

No. 791,468.

PATENTED JUNE 6, 1905.

O. Q. HOLMAN.
NEBULIZER.

APPLICATION FILED JAN. 11, 1904.

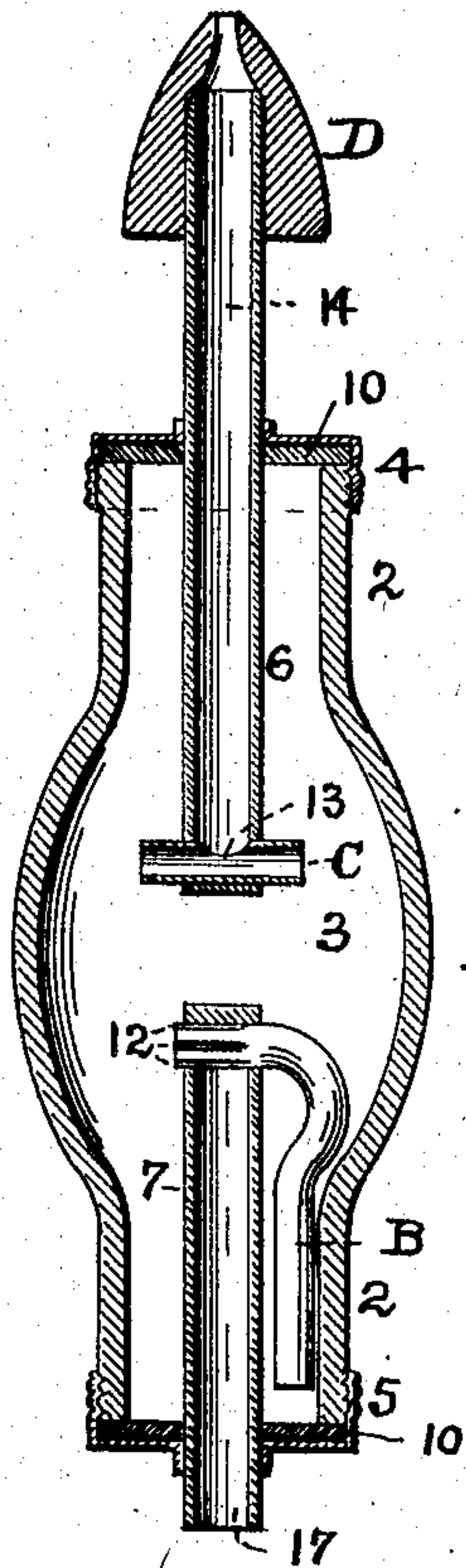


FIG. 3.

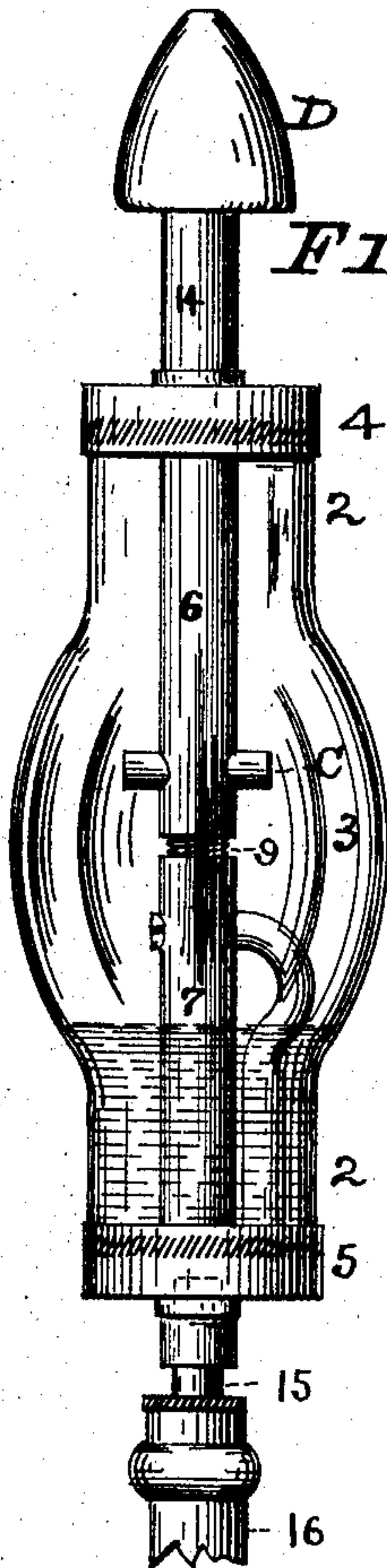


FIG. 1.

