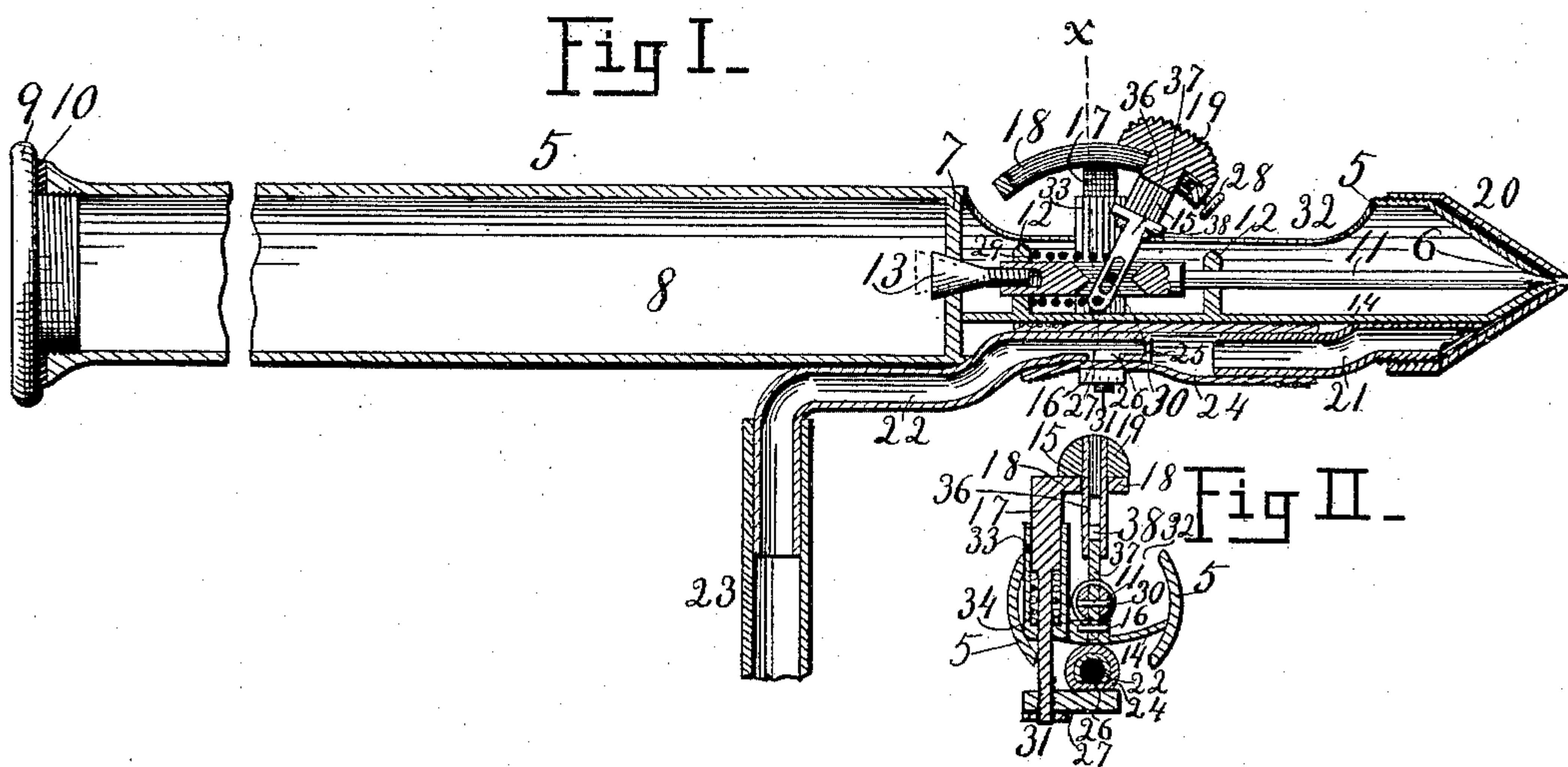


(No Model.)

C. L. BURDICK.
AIR BRUSH.

No. 474,158.

Patented May 3, 1892.



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AIR-BRUSH.

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To all whom it may concern:

Be it known that I, CHARLES L. BURDICK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Air-Brushes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of implements by means of which artists are enabled to reduce india-ink and other paints which are in a more or less fluid condition to the form of spray in the act of applying the same to produce pictorial effects; and its object is to provide means whereby either a large quantity of paint may be contained in the implement for application thereby, or small quantities of the same or different colors may be quickly substituted one for another in the same implement, and the implement may be readily cleaned between changes to avoid tarnishing the tints.

To this end my invention consists in the construction and combination of parts forming an air-brush, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I represents in longitudinal vertical section an air-brush according to my invention, broken and very much enlarged. Fig. II represents a transverse vertical section of the same on the line xx of Fig. I.

5 represents the body, consisting of a cylindrical tube conical at its forward end and having a small aperture or delivery 6 at its apex.

7 represents a partition across the interior of the body, forming the lower end of the storage chamber or reservoir 8.

