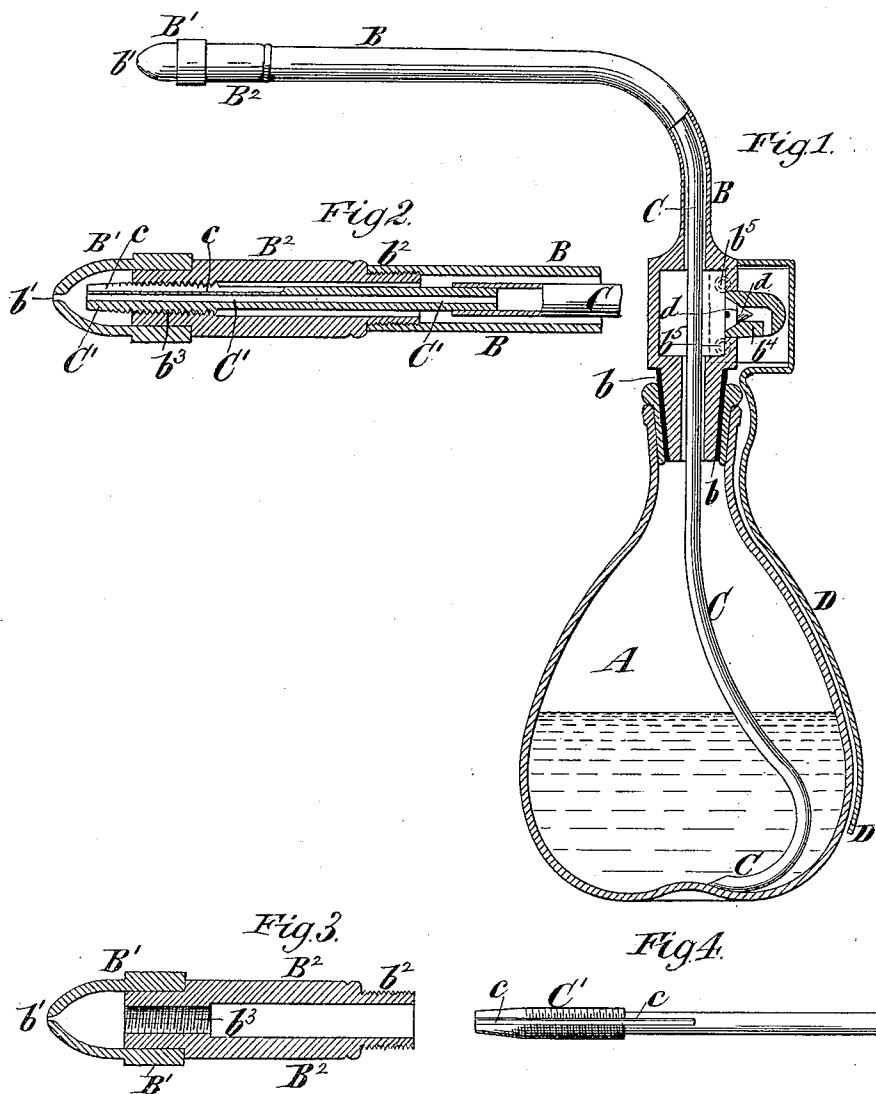


(No Model.)

G. KNEUPER.
ATOMIZER.

No. 394,775.

Patented Dec. 18, 1888.



Witnesses:

Joseph W. Roe.
C. Sundgren.

Inventor:

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UNITED STATES PATENT OFFICE.

GEORGE KNEUPER, OF NEW YORK, N. Y.

ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 394,775, dated December 18, 1888.

Application filed March 2, 1888. Serial No. 265,975. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KNEUPER, of the city and county of New York, in the State of New York, have invented a new and useful Improvement in Atomizers, of which the following is a specification.

I will describe an atomizer embodying my improvement in detail, and then point out the novel features in the claims.

10 In the accompanying drawings, Figure 1 is an elevation, nearly all in section, of an atomizer embodying my invention. Fig. 2 is a longitudinal section, upon a larger scale, of the end portion or section of the air and liquid tubes; and Figs. 3 and 4 are sectional views, upon the same scale as Fig. 2, of the parts forming the tip portions of such tubes detached from each other.

Similar letters of reference designate corresponding parts in all the figures.

A designates the liquid-receiver, and B C designate, respectively, the air and liquid tubes surmounting the same. I have here shown a liquid-receiver made wholly of soft india-rubber, like that shown in my Letters Patent No. 363,247, dated May 17, 1887; but in so far as my invention relates to the tubes B C or their attachments, the receiver A might be of rigid material, as glass.

