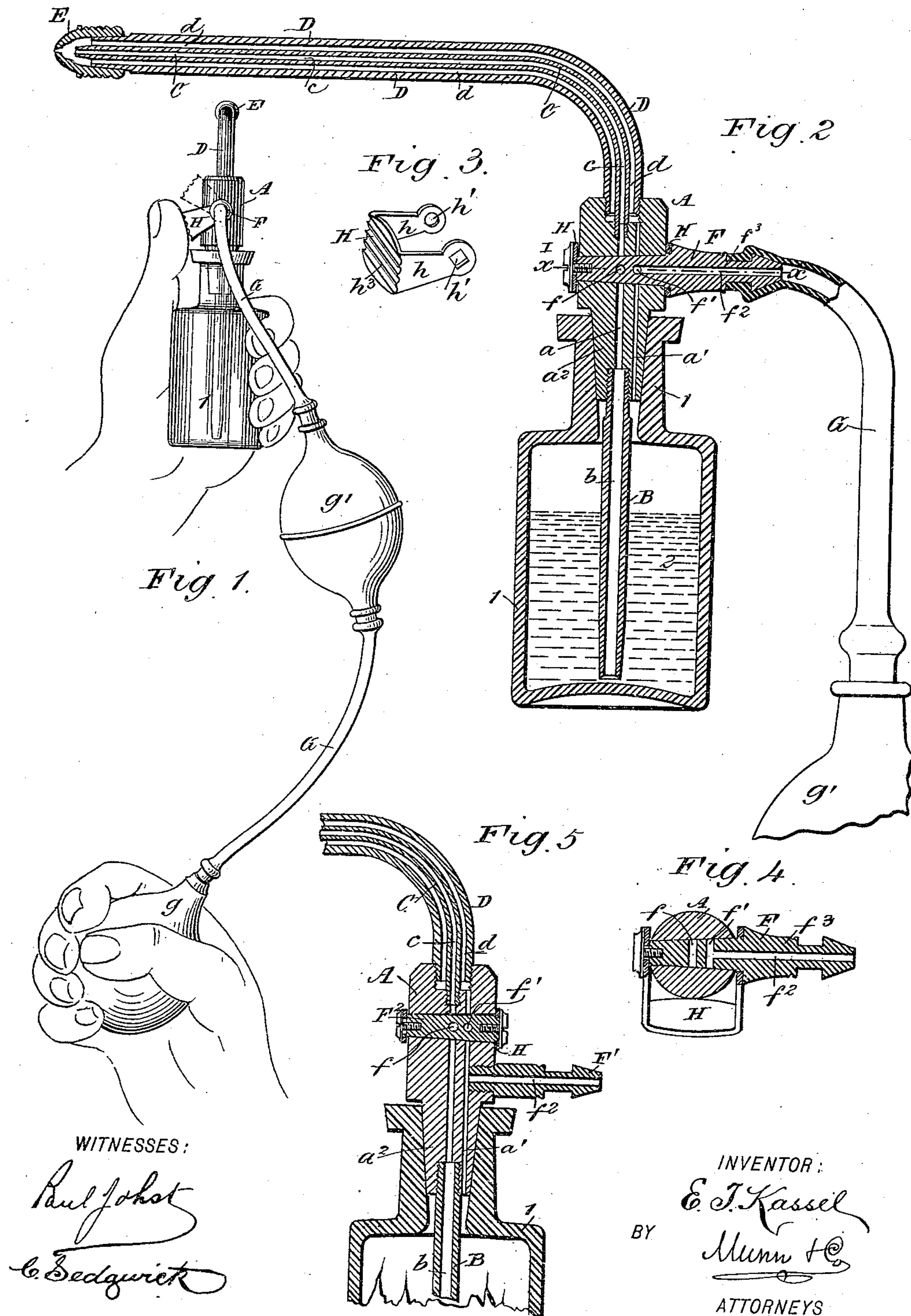


(No Model.)

E. T. KASSEL.
ATOMIZER.

No. 446,256.

Patented Feb. 10, 1891.



UNITED STATES PATENT OFFICE.

EDWARD T. KASSEL, OF NEW YORK, N. Y., ASSIGNOR OF ONE-HALF TO
CHARLES E. RIKER, OF SAME PLACE.

ATOMIZER.

SPECIFICATION forming part of Letters Patent No. 446,256, dated February 10, 1891.

Application filed April 2, 1890. Serial No. 346,295. (No model.)

