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ATOMIZER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WINFORD L. ENGBAUSER, a citizen of the United States of America, and resident of Winslow Park, county of Hamilton, and State of Ohio, have invented certain new and useful Improvements in Atomizers, of which the following is a specification.

This invention relates to improvements in atomizers for paint and similar materials and has for an object to produce an atomizer in which the operating parts of the atomizer valve are located outside of the fluid passages of the device.

A further object is to produce an atomizer in which the handle, the valve operating mechanism, and the air supply pipe may be easily detached from and quickly attached to the other portions of my improved apparatus.

A further object is to produce an improved gravity-feed atomizer which may be used in any position without stopping the flow of fluid to the atomizing nozzle.

These and other objects are attained in the apparatus described in the following specification and illustrated in the accompanying drawings, in which:

Figure 1 is a longitudinal sectional elevation of my improved apparatus, taken on the line 1—1 of Fig. 2. Fig. 2 is a sectional view taken on line 2—2 of Fig. 1 and showing certain parts in elevation. Fig. 3 is a fragmental elevation showing certain parts of my apparatus detached from certain other parts.

The apparatus illustrated as an embodiment of my invention comprises a reservoir 4 having an outlet nozzle 5, with a needle valve 6 adapted to open and close the aperture of the constricted liquid passage 7 formed in the nozzle 5. An air nozzle 8 is located adjacent to the liquid nozzle and is provided with a constricted passage 9 which is adapted to discharge air directly across the aperture of the passage 7 so that liquid passing therefrom will be atomized, when the valve is opened.

The above described parts are suitably mounted on a frame 10 so that they are held in proper position with relation to one another. That is, the reservoir 4 having the gravity-feed nozzle 5 located in its bottom, is mounted on an arm 10^a of the frame 10, above the air nozzle 8. In this position the aperture of the liquid nozzle 7 is located im-

mediately in front of the aperture of the air nozzle 8, so that the air passing from the air nozzle 8 will pick up and atomize the liquid as it drops from the liquid nozzle 5. The needle valve pin 6 which closes the aperture of the liquid nozzle 5 is reciprocally mounted in forwardly extending arms 10^b and 10^c of the frame 10, and a coil spring 11 is adapted to normally retain the end of the pin in the aperture of the passage 7, by bearing against a pin 12 mounted on the valve pin 6, the opposite end of the spring resting upon the top surface of the arm 10^c of the frame 10. In order to operate the needle valve I have provided a pivotally mounted lever 13 which is forked at the end which engages the needle valve, so that the branches of the fork rest upon the extending ends of the pin 12. This lever 13 is pivotally mounted at a point 14 on the frame 10 so that upward movement of the rearwardly extending end of the lever will cause the pin 6 to be withdrawn from the aperture of the passage 7, against the pressure of the spring 11. In order to affect movement of the lever 13 to open the valve 6, I have provided a cooperating lever 15, which is pivotally mounted at a point 16 on the removable handle 17 of the device. This lever 15 is adapted to be operated by means of the push pin 18 which extends through a longitudinal bore 19 formed in the handle. A knob 20 is mounted on the top of the push pin 18 for the purpose of facilitating operation of the needle valve 6 by means of the thumb of the operator when he grasps the handle portion 21 of the removable member 17. A spring 22 is provided for the purpose of causing the pivotally mounted lever 15 to move to its normal inoperative position as shown in Fig. 1, whereby the needle valve will normally remain closed under the pressure of the spring 11. In order, however, to cause the needle valve to remain open without the operator being compelled to constantly exert pressure on the knob 20, I have provided a means for locking the push pin 18 in its operative position. This means consists of a groove 23 which extends around the push pin, and cooperating pins 24 and 25 mounted in the handle portion 21, for the purpose of engaging the groove 23.

The handle 17 is provided with an air hose connection 26 which is integrally formed therewith and is provided with the usual circumferentially extending shoulders

27 for the purpose of retaining the air hose. This handle 17 is removably mounted so that it may be quickly attached to the rearwardly extending boss 10^a of the frame 10, by means of a short nipple 28 which is screwed into the end of the air passage formed in the handle 17 and the projecting end of which is adapted to engage the passage formed in the boss 10^a, and a spring 29 secured to the boss 10^a in such a position that an aperture 30 formed in the spring 29 will engage a pin 31 mounted in the handle 17, when the handle is moved to abut the boss 10^a with the nipple 28 engaging the air passage in the boss. The spring is bent upwardly at its free end to form a latch 32. The levers 13 and 15 are so mounted with relation to one another that the free end of lever 15 will pass under the free end of the lever 13. It will thus be seen that the handle carrying the flexible air line may be easily and quickly attached to and detached from the atomizer portions of the apparatus without danger of disarrangement of the parts.

