

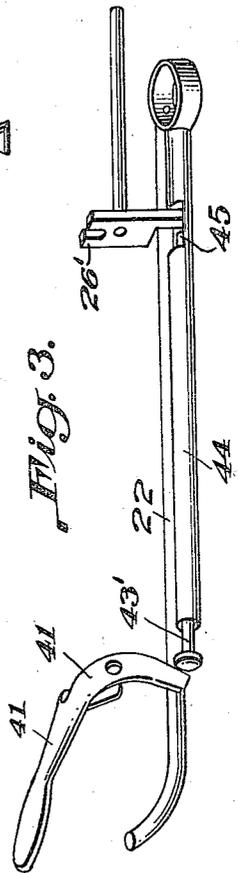
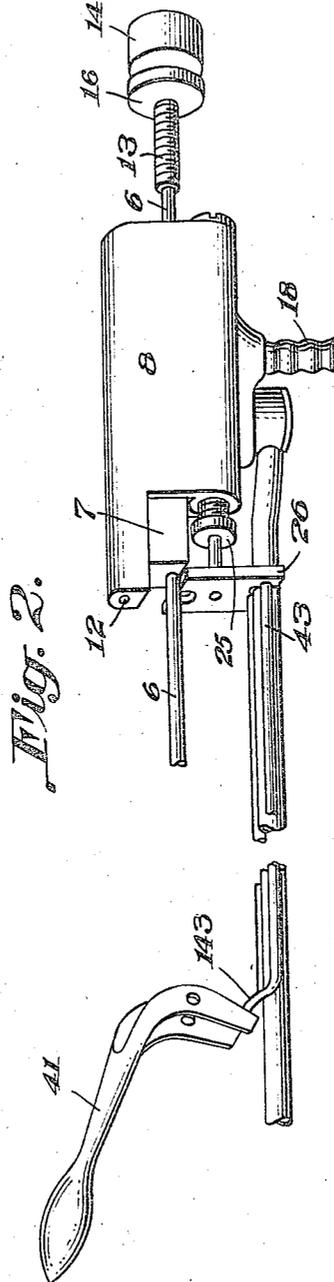
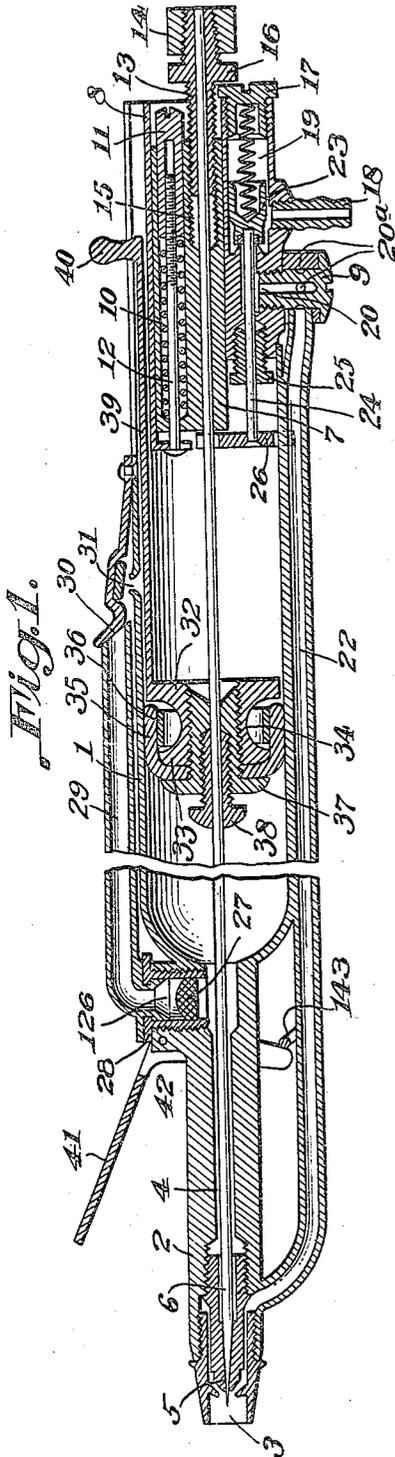
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AIR BRUSH FOR ARTISTS' USE

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AIR BRUSH FOR ARTISTS' USE

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7 Claims. (Cl. 299-88)

This invention relates to spray brushes for artists' use of the type held between thumb and middle finger in a manner similar to holding a pen or pencil and in which under control of the index finger a variable supply of compressed air is caused to issue past a controlled paint supply nozzle and the paint, intermixed with and atomized by the compressed air, is ejected through a spraying nozzle.