30 The air tube B has a soft-rubber or other bushing or stopper portion, b , which fits snugly into the mouth of the liquid-receiver A, and the air-tube is terminated by a cap, B' , having a perforation, b' , through which the spray is discharged.

35 The liquid-tube C terminates in a liquid-nozzle, C' , from the end of which a stream of liquid is forced by the air-pressure within the receiver A. The liquid-nozzle C' , although made independently of the liquid-tube, is yet permanently secured thereto.

In the usual construction of atomizer the entire air-tube B, clear to the perforated cap B' , is made of one piece, in which the liquid-nozzle C' is fixed and non-adjustable; but I employ a tip-section, B^2 , which is made separate from and secured to the tube B. I have here shown the tip-section B^2 as secured by a screw-joint, b^2 , so that it may be detached.

50 The tube-section B^2 constitutes in effect a portion of the air-tube.

The liquid-nozzle C' is screwed into a bore, b^3 , in the tip-section B^2 , and has longitudinal grooves c , or its outer wall cut away to form passages through which the air may escape 55 past the liquid-nozzle C' .

By the compression of the hand on the liquid-receiver A a pressure of air is brought to bear on the top of the liquid in said receiver, and the liquid is forced up the liquid-tube C and through the liquid-nozzle C' , and at the same time the compressed air which passes upward through the air-tube B around the liquid-tube C passes through the passages c , and catching up the liquid from 65 the nozzle C' , discharges it in spray through the perforations in the cap B' .

To provide for varying the character of the spray, I adjust the liquid-nozzle in the bore b^3 , so that it will project more or less nearly 70 to the cap B' . If adjusted into contact with the cap B' , an approximately solid stream will be thrown, and if adjusted back to about the position shown in Fig. 2 an effective spray will be thrown.

Inasmuch as the liquid-tube C is of soft india-rubber it will readily turn in the bent tube B to permit the liquid-nozzle C' to be adjusted, and the tube B may be of metal and bent before the tube C is inserted into it. The liquid-nozzle C' may, if desired, be of silver, and then the liquid, even if it be of a corrosive character, will not come in contact with the air-tube B or with any other metal save with the liquid-nozzle C' , if that be made of silver 85 rather than hard india-rubber.

It will be understood that several tips B' are commonly interchangeably fitted in place and may be substituted one for another as it may be desired to use one or the other tip 90 for the locality which it is desired to treat—as the larynx, the nasal passages, the ear, &c.

When the rubber liquid-receiver A is compressed, air is caused to exert its pressure on the liquid, and is also forced up the tube B, and when the liquid-receiver is released and allowed to recover air passes in through the valve d , which is arranged in a branch, b^4 , at the side of the tube B.

When the atomizer is operated simply by 100 compressing the liquid-receiver A, it is difficult in some cases to prevent the nozzle from

wavering; and to hold it steady, unless some special means are provided for the purpose, I therefore provide a hand-piece, or, as I term it, a "spoon," D, of metal or of hard material, 5 which lies closely to the wall of the receiver A and conforms to the shape of the bulb or receiver in a vertical plane. As here represented, this spoon or hand-piece D is formed of a piece of sheet metal, and in one piece 10 with flanges or a box which incloses the branch b^4 , and is secured by screws b^5 to the tube B. Obviously the spoon or hand-piece D might be otherwise formed and secured in place, and its only requisite is that it shall lie closely to 15 the normal contour of the liquid-receiver A, as shown.

To use the device, the liquid bulb or receiver A is grasped in the hand with the spoon or hand-piece D lying against the palm of the 20 hand, and then when the bulb is compressed by the fingers the atomizer will be operated and the nozzle held with comparative steadiness and prevented from wavering or moving, and therefore the spray may be directed with

proper accuracy against one spot, as in the 25 throat.

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

1. The combination, with a liquid-receiver and an air-tube provided with a tip-section 30 made separate from the tube and detachably joined thereto, of an inner liquid-tube within the air-tube and a liquid-nozzle on said liquid-tube, fitted to and adjustable lengthwise in the tip-section and having air-passages in its 35 exterior, substantially as herein described.

2. The combination, with the air and liquid tubes of an atomizer and a liquid-receiver formed of soft india-rubber, of a rigid spoon or hand-piece, as D, which lies closely to the 40 receiver and forms a rest for the palm of the hand in compressing the receiver, substantially as herein described.

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Witnesses:

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