

No. 694,630.

H. GOLTERMANN.
NEBULIZER.

Patented Mar. 4, 1902.

(Application filed June 25, 1901.)

(No Model.)

Fig: 1.

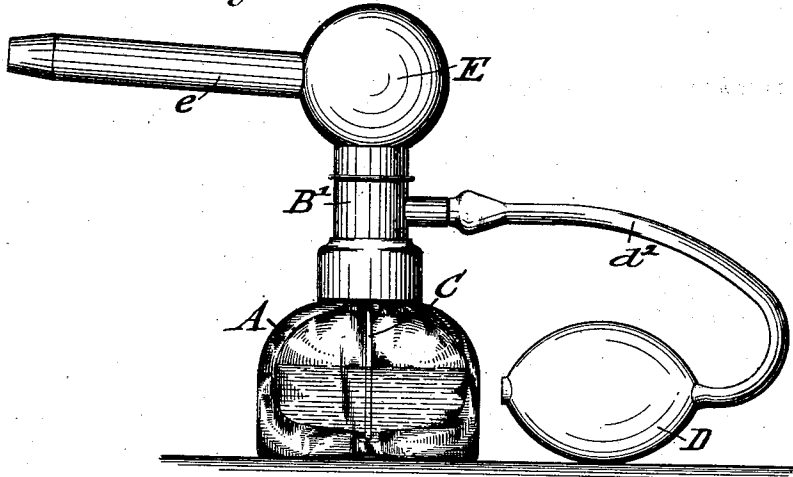


Fig: 2.

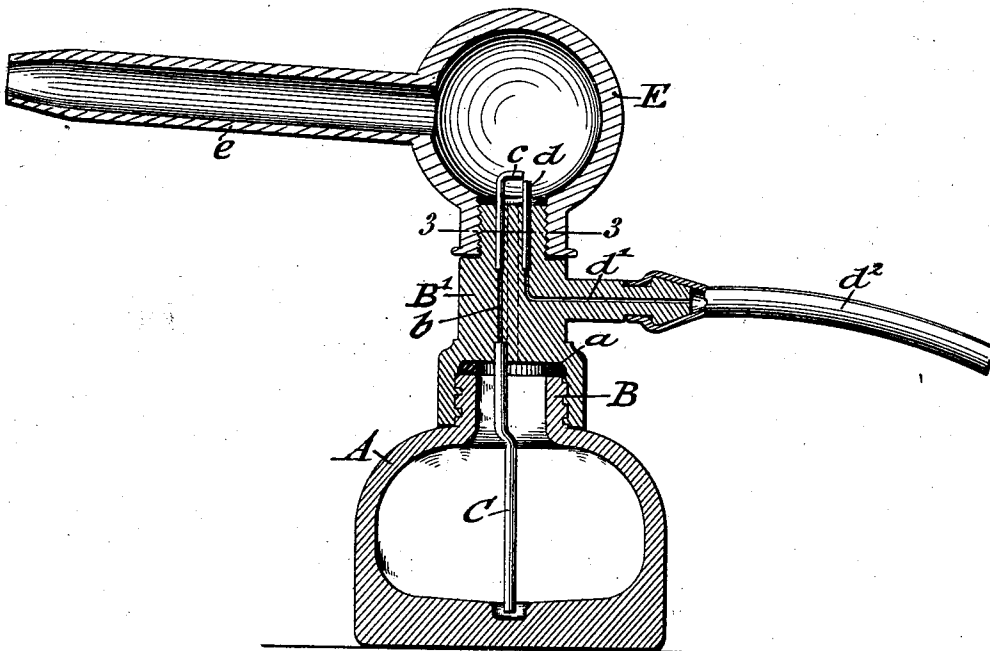
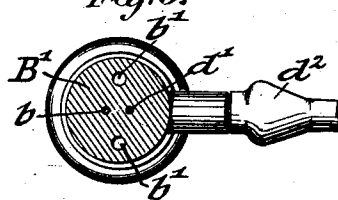


Fig: 3.



WITNESSES:

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NEBULIZER.

SPECIFICATION forming part of Letters Patent No. 694,630, dated March 4, 1902.

Application filed June 25, 1901. Serial No. 65,922. (No model.)

