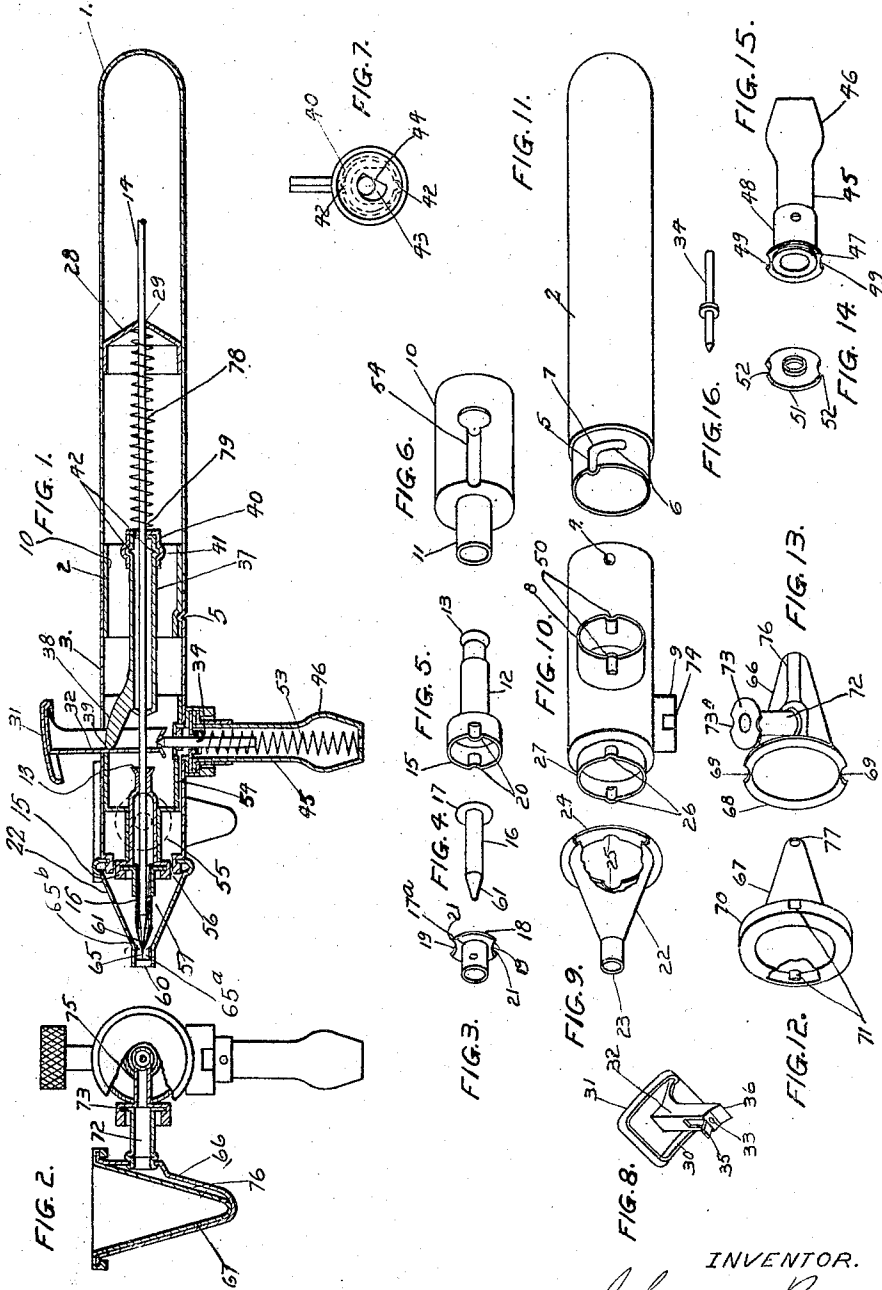


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AIR BRUSH.

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WITNESSES.  
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## AIR-BRUSH.

1,299,290.

Specification of Letters Patent.

Patented Apr. 1, 1919.

