

(No Model.)

T. WOODRUFF.
ATOMIZER.

No. 578,436.

Patented Mar. 9, 1897.

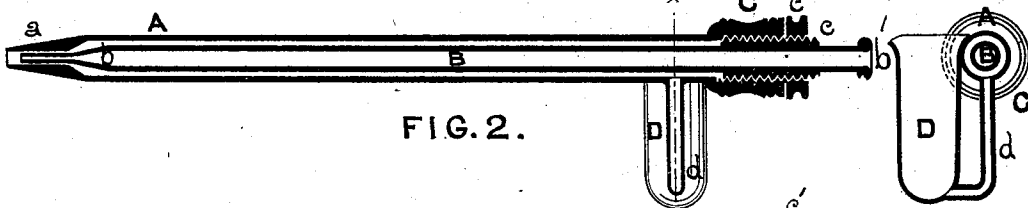


FIG. 2.

FIG. 3.

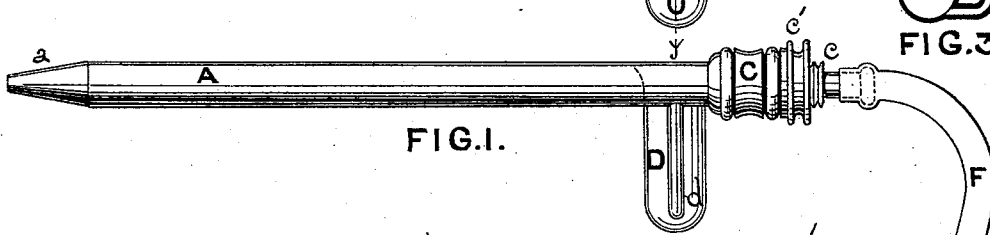


FIG. 1.

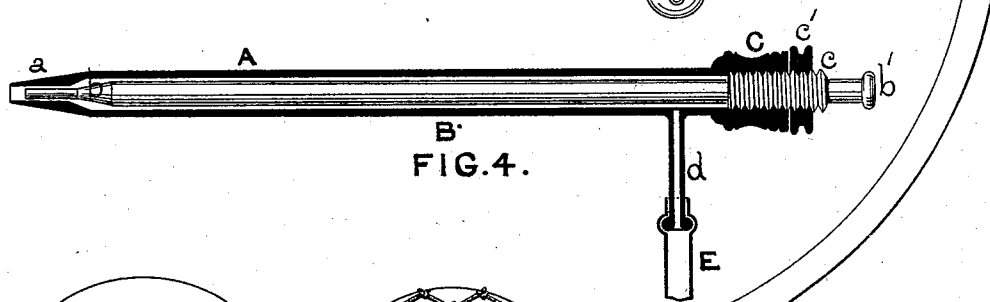


FIG. 4.

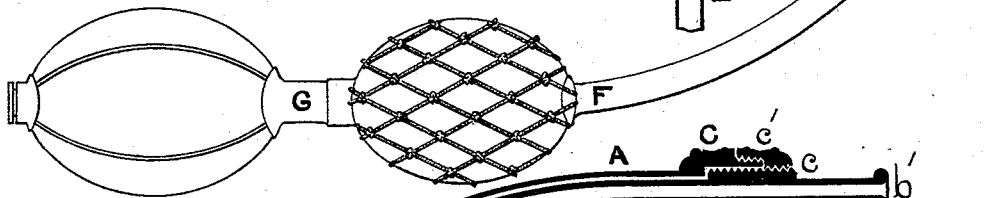


FIG. 5.

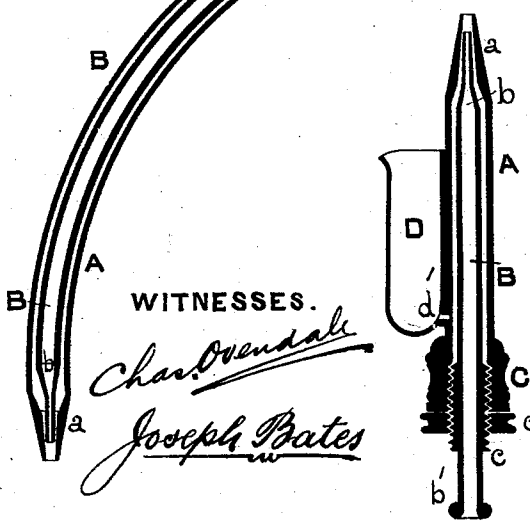


FIG. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

THOMAS WOODRUFF, OF WITHINGTON, ENGLAND.

ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 578,436, dated March 9, 1897.

Application filed July 6, 1896. Serial No. 598,212. (No model.)

To all whom it may concern:

Be it known that I, THOMAS WOODRUFF, a subject of the Queen of Great Britain, residing at Withington, near Manchester, in the county of Lancaster, England, have invented certain new and useful Improvements in Appliances for Spraying Medicated or other Liquids or Solutions, of which the following is a specification.

10 This invention is primarily designed for applying to the throat or nose in the form of a spray a medicated liquid or solution, but may be employed for spraying perfumes or other liquids.

15 It consists, essentially, of two tubes, one placed inside the other and both provided with fine nozzles, the nozzle of the inner one projecting into the outer one to within a short distance of the end, the outer tube being provided with a reservoir for the liquid or a connecting-tube for inserting in the liquid and the inner one connected by a tube or otherwise with a ball or other appliance for forcing a current of air through.

25 It will be fully described with reference to the accompanying drawings.

Figure 1 is a front elevation of throat-spray; Fig. 2, a longitudinal section of same; Fig. 3, a transverse section on line *xy*, Fig. 2; Fig. 4, a longitudinal section without the reservoir D; Fig. 5, a longitudinal section of curved form for spraying the larynx; Fig. 6, a longitudinal section of nasal spray.

30 I provide two tubes A and B of different diameter, the tube B being fitted inside the other. The tubes are preferably cylindrical, as shown, and are placed concentrically. Both the tubes are drawn out to fine nozzles *a b* at the delivery end, the nozzle *b* fitting into the nozzle *a*, leaving a fine annular aperture around the inner nozzle, which is provided with a fine central aperture.

35 At the opposite ends the two tubes A and B are attached or connected together by a cover or collar C, which seals the end of the outer tube A and provides means for adjusting the position of the inner one B by means of the screw *c* thereon, leaving the end *b'* open. A check-nut *c'* locks the two tubes in position 40 when adjusted.

To the outer tube A, preferably near the closed end, is fitted a reservoir D to hold the

solution or medicament. The reservoir D is connected to the tube A by a small tube *d*, which passes from the bottom of the reservoir to the under side of the tube A, or, as in Fig. 6, when the nasal spray is intended to be used in a vertical position, by a small aperture or passage *d'*, leading from the bottom of the reservoir to the interior of the tube A. 55 60

Instead of the reservoir D the tube *d* may be open at its free end, to which may be attached a rubber tube E for insertion in a bottle or other vessel containing the solution.

The free end of the inner tube B is open, 65 and to it is attached by a pipe or tube F an elastic bulb or bellows G or other appliance for forcing air through the tubes.

Fig. 5 shows a modified form of appliance curved longitudinally to reach the larynx. 70

The appliance may be made to deliver the spray either horizontally or vertically or at any desired inclination thereto, and the nozzles may be either straight, curved, or inclined, as found desirable for directing the 75 spray as required.

The tubes and other parts may be made of glass, vulcanite, transparent, celluloid, or other suitable material.

When in operation, the solution or medicament is placed in the reservoir or receiver D 80 and air is forced through the inner tube B by means of the bulb or bellows G. The current of air issuing through the nozzle *b* induces a current in the aperture surrounding it in the nozzle *a*, exhausts the air in the tube A, and draws up the solution through the tube *d*, discharging it in the form of a fine spray. 85

What I claim as my invention, and desire to secure by Letters Patent, is— 90

1. An appliance for spraying medicated and other solutions constructed with two concentric tubes both drawn to a fine nozzle at one end the nozzle of the inner one projecting into that of the outer one in combination with the cover C which seals the end of the outer tube A, the screw *c* for adjusting the position of the inner tube and the check-nut *c'* for locking the two tubes in position when adjusted. 95

2. In an appliance for spraying medicated or other solutions the combination with the inner and outer concentric tubes A and B the nozzles *a* and *b* one projecting into the other, the receiver D and tube *d* for supplying the 100

solution and the tube E and bellows or bulb
G for forcing air through to create a spray,
of the cover C which seals the end of the
outer tube A the screw *c* for adjusting the
5 position of the inner tube and the check-nut
c' for locking the two tubes in position when
adjusted.

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

THOMAS WOODRUFF.

Witnesses:

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