It is very desirable in a spray brush adapted to be held and used after the manner of a pencil, that the finger engaged control member be of such a nature as to provide so considerable a leverage that a very light movement of the finger of the operator will effect the actuation of the air and paint valves common in devices of this nature. It is further highly desirable that the direction of thrust of the finger be in the direction of the length of the tool rather than directly transversely thereof, because, by such endwise thrust and such increased leverage, the valve may be controlled without impairing the aim of the operator in directing the pigment accurately to the desired spot.

This and other features of the invention will be clear from the following description in reference to the accompanying drawing showing two preferred forms of construction of the invention diagrammatically and by way of example, wherein:

Figure 1 is a vertical, longitudinal section of a first form of construction; Fig. 2 is a perspective view of the control lever and its associated parts; Fig. 3 is a similar view of the control lever with modified associated parts.

In the construction shown, a paint reservoir or barrel 1 of appropriate material has a dome-shaped forward end fitted or provided with an extension 2 of reduced diameter terminating in a tubular spraying nozzle 3. The paint is supplied to this nozzle from the reservoir 1 through a passage 4 terminating in a conical valve seat 5 for a conically pointed valve rod 6 extending from the nozzle 3 through the extension 2, and through the entire length of the reservoir 1 to be held at the rear end thereof in a sliding member 7 carried in a fitment 8 secured in the end of the reservoir 1 by a union screw 9.

A compression spring 10 for returning the sliding member to its normal position is housed within said sliding member 7 and its tension adjusted by rotating a cylindrical nut-like member 11 fitted on a screw-threaded spindle 12 passing through a hole in the forward end of the sliding

member 7 which is thereby secured to the fitment 8.

The rear end of the valve rod 6 carries an externally screw threaded sleeve 13 tightened onto the valve rod by a knurled nut 14 and screwed into a threaded hole 15 in the sliding member 7. This sleeve 13 is also provided with a collar 16 adapted to abut against a screw plug 17 forming part of the air inlet valve hereinafter referred to and thereby limiting the closing movement of the valve rod. In this way the delicate valve seat 5 can never be damaged by excess pressure applied to the valve rod when the same is in closed position. The arrangement for holding the end of the valve rod, as will be readily seen, permits of fine adjustment so that the valve rod shall only open sufficiently for the purpose desired.

The fitment 8 above referred to has a union 18 for connection to the supply of compressed air which preferably consists of a short length of extra light braid covered tube, not shown, permanently secured at one end to the union 18 and at its other end held by an ordinary union to the main air supply, said air supply tube passing over the back of the artist's hand so giving greater freedom of movement. The compressed air supplied through union 18 passes to the air inlet valve above referred to which consists of a chamber 19 closed at the rear by the screw plug 17 and communicating through an aperture at its forward end, an enlarged passage 20 and perforations 20^a in the union screw 9 with an air supply pipe 22 secured to the fitment 8 by said union screw 9 and leading to the spraying nozzle 3. The aperture in the chamber 19 is controlled by a spring pressed valve 23 carrying a valve stem 24 passing through a hole in the fitment 8 and a stuffing gland 25 for connection to a plate 26 or the like actuated by a control lever hereinafter referred to.

The dome-shaped forward end of the barrel connects with a small chamber 126 containing a filter 27 advantageously convex in shape, said chamber being closed by a cap 28 in which is fitted a filling tube 29 for the paint reservoir. The free end of the tube in the inoperative position is closed by a clip-like member 30, which is also adapted to close a pin hole air vent 31 in the wall of the reservoir when the filling tube is rotated outwardly for refilling and paint is drawn into the reservoir as will be explained hereinbelow. The filling tube normally lies flat against the reservoir, but can be rotated outwardly about the cap 28 so as to be dipped into a paint supply vessel, the contents of which can

be drawn into the reservoir through said filling tube by pulling the piston (hereinafter referred to) back to the rear end of the reservoir whilst the air vent is closed by the clip 30, thus providing a self-filling arrangement.

The filling tube may also be adapted to be removed from the cap 28 and a small cup inserted in its place if the instrument is required for very small work where mere brushfulls of colour are used at a time. Or, the cap 28 might suitably be entirely omitted and the filter chamber closed by a rubber plug at the centre of which the filling tube could be mounted.

