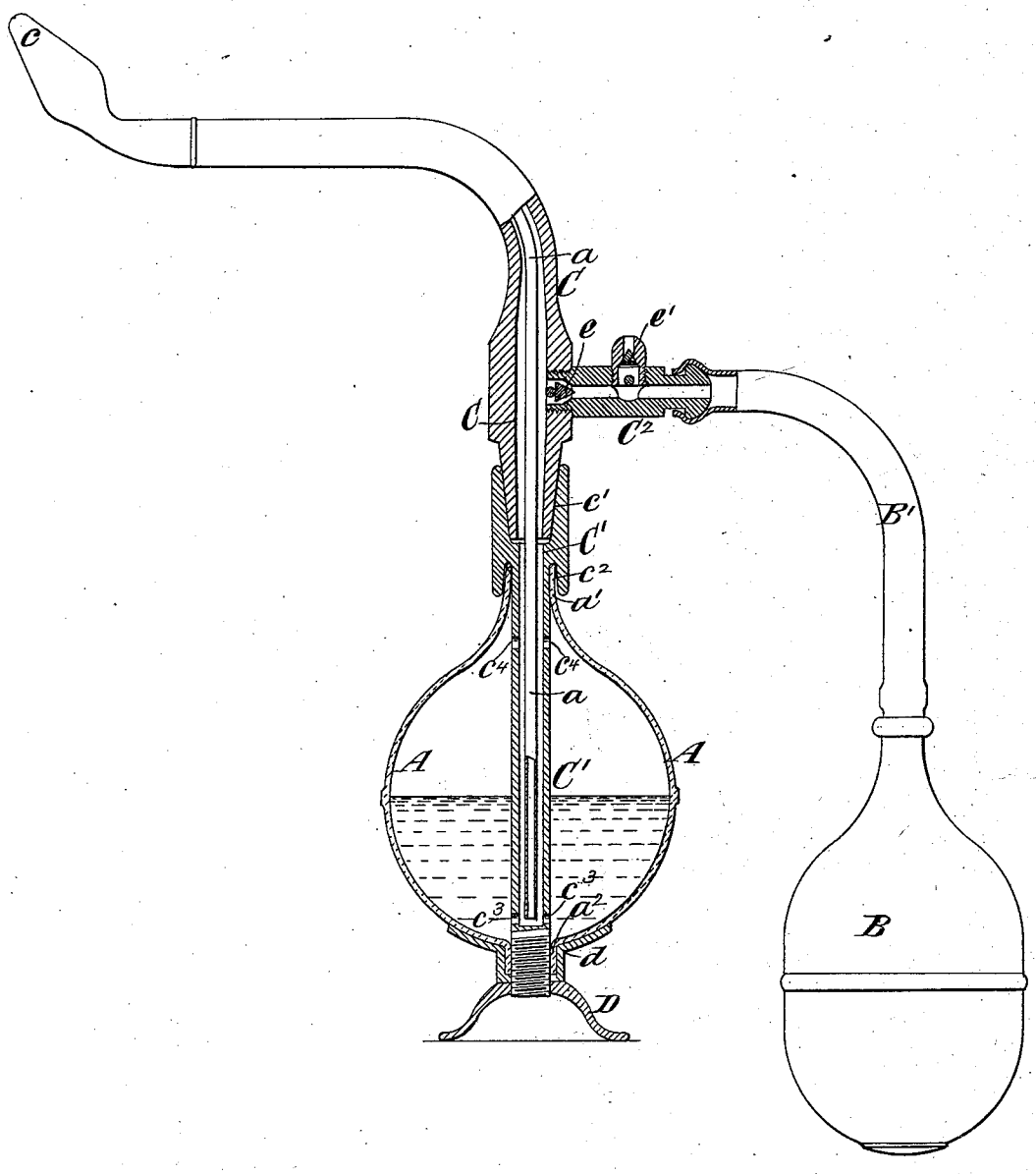
(No Model.)

G. KNEUPER.

ATOMIZER.

No. 380,041. Patented Mar. 27, 1888.



Witnesses:
Joseph W. Roe.
C. L. Sundgren.

Inventor:
George Kneuper.
by his Attys
Brown & Race

N. PETERS. Photo-Lithographer. Washington. D. C.

UNITED STATES PATENT OFFICE.

GEORGE KNEUPER, OF NEW YORK, N. Y.

ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 380,041, dated March 27, 1888.

Application filed December 31, 1887. Serial No. 259,474. (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.

In my Letters Patent No. 363,247, dated May 17, 1887, I have shown and described an atomizer in which the liquid-receiver is formed wholly of elastic and expansible material, so that when the nozzle of the atomizer is closed air may be pumped into the liquid-receiver, thereby expanding the receiver and forming therein a volume of compressed air, which will give a continuous spray when the finger is removed from the nozzle.

One object of my present invention is to so arrange and construct the air-tube leading from the liquid-receiver that it forms a sustaining-post to the receiver and renders an atomizer having such expansible liquid-receiver a more stable article when placed upon a table or other support.

A further object of my invention is to reduce the cost of atomizers having a compression-bulb for forcing air into the liquid-receiver, and to enable all those parts which are formed of flexible and soft india-rubber to be made without any valves, the necessary valves being in a structure surmounting the liquid-receptacle, and in which are comprised the air and liquid tubes of the atomizer, such structure being of hard rubber or other hard and rigid material.

The invention will be hereinafter more particularly described, and pointed out in the claims.

