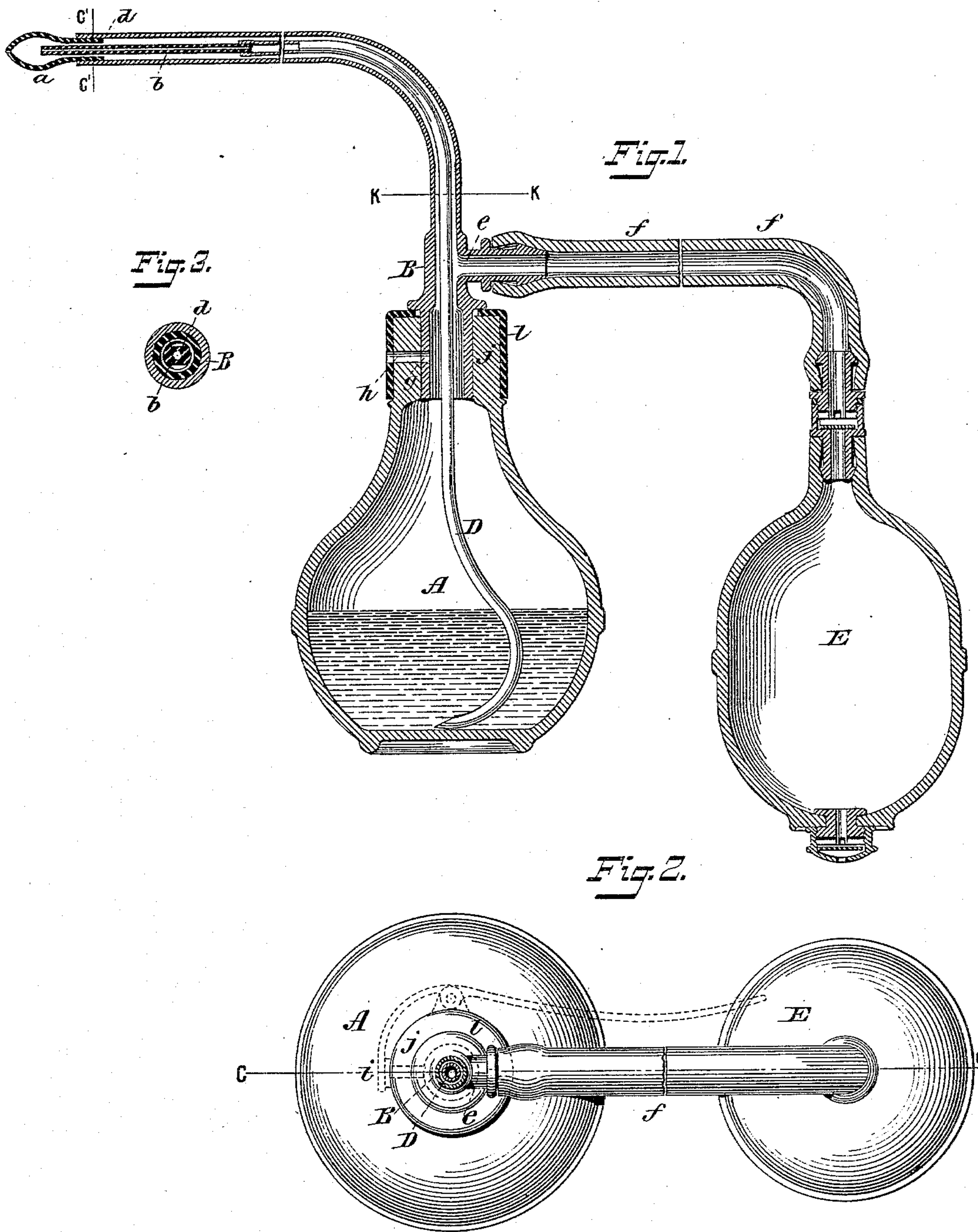


(No Model.)

G. KNEUPER.
ATOMIZER.

No. 401,355.

Patented Apr. 16, 1889.



WITNESSES:
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UNITED STATES PATENT OFFICE.

GEORGE KNEUPER, OF NEW YORK, N. Y.

ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 401,355, dated April 16, 1889.

Application filed February 2, 1889. Serial No. 298,502. (No model.)

To all whom it may concern:

Be it known that I, GEORGE KNEUPER, a resident of the city, county, and State of New York, have invented an Improved Atomizer, of which the following is a specification.

This invention relates to that class of atomizers that throw a continuous spray or stream; and it has for its object to cause the stream of spray or the like to instantly stop flowing when desired.

Another object is to improve the connection between the neck of the liquid-holding vessel and the air and liquid tubes.

