No. 681,758. Patented Sept. 3, 1901.

C. L. TURNER.

ATOMIZER.

(Application filed Sept. 14, 1899.)

(No Model.)

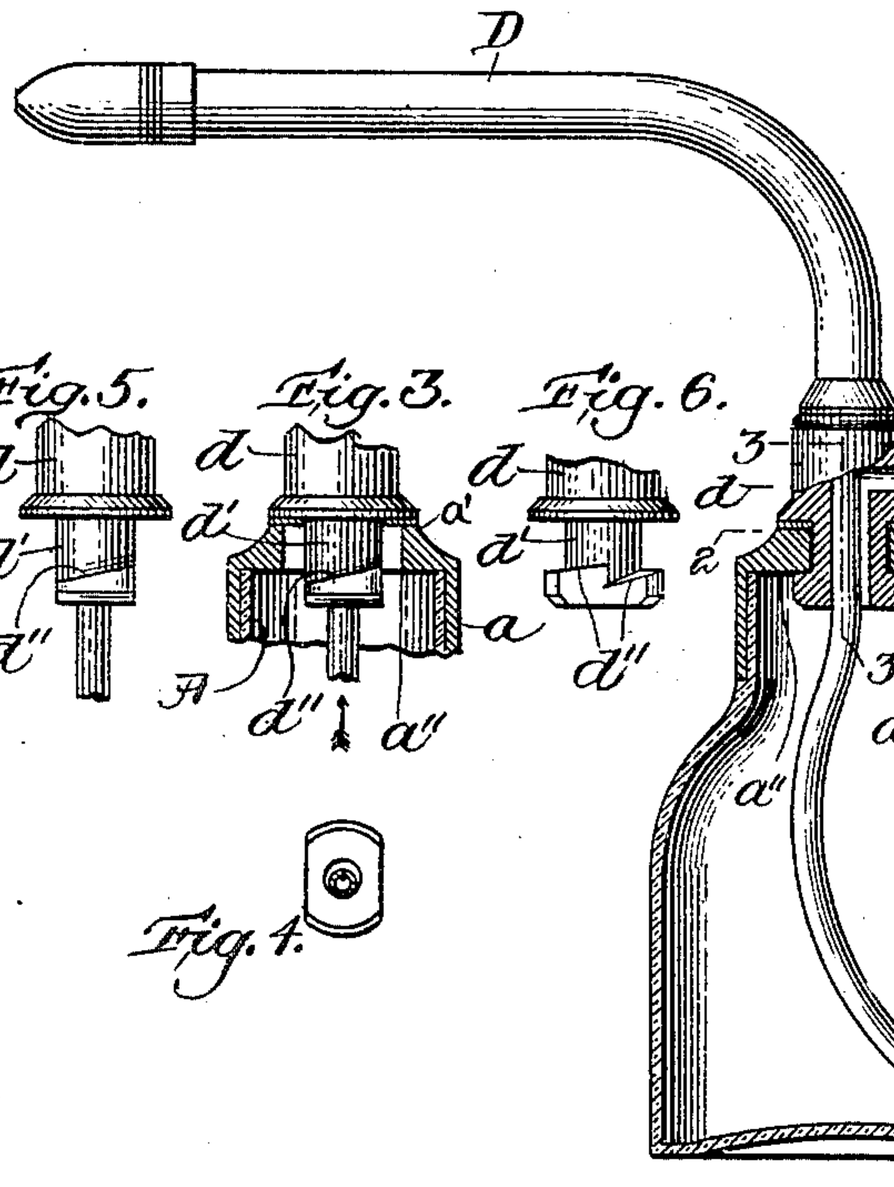


Fig. 1.