To all whom it may concern:

Be it known that I, EDWARD T. KASSEL, of New York, in the county and State of New York, have invented a new and Improved
5 Atomizer, of which the following is a full, clear, and exact description.

My invention relates to a device for atomizing or spraying perfumery and antiseptic or other liquids for toilet, medicinal, or surgical
10 uses, and has for its object to provide a simple, inexpensive, easily-operated, and efficient device of this character.

The invention will first be described, and then will be particularly pointed out in the
15 claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters and numerals of reference indicate corresponding parts in all the
20 figures.

Figure 1 is a side elevation illustrating the manner of using my improved atomizer. Fig. 2 is an enlarged central sectional view of the atomizer and liquid-vessel with the air-forcing
25 bulbs partly broken away. Fig. 3 is a perspective view of the valve-operating thumb-piece. Fig. 4 is a sectional plan view taken on the line $x x$ in Fig. 2, and Fig. 5 is a detail view of a modification of the atomizer.

30 The body or head piece A of the atomizer has a tapering stem a^2 , adapted to form a tightly-fitting cork to a bottle or reservoir 1, containing liquid to be sprayed, such as cologne or other perfumes or antiseptic fluid of any
35 kind. Into the lower end of the stem or cork a^2 is fitted a liquid-feed tube B, which extends, as usual, nearly to the bottom of the bottle.

To the upper end of the body or head-piece is fitted, preferably by a screw-joint, a liquid-discharge tube C, which has a central bore or
40 passage c , which communicates with a lengthwise bore or passage a , formed through the body A, and with the bore or interior passage b of the feed-tube B.

45 Outside of the discharge-tube C there is fitted to the body or head-piece A, and preferably by a screw-joint, an air-discharge tube or pipe D, the interior bore d of which is enough larger than the tube C to give free passage to
50 air forced through it to spray any liquid from

a nozzle or mouth-piece E, which is applied to the outer end of the tube C. The nozzle may be formed and perforated in any preferred manner to discharge the spray directly forward or sidewise or backward, as may be necessary or most desirable. A lengthwise bore
55 or passage a' , made through the body or head-piece A and preferably about parallel with the other bore or passage a thereof, communicates with the interior of the bottle or reservoir 1 and the bore d of the air-discharge
60 tube D, but has no direct communication with the liquid-discharge tube B of the device.

Into the body or head-piece A is fitted a tapered plug-valve F, which has transverse
65 passages $f f'$, adapted to coincide or register with the body-passages $a a'$, respectively. In the preferred form of the atomizer the valve also has an interior lengthwise bore or passage f^2 , which ranges outward through an extension
70 f^3 of the valve, to which the rubber or flexible air-supply tube G is connected. This tube has the ordinary outer valved air supply and forcing bulb g and an inner or intermediate air-reservoir bulb g' , which maintains constant
75 air-pressure through the open valve to the atomizer-nozzle when the device is in operation.

To actuate the valve for simultaneously opening and closing the fluid and air passages
80 $a a'$, it is only necessary to turn it one-quarter around and backward again, and this may be done by any suitable handle or finger plate or piece fixed or held to the valve. I prefer, however, to use a U-shaped thumb-piece H,
85 (shown detached in Fig. 3 of the drawings,) having opposing parallel arms $h h$, one of which has a round hole h' , fitting the round extremity of the valve next the retaining-screw I, while the other arm has a square or
90 flat sided aperture h^2 , which is fitted to a correspondingly-shaped part of the valve at the other side of the body or head-piece A of the atomizer. This construction causes the
95 valve to be turned as the thumb-piece is turned by pressing on its milled or serrated cross-bar h^3 .

In the modification shown in Fig. 5 of the drawings the air-inlet passage f^2 to the bore
or passage a' of the body or head-piece A' of 100

the atomizer is not formed in an outward prolongation of the valve, as in the preferred construction, but is formed through a separate tubular mouth-piece F' , fitted into the side of the head-piece near its plug-valve F^2 , to which the actuating thumb-piece H is applied, as in the preferred device. The air-feed pipe G will be connected to the mouth-piece F' , and the effect, as regards supply of air to both the bottle or reservoir containing the liquid and the air-conduit pipe D , leading to the spray-nozzle, will be the same as in the first-described construction. It will be noticed that in both constructions the air-inlet passage f^2 is fully twice as large as the air-passage a' through the head-piece, with which it communicates. Hence the one passage f^2 furnishes ample air to induce pressure on the liquid in the bottle to force it to the nozzle E and to spray or atomize the liquid at and from the nozzle.