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*To all whom it may concern:*

Be it known that I, JOHANNES BERG, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Air-Brushes, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to improvements in air brushes in which ink or coloring matter or pigment may be distributed under pressure and has for its object the production of a device, the various parts of which may be quickly assembled and disassembled without the use of screw threads.

A further object is the production of a device in which novel means for tightening the needle are provided.

A further object is the production of an improved form of pigment container comprising a plurality of cups easily separable and readily cleaned.

A further object is the production of improved locking means whereby the members constituting the device can be readily and quickly attached and detached and yet held firmly in place when in use.

A further object is the production of a simple and efficient device having as few parts as possible and the parts so arranged as to be least liable to disarrangement or breakage, constituting a device that can be cheaply constructed.

These and such other objects as may hereinafter appear are attained by my device, an embodiment of which is illustrated in the accompanying drawings in which—

Figure 1 illustrates a sectional view of my device in operative condition;

Fig. 2 represents a front view of my device partly in section;

Fig. 3 represents a perspective view of the locking collar;

Fig. 4 represents a perspective view of the nozzle;

Fig. 5 represents a perspective view of the pigment receptacle;

Fig. 6 represents a perspective view of the supplemental barrel;

Fig. 7 represents a front view of the needle tightener;

Fig. 8 represents a perspective view of the shifting or finger lever;

Fig. 9 represents a perspective view of the nozzle cap partly broken away;

Fig. 10 represents a perspective view of the main barrel;

Fig. 11 represents a perspective view of the handle and locking collar;

Fig. 12 represents a perspective view of the inner pigment receptacle;

Fig. 13 represents a perspective view of the outer pigment receptacle;

Fig. 14 represents a perspective view of the compressor disk;

Fig. 15 represents a perspective view of the air compressor connection with locking collar, and

Fig. 16 represents a perspective view of the compressor piston or valve stem.

Like numerals of reference indicate like parts in the several figures of the drawing.

Referring now to the drawings, 1 represents a hollow metallic handle preferably cylindrical in form with lower end closed and having a locking sleeve 2 fitted within the upper end thereof. A main barrel 3 slips over the locking collar and is provided with an internally projecting boss 4. The locking collar has a depression or groove 5 extending lengthwise of the barrel and turning at substantially right angles at 6. When the main barrel is slipped over the collar the boss 4 slips into the depression or groove 5 and when the lower end of the main barrel abuts the end of the handle at 7 the boss is opposite the right angle extension 6 of the groove. The parts are then given a slight twist, turning the boss or stud 4 in the groove 6 and holding the parts securely together by forming in effect a species of bayonet joint having a cam action.

From one side of the main barrel a circumferential flange 8 surrounds the opening through which compressed air enters the device and a second flange 9 projects at right angles to the first surrounding the opening through which the ink or pigment enters the device. A supplemental barrel 10 having its rear end of slightly less diameter than the interior diameter of the main barrel and having a restricted forward extension 11 fits within the front of the main barrel and a

pigment chamber 12 fits snugly within the interior of the restricted end 11. This pigment receptacle is slightly flared at its lower end 13 and provided with a circumferential opening, thus making it easy to slip the needle 14 through the pigment receptacle. An enlarged flange or cup 15 surrounds the outer end of the pigment receptacle and the nozzle 16 is provided with a circumferential flange 17 adapted to fit within the cup 15. A locking collar 17<sup>a</sup> passes over the nozzle 16 and the base 18 of this collar rests on the flange 17. The base 18 is notched on opposite sides at 19, the notches registering with the inwardly projecting bosses 20 pressed in from the upper edge of the outer periphery of the collar 15. The outer edge of the flange 18 is beveled off close to one corner 21 of each notched portion for the purpose of securely locking the nozzle in place within the collar 15.