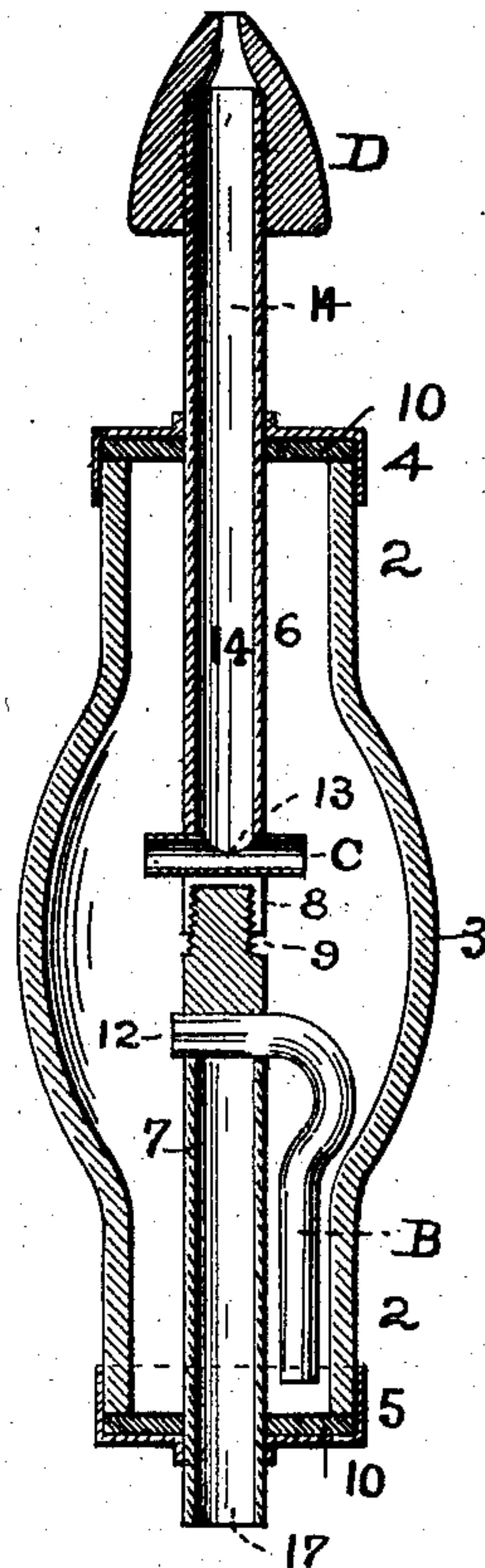


FIG. 2.

