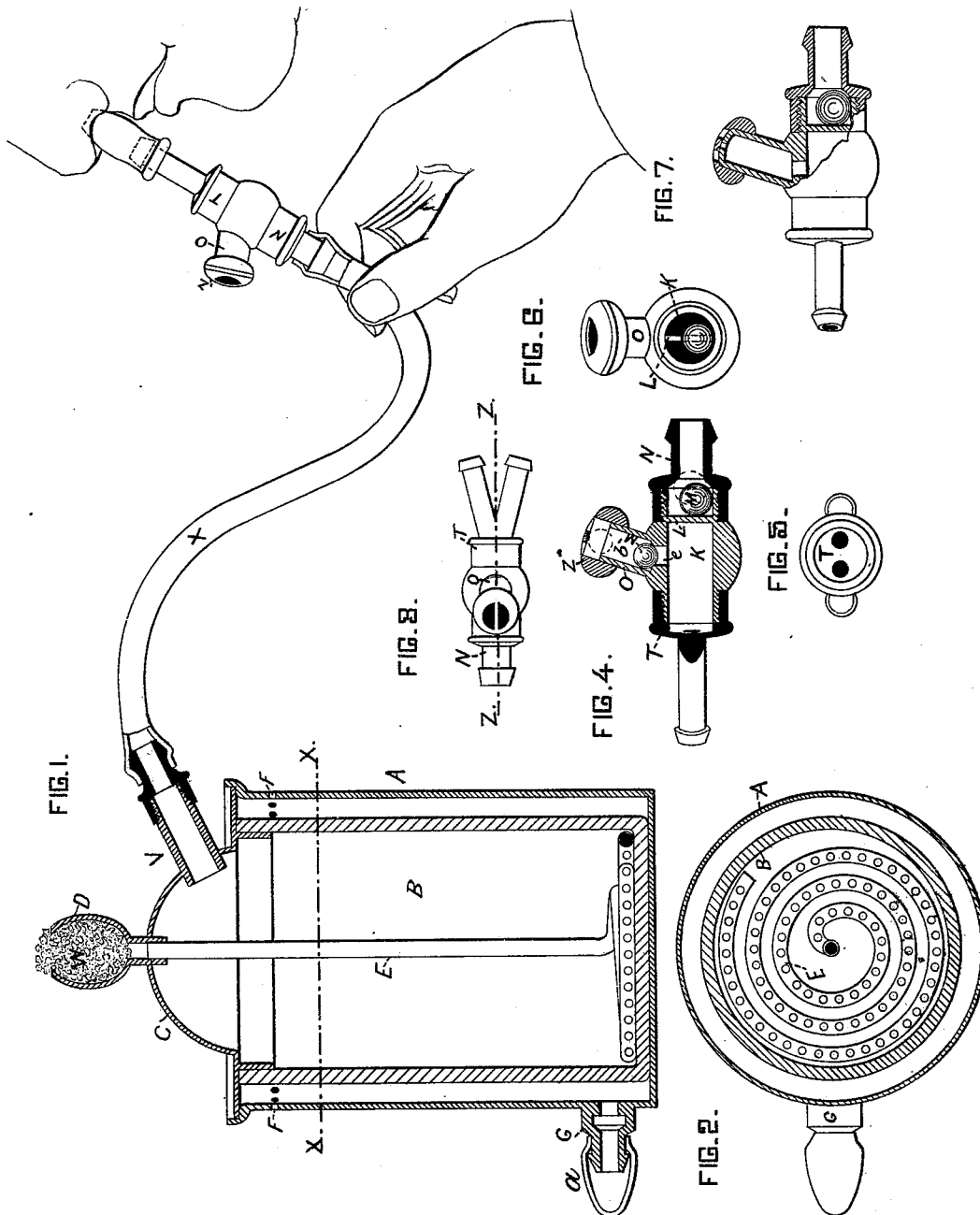


J. B. HAIGHT.
 Combined Inhaler, Vaporizer, and Douche.
 No. 218,434. Patented Aug. 12, 1879.



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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN COMBINED INHALER, VAPORIZER, AND DOUCHE.

