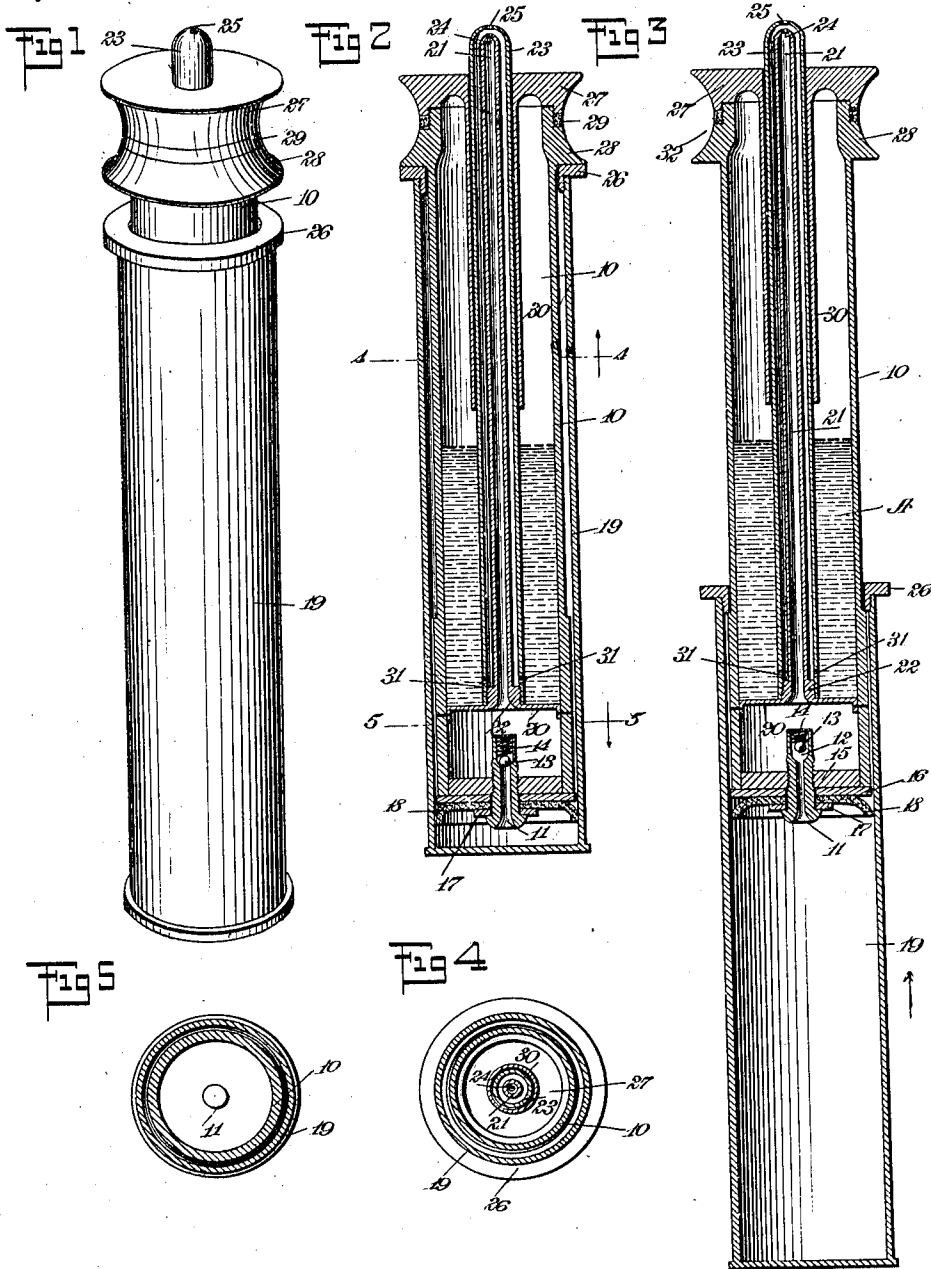


E. J. MANNING.
 ATOMIZER.
 APPLICATION FILED APR. 15, 1911.

1,020,833.

Patented Mar. 19, 1912.



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ELMER JASPER MANNING, OF JANESVILLE, WISCONSIN.

ATOMIZER.

1,020,833.

Specification of Letters Patent.

Patented Mar. 19, 1912.

Application filed April 15, 1911. Serial No. 621,268.

To all whom it may concern:

Be it known that I, ELMER J. MANNING, a citizen of the United States, and a resident of Janesville, in the county of Rock and State of Wisconsin, have invented a new and Improved Atomizer, of which the following is a full, clear, and exact description.

