

J. R. BALLENTINE.
 ATOMIZER.
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990,949.

Patented May 2, 1911.

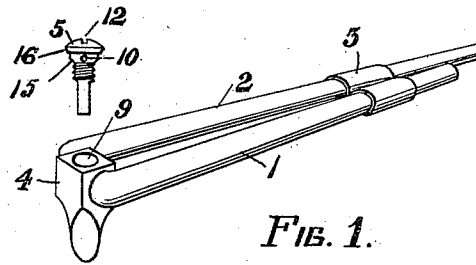


FIG. 1.

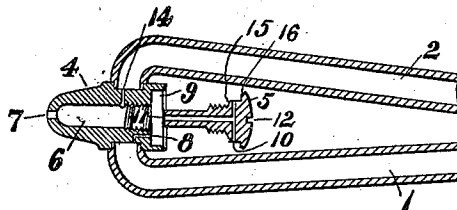


FIG. 2.

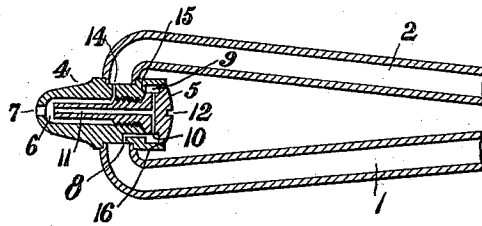


FIG. 3.

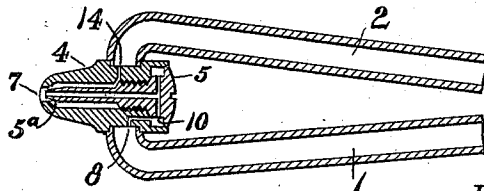


FIG. 4.

Witnesses

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JOHN R. BALLENTINE, OF TOLEDO, OHIO.

ATOMIZER.

990,949.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN R. BALLENTINE, a citizen of the United States, residing at Toledo, in the county of Lucas and State of Ohio, have invented certain new and useful Improvements in Atomizers, of which the following is a specification.

This invention relates to the vacuum class of atomizers which create a spray by means of suction, and particularly to the type of this class in which the spray-head may be set at different angles in its plane of rotation.

The object of my invention is to provide a cheap, simple and efficient spray-producing head of the type referred to, which can be easily cleaned or inspected and its passages cleared of any foreign substances without removing the spray-head from between the ends of its tubes or arms which hold it.

I am aware of other rotatable spray-heads of the type referred to, which have fixed separated air and liquid-chambers therein, but it is difficult to clear their passages when clogged unless the head is removed from the ends of the tubes in order to gain access to the passages from the rear as well as the front, owing to the relative position and extreme small size of the same. Spray-producing heads of this character require a tight joint between the outer ends of the tubes and their respective recesses to prevent leakage of both air and liquid, the tightness of the joint depending entirely on the resiliency of the tubes and the fit of the shoulders and reduced end portions of the tubes and the surfaces of the head which they engage. The ends of the tube form a swivel upon which the head is rotated and no packing or gaskets can be used owing to the small size of these structures. In removing and replacing these old spray-heads the tubes must be sprung apart, and not only must care be taken when replacing to avoid any marring or injuring the edges or surfaces of tubes or head where they join, as this would cause a leaky joint rendering the atomizer ineffective in a more or less degree, but it is all important that the side of the head containing the liquid passage be replaced to connect with the liquid tube and not the air tube, or the device would be rendered wholly ineffective. This often occurs through the ignorance of the operator, even if the head be marked to avoid it.

I consider my invention a decided improvement and an essential feature in spray-producing heads of the type of the class to which it relates, as free access may be had to its passages for cleaning or other purposes without removing it from the tubes thereby eliminating any possibility of a leaky joint through a springing of the tubes, or injury to the ends of the tubes or their respective recesses and avoiding any chance of replacing head in an inoperative position.

I attain these objects by constructing a spray-producing head as illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of my device with the head set at a right angle to its tubes with its plug section removed. Fig. 2 is a central longitudinal section of same with the head parallel to the tubes. Fig. 3 is a central longitudinal section of same assembled for operation. Fig. 4 is a sectional detail of a modification.

Like numerals of reference indicate like parts throughout the drawings.