9 is a cap adapted to close the upper end of the reservoir and to be removed for opening the reservoir to charge the same with ink or other fluid paints, and 10 is any suitable packing, whereby the joint between the removable cap and the body may be made tight.

11 represents a valve-stem made conical at its lower end to fit into the aperture 6 as a valve to close the same. This stem 11 is fitted to play longitudinally in bearings 12, which are fixed in the body.

13 is a plug adapted to be screwed into the end of the stem 11, and it is made conical in form to fit and close a conical seat in the partition 7.

14 is a trough-shaped bottom extending from the partition 7 to the conical forward end of the body, in which trough paint or ink delivered from the valve 13 may run by gravity forward to the outlet 6, and the screw connection between the plug 13 and the stem 11 permits the valves on the two ends of the stem to be accurately adjusted to their seats, so that both valves shall be closed at once. Any sliding motion of the stem which tends to open either valve will also open the other to the same extent, so that the supply from the valve 13 shall always equal the demand at the delivery 6, and yet the supply will never exceed the demand.

15 represents a lever passing through the stem 11, and connected therewith by a pin 30 and pivoted to the body at 16.

17 is a bracket fitted to slide vertically in a sleeve 33, which is rigidly secured to the body 5. The bracket is shaped as a segment of a circle at 18, concentric with pivot 16. Through this bracket is a vertical slot serving as a guideway in which the lever 15 may play to and fro longitudinally of the body.

34 is a spring acting between the sleeve 33 and the bracket 17 to press the latter normally upward.

19 is a thumb-piece serving as a handle to the lever 15 and adapted to slide upon the segment 18.

20 represents a cap of conical form screwed upon the forward end of the body 5 and leaving an annular space between the cone of the body and the cap, through which a current of air may be driven. The aperture in the cap 20 is in line of the delivery-aperture 6 of the body.

21 represents an air-passage leading to the annular space between the cap and the body.

22 is an air-tube, which may be connected by means of a flexible pipe 23 with any source or means of supplying air under pressure.

24 is a flexible tube, such as common rubber pipe, passing over and connecting the ends of the passage-ways 21 and 22. The end 25 of the tube 22 is closed and an aperture 26 is made in one side thereof. The tube is

in this region reduced, so that air may freely escape from said opening to the interior of the pipe 24.

27 is an arm projecting from the lower end of the bracket 17 to be pressed by the action of spring 34 against the under side of the pipe 24 and compress it upon the opening 26, whereby a valve is formed for opening and closing the pipe 22.

28 is a set-screw adapted to limit the motion of the lever 15, so that neither of the valves at 6 and 13 may be strained by forward pressure upon the lever.

29 is a spring acting between one of the bearings 12 and the lever 15 to press the lever constantly forward to its normal position, in which the valves are closed.

Immediately back of the cap 20 is a large opening 32 through the side of the body, which opening is never closed, and through which ink or paint may be introduced in small quantities directly to the interior of the cone, ready to be discharged at the delivery 6 without passing through the reservoir 8.

31 is an adjusting-screw, by means of which the arm 27 may be set up or down upon the bracket 17, in order to adjust the arm to close its valve at the proper time. The lever 15 is made in two parts 36 and 37, fitted to telescope one upon the other, so that the part 36 may play down when the knob 19 is pressed upon the segment 18 by the operator's finger to open the valve 26, and be slid upward with the said segment by the spring 34, a head 38 preventing disengagement.

The operation is as follows: When the reservoir is to be used, a quantity of ink may be placed therein, and, connections between the tube 22 and the source of air-supply being made, the operator proceeds to direct the delivery-point toward the paper or canvas. At the same time by means of the thumb or finger he may press down more or less upon the lever 15, thereby opening the valve 26 and admitting more or less compressed air to the annular space between the conical cap 20 and the end of the body, and the air driving out forward of the aperture 6 will form a suction through the said aperture to draw out and discharge in a more or less sprayed condition whatever ink the valve 6 permits to escape. By drawing back more or less upon the said lever the valves 6 and 13 are opened more or less, so that the amount of ink discharged may be perfectly controlled. The artist may direct the point of delivery upon the canvas either in curves or straight lines. If the point of delivery be kept close to the canvas, the ink will be delivered in a narrow line, and if the point be removed farther and farther away from the canvas the ink is more and more spread until the edges of the line are entirely lost, and shading may be accomplished of every grade from jet-black to the pure white of the paper or canvas with such certainty as to satisfy the most fastidious eye. The operating-lever 15 not only performs the

double service of opening both the ink and air supply by the action of one finger of the operator, but by its double action the amount of supply of each may be controlled with the greatest accuracy.

