May 17, 1927. 1,629,144

C. L. BURDICK

SPRAYING APPARATUS

Filed Sept. 13, 1922

Fig. 1.

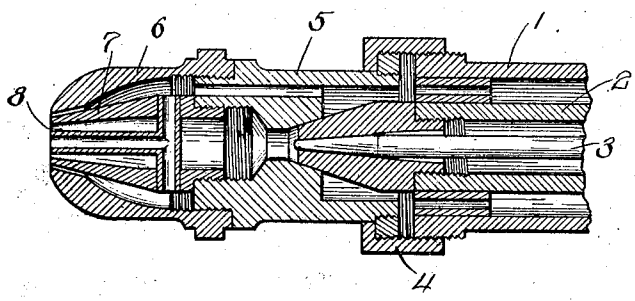


Fig. 2.

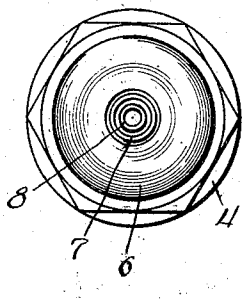


Fig. 3.

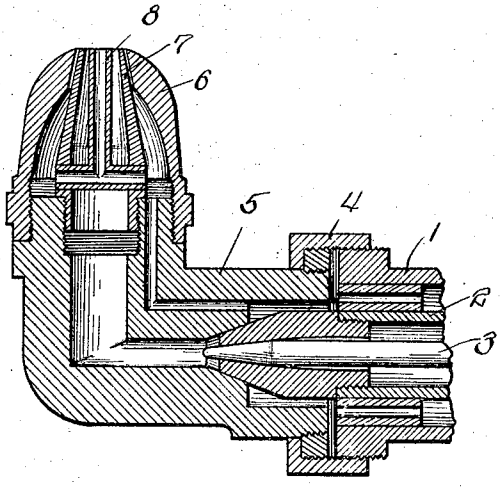
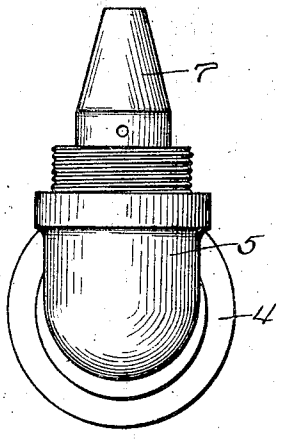


Fig. 4.



Witness:

Inventor:
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Patented May 17, 1927. 1,629,144

UNITED STATES PATENT OFFICE.

CHARLES LAURENCE BURDICK, OF LONDON, ENGLAND.

SPRAYING APPARATUS.

Application filed September 13, 1922, Serial No. 588,072, and in Great Britain October 15, 1921.

My invention relates to machines or apparatus for spraying liquids and more particularly to spraying nozzles, or to a form of delivery port to be used in connection with sprays of the well known type in which liquid is delivered into the center of a current of compressed air or gas at the point of discharge, and controlled by a needle valve. The purpose of the invention is to provide a more efficient method of atomization.

The usual method of breaking up the stream of liquid or securing atomization is by surrounding the liquid with a current of compressed air or gas. It has the objection that the outer portions of the liquid stream receive the impact of the air while the center of the stream, in certain circumstances, does not receive sufficient force from the air to become effectively atomized.

To overcome this difficulty I provide a central passage or passages for compressed air as well as the outer ring of air, and thus bring the force of the air, or gas, more intimately in contact with the liquid. The result is to secure a better atomization. This is particularly useful when liquids of a very viscous nature are employed, and it also enables atomization to be secured at a lower air pressure which has the advantage that the fine particles of liquid are not so much diffused in the atmosphere, and this improves conditions for workers who are spraying substances deleterious to health.

This improved nozzle can be used as an independent unit or as supplemental to the ordinary pin valve nozzle which is usually employed where a nice control of the quantity of the liquid is required.

My invention will be described by reference to the accompanying drawings of which:—

Fig. 1 is a sectional side elevation, of a nozzle according to my invention;

Fig. 2 is an end view;

Fig. 3 is a sectional side elevation of a modification, and

Fig. 4 is another view of the same modification with the cap removed.

In the embodiment of my invention selected for illustration, 1 is a cylindrical air delivery tube containing within it a cylindrical liquid delivery pipe 2 having a needle valve at its forward end at which point the volume of liquid is controlled by the position of the pointed rod 3. Secured to these delivery pipes for compressed air and liquid by a union nut 4 is a cylindrical piece 5 having a vapor nozzle 6 and an interior liquid delivery port 7 into which is inserted a tubular T-shaped piece 8 which provides for a delivery of compressed air in the center of the liquid delivery. By this arrangement an annular shaped current of compressed air will surround and impinge on an annular shaped stream of liquid while an inner current of compressed air will strike the liquid from within and secure a more complete atomization of the liquid.

Figures 3 and 4 having the same reference numerals show how the nozzle may be constructed to direct the spray at an angle to the primary delivery ports.

Without further elaboration, the foregoing will so fully explain the gist of my invention, that this may, by applying current knowledge, readily adapt same for use under various conditions of service without eliminating certain features which may properly be said to constitute the essential items of novelty involved, which items I intended to be defined and secured to me by the following claims.

I claim:—

In an atomizing nozzle, a body having a central passage therethrough, a second passage through said body, means for supplying a liquid to said central passage, means for feeding air under pressure to said second passage, a liquid jet member communicating with said central passage and having a tapering portion ending in a circular opening, a hollow cap fitting on said body and communicating with said second air passage and having an opening concentric with said liquid jet member to form an annular orifice, a cylindrical air jet member within said liquid jet member and coaxial therewith and slightly spaced therefrom to form a relatively narrow annular orifice for said liquid, and means connecting said cylindrical air jet member with the hollow portion of said cap to supply said air to both said air jets under substantially the same pressure.

In witness whereof, I hereunto subscribe my name this 28th day of August, 1922.

CHARLES LAURENCE BURDICK.