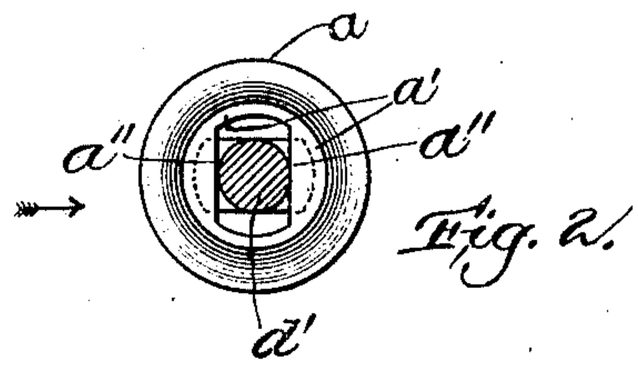


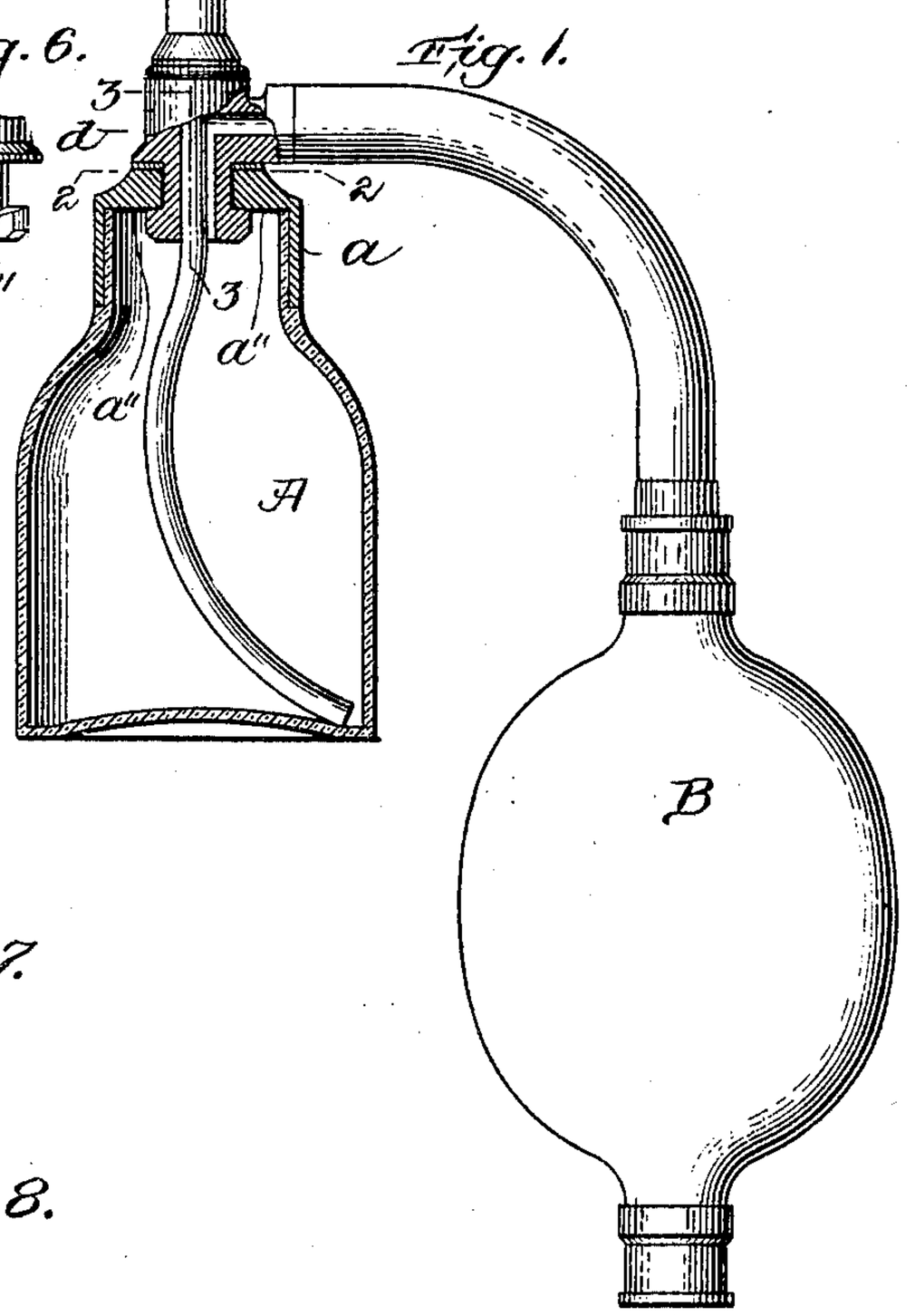
Fig. 2.