The invention consists in the details of improvement and the combinations of parts, that will be more fully hereinafter set forth, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical cross-section on the plane of the line *c c*, Fig. 2, of an atomizer containing my improvements. Fig. 2 is a sectional plan view of the same on the plane of the line *k k*, Fig. 1; and Fig. 3 is a detail section on the line *c' c'*, Fig. 1.

In the accompanying drawings, the letter A represents a liquid receiver or vessel made wholly or partly of elastic material, so as to be expansible.

B represents an air-tube that fits in the neck of the vessel A, and *a* is a cap or nozzle on the outer end of the air-tube B, which cap has one or more small apertures to permit the passage of liquid and air from the atomizer.

D is a liquid-tube that passes into the liquid-vessel A, and also within the air-tube B, as shown in Fig. 1. The liquid-tube D terminates within the air-tube B in a nozzle, *b*, that projects into the cap *a*, as shown. Two of the sides of the nozzle *b* are flattened or grooved at *d* to permit air to pass along said nozzle and into the cap *a*.

The above construction of parts is substantially similar to that shown in Letters Patent of the United States No. 394,775, issued to me December 18, 1888, and I therefore refer to said Letters Patent for a more detailed description of said parts; but for the purposes of my present invention the liquid-vessel A

and the air and liquid tubes B D may be otherwise arranged than that shown herein to suit different requirements. The air-tube B has a side projecting nozzle, *e*, which connects by a tube, *f*, with a compression-bulb, E, which is provided with suitable or the usual valves. Upon compressing the bulb E air is forced into the liquid-vessel A and upon the liquid therein, which forces said liquid into and through the tube D. The air from the bulb E also passes through the air-tube B and out at the cap *a*, thereby converting the liquid that passes from said cap *a* into a spray.

The liquid-vessel A may be of soft india-rubber, like that shown in my Letters Patent No. 363,247, dated May 17, 1887, or it may be of any other suitable construction. The air from the bulb E being compressed in the liquid-vessel A, causes, with the aid of the expansible vessel A, a continuous spray to be thrown, in the manner well known.

In the continuous-spray atomizers heretofore constructed the air will continue to escape from the atomizer even after the bulb E has ceased to be compressed, and until all the compressed air is exhausted from its receiver. In order to cause the stream of spray or the like to stop instantly, even if air remains compressed in its receiver, I make a passage-way or opening, *g*, in the air-tube B, or in the vessel A, which will permit the escape of air as soon as uncovered. This opening *g* may be made in the part of the air-tube B that extends within the neck of the liquid-vessel A, as shown in Fig. 1, in which case it will come in line with an opening, *h*, in the liquid-vessel, as shown. With this construction, when it is desired that an atomizer shall throw a stream, the operator's finger should be held over the opening *g* to prevent the escape of air; but when it is desired to stop the stream, even if air remains compressed in the atomizer, the finger of the operator will be removed from over the opening *g*, whereupon the air will instantly seek an outlet through said opening instead of through the main part of the tube B, thereupon instantly stopping the stream or spray of liquid.

If desired, instead of using the finger to close the opening *g*, a suitable valve, *v*, may

be carried by the atomizer, so as to cover said opening, as shown by dotted lines in Fig. 2. When it is desired to stop the stream, said valve will be opened by operating its lever or the like.

5 With the expansive liquid-vessels in continuous-spray atomizers heretofore used, in which a rigid ring was cemented or otherwise securely held in the neck of the vessel, the continual expanding and contracting of the liquid-vessel would gradually cause the rigid ring to become loosened from the neck. In order to overcome this difficulty and to removably connect the air-tube with the liquid-vessel, I make the neck *j* of the liquid-vessel of elastic material, as shown in Fig. 1, and place around this elastic neck a rigid cap, *l*, which prevents the neck from expanding. The cap *l* overlaps the neck *j*, as shown. The end of the tube B which enters the neck *j* of the liquid-vessel is made slightly larger than the aperture in said neck, so as to spread the neck as it enters, thereby making a firm connection between the air-tube and the neck *j*.

By this means the air-tube can be readily put in place and removed, and there is no danger of any separate parts becoming loosened from the liquid-vessel or the air-tube, and no air will escape past the parts, as a firm connection is made, at the same time permitting the parts to expand as much as necessary.

Having now described my invention, what I claim is—

1. The liquid-vessel A and its air-tube B, provided with the opening *g*, said opening being adapted to be closed and unclosed, in combination with the pipe *f* and bulb E, substantially as described.

2. The liquid-vessel A, having a flexible neck, *j*, combined with a rigid cap, *l*, around and overlapping said neck, and with the tube B, that enters said neck, substantially as described.

GEORGE KNEUPER.

Witnesses:

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THEO. F. BOURNE.