Specification forming part of Letters Patent No. **218,434**, dated August 12, 1879; application filed May 12, 1879.

To all whom it may concern:

Be it known that I, JOHN B. HAIGHT, of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in a Combined Atomizer, Vaporizer, and Douche; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

Figure 1 represents a vertical section of my combined atomizer, vaporizer, and douche, with tube and valve attachments, showing the manner in which it is applied to the nostrils. Fig. 2 represents a section of the same, taken through *x x*. Fig. 3 represents a plan of the double-ball valve. Fig. 4 represents a section of the double-ball valve, taken through *z z*. Fig. 5 represents an end view of the adjustable cap, with the V-shaped tubes for nostrils. Fig. 6 represents an end view of the inhaling-valve having the cap removed, and showing the ball and upright. Fig. 7 represents a modification of the valve attachment.

My invention relates to that class of atomizers used in conveying atomized and vaporized medicines to the lungs and air-passages of head and throat; and it consists in a metallic vessel, cylindrical in form, inclosing therein a glass jar of a size to allow an interstice between the two for hot water when using the apparatus as a vaporizer.

The metallic vessel and glass jar are closed at the top by a lid, a portion of which fits tightly on the inside of the jar to prevent the air from passing at this point. A portion of the lid is of a convex form, on top of which a small sponge-cup is fixed, with an opening through its bottom, into which a hard-rubber tube is inserted, extending to the bottom of the jar, and terminating in a coil. The coil is perforated, in order that the air may strike the whole surface of the medicine at each inspiration. The metallic vessel is also provided with small perforations on its periphery near the top, to allow the steam arising from the hot water contained in it to escape. It is also

provided with a tube attachment near the bottom, so that it may be used as a nasal douche when desired. The convex of the lid is also provided with a similar attachment, to which a rubber tube is applied.

My invention also consists in a double-ball valve fastened to one end of the tube extending from the lid. The double-ball valve for inhaling and exhaling is provided with an adjustable cap at each end. The inhaling-valve is provided with an upright near the end next to the rubber tube with openings on each side to allow the atomized or vaporized medicine to pass through, at the same time preventing the ball from passing, thereby making a self-acting valve.

The exhaling-valve is an inclined tube containing a ball located on top of the inhaling-valve. This ball plays freely in the tube, which extends down a short distance to a flat surface, with a smaller opening extending into the inhaling-valve.

The inclined tube which forms the inhaling valve is provided with an adjustable cap, with openings in the top.

One of the caps of the inhaling-valve is provided with two tubes, forming a V, with a rubber tip to enter each nostril. This cap, when inhaling through the mouth, is removed and a mouth-piece of hard rubber attached.

In the drawings, A represents the metallic vessel, inclosing a glass jar, B, the same covered at the top by the lid C, a portion of which is convex, provided with a sponge-cup, D, with an opening through its bottom, into which a hard-rubber tube, E, is inserted, extending to the bottom of the glass jar B, and terminating in a coil. The coil is perforated in order that the air may strike the entire surface in the jar B. The metallic vessel A is also provided with perforations on its periphery near the top, to allow the steam from the hot water to escape. It is further provided with a tube attachment, G, near the base, covered by a rubber tip when using it as an atomizer or vaporizer. The convex of the lid C is also provided with an attachment, V, to which a rubber tube is connected, having at one end a combined inhaling and exhaling valve.

K is the inhaling-valve, with the upright L,

which prevents the small rubber ball M from passing the upright L, and the screw-cap N keeps the ball within certain limits.

