

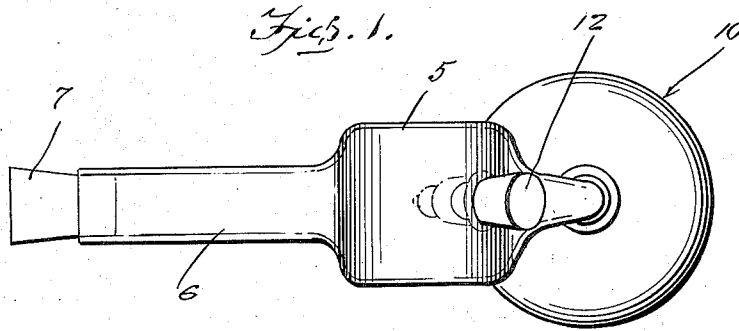
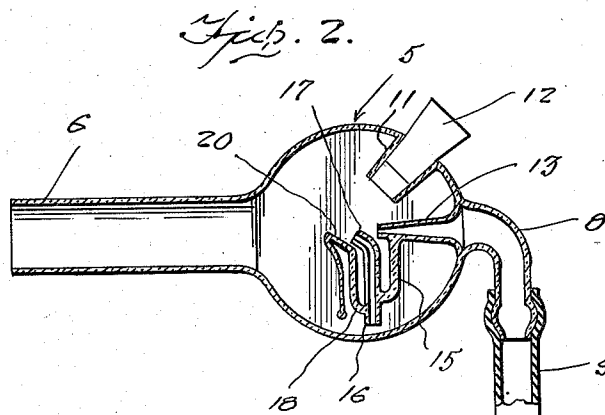
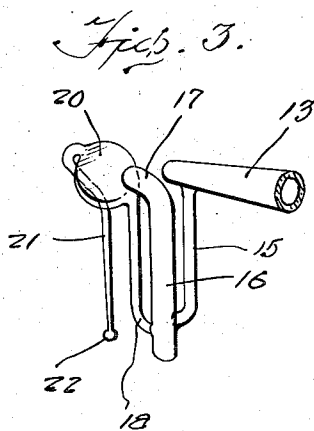
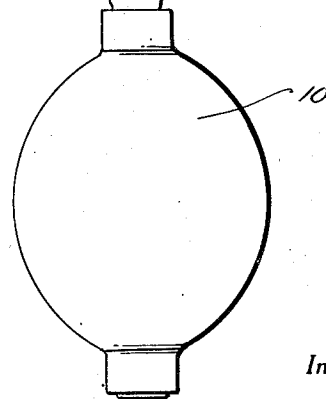
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ATOMIZER

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ATOMIZER

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1 Claim. (Cl. 299—88.5)

My invention relates generally to atomizers, and particularly to an atomizer especially adapted for medical use, and an important object of the invention is to provide an atomizer of this character which achieves a very fine division of the liquid and which prevents the spraying of undesirable large drops or particles.

Another important object of my invention is to provide an atomizer capable of producing the finest spray without sacrifice to the total volume of liquid atomized and sprayed.

Another important object of the invention is to provide in an atomizer of the character indicated above means for effectively controlling the physical characteristics of the spray in addition to obtaining a maximum quantity thereof.

Other important objects of my invention will be apparent from a reading of the following description in connection with the drawing, wherein for purposes of illustration I have shown a preferred embodiment of my invention.

In the drawing:—

Figure 1 is a top plan view of the embodiment.

Figure 2 is a longitudinal vertical sectional view taken through Figure 1.

Figure 3 is a perspective diagrammatic view of the atomizing jet, capillary tube and diagonal baffle.

Referring in detail to the drawing, the numeral 5 generally designates a suitable generally globular container of suitable material such as glass or metal or composition which has a relatively large delivery tube 6 communicating with one side thereof which projects radially from the globe and is capable of having its other end stoppered by a stopper 7 when the device is not in use. Diametrically opposite the delivery tube 6 the globe has a connection nipple 8 in communication with the interior of the globe 5, the neck 40 being connected to a tube 9 in communication with a suitable source of air under pressure such as a bulb 10.

Disposed in the top of the globe near the neck 8 is the filling opening neck 11 which extends radially inwardly at an acute angle relative to the axis of the tube 6 and is adapted to be closed by a plug or stopper 12.

