

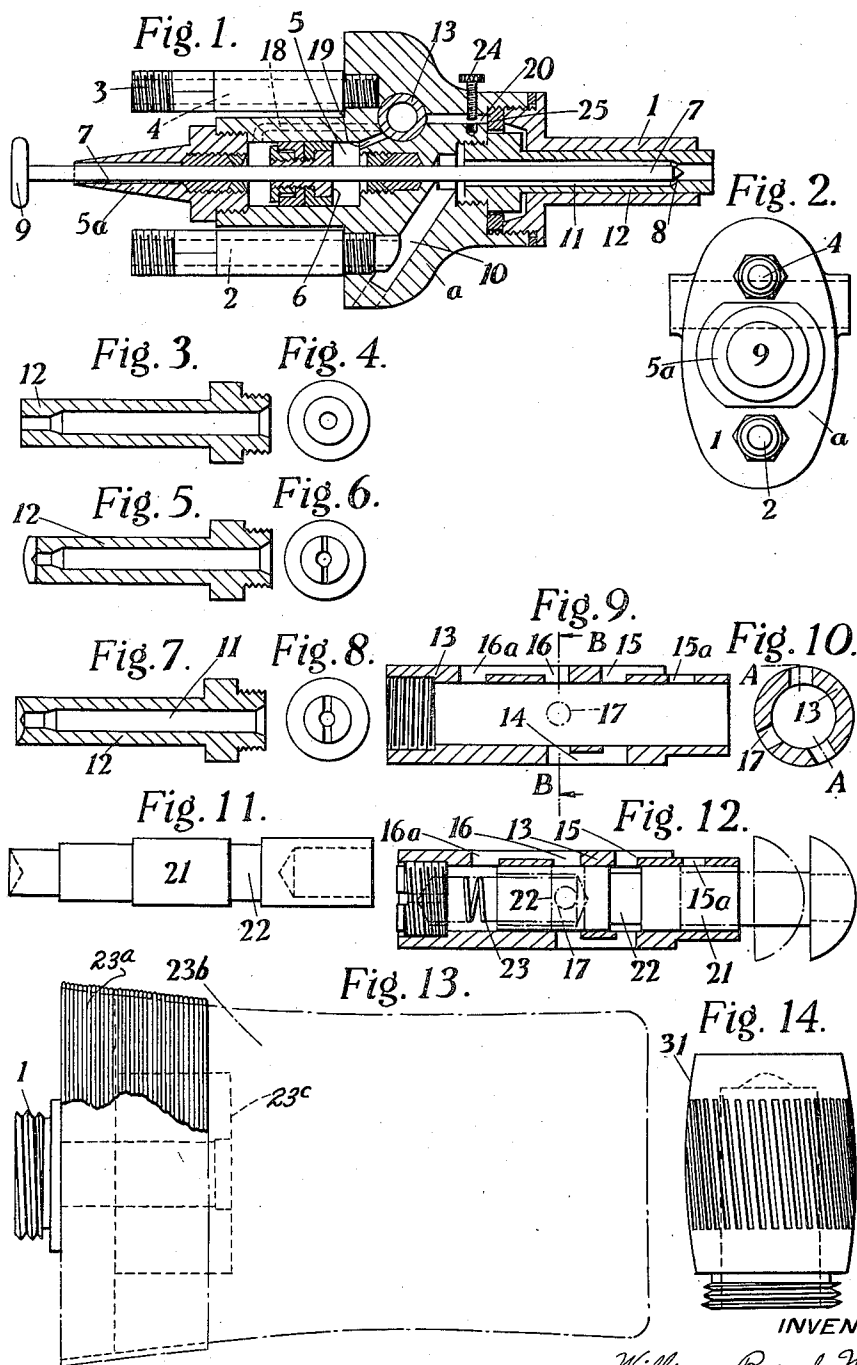
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MECHANICAL PAINTING OR COATING OR CLEANING OR THE LIKE DEVICE

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MECHANICAL-PAINTING OR COATING OR
CLEANING OR THE LIKE DEVICE

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This invention relates to improvements in mechanical-painting or coating or cleaning or the like devices.