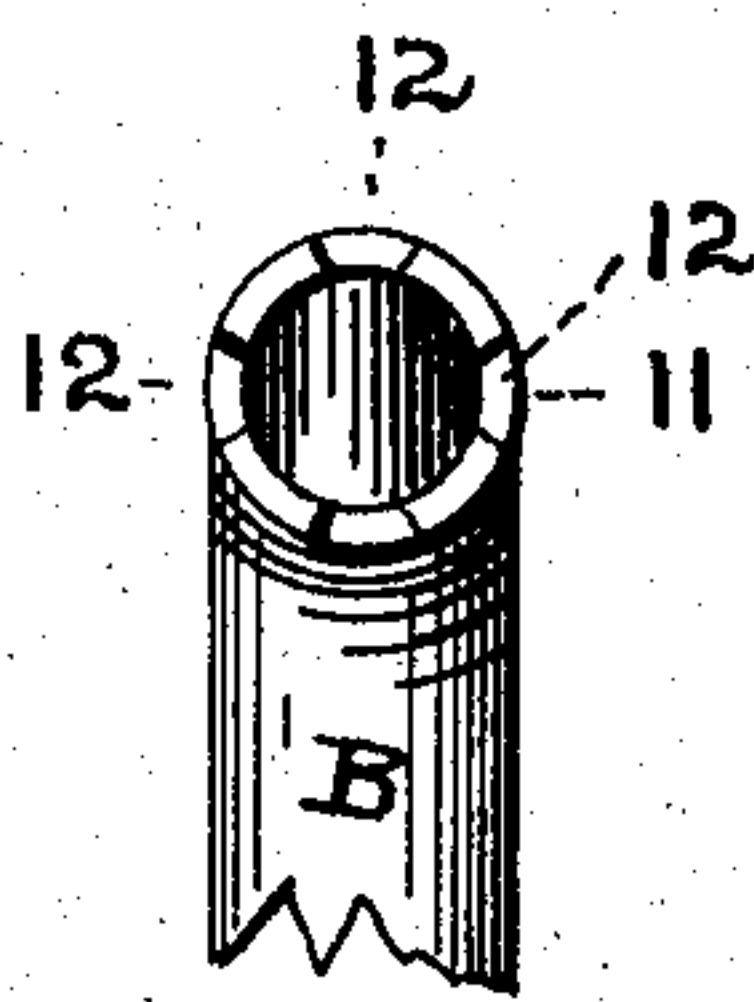
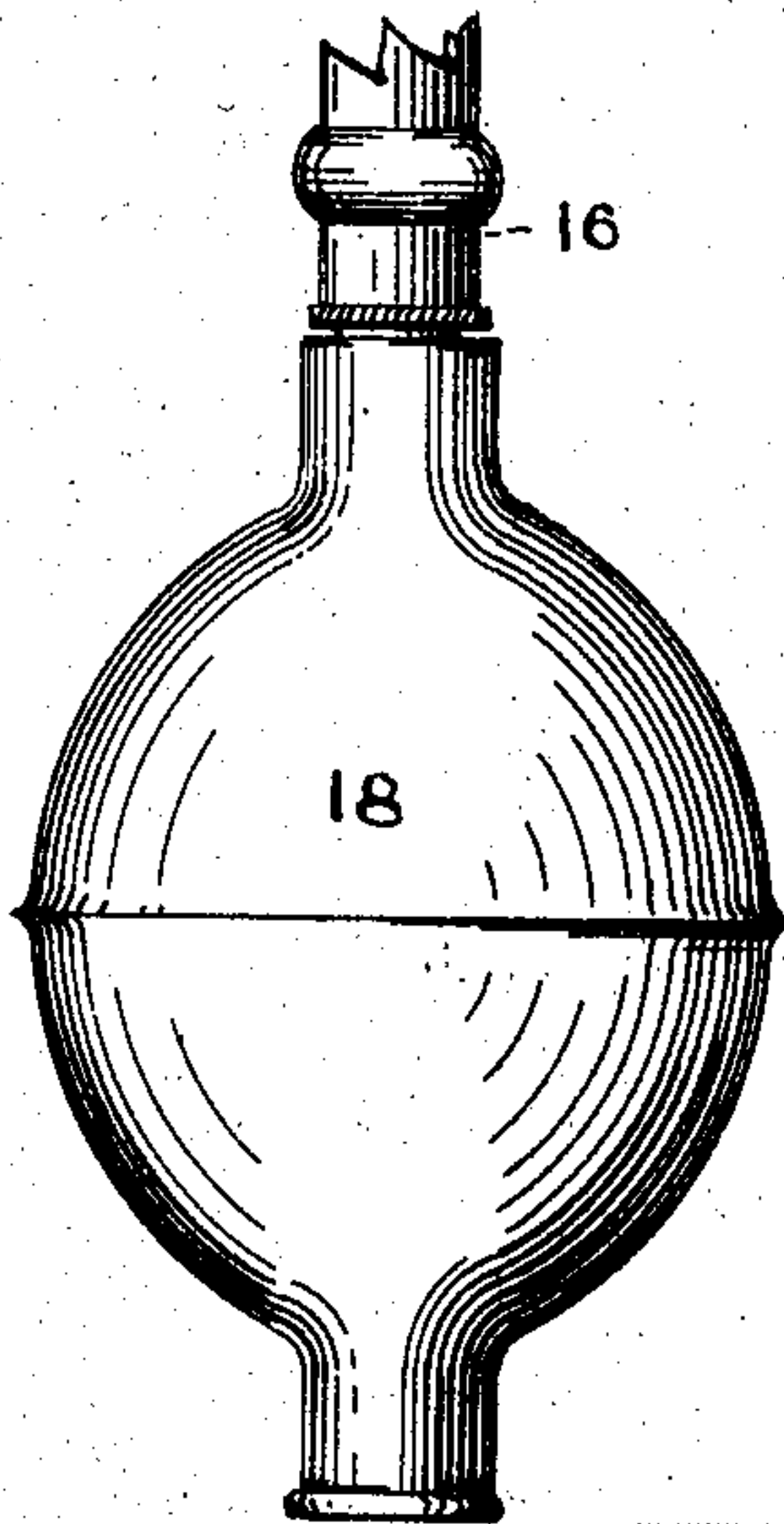