By means of the opening 32 the valve-seat at 6 and the whole interior works are accessible for cleaning, and through this opening a small quantity, a mere drop, if so desired, of ink or other color may be placed within the cone for immediate use. In this case of course the reservoir 8 will be empty and the operation of the valve 13 has no effect upon the result. The conical cap 20 being removable permits the interior to be readily cleaned, and it being screw-threaded upon the body permits longitudinal adjustment to vary its distance from the delivery 6 to adapt the implement to use inks or paints of different degrees of fluidity or thickness. The body being open at the side not only gives free access for applying a small quantity of paint within the delivery and for cleaning purposes, but it permits the entrance of air behind the paint whether the latter be placed in at the side or received from the reservoir, thus enabling the air-blast to draw the paint out of the delivery 6 by suction. If the side were closed, there would be no atmospheric pressure behind the paint to aid suction. This device does not apply any direct air-pressure behind the paint.

For the purposes of the claim I term the cap 20, perforated in line of the delivery 6 and connected with a source of supply of air under pressure, a "suction-nozzle." While the reservoir 8, closed except at its delivery-valve 13, would not deliver paint or ink evenly enough to insure perfect work if the delivery 6 were coincident with the valve-opening 13, because of the air-bubbles passing at intervals into the reservoir at the same valve 13, yet it will accumulate a sufficient supply at 6 to be with certainty controlled by the valve there.

It is evident that many different ways could be devised to give transverse movement to the knob 19 besides slotting the lever, and that other devices might be used to connect this knob with the air-supply valve and still maintain the two motions to the valve-operating lever, one motion being transverse to the line of the implement to control the air-delivery and the other motion longitudinal to control the paint-delivery. These two motions are so distinct from each other that the operator need not be confused. The harder he presses on the lever the harder the air will press out at work, and the more he draws back the lever the more paint will be delivered.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination, in air-brushes, of an open receptacle for ink or paint conical at one end and perforated for delivery of the said ink or paint, a valve to close the said perforation and adapted to be operated by hand, a

cap covering the conical end of the body and forming an air-space between and perforated in line of the said delivery, and means for connecting the said air-space with a source of supply for compressed air, substantially as described.

2. The combination, in air-brushes, of a receptacle for ink or paint, perforated for delivery thereof, and open to atmospheric pressure from the rear, a finger-valve for the said perforation, and a suction-nozzle forward of the perforation, substantially as described.

3. The combination, in air-brushes, of a body containing a paint-reservoir, a valve therefor, a delivery formed in the body at some distance from the said valve and connected therewith by a paint trough or receptacle open to the outer air, a finger-valve for the said delivery, and a suction-nozzle forward of the delivery, substantially as described.

4. The combination, in air-brushes, of a tubular body having a paint-reservoir in its rear portion and made conical at its forward end and perforated as a paint-delivery at the apex of the cone, a valve-seated opening in the forward end of the reservoir, a valve-rod shaped at its forward end as a valve for the said delivery and provided at its rear end with a valve fitted to the said valve-seated opening, one of the said valves being adjustably connected with the rod, and a spring, and a finger connection for said valve-rod, substantially as described.

5. The combination, in air-brushes, of a body having a perforated paint-reservoir and a delivery at some distance apart, each provided with a valve-opening, a rod having valves at its ends and fitted to slide between the reservoir and delivery-openings, a perforated cap in front of the delivery-opening, leaving an annular air-space between the cap and body, a tube closed at its end and having a delivery at one side, means for connecting this tube with a source of supply for air under pressure, a flexible pipe connecting the tube and the aforesaid annular air-space and loosely covering the said side delivery as a valve therefor, a bracket fitted to slide transversely to the body and having an arm to bear upon the said flexible pipe over the said side

delivery, and a finger-lever pivoted to the valve-rod and passing through a slot in the bracket and pivoted to the body and having a shoulder to engage the bracket, substantially as described.

6. The combination, in air-brushes, of a perforated reservoir, a paint-delivery located at some distance therefrom, a suction-nozzle beyond the delivery, an air-pipe communicating with the nozzle, a valve for the pipe, a valve for the reservoir, a valve for the said delivery, and a finger-lever connected with the three valves, substantially as described, whereby all the valves may be operated by one finger, substantially as described.

7. The combination, in air-brushes, of a delivery-valve, a bracket fitted to slide transversely to the implement and having a slotted segment, a spring for the bracket, a telescoping lever connected with the said valve and pivoted to swing in the said slot and provided with a thumb-piece to slide upon the said segment, and a compressed-air valve connected with the said bracket, substantially as described.

8. The combination, in air-brushes, of a paint-receptacle perforated for delivery, a valve for the perforation, a suction-nozzle forward of the delivery, a connection between the nozzle and compressed-air source, a valve for the said connection, and a finger-lever hung for two movements, substantially as described, whereby the operator's finger may make one movement to control the air-supply and another movement to control the paint-delivery.

9. The combination, in air-brushes, of a receptacle for paint having a delivery-aperture, a suction-nozzle in front thereof, an air-tube connecting with the nozzle, valves for the delivery-aperture and air-tube, and an operating-lever fitted to play both longitudinally and transversely to the body and connected with the valves, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES L. BURDICK.

Witnesses:

H. H. DAVIS,

E. G. HANBERG.