It will be noted that when the nozzle with the locking collar in place is fitted within the cup 15 it is only necessary to turn the collar, the sharp edges or corners 21 sliding underneath the lower ends of the inwardly projecting bosses 20 and as the members are turned a little more they are all securely locked in place, the sharp knife-like edge of the cut away portion 19 readily fitting underneath the bosses 20. A nozzle cap 22 is provided cone-shaped with the opening 23 and an inwardly turned flange 24 provided with a pair of oppositely disposed notches 25. These notches are adapted to pass over bosses 26 pressed out from the circumference of the sleeve 27 fitted within the upper end of the main barrel. After this nozzle cap is slipped in place, it is turned slightly, turning the notches 25 out of registration with the bosses 26 and at this point the edge of the flange engages the bottom of the bosses holding the cap securely in place.

A needle supporting guide 28 is mounted within the hollow handle provided with an opening 29 through which the needle 14 passes. The shifting or finger lever 30 passes through an opening in the main barrel and is provided at its top with a roughened gripping member 31 mounted on a hollow post 32. The bottom of the post is provided with an opening 33 within which the end of the air compressor valve stem 34 fits. Downwardly projecting members 35, 36 are provided on either side of the opening 33, the purpose of which will be explained later. The needle 14 passes through the opening 29 in the rear supporting guides and through the pigment receptacle 12, being thus held within the center of the guide and main barrel. A shifting collar 37 is positioned within the main barrel and provided with a forwardly and upwardly extending engaging lug or finger 38 the end

of which 39 fits between the sides of the post 32.

A needlebinder shown in Fig. 7 comprises a cap 40 having a circumferential flange 41 adapted to fit over two corresponding lugs 42 on the member 37. The closed end of the cap is provided with an eccentric opening 43 shaped in the form of a sector of a circle, that is, with one side cut away as shown at 44 and eccentrically disposed with respect to the center of the top of the cap. The needle 16 passes through this eccentric opening 43 and by simply turning the cap on the member 37 the needle can be held rigidly against end to end movement, the purpose of which will be explained later.

An air compressor connection 45 is provided fitting within the flange 8 and provided with an enlargement 46 which will serve to hold in place any tube that may be slipped over it, leading to an air compressor or source of compressed air, not shown. The member 45 is provided with a circumferential flange 47 and a locking collar 48 provided with notches 49. By means of this flange and locking collar the compressor connecting tube can be instantly fitted in place and held securely there in the same manner as the nozzle as heretofore explained and illustrated in Figs. 3, 4 and 5, the collar 8 being provided with inwardly projecting bosses 50 corresponding to the boss 20 shown in Fig. 5. A compression disk 51 provided with oppositely disposed notches 52 is mounted above the top of the compression tube and the valve stem 34 passes through the center of the tube, and the center of the compression disk at its upper end engages the opening 33 in the bottom of the post 32 and is mounted within a spring 53 and held in engagement with said post. By pressing down on the shifting or finger lever 30 the valve stem is forced downwardly permitting compressed air from a supply not shown to pass through the central opening in 51 between the outer circumference of the valve stem and center of compression disk from whence it passes into the space 54 between the main barrel and the supplemental barrel and into the large air space 55 and out through the opening 56 into the interior 57 of the nozzle cap. It will thus be noted that by pressing down on the finger or shifting lever air can be forced out of the opening 60 at any regulated degree of pressure and surrounding the end 61 of the nozzle 16.

The point 65 of the needle 14 passes through the nozzle end 61 projecting therefrom as shown in Fig. 1.

A cap 65<sup>a</sup> is fitted in the opening 60. This cap has a flange 65<sup>b</sup> extending inwardly toward the tapered end 61 of the nozzle, to restrict the flow of air.

Referring now more specifically to Figs. 130

2, 12 and 13 in which is shown the ink receptacle comprising an outer conical cup 66 and an inner cup of the same shape 67 fitting therein, the flange 68 of the outer cup is provided with oppositely disposed notches 69 and a downwardly extending flange member 70 of the inner cup is provided with a pair of inwardly projecting bosses 71. This construction permits the insertion of the inside cup into the outer cup, the bosses 71 passing within the openings 69 after which the members are slightly turned and the two cups are locked and held tightly together as shown in Fig. 2.