An object of the present invention is to provide an improved form of apparatus for mechanical painting, coating or cleaning of the kind in which the brush is charged under a valve control with, for example, paint, and the material applied by the usual brushing action, thus rendering the apparatus eminently suited for the application of materials, which under present regulations must not be applied in certain circumstances by the known spraying appliances.

By the present invention there is provided means for opening and closing the valve for delivering the material to the brush comprising for example a piston or diaphragm, each side of which is subjected to fluid pressure so that the said means is controlled for movement entirely by a fluid.

Advantages of using fluid pressure on both sides of for example the piston or diaphragm is that the force exerted on the piston or diaphragm is uniform on both sides and the liability of metal springs becoming set or clogged or breaking down due to fatigue is avoided.

Any suitable fluid distributing valve arrangement may be used, such as by way of example, rotary, oscillating or slide valve devices.

Compressed air may be and preferably is used to move the means for opening and closing the delivery valve for the material, and for certain uses this compressed air is not passed to the brush, although for some purposes it may be passed thereto. In this connection when there is a through-way to the brush means may be provided for blocking this communication when it is not desired to have the compressed air or fluid under pressure passing to the brush.

Other improvements embodied in the present invention are as set out in the description of a constructional form of the apparatus hereinafter referred to.

In order that the improvements constituting the present invention may be clearly understood reference is hereinafter made to the accompanying drawing.

In the drawing:—

Fig. 1 is a sectional view of the hand-piece.

Fig. 2 is an end view of Fig. 1.

Figs. 3 and 4, 5 and 6, and 7 and 8 are sectional views and end views respectively of a hollow member in which the needle valve is located.

Fig. 9 is a sectional view of the sleeve on the

line A—A of Fig. 10, and Fig. 10 is a section of Fig. 9 on the line B—B.

Fig. 11 is a view of the piston valve.

Fig. 12 is a combined view of the sleeve and piston valve.

Fig. 13 is a view of the brush.

Fig. 14 is a view of the cleaning cap.

Referring to Fig. 1, *a* is a head or hand-piece, which is made up as a compact unit of a hand-grip size. This hand-piece is adapted to receive a coupling member 1. The paint or other material is received by way of flexible tubing from an outside source into the passage-way 2. 3 is a union for a flexible tubing leading from a source, for example, of compressed air to the passage-way 4.

In the hand-piece *a* is a cylinder 5, within which works a piston 6. This piston is fixed to a spindle 7 of a needle valve 8 which controls the delivery of the material, for example paint, to the brush. The spindle 7 extends through the cylinder end 5*a* and has a finger-disc 9 so that the spindle 7 can be moved by hand for cleaning the valve seating.

The paint passes along the bore 10 to an annular space 11 between the spindle 7, and the inner walls of a hollow member 12 screwed to the nose of the hand-piece 1. The sealing for the needle valve 8 is in the hollow member 12.

In the hand-piece 1 and at right angles to the axis of the spindle is a bore in which is housed a sleeve 13. This sleeve has ports 14, 15, 16, and 17. The port 14 is for admission of the compressed air and communicates with the air-way 4. The port 15 communicates with the cylinder port 18, and the port 16 with the cylinder port 19. The port 17 communicates with the bore 20.

Working within the sleeve 13 is a piston valve 21 having a circumferential groove 22. This valve 21 is under the influence of a spring 23, which normally keeps the valve 21 in the position so that the compressed air passes from the port 14 by way of the groove 22, ports 15 and 18 to the back of the piston 6 and thus keeps the needle valve 8 closed. When the valve 21 is depressed against the spring the circumferential groove is moved to shut off the port 15 from the admission port and to open up the port 16 thereto, so that air can pass by way of the cylinder port 19 to the front of the piston and open the needle valve 8 to admit the material to the brush. Exhaust from the back of the piston is by way of 18, 15 and 15*a* to open air, and from the front of the piston by way of 19, 16 and 16*a* to open air.

