the vertical position of the table 12, and furthermore it performs its ordinary function of swinging the table into position below the tube 3 or into a position out of line with said tube 3.

When the table is in position below the tube 3, the passage of the vapor is so baffled that it escapes through the tube 3 in the form of a very light vapor, and as the table is moved from below the tube 3, this vapor becomes heavier, and is discharged with greater force.

As will be readily understood, the table may be moved from outside the receptacle by simply moving the arm 15. It is therefore not necessary to remove the cap or to bring the fingers into contact with any portion of the device which is covered with the fluid or vapor. This is of vital importance to physicians and others using the nebulizers, because it enables them to keep their hands free from the liquid being used.

With reference particularly to Fig. 1, it will be seen that on the outer end of the vapor tube 3, a nozzle 16 is provided having an annular chamber 17 around its discharge tube 18. This annular chamber 17 is adapted to receive the secretions from the nose or

other part of the anatomy while using the nebulizer, thus preventing such secretions from passing down the tube into the medicine.

5 In the modification shown in Figs. 2 and 3, instead of providing an adjustable arm, the upper end of the rod 19 which corresponds to the rod 13, is bent at right angles, so that while it performs the same functions
10 as the arm 15, it is not adjustable. It will therefore be noted that the table 12 may be readily swung into position below the tube 3 or be moved out from below the tube as shown in dotted lines in Fig. 4, and this
15 operation accomplished without removing the cap.

Various other slight changes might be made in the general form and arrangement of parts described without departing from
20 our invention, and hence we do not limit ourselves to the precise details set forth, but consider ourselves at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

25 Having thus described our invention, what we claim as new and desire to secure by Letters Patent is:

1. A nebulizer for converting liquids into light and heavy vapors, comprising a recep-
30 tacle for liquid, a closure for said receptacle, a vertically positioned vapor conducting tube projecting into said receptacle and secured in said closure, an ejector adapted to discharge spray in a direction of the open
35 lower end of said tube, a table, and means supported by said closure for moving said table into and out of the path of said spray and maintaining said table at all times at right angles to the path of said spray, said
40 table moving means being operable from without the closure, substantially as described.

2. A nebulizer for converting liquids into

light and heavy vapors, comprising a recep-
45 tacle for liquid, a cap closing said receptacle, a vertically positioned vapor conducting tube projecting through said cap and secured therein, an ejector located below the
lower end of the tube, an air pipe projecting through the cap and supporting the said
50 ejector, a table located between the ejector and the lower end of the tube, and means supported in the cap and operated from outside the cap to move the table into and out
55 of the path of the spray and for moving the same toward or from the ejector, substantially as described.

3. A nebulizer for converting liquids into light and heavy vapors, comprising a recep-
60 tacle for liquid, a cap normally closing said receptacle, a vertically positioned vapor conducting tube projecting through said cap and secured therein, an ejector located below the
lower end of the tube, an air pipe projecting through the cap and supporting the
65 said ejector, a tube secured in the cap, a rod projecting through said tube and rotatably and slidably movable therein, a table on the lower end of the rod normally located between the ejector and the tube, and an arm
70 on the upper end of said rod outside of the cap, substantially as described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

JAMES J. HOLLAND.
WILLIAM DISCHER.

Witnesses as to the signature of James J. Holland:

C. E. POTTS,
R. H. KRENKEL.

Witnesses as to the signature of William Discher:

ED. E. PERRY,
LOUIS H. AMER.