The accompanying drawing is an elevation, partly in section, of an atomizer embodying my invention and comprising a liquid-receiver formed in one integral structure of soft india-rubber, and also comprising a compression-bulb to be operated by hand for compressing air within the liquid-receiver.

A designates the liquid-receiver, which consists of a bulb of soft and flexible india-rubber readily expansible under air, which may be compressed therein by a compression-bulb, B. The liquid-receiver A is surmounted by a structure of hard or rigid material—such, for example, as hard vulcanized india-rubber or vulcanite—and which comprises a liquid-tube, *a*, and an air-tube, C, and at the top of this structure is the spraying-nozzle *c*.

The air-tube C comprises a lower portion, C′, which extends downward through the liquid-receiver A and forms a continuation of the portion C. These two parts of the air-tube are fitted together, as here shown, by an ordinary slip-joint, *c′*, which enables the nozzle and upper portion of this structure to be removed for the purpose of filling the liquid-receiver A. The portion C′ of the air-tube has a cylindric recess or socket, c^2, which receives a neck, *a′*, upon the upper portion of the liquid-receiver A, and at the bottom the liquid-receiver has a corresponding neck, a^2, which enters a circular recess in a washer, *d*, placed outside and below the liquid-receiver. The lower portion of the air-tube C′ extends through the neck a^2 and through the washer *d*, and has screwed upon it a base, D, on which the atomizer is supported.

The liquid-tube *a* extends downward within the air-tube portion C′ nearly to the bottom thereof, and such portion C′ of the air-tube has lateral openings c^3, through which liquid may enter its interior, and near the top of the liquid-receiver also has openings c^4, through which air may escape from the air-tube into the receiver above the liquid therein.

In connection with the expansible liquid-receiver A at least one valve is necessary to permit the entrance of air to the air-tube C and to prevent its escape therefrom to the atmosphere. I have here shown such a valve at *e*, and if no compression-bulb B be used this valve *e* is all that is necessary for operating the atomizer. By grasping the expansible liquid-receiver A in the hand and compressing it, the air which it contains will be ejected from the nozzle *c*, and, drawing up liquid through the tube *a*, will eject spray from the nozzle. When the grasp of the hand on the bulb A is released, the valve *e* will open to allow the bulb in recovering itself to fill with air. As soon as pressure is again brought to bear upon the bulb, the air will be discharged therefrom, the valve *e* closing to prevent its escape to the atmosphere. I prefer, however, usually to employ a compression-bulb, B, and a tube, B′, by which the air may be compressed

to any desired pressure within the liquid-receiver A when the finger is applied over the nozzle *c*.

I have here shown the structure of hard or rigid material which surmounts the liquid-receiver A as having a lateral branch, C^2, with which the tube B′ of the bulb B is connected, and which contains both the valve *e* and a second valve, *e′*. It will be understood that both these valve *e e′* are comprised in the structure of hard or rigid material which surmounts the liquid-receiver, and the bulb B and its discharge-tube B′ are destitute of valves, and therefore are very simple and correspondingly inexpensive in their construction. The bulb B, save for its opening to the tube B′, is entirely imperforate and closed to the atmosphere. A very common construction for bulbs which are used to compress air is to provide the compression-bulb B at its one end—that is, the lower end in the drawing—with a suction-valve, and to provide it at its opposite end, where the tube B′ is joined onto it, with a discharge-valve; but when the bulb and its tube B B′ are valveless, as in my invention, their construction is greatly simplified, and the cost of the entire article is much reduced below what it would be if the two valves *e e′* were arranged at opposite ends of the compression-bulb B instead of in the structure of hard or rigid material surmounting the liquid-receiver A. Indeed, the compression-bulb B and its air-tube B′ may, if desired, be formed in a single piece of soft and flexible india-rubber without any openings whatever, save that at the end of the tube B′, where it is joined onto the lateral branch C^2. When the bulb B is compressed, the air therein will be forced through the tube B′, and, closing the valve *e′*, will open the valve *e* and pass into the air-tube C C′, and, if the finger be over the nozzle *c*, will pass downward into the liquid-receiver A. When the pressure on the bulb B is relaxed, the valve *e* is instantly closed and the valve *e′* opens, admitting atmospheric air to fill the bulb B and permitting it to recover itself or expand.

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

1. The combination, with the liquid-receiver of an atomizer formed wholly of elastic and expansible material, of an air-tube extending downward through the receiver and forming a sustaining-post thereto and having near the bottom of the receiver a lateral inlet-opening and a liquid-tube extending downward in the air-tube and terminating near said lateral opening, substantially as herein described.

2. The combination, with the liquid-receiver of an atomizer formed wholly of an elastic and expansible bulb, of a structure of hard or rigid material surmounting the receiver and comprising the air and liquid tubes of the atomizer, and an inlet or suction valve for air also comprised in the said structure above the receiver, substantially as herein described.

3. The combination, with the liquid-receiver of an atomizer and a surmounting structure of hard or rigid material comprising within it the air and liquid tubes of the atomizer, and having a branch, C^2, wherein are the air-valve *e*, opening from said branch into said air-tube, and the air-valve *e′*, opening into the branch, of a compression-bulb, B, and a tube, B′, whereby it is connected with said branch C^2, both said bulb and tube being destitute of any valves and the bulb being imperforate and closed to the atmosphere, save for the passage through the tube B′, substantially as herein described.

GEO. KNEUPER.

Witnesses:
C. HALL,
FREDK. HAYNES.