The needle valve is opened only to charge the

brush with, for example, paint, and is not kept open during the brushing operation but the brushing operation need not be suspended during charging. To prevent the compressed air from reaching the brush by way of the bore 20 a shut-off cock 24, or/and a washer or disc 25 is provided.

In cases where it is desired that an air-stream shall be supplied to the brush this bore 20 is opened up, by opening up the cock 24 and/or removing the washer 25 when this is used so that air passes from the bore 20 to the brush between the internal wall of the part 1 and the external wall of the member 12, there being a small space between the said internal and external walls. This air stream is supplied at the charging period only.

The air passes to the bore 20 by way of the port 17 which is in alignment with the groove 22 when the piston valve 21 is depressed.

Figs. 3 to 8 inclusive illustrate various forms of members 12.

Figs. 4, 6 and 8 show various forms of feed tips for the members 12.

In the example shown the member 1 is shown attached to the head-piece by a screw union.

Any suitable form of brush 23b may be used, for example, oval, flat, and circular brushes.

There is provided a holder or carrier 23a for the multiplicity of finely slender components, as for example, bristles comparable to those used in an ordinary paint brush, or rubber fingers.

The coupling member 1 is arranged to be detachably attached to the holder or carrier and also to the hand-piece or apparatus.

The holder or carrier has a wedge or taper or retaining member 23c for securing the bristles in the holder.

Into this retaining member the coupling member is secured.

It is to be understood that any suitable form of brush component may be used.

Means may be provided for cleaning the apparatus. Fig. 14 shows a hollow cap 31 adapted to be attached to the head or hand-piece in place of the member 1 when this has been removed. Now on depressing the piston valve 21 to bring the groove 22 into alignment with the ports 14 and 17 the air passes through the bore 20 to the interior of the cap 31 and then through the valve 8, which has been previously opened, to the annular space 11, bore 10, and passage-way 2 to the paint feed tubing and effecting a cleaning thereof by driving the material back to the source of supply, it being understood that the pressure behind the material is first relieved.

What I claim is:—

1. A hand brushing apparatus for painting, coating, or cleaning, including a hand-piece, a control member working in a cylinder formed in said hand-piece, a valve spindle extending into said cylinder and on which said control member is fixed, a delivery valve for the paint or other material on said spindle and outside of said cylinder, a slide valve device housed in said hand-piece for controlling the ingress and egress of a fluid under pressure to each side of said control member alternately to move this in the cylinder to open and close the said material delivery valve, said fluid under pressure being obtained from a separate source to that of the paint or other material, the said hand-piece having a passage-way through which said fluid under pressure for actuating the control member is supplied to said slide valve device, and also having passages leading from said slide valve device to the cylinder

for the admission to and exhaust of the fluid pressure from each side of the control member and said hand-piece also having a separate passage-way for supplying paint or other material to the delivery valve.

2. A hand brushing apparatus for painting, coating, or cleaning, including a hand-piece, a coupling member attached thereto, a control member working in a cylinder formed in said hand-piece, a valve spindle extending into said cylinder and on which said control member is fixed, a delivery valve for the paint or other material on said spindle, said valve having a seating in said coupling member, a slide valve device housed in said hand-piece for controlling the ingress and egress of a fluid under pressure to each side of said control member alternately to move this in the cylinder to open and close the said material delivery valve, said fluid under pressure being obtained from a separate source to that of the paint or other material, the said hand-piece having a passage-way through which said fluid under pressure for actuating the control member is supplied to said slide valve device, and also having passages leading from said slide valve device to the cylinder for the admission to and exhaust of the fluid pressure from each side of the control member and said hand-piece also having a separate passage-way for supplying paint or other material to the delivery valve.