O is the inclined tube, forming, with the ball, the exhaling-valve, located on top of the inhaling-valve K, with an opening, *b*, in which the small rubber ball M' operates. The bottom of the opening *b* is made flat, with a smaller opening, *c*, passing through it to the inhaling-valve K. Z is the adjustable cap for the inclined tube O, with openings in the top. T is also a movable cap, screwed on one end of the inhaling-valve. It is provided with a double tube, V-shaped, with rubber tip on each one, to be inserted into the nostrils. The cap T is removed and a hard-rubber mouth-piece put in its place when desirous of inhaling the medicine through the mouth.

The metallic vessel A can be used for a nasal douche by removing the tube X, glass jar B, hard-rubber tube E, and the rubber tip *a*, and replacing the latter by a rubber tube having a glass bulb on the end for insertion into the nostril. The medicine to be atomized or vaporized is placed in the glass jar B, and is covered by the lid C. The rubber tips on the tubes of the adjustable cap T are inserted into the nostrils. The air from the exterior passes through the sponge W, the same being dampened to prevent the passage of particles of dust into the jar, and then gains its outlet through the perforation in the coil of the tube E, thereby distributing the air in equal quantities through the medicine, thereby thoroughly medicating the air contained in the jar. The atomized medicine gains its way into the nostrils or lungs by passing through the inhaling-valve K, the same being provided with a small rubber ball, M, which falls from the opening of the adjustable cap N when inhaling the medicine, and is prevented from passing by the upright L. At the same time the small rubber ball M' of the exhaling-valve falls into the small opening *c*, thereby forcing the atomized medicine through the cap T, or the one adopted in lieu thereof.

When the patient exhales, the small rubber balls M M' assume a different position. The ball M is forced into the opening of the cap N, as shown by dotted lines on the drawings, and the ball M' is forced up and against the cap Z, thereby preventing the once-breathed air from returning to the jar. By this means the air in the jar is kept free from deleterious matter that would otherwise pass into it.

In using the valvular attachment where it is desirable that a limited amount of atmospheric air may be breathed, the exhaling-valve can be removed, thus making a single-ball valve, as shown in the modification. Fig. 7

shows the modification of the valvular attachment with the inclined tube, provided with an orifice across the end, the same being covered by a small strip of a movable cap. This cap can be regulated so as to allow as much of the atmospheric air to pass into the tube as may be deemed necessary. The manner of regulating the cap is simply to turn the same right or left, thus causing the small strip of the cap to move from over the orifice of the tube in order to allow the atmospheric air to pass into the same when inhaling.

The advantages claimed by me for the apparatus herein described over the appliances heretofore used for the inhalation of medicine are, that while the inhalers now used, being unprovided with valves, allow the once-breathed and poisoned air to re-enter the vessel containing the medicament, my apparatus, being supplied with valves, cannot be objected to on the same grounds.

Furthermore, as concerns the inhalation of atomized or vaporized medicine, I claim for my apparatus advantages over those instruments (insufflators)—advantages in that while by the insufflators the whole quantity of medicine desired to be used is thrown into the air-passages at once and in bulk, thus giving to the inflamed and delicate membrane a shock which is both painful and injurious, by the means I employ the medicated powder is conveyed in such small quantities at each inspiration that no disagreeable results follow.

I am aware that double valves were used in inhalers before, but not operated as shown in my invention.

Having thus fully described my invention, what I claim as new and useful, and desire to secure by Letters Patent, is—

1. In a combined atomizer, vaporizer, and douche, the metallic vessel A, in combination with the glass jar B, hard rubber tube E, terminating in a coil and having perforations therein, lid C, sponge-cup D, and tube attachment V, substantially as shown and described.

2. In a double-ball valve, the valve K, upright L, ball M, adjustable caps N and T, combined with the exhaling-valve tube O, openings *b* and *c*, the rubber ball M', and the adjustable cap Z, in combination with an atomizer, vaporizer, and inhalers, substantially as shown and described.

In testimony that I claim the foregoing I have hereunto set my hand.

J. B. HAIGHT.

Witnesses:

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