In order to permit the device to be used in any position, as for example when the work to be done is located above the operator so that he has to hold the apparatus in such a position as to direct the spray of atomized material in an upwardly inclined direction, I have provided a pivot joint 33 which will permit the reservoir 4 to be tipped in order that the liquid contained therein will flow toward the passage 7 as the reservoir becomes gradually emptied. This pivot joint is constructed in much the same manner as the ordinary pivot pipe joint and need not therefore be specifically described. When, however, it is desired to tip the apparatus or the reservoir so that the fluid contained therein is in danger of overflowing the air vent 34, when the reservoir is full, I have provided an extended vent tube 35 which lies along the surface of the removable cover 36 of the reservoir. It will be easily understood that when the device is inclined so as to direct the spray upwardly, the liquid contained in the reservoir will not flow from the air vent when the cover is turned to occupy the position shown in Fig. 1. When, however, the cover is turned so that the vent tube 35 extends rearwardly, it will be readily understood that the device may be then used to spray material downwardly since liquid contained in the reservoir cannot possibly flow from the vent tube when the end of the tube is so located above the surface of the liquid. At the end of the vent tube, I have secured an adjustable cap 37, which is adapted to be turned so that an aperture 38, formed in the cap, will register with an aperture 39, formed in the vent tube, whereby air will be admitted to the interior of the reservoir when it is desired to use the liquid contained

therein. By turning the cap so that the apertures do not register, the interior of the reservoir will be closed to the admittance of outside air, thereby preventing the contents of the reservoir from evaporating. Because of the fact that the contents of the reservoir are prevented from evaporating in this manner, it will not be necessary to empty the reservoir to prevent clogging of the liquid passages, after the atomizer has been used each time.

In operation, the desired colored paint, lacquer or other material is placed in the reservoir 4 and the handle 17 is slipped into position, so that the spring 29 snaps over the pin 31, thereby locking the handle in position with relation to the atomizer. Air is constantly being discharged from the nozzle 9. With the parts thus assembled the apparatus is passed over the work to be done so that the air issuing from the nozzle 9 will blow all dust or other material from the surface of the work. When this has been accomplished the atomizer valve is opened by pressing upon the knob 20 and the liquid passing downwardly through the passage 7 is picked up by the jet of air as it is blowing transversely across the aperture of the nozzle 5. This action results in complete atomization of the liquid. Should the surface of the work be sufficiently large the operator may lock the push pin 18 in its operative position by engaging the groove 23 with either one or the other of the pins 24 or 25. When it is desired to stop the spray the pin 18 is allowed to resume its normal inoperative position and consequently the other operative parts will likewise resume their inoperative positions. Should any material be left on the needle valve pin 6 or surrounding the nozzle 5 it will be easily understood that this material will be immediately removed because of the constant passage of air from the nozzle 8.

Because of the simplicity of the fastening device and of the ease with which it may be operated to attach or detach the handle from the atomizer and reservoir portions, I may have a series of containers or reservoirs, each one of which will contain a separate color or other liquid, and may have but one attachable handle and consequently but one air hose, thereby eliminating the confusion and also the unnecessary expense to say nothing of the wear and tear occasioned by having to have a separate and distinct air hose for each atomizer containing a different liquid.

Having thus described my invention, what I claim is:

1. In combination in an atomizer a liquid discharge nozzle, an air nozzle adapted to discharge air across the aperture of said liquid discharge nozzle, and a valve adapted to close the aperture of the liquid discharge nozzle and located in the path of air dis-

charged from said air discharge nozzle, whereby air from the air nozzle will impinge the valve.

2. An atomizer comprising a reservoir, a liquid discharge nozzle, a pivot joint connecting said reservoir and said liquid discharge nozzle, a valve located exteriorly of said liquid discharge nozzle and adapted to close the aperture of said nozzle, and an air discharge nozzle adapted to discharge air across the juncture of the liquid discharge nozzle and the valve.

3. In an atomizer, the combination of a reservoir, a liquid discharge nozzle, a pivot joint connecting said liquid discharge nozzle with said reservoir and adapted to permit relative movement between said nozzle and said reservoir.

4. In an atomizer the combination of a liquid discharge nozzle, an air discharge nozzle, a frame in which are mounted said nozzles, a valve reciprocally mounted in said frame exteriorly of and adapted to close said liquid nozzle, a handle provided

on said frame, levers mounted on said frame adapted to operate said valve, and means mounted on said handle adapted to operate said levers.

5. In combination in an atomizer, an air discharge nozzle, a liquid discharge nozzle, a valve adapted to close said liquid discharge nozzle, a frame in which are mounted said nozzles and said valve, valve actuating means mounted on said frame, a handle having an air supply passage, detachably mounted on said frame, the air supply passage being adapted to register with said air nozzle, and means mounted on said handle, adapted to engage said first mentioned means to operate the valve, when said handle is attached to said frame.

In testimony whereof, I have hereunto subscribed my name this 29th day of August, 1914.

WINFORD L. ENGHAUSER.

Witnesses:

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