The piston preferably consists of a pair of discs 32, 33 interconnected by a short piece 34 of smaller diameter. A leather pump washer 35 is placed over the disc 33, which may advantageously be slightly smaller in diameter than the disc 32 and forced against the inner wall of the reservoir by a split brass ring 36. A washer 37 and a gland screw 38, through which latter passes the valve rod 6, ensure tightness of the forward paint containing part of the reservoir 1. Connected to the periphery of the disc 32 is a rod 39 terminating at the outside of the reservoir in a knob 40 by which the piston can be moved in longitudinal direction within the reservoir as required.

The control lever above mentioned is preferably in the form of a bell-crank lever 41 pivoted to the reservoir at 42 so as to be readily actuated by the index finger. The lower end of the control lever is adapted to co-operate with the connecting bend 43 of a rod or a pair of rods 43 disposed at either side of the air supply pipe 22 and terminating in the plate 26 operatively connected to the air valve 23.

In the modified construction shown in Fig. 3, one rod 43' only is provided for communicating the movement of the control lever 41 to the plate 26' connected to the air valve and corresponding in function to plate 26. The rod 43' is disposed in a tubular casing 44 preferably of the same size as and disposed parallel to the air supply pipe 22, the casing 44 being provided with a slot 45 at its rear end so as to permit the bottom end of the plate 26' to engage the end of the rod 43'. The casing 44 is further continued up to the union screw 21 for effect.

It will be readily appreciated that on gradual depression of the control lever 41 the plate 26 or 26' is pushed rearwards and the air valve 23 is opened to allow the compressed air continuously supplied through 18 to pass through the air supply pipe 22 to the nozzle 3. On continued movement the plate 26 contacts with the forward end of the sliding member 7 and the valve rod 6 is moved rearwardly against the action of the spring 10 and lifted off its seat to establish communication between the nozzle 3 and the reservoir 1. The compressed air issuing past the valve seat creates a suction effect and paint is drawn out of the reservoir and, atomized by and intermixed with the compressed air ejected from the nozzle 3. The piston being in use always withdrawn as far as possible, the formation of a vacuum in the reservoir is prevented whilst paint is being sucked through the paint control needle valve 6 by the atmospheric air entering through the hole 31 which will thus be situated on the front side of the piston. By causing the delivery of paint subsequently to the delivery of compressed air supply and vice versa, the paint supply can be advantageously sealed as soon as the control lever is released; as any tendency

for the instrument to spit or splutter is eliminated, the nozzle can be held at any inclination or vertically without paint dripping therefrom.

By means of the mechanism shown and described, fine or delicate work can be carried out with the control lever 41 only slightly depressed; coarser work on larger areas being carried out with the control lever fully depressed and with the needle valve fully open. By referring to Fig. 1 it will be seen that the plate 26 is slightly spaced from the sliding member 7 so that initial movement of the lever 41 starts the air to flowing before the paint starts to flow. When lever 41 is released, spring 10 closes the paint control needle valve 6 before the air ceases to flow. The result of this progressive movement is that there is never any sputtering or dripping of the tool.

I claim:

1. An air brush comprising an elongated, tubular paint receiving body of a shape to adapt it to be held in the hand like a pen, and comprising an elongated, reduced tubular extension projecting forwardly from said body, a spray nozzle carried by the forward end of said extension, to which paint is delivered through said extension, a paint control valve associated with and forming a part of the spray nozzle, an air conduit for furnishing air of atomization thereto, an air control valve associated with said conduit and controlling the passage of air from a source of air supply through the conduit to the spray nozzle, and a manually operable member for actuating both the air valve and the paint control valve, said member comprising a pivoted lever having a short arm and a long arm, the latter arm extending in the direction of the length of said extension, and toward the outer end of said extension, with its free end farther from said extension than its pivot point, actuating connections between the short arm of the lever and both the air control valve and the paint control valve, the throw of said connections being such that the air control valve is opened ahead of the paint control valve and the paint control valve is closed ahead of the air control valve.