Axially aligned with the tube 6 and mounted at the opening by which the neck or nipple 8 communicates with the interior of the globe is the tapering air jet nozzle 13 which has depending therefrom near its radially inward end the brace 15 which is J-shaped in cross section and has its lower end connected with the lower part of a vertical capillary tube 16 which has its lower end

close to the bottom of the globe 5 and its upper end curvedly angulated as indicated by the numeral 17 away from the jet nozzle 13 and rising approximately on a level with the small inner end of the nozzle 13 and pointing toward the tube 6.

Rising from a lower part of the left hand side of the capillary tube 16 is a support 18 which terminates at its upper end in a disk-like baffle plate 20 which is angulated with respect to the axis of the nozzle 13 and has an angulation approximating that of the part 17 of the capillary tube. Depending from the left hand or upper edge of the disk baffle 20 is a suitable capillary drain arrangement 21 which may be in the form of a thin rod or a tube terminating at its lower end in a small ball 22.

The interior of the globe 5 having been filled to a suitable level below the axis of the tube 6 with the liquid to be sprayed, compressing the bulb 10 will cause compressed air to enter the globe through the nozzle 13 and to be concentrated in a stream by the nozzle 13 and impinged upon the upper side of the portion 17 of the capillary tube 16 and the exposed face of the baffle 20 and find exit through the tube 6, and in so passing atomize the liquid which is present at the upper end of the capillary tube 16 by virtue of the capillary action of the tube, so as to atomize and spray this liquid and impinge the resultant liquid particles or droplets upon the baffle 20 and cause them to take therefrom a course which is axial through the tube 6.

When the liquid to be sprayed is atomized by the jet and capillary device, the resultant spray is composed of both large and small drops or particles. I have found that by use of a barrier or baffle such as that indicated by the numeral 20 in the drawing, that not only will the larger drops be eliminated, but actually the barrier is capable of reatomizing some of these.

The atomized stream to be controlled should be intercepted close to its source in order that the larger drops shall strike the barrier or baffle with sufficient force to collapse them. With the baffle located as closely as indicated to the air jet 13, the blast from the jet 13 will reatomize some of these collapsed drops which have wetted the baffle 20.

All of the liquid that condenses on the baffle 20 will not be reatomized however, and for this reason I have found it advantageous to provide a drainage means to prevent the large drops from forming on and being blown from the trailing edge of the baffle. Such means is provided by

forming a small rod or the like in close contact with the underside of the baffle disk 20, such as the member 21 and using the capillary action thereof to return the excess liquid on the baffle to the storage space therebelow in the globe.

5 If the baffle plate intercepts the stream of atomized liquid diagonally and is curved slightly in the direction of its course, little resistance is offered to the forward movement of the spray. By adjusting the angle and the elevation of the baffle disk, effective control of the drop size of the spray delivered through the tube 6 may be secured.

10 When the atomizer is operated, the individual droplets of inhalable size such as would be recommended for the treatment of pulmonary diseases and the like, are not affected to any appreciable extent, but the larger drops are collapsed on the baffle.

20 The baffle when wetted simulates the action of the mucous membrane of the nose and throat, in that the spray passing the baffle will be capable of being drawn past the said membranes and actually into the lungs of the patient.

25 Although I have shown and described herein a preferred embodiment of my invention, it is to

be definitely understood that I do not desire to limit the application of the invention thereto, and any change or changes may be made in the materials, and in the structure and arrangement of the parts, within the spirit of the invention and the scope of the subjoined claim.

What is claimed is:—

An atomizer comprising a body having a liquid containing space and a spray outlet, a capillary tube arranged to have one end immersed in liquid in said liquid containing space, a compressed air inlet, said compressed air inlet having an air jet arranged to blow over the opposite end of said capillary tube in atomizing relation thereto, a barrier arranged beyond said capillary tube and diagonally intercepting the stream of atomized liquid on its way to said spray outlet, said barrier being sufficiently close to the said opposite end of the capillary tube to collapse the larger droplets in said stream and to be capable of re-atomizing part of the droplets, and a capillary drain depending from said barrier into said liquid for relieving said barrier of excess liquid in a manner to prevent blowing of unatomized liquid from said barrier into said spray outlet.

HAROLD E. CURRY.