

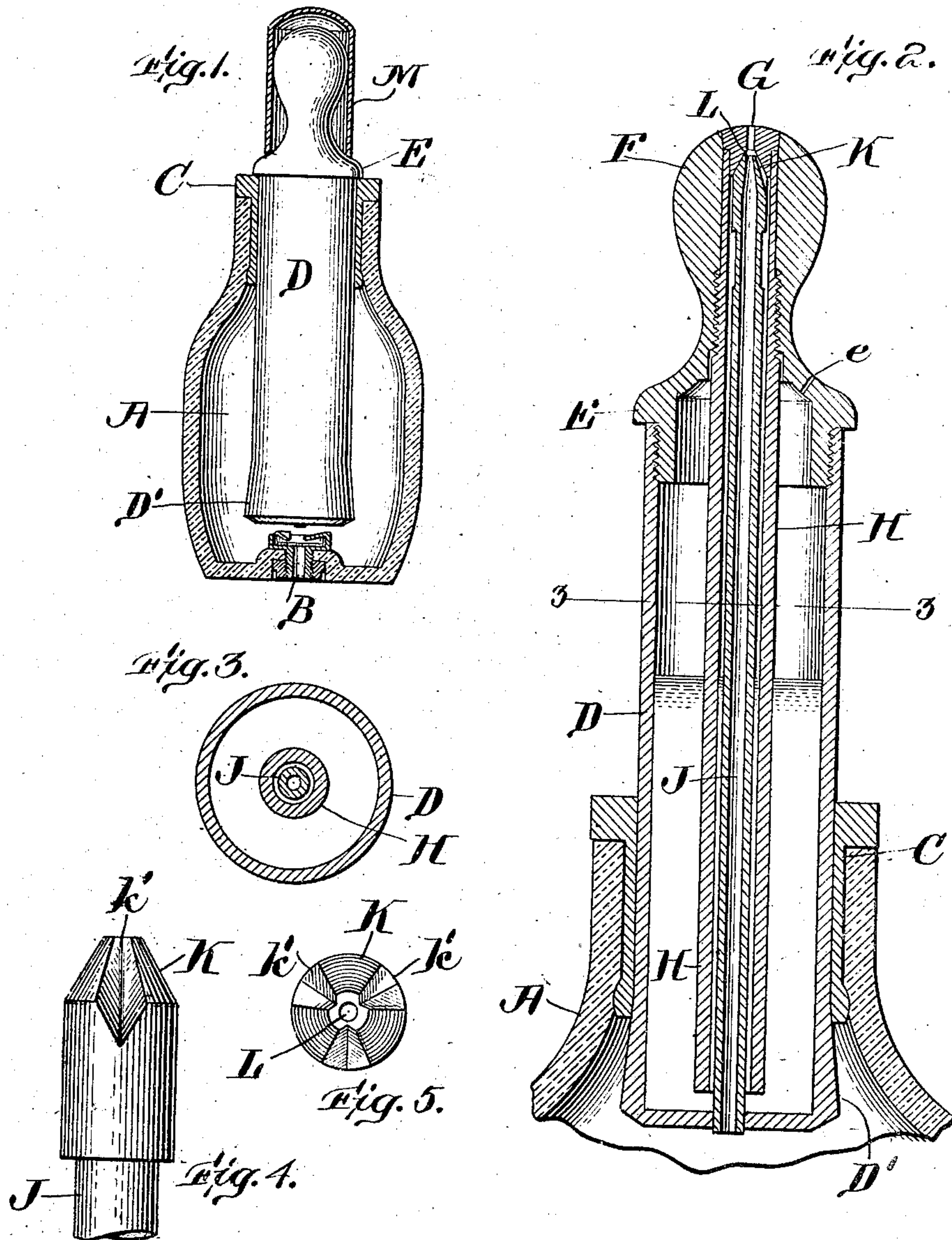
No. 757,157.

PATENTED APR. 12, 1904.

C. L. TURNER.
ATOMIZER.

APPLICATION FILED JUNE 26, 1902.

NO MODEL.



Witnesses:

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UNITED STATES PATENT OFFICE.

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ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 757,157, dated April 12, 1904.

Application filed June 26, 1902. Serial No. 113,195. (No model.)

To all whom it may concern:

Be it known that I, CHARLES L. TURNER, a citizen of the United States, and a resident of Winthrop, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Atomizers, of which the following is a specification.

My invention relates to atomizers; and its object is to produce an atomizer which shall be collapsible, and therefore convenient for transportation, of few parts, simple and effective in construction, and adapted to be operated by one hand, leaving the other hand free.

My atomizer employs a bulb of usual type common in all atomizers and a receptacle having a sliding engagement with the bulb and capable of being pushed within the bulb and withdrawn from it in telescoping fashion, still remaining in engagement therewith, as shown in the patent to C. J. Seltzer, No. 700,838, dated May 27, 1902.

An embodiment of my invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central longitudinal section of the bulb, showing the receptacle in elevation and the atomizer in telescoped or contracted position. Fig. 2 is a central longitudinal section, enlarged, of the receptacle and parts located therein. Fig. 3 is a cross-section through line 3 3 of Fig. 2. Fig. 4 is a much enlarged elevation of the air-nozzle, and Fig. 5 is a plan view of Fig. 4.