2. An air brush comprising an elongated, tubular paint receiving body of a shape to adapt it to be held in the hand like a pen, and comprising an elongated, reduced tubular extension projecting forwardly from said body, a spray nozzle carried by the forward end of said extension, to which paint is delivered through said extension, a paint control valve associated with and forming a part of the spray nozzle, an air conduit connected to the spray nozzle for furnishing air of atomization thereto, an air control valve associated with said conduit and controlling the passage of air from a source of air supply through the conduit to the spray nozzle and a single manually operable member for actuating both the air valve and the paint valve by the pressure of the index finger of the user transversely of the axis of said reduced extension, said member comprising a bell-crank lever having a short arm and a long arm and pivoted at its heel upon said body, with the free end of the latter arm extending in the direction of the length of said extension with its free end toward the outer end of said extension, the short arm of said lever extending across the tubular extension to that side thereof remote from the long arm of the lever, and connections between the short arm of the bell-crank lever and both the air control

valve and the paint control valve, the throw of said connections being such that the air control valve is opened ahead of the paint control valve and the paint control valve is closed ahead of the air control valve.

3. An air brush of the character described comprising in combination a tubular body portion having a tubular reduced extension extending forwardly therefrom, a piston slidably mounted in the body portion, that part of the body portion forwardly of said piston constituting a paint receiving reservoir, a spray nozzle upon the forward end of the extension, a paint control needle valve associated with the spray nozzle and controlling the passage of paint therefrom, said needle valve being constituted by an elongated stem which extends through the piston, packing means between the piston and the valve stem for forming a fluid tight connection, an air supply connection at the rear part of the body portion, an air conduit leading from a point adjacent the air connection to the spray nozzle for delivering air of atomization thereto, an air valve within the body positioned to control the passage of air from the air connection to the conduit, a bell-crank lever comprising a long arm and a short arm pivoted at its heel upon the body, with its long arm projecting in the direction of the length of the tubular extension and toward the free end thereof and in a position to be engaged and moved toward said extension by the pressure of the index finger of the user, the short arm of said lever comprising a forked portion which straddles said extension and extends to that side thereof remote from the long arm, and connections between the short arm of said lever constituted by said forked portions and both the air control valve and the paint control valve, said connections having such throw that the air control valve is opened ahead of the paint control valve and the paint control valve is closed ahead of the air control valve.

4. A structure as recited in claim 3 wherein the body is provided with means for venting the same to the atmosphere in the rear of the piston.

5. A structure as recited in claim 3 in combination with means for manually moving the piston in the body.

6. In a spray brush of the character described, the combination with an elongated, tubular body having a reduced extension projecting from the forward end thereof, said extension having a passageway formed therein for the passage of material being sprayed from the forward end of the body to the outer end of the tubular extension, a spray nozzle at the outer end of the

extension which includes a conical valve seat, a needle valve cooperating with said seat to control the passage of paint or like material past said valve seat and an air receiving tubular member surrounding the conical valve seat, said needle valve being formed upon the forward end of a valve rod, said valve rod extending rearwardly through the tubular extension to the rear end of said body, a packing gland carried by the piston through which said rod passes, a manually operable control member connected to the piston and accessible from the exterior of the body so that the piston may be manually moved from the exterior of the body, a control lever pivoted to the body adjacent the juncture of said body and its forward extension, said control lever projecting in the direction of the length of said extension and toward the outer end of said extension and said lever lying, when not being actuated by the operator, at an acute angle to the said extension, an air supply connection at the rear end of the body, an air conduit leading from the rear end of the body to the air receiving tubular member of the spraying nozzle, an air control valve disposed between the air supply connection and said conduit, a slidable member mounted within the rear end of the body, means for adjustably connecting the rear end of the valve rod to said slidable member, a plate to which the air valve is connected, said plate overlying the slidable member in such manner and in such spaced relation thereto that initial movement of the plate will move the air valve toward open position and additional movement of the plate will move the slidable member to thereby withdraw the needle valve from its seat, and connections between the control lever and the plate to move the plate as described under movement of the control lever toward the reduced extension.

7. A spray brush comprising a body constituting a paint receptacle and a forwardly extending reduced extension, a spray nozzle at the forward end of the reduced extension, means for conducting air under pressure and paint to said spray nozzle and control means for the air and paint comprising a control lever having a long arm and a short arm, said lever being pivoted to the body and projecting from its pivot point in the direction of the length of the extension, with its free end disposed toward the spray nozzle, said lever lying at an acute angle with respect to the extension, and the control connections being of such shape and throw that movement of the control lever toward the extension actuates said control connections.

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