Among the principal objects which the present invention has in view are: to provide an apparatus of the character mentioned wherein there may be transported liquid without fear of leakage; to provide an apparatus of the character mentioned which is convenient in shape and size for carriage in a pocket; and to provide an apparatus of the character mentioned which permits the separation of the parts for purposes of hygiene.

One embodiment of the present invention is disclosed in the structure illustrated in the accompanying drawings, in which like characters of reference denote corresponding parts in all the views, and in which—

Figure 1 is a perspective view of an atomizer constructed and arranged in accordance with the present invention; Fig. 2 is a vertical longitudinal section of the same taken on the median line, and showing the parts in contracted position; Fig. 3 is a vertical longitudinal section, showing the parts distended preliminary to operation; Fig. 4 is a cross section taken on the line 4—4 in Fig. 2; and Fig. 5 is a cross section taken on the line 5—5 in Fig. 2.

To provide a convenient receptacle for the carriage of certain medicaments in form to be administered at any time I have constructed the tubular holder 10. At the bottom of the holder 10 I have introduced an air inlet tube 11, at the inner end whereof is provided a valve chamber 12. The valve chamber 12 is of usual construction to provide a seat for the ball valve 13. The valve 13 is moved to its seat by a spiral spring 14 which is suitably mounted in the chamber 12.

The tube 11 has formed thereon a suitable screw thread to engage a tapped perforation in the disk 15, which is fitted within the holder 10 to rest upon the bottom 16 thereof. Interposed between the outer side of the bottom 16 and the disk washer 17 is a leather disk 18 which serves as a piston packing to bear upon the inner surface of the tube 19 and to form an air stop therefor.

The holder 10 is provided with a parti-

tion 20 near the bottom 16 thereof. The partition 20 has erected thereon at the center thereof an air tube 21. The tube 21 is enlarged where the same joins the partition 20 to form the base 22. The base 22 is provided with a screw thread upon which is screwed the removable tube 23. The tube 21 is provided with a delivery orifice 24 at the end thereof, and the tube 23 is provided with an orifice 25 at the end thereof, the two orifices being juxtaposed and aligned. The delivery of the air from the tube 21 across the space separating the orifices 24 and 25 and outward through the orifice 25 forms a suction to draw the liquid contained in the space between the tubes 21 and 23 into the path of the air passing through the said orifices to be atomized and delivered as a jet of vapor.

It is to force the air upward through the tube 21 that I have provided the tube 19. The tube 19 forms a casing for holding and guiding the holder 10. The walls of the lower end of the holder 10 are slightly enlarged, as seen in Figs. 2 and 3, and are turned to form a shoulder to rest against the nut 26 when the same is screwed to position on the tube 19. The holder 10 is loosely mounted in the tube 19 to provide between the juxtaposed sides of the said holder and tube a passage for air entering the space between the nut 26 and the body of the holder 10.

When in the operation of the invention the tube 19 is drawn downward to the position shown in Fig. 3 of the drawings, the surrounding air is sucked through the space between the tube and holder and into the body of the tube 19. The edges of the disk 18 yield readily to permit the air to pass into the body of the tube 19. When now the tube 19 is forced up over the holder 10 to the position shown in Fig. 2 of the drawings, the disk 18 spreading against the inner surface of the tube 19 serves to trap the air contained in the tube 19, leaving thereby the only exit for the said air through the tube 11 into the chamber formed in the holder 10 between the partition 20 and the disk 15. To permit the air passing into the said chamber the ball valve 13 is lifted, as seen in Fig. 3 of the drawings. The air is forced from the said chamber up through the tube 21, thence through the orifices 24 and 25 to the outer air. As stated, in this action the suction formed by the rush of air from one to

the other of the said orifices serves to draw upward the liquid A, and to atomize the same. The holder 10 is closed by a cap 27. The cap 27 is screw threaded to register with threads formed on the outer end of the head 28. Between the squared shoulder formed on the cap 27 and the head is a packing 29 adapted to form a water-tight joint at this point. The cap 27 being removed, the holder 10 is filled with the liquid A, as shown in Figs. 2 and 3 of the drawings. The cap 27 is provided with a central tube 30 which extends downward into the holder 10. Between the tube 23 and the tube 30 is formed an air passage which serves to equalize the air pressure in the holder 10 and the outer atmosphere. This provision overcomes any tendency to form a vacuum in the holder 10 above the liquid. It further provides for equalizing the pressure of the air in the said holder should the same become heated to expand.

