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O. C. KNIGHT.

ATOMIZER OR NEBULIZER.

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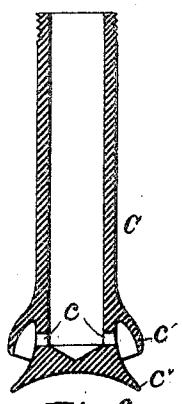


Fig. 2

Fig. 1

Witnesses:
Ethel A. Teller
Otis O. Earl

Inventor,
Olin C. Knight
By Fred L. Chappell
Att'y.

UNITED STATES PATENT OFFICE.

OLIN C. KNIGHT, OF KALAMAZOO, MICHIGAN, ASSIGNOR TO THE NATIONAL VAPORIZER COMPANY, OF KALAMAZOO, MICHIGAN.

ATOMIZER OR NEBULIZER.

No. 803,170. Specification of Letters Patent. Patented Oct. 31, 1905.

Application filed June 16, 1904. Serial No. 212,912.

To all whom it may concern:

Be it known that I, OLIN C. KNIGHT, a citizen of the United States, residing at the city of Kalamazoo, county of Kalamazoo, State of Michigan, have invented certain new and useful Improvements in Atomizers or Nebulizers, of which the following is a specification.

This invention relates to improvements in atomizers or nebulizers.

The objects of this invention are, first, to provide an improved atomizer or nebulizer which is compact in structure and convenient to use; second, to provide an improved atomizer or nebulizer in which the liquid is retained in the flask no matter in what position it may be placed; third, to provide an improved atomizer or nebulizer in which the parts may be readily disassembled for the purpose of cleaning; fourth, to provide an improved atomizer or nebulizer in which the parts are simple and economical to produce and easy to assemble and adjust.

Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail longitudinal sectional view thereof, the air-bulb D being shown in full lines. Fig. 2 is a longitudinal sectional view of a modified form of the delivery-tube C.

Referring to the drawings, the medicament flask A is open at each end and is provided with threaded necks *a* to receive the threaded caps A′ and A″. These caps are provided with centrally-located openings therethrough. The cap A′ serves as a support for the atomizing-tube and the cap A″ for the delivery-tube. The cap A″ is provided with a suitable delivery tip or nozzle *a*″, and the cap A′ is provided with a suitable tip *a*‴, adapted to receive the air-supply tube D′. The atomizing-tube consists of an outer medicament-tube B, which is screw-threaded into the cap A′. Within this tube B is an air-delivery tube B′. This air-delivery tube is preferably screw-threaded into the lower end of the tube B. The tube B is provided with inlet perforations *b* at its lower end and a delivery-opening *b*′ toward its upper end. The air-delivery tube B′ is provided with a delivery-opening *b*″, adapted to be brought into register with the perforations *b*′. Thus arranged the parts are very economical to construct and can be readily assembled. If the same should become clogged, it can be readily disassembled for the purpose of cleaning.

Secured in the cap A″, preferably by screw-threading therein, is a delivery-tube C, having an inlet-opening at its inner end. This tube projects a considerable distance into the receptacle. An inner tube C′ is secured in the outer end of the delivery-tube C. This tube forms a trap in the delivery-tube for any medicament which may get into the same. This inner tube is preferably screw-threaded into the tube C.

On the outer end of the cap A′ is a tip *a*‴, adapted to receive the delivery-tube D′ of the bulb D. This may be of the usual or any desired construction and is here illustrated in conventional form.

In the modified structure of the delivery-tube C shown in Fig. 2 flaring cup-like traps *c*′ are provided for the inlet-opening *c*. These traps *c*′ guard the inlet-openings *c* and are in turn guarded by the projecting head *c*″ of the tube.

With the parts of my improved atomizer arranged as illustrated and described the same are very economical to produce and are easily assembled. The instrument is convenient to use and may be placed in any position while containing the medicament without danger of spilling the same. The structure is very compact, strong, and durable.

I have illustrated and described my improved atomizer or nebulizer in the form preferred by me on account of its structural simplicity and economy, although I am aware that it is capable of considerable structural variation without departing from my invention.

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

1. The combination of a liquid or medicament flask open at each end, having threaded necks thereon; threaded caps A′ and A″ therefor, said cap A′ having a tip thereon adapted to receive an air-supply tube, and said cap A″

having a delivery-tip thereon; a tube B having a medicament-inlet at its lower end and a delivery-opening at its upper end, carried by said cap A′; an air-delivery tube B′ having a delivery-opening registering with the delivery-opening in said tube B, arranged therein; a delivery-tube C carried by said cap A″ having an inlet-opening at its inner end; and a tube C′ arranged in said tube C adapted to form a trap at the outer end thereof, for the purpose specified.

2. The combination of a liquid or medicament flask open at each end, having threaded necks thereon; threaded caps A′ and A″ therefor; a tube B having a medicament-inlet at its lower end and a delivery-opening at its upper end, carried by said cap A′; an air-delivery tube B′ having a delivery-opening registering with the delivery-opening in said tube B, arranged therein; a delivery-tube C carried by said cap A″, having an inlet-opening at its inner end; and a tube C′ arranged in said tube C adapted to form a trap at the outer end thereof, for the purpose specified.

3. The combination of a liquid or medicament flask open at each end, having threaded necks thereon; threaded caps A′ and A″ therefor, said cap A′ having a tip thereon adapted to receive an air-supply tube, and said cap A″ having a delivery-tip thereon; a tube B having a medicament-inlet at its lower end and a delivery-opening at its upper end, carried by said cap A′; an air-delivery tube B′ having a delivery-opening registering with the delivery-opening in said tube B, arranged therein; a delivery-tube C carried by said cap A″ having an inlet-opening at its inner end; for the purpose specified.

4. The combination of a liquid or medicament flask open at each end, having threaded necks thereon; threaded caps A′ and A″ therefor; a tube B having a medicament-inlet at its lower end and a delivery-opening at its upper end, carried by said cap A′; an air-delivery tube B′ having a delivery-opening registering with the delivery-opening in said tube B, arranged therein; and a delivery-tube C carried by said cap A″ having an inlet-opening at its inner end, for the purpose specified.

5. The combination of a liquid or medicament flask open at each end, having threaded necks thereon; threaded caps therefor; an atomizing-tube carried by one of said caps; a delivery-tube carried by the other of said caps; and a medicament-trap arranged within said delivery-tube, for the purpose specified.

6. The combination of a liquid or medicament flask open at each end, having threaded neck portions; threaded caps therefor; an atomizer-tube carried by one of said caps projecting into said flask; and a delivery-tube carried by the other of said caps projecting into said flask, the inlet-opening in said delivery-tube being at its inner end, whereby the structure may be readily assembled or disassembled, for the purpose specified.

7. The combination of a liquid or medicament flask open at each end; caps therefor; an atomizing-tube carried by one of said caps; a delivery-tube carried by the other of said caps; and a medicament-trap for said delivery-tube, for the purpose specified.

8. The combination of a liquid or medicament flask; a cap therefor; a tube having a medicament-inlet at its lower end and a delivery-opening at its upper end, screw-threaded into said cap; and an air-delivery tube having a delivery-opening adapted to be brought into registry with said delivery-opening in said first-named tube, for the purpose specified.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

OLIN C. KNIGHT. [L. S.]

Witnesses:

ETHEL A. TELLER,

OTIS A. EARL.