3. A hand brushing apparatus for painting, coating, or cleaning, including a hand-piece, a control member working in a cylinder formed in said hand-piece, a valve spindle extending into said cylinder and on which said control member is fixed, a delivery valve for the paint or other material on said spindle and outside of said cylinder, a slide valve device housed in said hand-piece for controlling the ingress and egress of a fluid under pressure to each side of said control member alternately to move this in the cylinder to open and close the said material delivery valve, said fluid under pressure being obtained from a separate source to that of the paint or other material, the said hand-piece having a passage-way through which said fluid under pressure for actuating the control member is supplied to said slide valve device, and also having passages leading from said slide valve device to the cylinder for the admission to and exhaust of the fluid pressure from each side of the control member, said hand-piece also having a separate passage-way for supplying paint or other material to the delivery valve, said hand-piece having a bore for by-passing a portion of the fluid under pressure to the delivered paint or other material, and means for opening and closing said bore.

4. A hand brushing apparatus for painting, coating, or cleaning, including a hand-piece, a control member working in a cylinder formed in said hand-piece, a valve spindle extending into said cylinder and on which said control member is fixed, a delivery valve for the paint or other material on said spindle and outside of said cylinder, said spindle projecting outside the hand-piece at the end remote from the delivery valve, so that the valve can be moved by hand, a slide valve device housed in said hand-piece for controlling the ingress and egress of a fluid under pressure to each side of said control member alternately to move this in the cylinder to open and close the said material delivery valve, said fluid under pressure being obtained from a separate source to that of the paint or other material, the said hand-piece having a passage-way through

which said fluid under pressure for actuating the control member is supplied to said slide valve device, and also having passages leading from said slide valve device to the cylinder for the admission to and exhaust of the fluid pressure from each side of the control member and said hand-piece also having a separate passage-way for supplying paint or other material to the delivery valve.

5 5. A hand brushing apparatus for painting, coating, or cleaning, including a hand-piece, a coupling member attached thereto a control member working in a cylinder formed in said hand-piece, a valve spindle extending into said cylinder and on
10 which said control member is fixed, a delivery valve for the paint or other material on said spindle and outside of said cylinder, a slide valve device housed in said hand-piece for controlling the ingress and egress of a fluid under pressure to
15 each side of said control member alternately to move this in the cylinder to open and close the said material delivery valve, a union member having a bore through which fluid under pressure for actuating the control member is supplied
20 from a separate source to that of the paint or other material to a passage-way in said hand-piece leading to the slide valve device, said hand-piece also having passages leading from said slide valve device to the cylinder for the admission to
25 and exhaust of the fluid under pressure from each side of the control member and said hand-piece also having a separate passage-way for supplying paint or other material to the delivery valve.

30 6. A hand brushing apparatus for painting, coating, or cleaning, including a hand-piece, a control member working in a cylinder formed in said hand-piece, a valve spindle extending into said cylinder and on which said control member is fixed, a delivery valve for the paint or other
35 material on said spindle and outside of said cylinder, a slide valve device normally held in one po-

sition by a spring, and being housed in said hand-piece and controlling the ingress and egress of a fluid under pressure to each side of said control member alternately to move this in the cylinder to open and close the said material delivery valve, said fluid under pressure being obtained from a separate source to that of the paint or other material, the said hand-piece having a passage-way through which said fluid under pressure for actuating the control member is supplied to said slide valve device, and also having passages leading from said slide valve device to the cylinder for the admission to and exhaust of the fluid under pressure from each side of the control member and said hand-piece also having a separate passage-way for supplying paint or other material to the delivery valve.

7. A hand brushing apparatus for painting, coating, or cleaning, including a hand-piece, a coupling member attached thereto, a control member working in a cylinder formed in said hand-piece, a valve spindle extending into said cylinder and on which said control member is fixed, a delivery valve for the paint or other material on said spindle having a seating in said coupling member, the said hand-piece having a bore at right angles to the axis of the spindle, a ported sleeve in said bore, a piston valve having a circumferential groove working within the sleeve, the hand-piece having a passage-way through which fluid under pressure for actuating the control member is supplied to a port in said sleeve, said port communicating with the circumferential groove in the piston valve, the hand-piece also having passages leading from other ports in the sleeve to the cylinder for the admission to and exhaust of fluid under pressure from each side of the control member and said hand-piece also having a separate passage-way for supplying paint or other material to the delivery valve.

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