Fig. 5.

Fig. 3.

Fig. 6.

Fig. 4.



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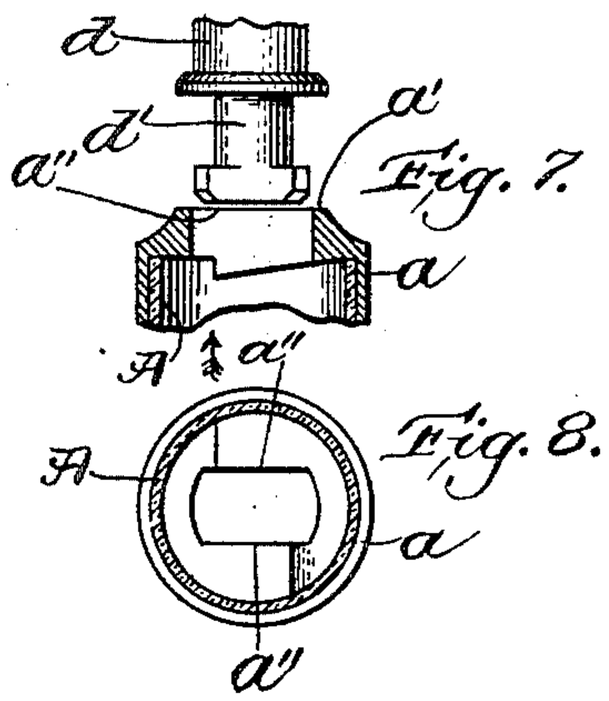

Fig. 7.

Fig. 8.

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UNITED STATES PATENT OFFICE.

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ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 681,758, dated September 3, 1901.

Application filed September 14, 1899. Serial No. 730,460. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. TURNER, of Malden, in the county of Middlesex and State of Massachusetts, have invented an Improved Atomizer, of which the following is a specification, reference being had to the accompanying drawings, in which—

Figure 1 is a sectional elevation of an atomizer embodying my invention. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a detail on plane 3 3 of Fig. 1, partly in section and taken looking in the direction of the arrow in Fig. 2. Fig. 4 is a view of the under side of the nozzle engagement looking in the direction of the arrow in Fig. 3. Fig. 5 is a front view of the nozzle engagement, showing the cams. Fig. 6 is a side view of the nozzle engagement, showing the cams. Fig. 7 shows a modification, the cam being within the bottle-neck and the upper surface of the nozzle engagement flat. Fig. 8 is a view looking in the direction of the arrow in Fig. 7.

My present invention relates only to effecting an engagement between the nozzle and the bottle, the bottle, the bulb, and the nozzle being of any preferred construction.

In atomizers as heretofore constructed the engagement of the nozzle and the bottle has usually been effected by screw-threads on the two parts, as will be plain to those skilled in the art.

In my device the opening in the neck of the bottle instead of being, as in the ordinary atomizer-bottle, circular is circular at the ends, with flattened sides, and the engaging part of the nozzle instead of being circular in outline to fit the circular opening in the neck of the bottle is of the same shape as the opening in the neck of the bottle—namely, circular at the ends, with flattened sides. It is obvious, however, that if the opening in the neck of the bottle preserves the same shape throughout the length of the neck of the bottle the engaging part of the nozzle which enters the opening could act only as a stopper and could not be turned in the neck of the bottle. As it is desirable that the engaging part of the nozzle should be drawn tightly into or against the neck of the bottle in order that a tight joint may result, the neck of the bottle is made larger in diameter than the mouth and of such size that the engaging part of the nozzle may be turned within it, and the engaging part of the nozzle is so shaped above the lower part thereof that it may turn within the mouth of the bottle—that is to say, the diameter of the engaging part of the nozzle at a point above its lower end does not exceed the size of the mouth of the bottle in its smallest dimension.