The operation of the invention is as follows: When the liquid has been placed in the holder 10 and the parts are folded together, as shown in Fig. 2 of the drawings, it will be noticed that the apparatus may be carried freely in the pocket without fear of the contents leaking therefrom. If the apparatus be upturned so that the protruding end of the tube 23 be depended, the liquid A will pass into the holder 10 to the end thereof having the cap 27 and surrounding the tube 30. There being no opening of the tube 30 from the cap 27, the liquid is held in the space surrounding the said tube 30. When it is desired to use the apparatus as an atomizer this is accomplished by the operator grasping the holder 10, using the groove 32 for that purpose, and then drawing outward the tube 19 to the position shown in Fig. 3 of the drawings. The end of the tube 23 is then inserted in the mouth or nostril as the need requires, when the operator, while steadying the apparatus by his grasp of the head and cap forming the groove 32 in the manner stated, forces the tube 19 in the direction indicated by the arrow in Fig. 3 toward the closing position shown in Fig. 2. As stated, the air which has been trapped in the tube 19 is by this action transferred to the chamber under the partition 20 and upward through the tube 21, and outward therefrom through the orifices 24, and through the orifices 25 is emitted from the tube 23. The suction caused by the passage of air between the two orifices in the manner described exhausts the air contained in the space between the two tubes 21 and 23, drawing the medicated liquid into the tube 23 and into the path of the air passing between the two orifices, from the orifice 25 whereof the mixed air and medicament is voided as a vapor.

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

1. An atomizer, comprising a tubular holder having a perforated bottom; an air tube mounted on said bottom alined with said perforation and having a delivery orifice at the opposite end thereof; a second tube mounted in fixed relation to the said air tube and having receiving perforations near the said bottom and a delivering orifice at the opposite end alined with the orifices in said air tube; a hollow cylinder plunger inclosing said tubular holder and provided with air trapping means adapted to take air into said cylinder and to exhaust air therefrom through said tubes; an air compression chamber mounted on said holder at the lower end thereof in open communication with said air tube; means for admitting the air to said compression chamber from said plunger adapted to prevent the egress from said chamber to said plunger; and closure means for said tubular holder adapted to surround the delivery end of said tubes.

2. An atomizer, comprising a tubular holder having a perforated bottom; an air tube mounted on said bottom alined with said perforation and having a delivery orifice at the opposite end thereof; a second tube mounted in fixed relation to the said air tube and having receiving perforations near the said bottom and a delivering orifice at the opposite end alined with the orifices in said air tube; a hollow cylinder plunger inclosing said tubular holder and provided with air trapping means adapted to take air into said cylinder and to exhaust air therefrom through said tubes; an air compression chamber mounted on said holder at the lower end thereof in open communication with said air tube; a pressure closed valve opening into said chamber from said plunger adapted to trap the air when delivered in said chamber; and closure means for said tubular holder adapted to surround the delivery end of said tubes.

3. An atomizer, comprising a tubular holder having a perforated bottom; an air tube mounted on said bottom alined with said perforation and having a delivery orifice at the opposite end thereof; a second tube mounted in fixed relation to the said air tube and having receiving perforations near the said bottom and a delivering orifice at the opposite end alined with the orifices in said air tube; a hollow cylinder plunger inclosing said tubular holder and provided with air trapping means adapted to take air into said cylinder and to exhaust air therefrom through said tubes; an air compression chamber mounted on said holder at the lower end thereof in open communication with said air tube; a pres-

sure closed valve opening into said chamber from said plunger adapted to trap the air when delivered in said chamber; and a closure member for said tubular holder, said member having a tubular extension to in-
5 fold the said second tube and to extend within the body of said tubular holder.

4. An atomizer, comprising a tubular holder having a perforated bottom; an air
10 tube mounted on said bottom alined with said perforation and having a delivery orifice at the opposite end thereof; a second tube mounted in fixed relation to the said air tube and having receiving perforations
15 near the said bottom and a delivering orifice at the opposite end alined with the orifices in said air tube; a hollow cylinder plunger inclosing said tubular holder and provided with air trapping means adapted
20 to take air into said cylinder and to exhaust air therefrom through said tubes; an air

compression chamber mounted on said holder at the lower end thereof in open communication with said air tube; means for admitting the air to said compression
25 chamber from said plunger adapted to prevent the egress from said chamber to said plunger; a screw threaded cap adapted for mounting on said tubular holder to close the same, said cap being provided with a tubu-
30 lar extension adapted to infold the said second tube, and a suitable packing between the said holder and said cap to form a water tight joint.

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

ELMER JASPER MANNING.

Witnesses:

ELLSWORTH ALLEN,
JASON CURTIS.