C. KELLY.

SPRAY PROJECTOR.

APPLICATION FILED JAN. 3, 1919.

1,326,348. Patented Dec. 30, 1919.

Fig. 5.

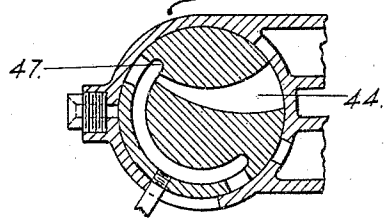


Fig. 4.

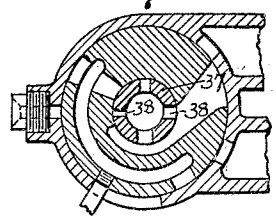


Fig. 2.

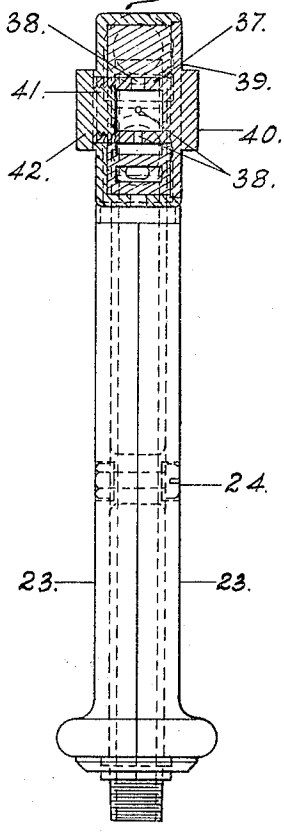


Fig. 1.

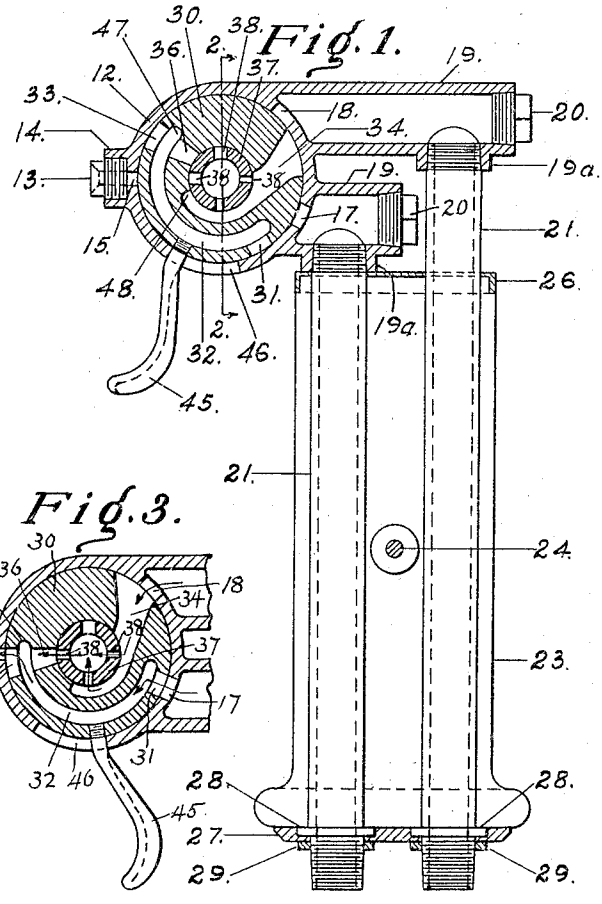


Fig. 3.

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UNITED STATES PATENT OFFICE.

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SPRAY-PROJECTOR.

1,326,348. Specification of Letters Patent. Patented Dec. 30, 1919.

Application filed January 3, 1919. Serial No. 269,419.

To all whom it may concern:

Be it known that I, CHARLES KELLY, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Spray-Projectors, of which the following is a specification.

This invention relates to hand controlled devices for projecting a liquid such as paint, varnish, shellac, etc., in the form of spray, upon surfaces to be coated by the liquid.

The invention is embodied in the improvements which I will now proceed to describe and claim.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a sectional elevation of a spray projector embodying the invention.

Fig. 2 is a section on line 2—2 of Fig. 1, and an edge view of parts at the right of said line.

Fig. 3 is a view similar to a portion of Fig. 2, showing the valve in its open position.

Fig. 4 is a view similar to a portion of Fig. 2, showing the cylindrical hollow member hereinafter described, adjusted to vary the delivering capacity of the air passage.

Fig. 5 is a view similar to a portion of Fig. 2, showing a non-adjustable air passage.

The same reference characters indicate the same parts in all of the figures.

My improved spray-projector is a portable structure adapted to atomize a liquid such as paint, to project the spray forcibly in the form of a jet, and to be moved about by hand to apply the jet to different parts of a surface to be coated by the liquid.

In the drawings, 12 represents a valve casing which is internally circular and is provided at one side with a spray-delivering nozzle 13 which is preferably detachably secured to a socket 14 formed on the casing, so that different nozzles may be used interchangeably, the casing being provided with an orifice 15 registering with the bore of the nozzle.

The casing is provided at suitable points, preferably in the side opposite the nozzle, with a liquid port 17 communicating with a liquid conduit, and with an air port 18 communicating with an air conduit.

In the embodiment of the invention here shown, each of said conduits includes a tubular member 19 integral with the casing and closed at one end by a plug 20, and a tubular member 21 screwed at one end into a tapped nipple 19^a on the member 19. The members 21 are threaded at their outer ends and adapted to be coupled to flexible conduit members (not shown) communicating with separate pressure tanks, one containing liquid and the other air, the arrangement being such that liquid is forced through one conduit to the liquid port 17, and air is forced through the other conduit to the air port 18.

