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W. J. BARBER.

ATOMIZER.

APPLICATION FILED JUNE 4, 1904.

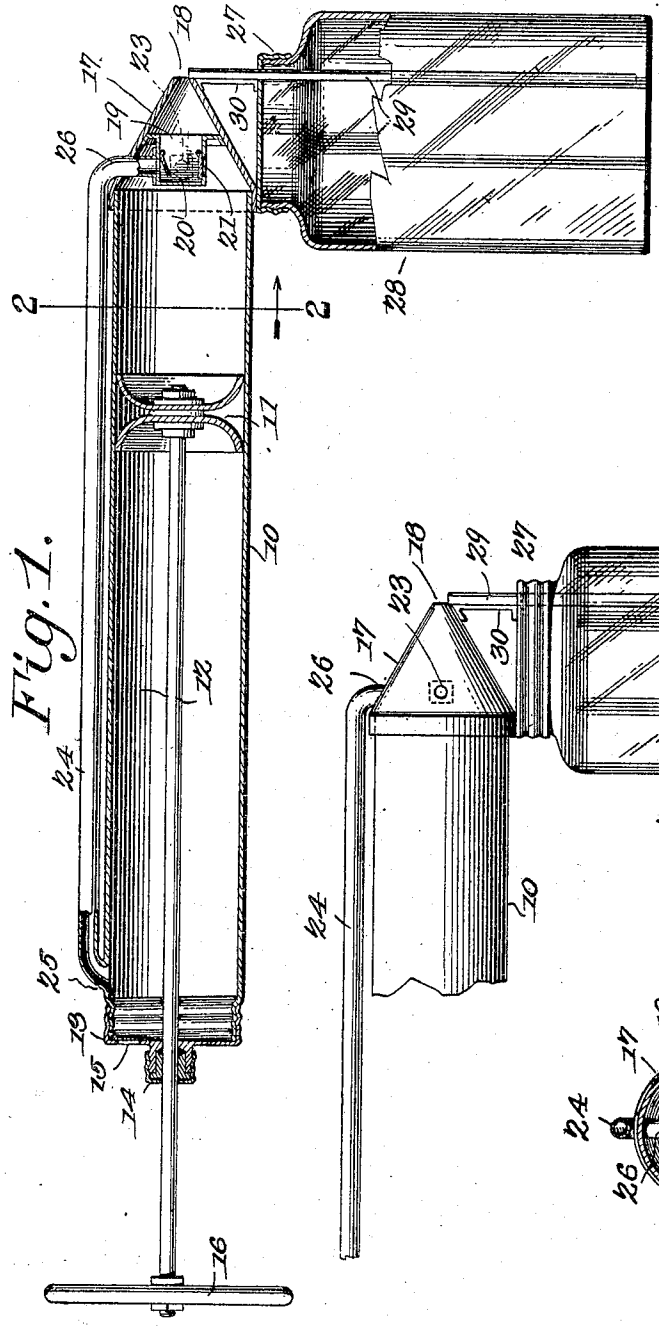


Fig. 1.

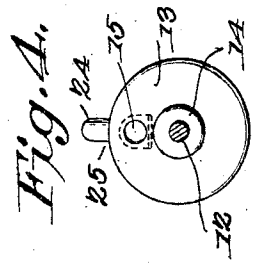


Fig. 4.

Fig. 3.

Fig. 2.

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UNITED STATES PATENT OFFICE.

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ATOMIZER.

No. 795,573. Specification of Letters Patent. Patented July 25, 1905.

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To all whom it may concern:

Be it known that I, WILLIAM JAY BARBER, a citizen of the United States, residing at Honeoye Falls, in the county of Monroe and State of New York, have invented a new and useful Atomizer, of which the following is a specification.

This invention relates to atomizers employed for spraying liquids, and more particularly to devices of that class used for the spraying of insecticides on vegetation.

The principal object of the invention is to provide a novel form of atomizer in which a continuous spray may be obtained and in which the parts are so arranged that the liquid-containing vessel may form a support for the air-pumping means and may be held in convenient position during the operation of the device.

