PORTABLE ATOMIZER FOR LIQUIDS OF ALL KINDS

Inventor

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Atomizing apparatus used for ejecting various liquids such as paint, insecticides, etc., are already known. Except in important plants working with compressed air produced by means of compressors or by the town supply—these plants take up very large room space and are very costly—all these atomizers are simple pumps actuated by the user, driving and discharging a sheaf of atomized liquid which is notoriously inadequate in most cases for the object in view. Now the portable atomizers actually used for ejecting liquid insecticides do not allow the latter to reach the ceiling of a room when it is relatively high. On the other hand, the pressure of the atomized jet is also very low and consequently its force of penetration in the floors for instance is practically inexistent.

My invention relates to a portable atomizer which obviates these drawbacks. It is based upon the general principle described in my U. S. Patent 1,742,604, and has for its object the ejection and the atomization of various liquids for technical, sanitary, domestic and other applications.

My apparatus comprises substantially the utilization for the ejection and the atomization of liquids of a compressed or liquefied gas bottle integral with the apparatus which is self-operating owing to the application of an uncongealable pressure reducing device of the kind described in my co-pending application Serial No. 218,270, filed September 5, 1927.

The whole atomizing device of the gas bottle with its pressure reducing device and the receptacle containing the liquid to be ejected constitutes a portable apparatus very easy to handle, allowing the ejection from a distance and the atomizing of all liquids for different purposes.

The apparatus allows also of ejecting from a distance atomized jets under pressures which may vary from the lowest to 28 kgs. per cm.² and more, and of producing sheets which may reach at least a distance of 10 meters.

Lastly, the apparatus according to my invention is arranged in such a manner as to allow on the one part to regulate the power by regulating the discharge pressure of the gas and on the other hand to regulate the delivery acting upon the section of passage according to the arrangement described in my U. S. Patent 1,714,129.

The appended drawings show a preferred embodiment of my invention wherein when the bottle of compressed gas is open and the pressure regulated, the atomization may either be continuous or intermittent and the duration of each ejection may be controlled without again handling the bottle, by means of a detent, as with any ordinary hand compressor. This form of apparatus is preferably designed for atomizing paint.

Fig. 1 is a longitudinal sectional view drawn on a larger scale of the mode of construction of the atomizer properly so-called.

Fig. 2 is an end view of the same.

Fig. 3 is a part sectional view.

Fig. 4 is an elevation, drawn on a smaller scale of the whole apparatus with the gas bottle and the liquid reservoir.

Fig. 4 of the appended drawing represents a portable atomizer according to my invention which comprises (a) a compressed or liquefied gas bottle 1 provided with an uncongealable pressure reducing device and with a handle 2 according to my above mentioned co-pending application Serial No. 218,270 for “improvements in uncongealable pressure reducing devices”; (b) a tubular atomizer 3 connected to the bottle by means of the coupling 4 of the liquid reservoir.

The tubular atomizer comprises a body 8 adjacent to the nipple 4 provided with a small central duct 6 on the path of which is formed a chamber 7 having at its lower end a hollow screw plug 8. This tubular plug which is normally closed during the atomizing operation by means of a joint 9 allows the communication of the duct 6 with the atmosphere. This joint 9 is inserted in a cup 10 carried by a detent 11 pivotally mounted at 12 in a guard 13 connected to the body 8. At its front end the duct 6 opens in another chamber 14 provided in the front of the body 8. The orifice of said tube is closed at that point by a valve 15 provided with a spring.
16 and with a spindle 17 which passes loosely through a plug 18 closing the chamber 14, the latter being surrounded by a threaded tube 3, in which a member 19 is fitted by means of a joint 20. At the back of said member 19, a chamber 21 is provided in which the gas passing through a plug 18 concentrically to the spindle 17 may enter. An inclined duct 22 opens also in said chamber 21 and connects it with the interior of a nozzle 23 provided with an inner screw thread in which the liquid reservoir 5 which may be of the kind found on the market, the stop being taken off.

In the centre of the nozzle 23 is placed a smaller tube 24 which screws in the member 19 and carries a tubular plunger 25. The bore of tube 24 and consequently the tube itself is connected by a conduit 26 with a longitudinal chamber 27 provided in the front part of the member 19 and in which is screwed a hollow needle 28, the screw threaded portion 29 closing the communication between the gas chamber 21 and the liquid chamber 27. In front of the member 19 is screwed a cap 29 which surrounds the needle 28 concentrically with a certain amount of play and passes through a packing 30. The cap 29 is provided with a head 29 for its manipulation and is perforated at 31 to allow the communication of the conical seat 32 of the needle 28 with the atmosphere according to the dispositions described in my co-pending application, Serial No. 918,371, for “improvements in adjustable atomizers”.

The working of the apparatus established as shown in the drawing is as follows:—

The operator holding the apparatus in the hand operates the lever 2 in the desired way to cause the opening and regulates at will the ejecting pressure of the expanded gas according to the force of the jet coming out of the orifice 31, the opening 31 being then closed by the detent 11 and the cap 29 remaining stationary in a predetermined position. When the desired pressure has been obtained the discharge may be regulated by turning the cap 29 in the required direction.

It will be understood that when the detent is closed, the gas as it passes through the duct 6 forces back the valve 15 and enters the chamber 21. A portion of said gas passing through the tube 22 acts upon the surface of the liquid contained in the reservoir 5 and causes it to rise in the tube 28, whilst the middle fillets follow their path through the bore of the needle 28 atomizing in the space between the end of the needle and the outlet 31.

When the ejection of the liquid such as paint for example at a given point is ended, the user releases the detent which “opens”, whereupon the gas finding an issue through the tubular stop 8 escapes instantly without pushing back the valve 15. When the user desires to apply paint in another place, he closes the detent, and so on.

It will be easily understood that the apparatus which has been described will be very useful for its application to painting owing to its handiness and that accordingly it belongs logically to the outfit of the motorist who is thus able to repair very rapidly all damages to the paint or the varnish of the body of the car.

It will of course be evident that I do not limit myself to the particular constructions herein disclosed inasmuch as many modifications may be made therein without departing from the principle of my invention.

What I claim and desire to secure by Letters Patent of the United States is:—

1. An atomizing device comprising an atomizing nozzle, a member having a passage therethrough for conducting fluid under pressure to the nozzle, said member having a spring seated check valve adapted to open by the fluid pressure in the direction of the pressure flow, a vent opening to atmosphere communicating with the atomizer in advance of said check valve, and a manually-controlled valve for said vent opening.

2. In an atomizing device, a nozzle comprising a tubular member having a passage therethrough for conducting fluid under pressure to the discharge end thereof, a spring seated check valve normally closing said passage and adapted to open under the influence of pressure fluid in the direction of the pressure flow, a valve controlled vent opening to atmosphere communicating with said passage in advance of the check valve therein, a second passage concentric with and surrounding the first passage, for conducting liquid to the discharge end of the member, a third passage adapted to connect said second passage with a supply of liquid, means for connecting said member to a receptacle containing a supply of liquid, and a passage in said connecting means for establishing communication between the first-named passage beyond the check valve therein and the interior of the receptacle.

In witness whereof, I have hereunto signed my name.

RENNÉ LEMOINE, NÉE TROUILLET.

1,794,186