In the drawings, the bottle is marked A, the bulb B, and the nozzle D; but these parts form no part of my invention and are merely shown to illustrate the connection between the nozzle and the bottle. The upper part *a* of the bottle A is preferably of hard rubber and is cylindrical within except at the mouth *a'*, where it is drawn to a smaller size, and its opening is circular at the ends, with flattened sides *a''*. (See Figs. 2 and 3.) The engaging part *d* of the nozzle is of the same shape at its lower end as the mouth of the bottle, and this lower end corresponds in thickness approximately to the perpendicular thickness of the mouth of the bottle. Above the lower end the engaging end of the nozzle is cylindrical in shape and is marked *d'*. The upper surface of the lower end of the engaging part of the nozzle is formed in two inclined planes marked *d''*.

The mode of operation is as follows: The engaging end of the nozzle is inserted into the neck of the bottle by fitting the lower end of the nozzle into the mouth of the bottle and pressing it down. It will be obvious now (see Figs. 1 and 3) that the lower end *d* will be below the mouth *a'* of the bottle. By turning the nozzle it will be clear that the inclined planes *d''* will be carried under the flattened sides *a''* of the neck of the bottle and by their cam action upon the under side thereof will draw the nozzle down toward the neck of the bottle and force the shoulder upon the nozzle and the upper surface of the mouth of the bottle in close contact to form a tight joint. Preferably a rubber washer of suitable shape will be placed between the two joint surfaces. Obviously the situation of the inclined planes may be reversed, if desired, and the inclined planes placed within the mouth of the bottle upon the under side of the flattened sides of the mouth. Such a construction will be a

mere equivalent of the construction which I prefer and which I have described.

The main advantage of my device consists in the easy and effective way in which the nozzle and the bottle may be connected and disconnected, a mere partial turn of the nozzle giving a sure and solid connection by the action of the inclined planes *d''* upon the under side of the mouth of the bottle. This is a matter of some importance to physicians and others who use many solutions which they desire to keep in separate bottles, but who wish to avoid the expense of a multiplicity of nozzles and bulbs. One nozzle in my device can be used for many bottles and can be instantaneously connected and disconnected. A second advantage consists in the fact that of whatever nature the solution used the gumming of the nozzle to the neck of the bottle, which is so common with the ordinary screw connection, is avoided, for in my device the inclined plane presents only a small surface of contact at the neck of the bottle and the nozzle has to be moved only a partial turn to entirely disengage it from the bottle.

What I claim is—

1. The atomizer above described made up of a bottle-mouth having a joint surface upon its upper side, the said surface having an aperture circular at the ends with flattened sides, with a margin of joint surface on all sides of the aperture; a nozzle connection having its lower end of similar shape to that of the aperture aforesaid, and adapted to enter the same and having a portion above its lower end of size smaller than the smallest dimension across the aperture to permit the lower end to be passed through the aperture and the nozzle connection to be turned therein; an enlarged portion above the reduced portion, said enlarged portion having a joint surface upon its under periphery; and an inclined plane interposed between the upper side of the lower end of the nozzle connection and the under side of the bottle-mouth to draw the two joint surfaces together to form a fluid-tight joint.

2. The atomizer above described made up of a bottle, a nozzle and a bulb, the bottle-mouth having a joint surface upon its upper side, the said surface having an aperture circular at the ends with flattened sides, with a margin of joint surface on all sides of the aperture; the nozzle connection having its lower end of similar shape to that of the aperture aforesaid, and adapted to enter the same and having a portion above its lower end of size smaller than the smallest dimension across the aperture to permit the lower end to be passed through the aperture and the nozzle connection to be turned therein; an enlarged portion above the reduced portion, said enlarged portion having a joint surface upon its under periphery; and an inclined plane interposed between the upper side of the lower end of the nozzle connection and the under side of the bottle-mouth to draw the two joint surfaces together to form a fluid-tight joint.

3. The atomizer above described, made up of a bottle-mouth having a joint surface upon its upper side, the said surface having an aperture longer in one dimension than in the other, with a margin of joint surface on all sides of the aperture; a nozzle connection having its lower end of similar shape to that of the aperture aforesaid and adapted to enter the same and having a portion above its lower end of size smaller than the smallest dimension across the aperture to permit the lower end to be passed through the aperture and the nozzle connection to be turned therein; an enlarged portion above the reduced portion, said enlarged portion having a joint surface upon its under periphery; and an inclined plane interposed between the upper side of the lower end of the nozzle connection and the under side of the bottle-mouth to draw the two joint surfaces together to form a fluid-tight joint.

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