A represents the bulb, and B an air-inlet check-valve of ordinary construction inserted at the free end of the bulb. At the end of the bulb opposite the check-valve B is a mouth or aperture, within which is secured a ring C, of hard rubber, metal, or other suitable material, to which the edges of the mouth of the bulb are secured. The telescoping receptacle D is fitted within this ring C and has a sliding engagement therewith. The inner end of the receptacle D is slightly conical in form, as shown at D', the effect of which is that a wedge-union and fluid-tight joint is formed when the receptacle is drawn out between the ring C and the receptacle. Fitted to the outer

end of the receptacle D is a screw-cap E, having a nozzle F of any suitable form exteriorly, the end of which is provided with a small discharge-orifice G, through which the atomized liquid is discharged. Within the receptacle and communicating through the bottom of the receptacle with the interior of the bulb A is an air pipe J, the upper end of which is conical in form and fits within a conical seat on the inner surface of the cap E, which centers the point of the pipe J so that it registers with the discharge-orifice G. In the preferred form of my device shown in the drawings a liquid-pipe H depends from the cap E into the receptacle, inclosing the air-pipe J (see Fig. 3) and extending nearly to the bottom of the receptacle. The conical nozzle A of the air-pipe J is provided with grooves *k'* and has an air-opening L. The grooves *k'* form ducts for the passage of the liquid from the liquid-tube through the orifice G. A minute air-inlet *e* is provided in the screw-cap E or at any suitable point in the walls of the receptacle D, communicating with the air-space within the receptacle for the purpose of admitting air to replace the liquid which is drawn out of the receptacle by the operation of the device, and this inlet may be made as small as possible in order to avoid any leakage of the liquid contents of the receptacle.

The operation of my improved atomizer is as follows: The telescoping receptacle D is pulled out until the conical end D' of the receptacle engages the lower end of ring C and by its wedging action forms a fluid-tight and union joint between the receptacle and the ring C. This is a feature of some importance in a telescoping atomizer, since the escape of air by any other outlet than the proper air-passage J would seriously impair the efficiency of a device like that shown, in which the lifting of the fluid is entirely accomplished by vacuum-suction as distinguished from the mode of operation which is shown in the Seltzer patent above mentioned, in which the liquid is elevated by direct pressure of the compressed air upon the surface of the liquid. When the bulb A is collapsed by hand, the

air within is compressed and forced upward through the air-tube J, escaping through the orifice G. In doing this the air within the liquid-pipe H is drawn upward, creating a partial vacuum, which is relieved by the rising of the liquid from below. It will be observed that the air-space within the liquid-pipe is of comparatively small area. The result is that the operation of my device is very prompt. It will be observed also, that the liquid in its discharge is arranged around the rapidly-moving column of compressed air, so that when the liquid and air issue through the orifice G the effect is as of a hollow cylinder of liquid filled with a column of air under pressure and in rapid motion. The effect is that as soon as the hollow column of liquid filled with compressed air, as above described, passes out of the orifice G it bursts into a spray so fine as to resemble steam, and it may truly be said that it is atomized, whereas in many of the so-called "atomizers" the effect is merely that of liquid broken into a rain.

So far as I know the concentric arrangement of liquid and air pipes which I have described and shown and which I shall claim is new with me, and I believe that the useful results attained are due to this arrangement and organization of parts. The results may be summarized as follows: prompt action, whereby as soon as the air begins to pass under pressure through the air-pipe the very small air-chamber at the upper end of the pipe H is exhausted and the liquid rises. This arrangement and proportioning of the parts also results in a great efficiency and continuity of operation, the liquid rising quickly and continuing to rise almost as long as the air continues to move upward in the air-pipe J. The concentric arrangement of the pipes also, as has been pointed out, places the air under pressure within the hollow column of water, so that as soon as the column of air and water is free from the restraining-walls of the cap E the air expands in all directions, finely comminuting the water in all directions, since the water is without the air, and the air will instantly expand in all directions.

When the atomizer is not in use, the receptacle D may be pushed within the bulb A, as shown in Fig. 1, and the cap M may be placed

over the nozzle F to prevent the escape of the liquid.

I claim—

1. An atomizer comprising a bulb; a receptacle to which the bulb is fastened made in two separable parts detachably fastened together, and with a discharge-orifice through one end; a pair of tubes within the receptacle comprising an inner tube fixed at one end to one of the two parts of the receptacle and communicating at that end with the interior of the bulb, the other end of said inner tube registering with the discharge-orifice of the receptacle; and an outer tube surrounding the inner tube held at one end by the other part of the receptacle and communicating at that end with the discharge-orifice and at its other end with the interior of the receptacle.

2. An atomizer comprising a bulb; a receptacle arranged within the mouth of the bulb made in two separable parts detachably fastened together, and with a discharge-orifice at one end; an inner tube within the receptacle fixed to one part thereof, one end of the inner tube registering with the discharge-orifice and the other end communicating through the end of the receptacle with the interior of the bulb; an outer tube surrounding the inner tube held at one end by the other part of the receptacle and communicating at that end with the discharge-orifice and at its other end with the receptacle, and an air passage-way communicating with the receptacle adapted to admit air to compensate for liquid removed therefrom.

3. In an atomizer, in combination, a bulb and a liquid-receptacle, the latter arranged to slide telescopically within the mouth of the bulb, the inner end of said receptacle being made with an exterior tapering enlargement for limiting the outward movement of the receptacle, and adapted to be wedged into the mouth of the bulb to prevent leakage between the receptacle and bulb.

Signed by me at Boston, Massachusetts, this 18th day of June, 1902.

CHARLES L. TURNER.

Witnesses:

OLIVER R. MITCHELL,
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