A further object of the invention is to improve, simplify, and cheapen the construction of devices of this class and to arrange the valve-chamber and all of the valves at one point within the discharge-nozzle.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of an atomizer constructed in accordance with the invention. Fig. 2 is a transverse sectional elevation of the same on the line 2 2 of Fig. 1. Fig. 3 is a side elevation of a portion of the atomizer. Fig. 4 is an elevation looking from the rear end of the pumping-cylinder, the plunger-rod being shown in section.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The liquid or powder to be atomized is placed in a suitable receptacle 28, having a screw-cap 27, through which extends a tube or duct 29, open at both ends. To the cap 27 is secured the end portion or nozzle 17 of a pumping-cylinder 10, said nozzle being firmly secured in place by a vertically-disposed bracket 30, that is connected to both the tube 29 and the nozzle. The cylinder 10 may be of any desired length and is provided at its rear end with a screw-cap 13, carrying a stuffing-box 14, through which extends a plunger-rod 12. Within the cylinder is placed a piston 11, that is secured to the inner end of said plunger-rod, and the outer end of the rod carries an operating-handle 16.

Within the nozzle 17 is placed a valve-chamber 19, said valve-chamber being arranged in the central position and its front end being open and in alinement with the discharge-orifice of the nozzle. The front end of the valve-chamber is provided with a flange that is secured to the inner wall of the nozzle, said flange forming, in connection with the valve-chamber, the front head of the cylinder 10. In the valve-chamber are arranged two ports, closed by flap-valves 20 and 21, both of which open inwardly, the port closed by the valve 21 communicating with the front end of the cylinder 10. The port closed by the valve 20 is placed in communication with the rear end of the cylinder by means of a tube 24, and on the operation of the piston in one direction the valve 20 will be opened to permit the passage of air from the rear end of the cylinder to the valve-chamber, and on movement of the piston in the opposite direction the valve 21 will be opened to allow the escape of air from the front end of the cylinder.

In the cap 13 at the rear end of the cylinder is an inlet-port normally closed by an inwardly-opening valve 15, and at one side of the nozzle is an inlet-port normally closed by an inwardly-opening valve 23. This port communicates with the front end of the cylinder and admits air on the back stroke of the piston.

In the operation of the device the receptacle 28 is held in one hand and the handle 16 is grasped in the other. The piston is reciprocated, and air flows from the front end of the cylinder through the port closed by valve 21, thence outward through the discharge-orifice of the nozzle, inducing a flow of fluid through the tube 29. On reversing the movement of the piston air flows from the rear end of the cylinder through the tube 24 and enters the valve-chamber through the port closed by the valve 20, this air also passing through the discharge-orifice of the nozzle, so that a practically continuous current of air is directed over the open end of the tube 29.

Having thus described the invention, what is claimed is—

1. In an atomizer, a cylinder, a piston disposed within the cylinder, a nozzle arranged at the front end of the cylinder, a valve-chamber disposed within the nozzle and having a flanged front end forming the front head of the cylinder, said valve-chamber being provided with inlet-ports, one of which communicates with the front end of the cylinder, a tube extending between the second port and the rear end of the cylinder, valves closing said ports, valved inlet-ports in the front and rear ends of the cylinder, a liquid-receptacle having a closed top to which the front end of the cylinder is secured, and a liquid-duct leading from the cylinder to a point adjacent to the discharge-orifice of the nozzle.

2. The combination in an atomizer, of a liquid-receptacle, a detachable cap or cover for said liquid-receptacle, a pump-cylinder, a piston arranged within the cylinder, a nozzle disposed at the front end of the cylinder and secured to said cap or cover, a liquid-discharge pipe leading from the receptacle and terminating at a point adjacent to the discharge-orifice of the nozzle, a valve-chamber disposed within the central portion of the nozzle and having its forward end open, said valve-chamber having a pair of valved inlet-ports, one of which is in communication with the front end of the cylinder, a tube leading from the opposite port to the rear of the cylinder, and valved inlet-ports arranged one at the front end of the cylinder, and the other at the rear end thereof.

3. The combination with a liquid-receptacle, of a removable cap or cover, a liquid-discharge tube leading therethrough, a bracket secured to the tube and the cap or cover, a nozzle member having its discharge-orifice adjacent to the upper end of the tube and secured to the cap and bracket, a cylinder carried by the nozzle, a piston disposed within said cylinder, a valve-chamber arranged within the central portion of the nozzle and having a flanged front end that forms in connection with the chamber, the front head of the cylinder, said valve-chamber having a pair of oppositely-disposed valved inlet-ports, one of which is in communication with the front end of the cylinder, a tube leading from the opposite port to the rear end of the cylinder, and valved inlet-ports disposed one at the front end of the cylinder and the other at the rear end thereof.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM JAY BARBER.

Witnesses:
A. M. HOLDEN,
R. W. HOLDEN.