The structure thus far described is provided with a suitable handle whereby it may be manipulated to direct the nozzle 13 as desired. As here shown the handle is composed of two handle members 23 clamped by a screw 24 on the conduit members 21, and confined against endwise movement thereon by a flanged inner head 26 seated on one of the nipples 19^a and engaging one end of the handle, and an outer head 27 confined against rigid collars 28 on the members 21 by nuts 29 engaged with the screw threads on the outer ends of the members 21. I do not limit myself, however, to the handle structure shown and described, and may employ any other suitable structure.

Fitted to turn or oscillate in the casing 12 is a valve 30 having a liquid passage adapted to register at its intake end with the liquid port 17, an air passage adapted to register at its intake end with the air port 18, and a mixing outlet common to the two passages and adapted to register with the nozzle 13, the arrangement being such that when the valve is opened a stream of air under pressure enters a stream of liquid under pressure at the mixing outlet, atomizes the liquid, and forces it in the form of a jet of spray through the nozzle.

The liquid passage is formed by a port or opening 31 in the periphery of the valve, and a preferably curved duct 32 extending from said opening to the mixing outlet 33 which is formed by another opening in the periphery of the valve.

The air passage is preferably adjustable, so that it may deliver more or less air at the mixing outlet, the preferred construction being shown by Figs. 1, 2, 3 and 4. By reference to these figures it will be seen that the air passage includes a duct portion 34 extending from one side of the periphery of the valve to the central portion

of the valve, a duct portion 36 extending from the central portion of the valve and intersecting the delivering end portion of the liquid duct 32, and a hollow cylindrical member 37 rotatively adjustable in the casing 12, and occupying a socket or bearing formed in the center of the valve, the member 37 being provided with ports or orifices 38 of different sizes constituting parts of the air passage. As shown by Fig. 2, the member 37 is formed on a head or disk 39 which forms one side of the casing and is provided with a projection 40 adapted to be engaged by a wrench. One end of the member 37 is internally threaded and engaged by a small bolt 41, the head 42 of which bears on the opposite side of the casing. When the bolt is loosened the member 37 may be turned, for example, from the position shown by Fig. 1 to that shown by Fig. 4, and secured in the adjusted position by tightening the bolt. The duct portion 34 is formed to communicate with two of the orifices 38, and the arrangement is such that when the valve is opened, one of the orifices 38 communicates with the duct portion 36. When a variable air supply is not desired, a single air passage 44 may be provided, as shown by Fig. 5.

I provide suitable means for partially turning the valve, said means being preferably embodied in a trigger or finger-engaging piece 45 attached to the valve and projecting through a slot 46 in the casing, the ends of said slot forming stops which limit the turning movements of the valve.

When the valve is opened, as shown by Fig. 3, liquid and air pass simultaneously to the mixing outlet and a jet of spray is forced through the nozzle, so long as the valve is held open by the trigger.

It will be seen by reference to Figs. 1 and 3 that when the valve is moved to its open position, air is admitted to the air passage in the valve before liquid is admitted to the liquid passage, thus preventing the liability of a discharge of liquid not atomized, at the commencement of the operation, the liquid being also shut off before the air when the valve is moved to its closed position. The plugs 20 may be removed from the inner conduit members 19, and the conduit members 21 may be inserted in place of the plugs in the outer ends of the members 19, the plugs 20 being inserted in the nipples 19^a, in case it is desired to locate the outer members 21 in alinement with the inner members 19.

I claim:

1. A spray-projector, comprising an internally circular casing having a spray-delivering nozzle, a liquid port, and an air port, a liquid conduit communicating with the liquid port, an air conduit communicating with the air port, said conduits being adapted to be connected with sources of liquid and air supply, and an oscillatory valve in said casing provided with a liquid passage having an intake end arranged to register with the liquid port, an air passage having an intake end arranged to register with the air port, and a mixing outlet common to both passages and arranged to register with the nozzle, the valve being adapted to close and open said nozzle and ports, and provided with means whereby it may be moved.

2. A spray-projector substantially as specified in claim 1, the casing being provided with a slot and the valve being provided with a handle projecting through the slot to permit manual movement of the valve, the ends of the slot constituting stops which limit the opening and closing movements of the valve.

3. A spray-projector substantially as specified in claim 1, provided with means for varying the delivering capacity of the air passage.

4. A spray-projector comprising an internally circular casing having a spray-delivering nozzle, an air port, a liquid port, and a rotatively adjustable tubular cylindrical member having different sized orifices in its periphery, and an oscillatory valve centrally apertured to receive said member and provided with a liquid passage having an intake end arranged to register with the liquid port, an air passage having an intake end arranged to register with the air port, and a mixing outlet common to both passages and arranged to register with the nozzle, said air passage being formed in part by said tubular member and variable by rotative adjustments of the latter.

5. A spray-projector comprising a casing having a spray-delivering nozzle at one side, and inner conduit members for liquid and air at the opposite side, each inner member being provided with a threaded outer end and with a threaded lateral nipple, plugs engageable either with said threaded ends or with said nipples, and outer conduit members also engageable either with said threaded ends or with said nipples, whereby the outer members may be located either in alinement with the inner members or in angular relation therewith.

In testimony whereof I have affixed my signature.

CHARLES KELLY.