The operation of the atomizer is very simple and effective. When the valve-piece H is held down by the thumb of the hand holding the bottle or reservoir 1, as shown in Fig. 1 of the drawings, the valve will close the liquid and air passages $a a'$ of the body or head-piece A or A' ; but when the thumb-piece H is moved or swung upward, as indicated by the dotted lines, the valve-passages $f f'$ will coincide simultaneously with the head-piece passages $a a'$, and when the air-forcing bulb g is compressed the air will enter the passage f^2 and pass through the valve-passage f' , and thence in opposite directions through the passage a' . The air entering the bottle or reservoir will, by pressure on the liquid 2 therein, force it gradually through the tube B , and thence through the head-piece passage a and interior tube C to the nozzle E , and simultaneously the air which is being forced from the valve-passage f' through the outer part of the head-piece passage a' and the passage d of the outer tubes D to the nozzle E will meet the liquid issuing from the inner tube C and spray or atomize it from the nozzle. The instant the thumb-piece H is turned downward to bring the valve to the position shown in Figs. 2, 4, and 5 of the drawings both head-piece passages $a a'$ will be simultaneously closed by the valve, and the supply of air to the liquid-reservoir and pipe D will be cut off, and the escape of liquid from the tube C will instantly stop, because no more liquid can be forced from the bottle by any pressure of air there may be therein, and atmospheric pressure will hold into the tube C any liquid which may already have passed the valve.

My improved atomizer also allows strictly localized applications of antiseptic or other fluids by one hand of a surgeon, while leaving his other hand free to perform an operation. This is done by first closing the valve F to cut off both air and liquid, and then working the air-forcing bulb g until the res-

ervoir-bulb g' is considerably distended with air, whereupon the surgeon will release the bulb g , which leaves the hand which had operated it free to handle an instrument, which he will while he opens the valve F by operating its thumb-piece with his other hand to eject the atomized liquid upon the parts being operated upon and by the air being discharged from the gradually-collapsing reservoir-bulb g' . The air-discharge from this bulb, and also the atomized liquid spray from the nozzle, may at any time during the operation be instantly cut off by simply closing the valve.

I am aware that it is not new to provide an atomizer with a valve which simultaneously cuts off the supply of air and liquid; but the prior device is provided at one end of its valve-casing or head-piece with a directly-connected air-forcing bulb, and at the opposite end of the head-piece is connected a feed-tube for the liquid to be sprayed from the nozzle, which is at one side of the head-piece. My improvement is readily distinguishable from this last-named device, in that the body or head-piece forming the valve-casing and bottle-cork has two independent passages $a a'$ extending clear through it lengthwise, one passage for air and the other for liquid, and the spray-tubes are connected to the outer end of the head-piece directly opposite the liquid-feed tube, which is connected to its inner end.

The special advantage of my particular construction of atomizer over the prior device above mentioned is that it may be much more conveniently used in ejecting internally medicinal sprays in operations requiring strictly localized applications to the affected parts. The operative difference between the two atomizers in this respect is so great that for many surgical purposes my atomizer would without hesitation be selected over the prior device, which in use is practically limited to spraying perfumery into the air or externally upon the face or body. The arrangement of my thumb-piece for operating the valve is also very convenient, as it allows movement of the valve by the same hand which holds the vessel containing the liquid to be sprayed. Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In an atomizer, the combination, with a body or head-piece having two independent lengthwise through-and-through liquid and air passages, of a plug-valve fitted to the head-piece and having two transverse passages adapted to open and close the head-piece passages, two discharge-tubes connected at one end of the head-piece and communicating, respectively, with its liquid and air passages, a liquid-feed tube connected to the other end of the head-piece and communicating with its liquid-passage, and an air-forcing device communicating with the air-passages of the head-piece and valve, substantially as described.

2. In an atomizer, the combination, with a
body or head-piece having two independent
lengthwise through-and-through liquid and
air passages, of a plug-valve having two trans-
5 verse passages adapted to register, respect-
ively, with the liquid and air passages of the
head-piece, said valve also having an inde-
pendent air-supply passage to which an air-
forcing device may be connected, substan-
10 tially as described.

3. In an atomizer, the combination, with a

body or head-piece having independent liquid
and air passages, of a plug-valve having trans-
verse passages adapted to register with said
head-piece passages and a U-shaped thumb- 15
piece held to the valve for actuating it by the
hand holding the liquid-vessel, substantially
as described.

EDWARD T. KASSEL.

Witnesses:

C. SEDGWICK,
E. M. CLARK.