In the drawings 1 and 2 are tubes which at some distance from their extremities are bound together in nearly parallel relation by band 3. The tube 1 is connected with a rubber hand bulb or other air supply and the tube 2 is connected with the vessel which contains the liquid to be atomized. The bulb and vessel referred to are omitted from the drawings as they form no part of my invention and being of the usual form will be understood fully without illustration. At their outer extremities the tubes 1 and 2 are turned inwardly so their ends point toward each other.

4 and 5 are the two separate parts which constitute the spray-head. The block 4 resembles a cube in form and two of its opposite sides have recesses with coincident axes to receive the reduced ends of the tubes 1 and 2 to form pivotal joints therewith. The block 4 has an axial bore throughout its length which is reduced as at 7 at its outer end and threaded and enlarged at its inner end or rear end to receive the other section or tubular plug 5. The block 4 has a lateral passage 14 in advance of its threaded part, which communicates with the tube 2, and a passage 8 which communicates with the tube 1. The plug 5 is reduced in advance of its exteriorly threaded portion to form an annular passage for the liquid between its reduced part and the wall of the block 4. The

plug 5 is enlarged and tapered behind its threaded portion to form a stop at 15, and tight fit between the block 4 and plug 5. This adjusts the plug to its required length in chamber 6 and effectively separates chambers 6 and 9. The head of the plug 5 is slotted as at 12 to enable it to be removed or replaced in the manner of a screw. The enlarged or countersunk end of the block 4 is closed by the head of plug 5, the edges of the head of plug being tapered as at 16 to effect a tight joint with the surface of the countersunk part with which they engage, the depth of the countersinking being greater than the thickness of the head of the plug 5 to form a chamber 9 which communicates with passage 8. The plug 5 is provided with a lateral passage 10 which communicates with its central bore 11 and chamber 9.

With the parts assembled in position as in Fig. 3 the operation of my device is as follows: Air forced through tube 1 by a bulb or other means, enters the chamber 6 through passages 8, 9, 10 and 11. The air entering the chamber 6 creates a suction which draws the liquid through the tube 2 and passage 14 into the chamber 6, where it mingles with the air and is discharged from the reduced bore 7 in the form of a spray.

I do not wish to be confined to the exact details of construction as obvious changes or modifications might occur to others skilled in the art to which it appertains. Thus as shown in Fig. 4 the application of the tubes may be reversed; that is the tube 2 used as the air tube and the tube 1 as the liquid tube, and the head will produce a spray provided the plug 5 is made a little longer so as to enter its reduced end in the reduced bore 7 of the head, as shown at 5^a. This would require considerable accuracy of adjustment with respect to the length of the reduced end of the plug within the reduced bore.

The device is not limited in its use to the spraying of liquids, but may be used to diffuse powder. When so used, slight changes are advisable, such as enlarging the passage

14 and the bore 7, and shortening the plug in the chamber 6; in other words the proportions may be varied according to the substance operated on.

Having thus described the invention what I claim as new and desire to secure by Letters Patent is:

1. A spray head comprising a hollow outer block with a tubular bore and discharge orifice in the front end thereof and an enlarged chamber in the rear end thereof, and a tubular plug fitting in the block in contact therewith at its intermediate portion between said bore and chamber, said plug having a head fitting against the rear end of the block to close the same, the block having a lateral supply passage to its bore, and the plug having a lateral supply passage from the said chamber to its bore.

2. A spray head comprising a hollow outer block with a discharge orifice at its front end and a recess at its rear end and an intermediate threaded part, and a tubular plug screwed into said hollow and having a head which closes said recess and a passage connecting its bore with said recess, the block having a passage on one side communicating with the hollow therein, and also a passage on the opposite side communicating with said recess.

3. The combination with air and liquid tubes, of a spray head, having outer and inner coaxial tubular parts, the outer part being engaged by and held between the ends of the tubes and having a passage communicating with one of the tubes, and the inner part having a passage communicating with the other tube, the inner part being removable from the outer part without disengagement of the latter from the tubes.

In testimony whereof, I affix my signature in presence of two witnesses.

JOHN R. BALLENTINE.

Witnesses:

E. J. WHITZEL,

CLARENCE A. RIPEY.