To all whom it may concern:

Be it known that I, HERMANN GOLTERMANN, a citizen of the United States, residing in New York, borough of Manhattan, in the State of New York, have invented certain new and useful Improvements in Nebulizers, of which the following is a specification.

This invention relates to an improved nebulizer or instrument in which a finer vapor is produced than in the well-known atomizers by throwing the spray produced by an atomizing device against a wall, so that it breaks up into a vapor, and in which that part of the spray which liquefies on striking the wall is conducted back into the liquid vessel. Nebulizers have heretofore been supplied on the market, but the spray is produced at the inside of the liquid vessel by striking against the sides of the same and is then conducted to the place of use. My invention is designed to produce the spray outside of the liquid vessel and conduct the same through a spherical or other head and a suitable nozzle to the place of use. For this purpose the invention consists of a nebulizer comprising a liquid vessel, a spray-head, and an atomizing device connected with the liquid vessel and arranged to spray the liquid against the spray-head; and the invention consists, further, of certain details of construction and combinations of parts, which will be fully described hereinafter and finally pointed out in the claim.

In the accompanying drawings, Figure 1 represents a side elevation of my improved nebulizer. Fig. 2 is a vertical longitudinal section of the same, and Fig. 3 is a horizontal section on line 3 3, Fig. 2.

Similar letters of reference indicate corresponding parts.

Referring to the drawings, A represents a vessel, of glass or other suitable material, in which the liquid to be sprayed is placed. The liquid-containing vessel A is provided with a neck B, having an exterior screw-thread, on which is screwed the interiorly-threaded lower end of a cap B', a washer *a* making the connection tight. The cap is provided with a bore *b*, which connects at its lower end with a suction-tube C and at its upper end with a spray-nozzle *c*, the end of which is bent over so that its end is above the end of the air-

supply tube *d*, which is connected by the bore *d'* and tube *d''* with the ordinary rubber bulb D or other air-forcing device. The end of the air-supply tube *d* is located in proximity to the nozzle *c*, so that by the air supplied under pressure a suction is created on the liquid in the liquid vessel and the liquid raised through the suction-tube, bore *b*, and nozzle and then atomized. On the upper end of the cap B' is screwed a hollow head E, preferably spherical in shape and provided with a discharge-nozzle *e*, which may be made integral therewith. The spray is thrown from the atomizing device against the inner surface of the head E and is broken up by the same into an extremely fine vapor, which escapes through the discharge-nozzle *e* to the part to be treated. The nozzle *e* is arranged at a slight inclination toward the head, so as to return into the same all liquid condensed therein when the nebulizer is set down. The liquid which condenses upon the inner surface of the hollow head E or is returned by the nozzle is conducted back into the liquid vessel by means of return-bores *b'* in the cap B'. The air-supply tube is not connected with the vessel A, but with the spray-head, so that air under pressure is not supplied to the interior of the liquid vessel, the liquid in the same being under atmospheric pressure only.

My improved nebulizer has the following advantages: First, it is worked only by suction, no air being supplied under pressure to the interior of the liquid vessel, but only supplied to the atomizing device at the atomizing-point; second, the surplus liquid is returned from the spray-head E through the return-openings *b'* into the liquid vessel, so that none of the liquid is wasted; third, the vapor is formed by the contact of the atomized spray with the inner circumference of the hollow head and then conducted off through the discharge-nozzle; fourth, the discharge-nozzle being made in one piece with the hollow spray-head E and the latter tightly secured over the atomizing device, all the vapor is conducted to the part to be treated.

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

A nebulizer, consisting of a liquid vessel A having a screw-threaded neck B, a cap B'

screwed on said neck, and provided with bores *b'* extending through the same and communicating with the interior of the vessel, and with a liquid-supply bore *b* also extending therethrough, and an air-supply bore *d'*,
5 an air-supply tube *d* connected with said air-supply bore, and projecting from the upper end of said cap, a suction-tube *C* connected with the lower end of the bore *b*, a nozzle *c*
10 connected with the upper end of said bore and having its upper end bent over in proximity to said air-supply tube *d*, a spherical

head *E* screwed on said cap, the upper end of said nozzle and air-supply tube being located in the lower part of said head, and a discharge-nozzle projecting from one side of said spherical head, substantially as set forth. 15

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

HERMANN GOLTERMANN.

Witnesses:

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JOSEPH H. NILES.