FIG. 4.



Witnesses:

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UNITED STATES PATENT OFFICE.

OLIN Q. HOLMAN, OF CHICAGO, ILLINOIS.

NEBULIZER.

SPECIFICATION forming part of Letters Patent No. 791,468, dated June 6, 1905.

Application filed January 11, 1904. Serial No. 188,626.

To all whom it may concern:

Be it known that I, OLIN Q. HOLMAN, a citizen of the United States, and a resident of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Nebulizers; and I do hereby declare that the following description of my said invention, taken in connection with the accompanying sheet of drawings, forms a full, clear, and exact specification, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has general reference to improvements in nebulizers; and it consists, essentially, in the novel and peculiar combination of parts and details of construction, as hereinafter first fully set forth and described and then pointed out in the claims.

In the drawings already referred to, which serve to illustrate this invention more fully, Figure 1 is an elevation of this improved nebulizer. Fig. 2 is a longitudinal sectional elevation of the same. Fig. 3 is a similar view of a modified form of this device. Fig. 4 is an end view of a portion of the suction-tube drawn to a magnified scale.

Like parts are designated by corresponding symbols of reference in all the figures.

The object of this invention is the production of an efficient, serviceable, convenient, and simple device for atomizing and nebulizing medicated liquids especially adapted for the treatment of catarrh of the mucous lining of the nasal and ear passages, the throat, the bronchial tubes, &c., and in which the medicine is applied through the nostrils and the mouth of the person affected. To attain these objects, I construct this nebulizer essentially of a glass, rubber, or other similar vessel A, (glass being obviously preferred for its cleanliness, ease of observation of its contents, &c.,) being a cylinder open at both ends and having centrally a belly-swell or enlargement 3, as clearly shown in the figures. This vessel A is closed at both ends by caps 4 and 5, through which are passed and firmly secured tubes 6 and 7, the former of which meeting the latter in about the middle of the vessel A and having an internal screw-thread 8, adapted to receive an externally-screw-threaded

reduced portion 9 of the lower tube 7. In the caps 4 and 5 there are packing-washers 10, upon which the ends 2 of the vessel A bear to make tight joints.

B is the suction-pipe. It has its upper end curved at 11, and this part of the suction-pipe is passed transversely through the lower tube 7 and securely fastened therein, its lower extremity reaching nearly to the lower end of the vessel A. This upper end 11 of the suction-pipe B is externally grooved or scored at 12, as more clearly shown in the enlarged view, Fig. 4, these grooves forming passages for the air, as will hereinafter more fully appear.

Transversely through the lower part of the upper tube 6 there is passed and properly secured a tube C, which forms the ingress-tube for the atomized and nebulized medicated liquid. This tube C has both of its ends open, and centrally it has an opening or small openings 13, communicating with the passage 14 in the upper tube 6.

