

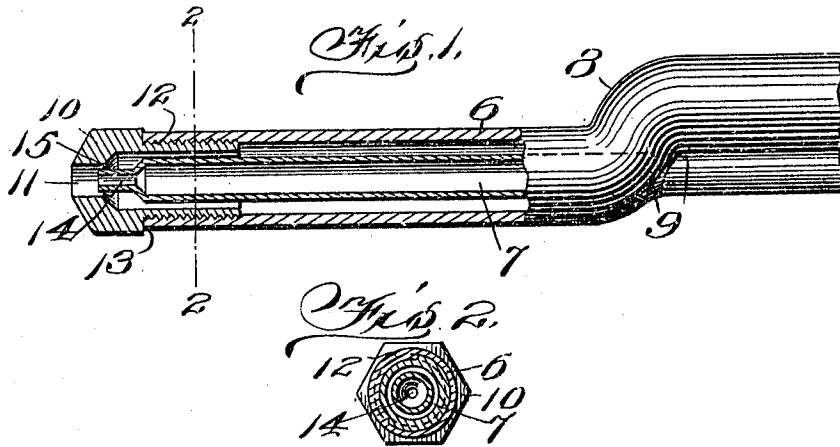
J. R. BALLENTINE.

ATOMIZER.

APPLICATION FILED JAN. 27, 1910.

955,938.

Patented Apr. 26, 1910.



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN R. BALLENTINE, OF TOLEDO, OHIO.

## ATOMIZER.

955,938.

Specification of Letters Patent.

Patented Apr. 26, 1910.

Application filed January 27, 1910. Serial No. 540,438.

*To all whom it may concern:*

Be it known that I, JOHN R. BALLENTINE, 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 atomizers, and especially to an improved spray head for delivering the spray or discharge from such instruments, embodying an improved construction or relation of the tubes with respect to each other and to the tip from which the spray is directly discharged.

The invention is adapted for use with a vacuum atomizer, that is, one in which the liquid is taken up or caused to flow in consequence of the passage of a current of air outwardly in proximity to the tip of the liquid tube, on the principle of an ejector, as distinguished from a compression atomizer wherein the liquid is caused to discharge by reason of air pressure in the bottle or vessel holding the liquid.

In the present invention the spray head is attached or fastened to the outer end of the air tube, and closes said end, and has a reduced bore into which the contracted end of the liquid tube extends, with an annular space between the liquid tube and the air tube, said space being unobstructed and permitting the free discharge of air through the spray head. I am aware that a somewhat similar construction has been made wherein the spray head is screwed or otherwise fastened onto the end of the inner or liquid tube, with holes extending laterally through the wall of the spray head to admit air from the air tube to the space within the head around the end of the liquid tube. In the present construction the spray head is not fastened to the inner tube, but there is a clear space extending entirely around the latter. This is advantageous because it gives a freer communication and easier flow, and requires less pressure on the bulb, and hence less air supply and pressure than with the heads having holes for the passage of air into the spray head. There is less liability of clogging, and the construction is generally cheaper and more convenient, and requires no threading of the bore of the spray head nor of the outside of the liquid tube.

The invention is illustrated in the accompanying drawings in which—

Figure 1 is a longitudinal sectional view

of the spray head and part of the pipes leading thereto. Fig. 2 is a cross section on the line 2—2 of Fig. 1.

Referring specifically to the drawings, 6 indicates the outer or air tube and 7 the inner or liquid tube. In the form shown in Fig. 1 the air tube is offset as indicated at 8 and the liquid tube is entered through a hole in the wall of the air tube at the offset portion, where it is soldered or brazed as indicated at 9, the tubes being thus firmly fastened together. This offset is made comparatively near the spray head, whereby the inner tube is centered or held in proper axial position, which is important, since it is essential to the proper operation of the atomizer that the tip of the inner tube should be spaced from the surrounding walls of the spray head. The hole through the outer tube, through which the liquid tube extends, is quite exactly positioned for the purpose referred to.

The spray head proper is indicated at 10, and consists of a plug with a bore there-through, the bore being contracted at its outer end as indicated at 11. The body is threaded exteriorly as indicated at 12, and is screwed into the outer tube. Instead of a threaded connection a plain tight fit will answer the purpose. The shoulder 13 on the spray head abuts against the end of the air tube, and this shoulder is so located that the spray head will occupy a proper relation to the end of the liquid tube. The end of the liquid tube within the spray head is contracted as at 14, and projects slightly into the reduced bore 11, and the end of the liquid tube is spaced on all sides from the wall of the spray head as shown, thereby forming an annular air passage around the tip of the liquid tube.

In operation, air forced through the air tube will flow out through the spray head and will draw liquid through the liquid tube and out at the tip thereof, the action being assisted by the inclined shoulder 15 between the larger and smaller bores of the spray head, which directs the air current toward and across the end of the liquid tube and thereby causes a mixture and atomization of the liquid, producing a very efficient spray which spreads as it escapes from the spray head. As stated, the annular passage through the spray head around the nozzle of the liquid tube is free and unobstructed, the liquid tube being centered in consequence

of its brazed attachment to the air tube at the offset.

What I claim as new is:

1. In a vacuum atomizer, the combination  
5 of an outer tube having an offset bend provided with an opening distant from its outer end, a spray head at the outer end of said tube having a longitudinal bore communicating with said outer tube, and an  
10 inner tube extending at its outer end into the bore of the spray head and spaced at all points therefrom, said inner tube fitted closely through the opening in the outer tube at a point distant from its end and  
15 closing said opening, the opening being in alinement with the bore of the spray head to center the inner tube therein.

2. In a vacuum atomizer, the combination  
of an outer tube having an offset part with  
20 an opening therein, a spray head at the outer

end of said tube having a longitudinal bore communicating with the said tube, and an inner tube extending at its outer end into the bore of the spray head and spaced at all points therefrom, said inner tube extending 25 through and being fastened in the opening in the offset part of the outer tube and being supported by said outer tube at the opening, to center the inner tube in the bore of the outer tube and the spray head, and forming 30 a clear annular space around the inner tube and in the spray head throughout the whole length of the latter.

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

JOHN R. BALLENTINE.

Witnesses:

E. G. WHITZEL,

WALTER O. KATZENMEYER.