The upper tube 6 projects beyond the cap 4 a sufficient distance to receive at its end a nasal piece D, which is removably placed upon said tube 6, so that when removed a hose or rubber tube may be placed upon this upper end whenever it is desired or found necessary to do so. The lower end of the lower tube 7 also projects beyond the cap 5 a short distance, and it is adapted to receive and hold by frictional contact a nipple 15, to which a rubber tube 16 is secured, and which carries at its other end an air-compressor 18 of any desired or preferred construction, there being shown in the drawings the usual rubber bulb, which renders the entire apparatus portable, but which may be an air-pump of any suitable design.

It will now be readily observed that in assembling the parts constituting the nebulizer the lower cap, with its attached tube, is placed onto the lower end of the vessel A and the upper cap, with its attached tube, placed onto the upper end of said vessel, the external screw-threaded portion 9 of the tube 7 caused to engage the internal thread of the upper tube 6 and then the two caps revolved, which causes the two caps to approach one another and finally to make a tight joint at both ends of

the vessel A in conjunction with the packings 10 in an obvious manner.

In Fig. 3 I have shown a slight modification of this construction. Here the ends of the vessel A are externally screw-threaded and the caps formed with female threads to engage these screw-threaded ends, thereby dispensing with the screw-threaded portions of the tubes 6 and 7. This construction has the advantage that the vessel may be readily filled by removing the upper cap and may, for this reason, be preferred.

Other slight modifications may be made in the construction of this device without departing from the scope of this invention.

In operation the medicated liquid is poured into the vessel A, but not sufficiently so as to cover the exit of the suction-pipe B. Now air is forced into the apparatus through the passage 17 in the tube 7, which will escape by the external grooves 12 into the interior of the vessel A and, tending to create a vacuum in the suction-pipe, cause the medicated liquid to rise and commingle with the escaping air to be atomized and thrown against the inner wall of the vessel A, where the matter is broken up or "nebulized" and passing through the tube C and passage 14 finally escapes at the upper end of the conical nasal piece D, which is held to the nostril or in the mouth of the patient, as the case may be. In this manner and by this construction a very efficient and convenient nebulizer is produced which is very simple in construction, not liable of clogging in its passages, and which can be produced at a very reasonable price. Should any liquid gather in the tube 6, it will not be carried upward therein, but drop back into the vessel A from the transverse tube C.

Having thus fully described this invention, I claim as new and desire to secure to me by Letters Patent of the United States—

1. A nebulizer consisting, essentially, of a suitable vessel having both of its ends cylin-

drical in shape, caps on both ends of said vessel, tubes central in said caps and rigidly secured thereto, a curved suction-tube passing transversely through the lower tube and secured thereto, an egress-tube transversely in the upper tube, a removable nasal piece at the upper end of the upper tube, and an air-compressor connected with the lower tube.

2. In a nebulizer, a suitable vessel for the medicated liquid, caps on both ends of said vessel, tubes centrally in said caps and secured thereto, one end of the said tubes having screw engagement one with the other, whereby the two caps are removably secured to said vessel and both ends of said vessel hermetically closed, as described.

3. In a nebulizer, a suitable vessel for the medicated liquid, caps on both ends of this vessel, an ingress-tube secured to and passing through the said lower cap, a suction-pipe one end of which is passed transversely through said ingress-tube said end of the suction-pipe being provided with a series of external grooves within the said ingress-tube, as stated.

4. In a nebulizer, an ingress-tube and a suction-pipe, the suction-pipe being passed transversely through said ingress-tube and having its end provided with a series of exterior grooves within the said ingress-tube, and forming air-escapes therefrom, as stated.

5. The combination, of an open-ended liquid or medicament flask; a suitable atomizing-tube; a delivery-tube suitably threaded to engage said atomizing-tube; and flanges or heads on said atomizing and delivery tubes adapted to seal the ends of said flask.

In testimony that I claim the foregoing as my invention I have hereunto set my hand in the presence of two subscribing witnesses.

OLIN Q. HOLMAN.

Attest:

FRED. F. FISK,
MICHAEL J. STARK.