A communicating pipe or tube 72 communicates with the flange member 9 in the main barrel, the tube 72 being provided with a downwardly extending flange 73 also shown at 73<sup>a</sup> and adapted to pass under the bosses 74 in the flange 9 and lock the cup in place, in the same manner as the other parts are locked together. A tube 75 connects the end of the tube 72 with the interior of the pigment reservoir 12 and a channel 76 extends from the opening of the tube 72 to the bottom of the outer cup and the inner cup is provided with an opening 77 thus giving free access to the ink or pigment from the inner receptacle or cup 67 to the pigment reservoir 12.

It will be noted that a needle spring 78 is provided surrounding the needle 14; the bottom rests against the support guide 28 and the top rests against the face of the needle tightener as shown in Fig. 1. This spring is tightly secured to the needle at 79, thus rendering it possible to have the point 65 of the needle always extend out of the nozzle unless it is forced back by the use of the finger or shifting lever, and the moment this pressure is withdrawn, the spring forces the needle forwardly into the position shown in Fig. 1.

When my device is in use the member 45 is connected with the compressed air tank or source of compressed air and the cup or reservoir 67 is filled with ink or pigment. The ink passes through the opening 77 up the channel 76 through the tube 72 and passage 75 into the pigment reservoir where it surrounds the needle; the needle being slightly smaller than the inner bore of the nozzle 16 the ink flows around the needle completely filling the nozzle and being held therein by the fact that the point of the needle passes through the end 61 of the nozzle. Consider the air pressure on when the shifting lever is pushed back withdrawing the needle; the current of air rushing through the nozzle cap and surrounding the end draws the ink through around the point in a fine line, with the result that it is applied to the paper exactly as though it flowed from a pen or a brush. The pressure of air can be regulated and the flow of ink regu-

lated so as to attain any desired result. The greater the pressure the farther the point of the pressure can be held from the paper and attain perfect results. With low pressure of course, the brush must be held nearer the paper or material being operated upon. The provision of the sloping members 35 and 36 permits a considerable rocking motion of the shifting lever without danger of unseating the end of the valve stem 34 and the use of the needle tightened shown in Fig. 7 renders it possible to fix the needle at any desired point and prevent its return and thus enable the operator to obtain a uniform line without the necessity of careful manipulation of his fingers, it being only necessary then to use the shifting lever to regulate the admission of compressed air. The size of the spray is fully regulated by means of the movement of the lever drawing the needle back and forth.

It will be noted that in the construction of my device, I use no screw threads or fitted portion but instead use the simple locking device illustrated and explained heretofore. All the parts may be manufactured of pressed steel or metal and the joints are formed by the locking means mentioned and all the parts can be readily and quickly assembled and disassembled. By the use of the double cup I am enabled to keep the pigment reservoirs clean as they can be readily taken apart and cleansed in the event that the pigment becomes clogged or dried therein, and the use of the sharp edged joint shown in Figs. 13, 15, 3 and 9 renders it possible to make quick and tight connections and eliminates all danger of screw threads being worn and causing leaks and loose fits between the members.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An air brush comprising a handle, a main barrel and pigment reservoir, a needle passing through said reservoir, a pigment cup, connections therefor, a compressed air tube connected to said main barrel, means whereby air may be admitted within said brush and quick detachable means for uniting said connections to said main barrel, said means including a locking cam mounted on said connection.

2. An air brush comprising a handle, a main barrel, a pigment reservoir, a needle passing through said reservoir, a pigment cup, connections therefor, a compressed air tube connected to said main barrel, means whereby air may be admitted within said brush and quick detachable means for uniting said connections to said main barrel, said means including a locking cam mounted on said connection and adapted to engage inwardly projecting bosses on said main barrel.

3. An air brush comprising a handle, a main barrel, a pigment reservoir, a needle passing through said reservoir, a pigment cup, connections therefor, a compressed air tube with connections therefor whereby air may be admitted within said brush and combined cam and wedge bayonet joint connections securing said parts together.

4. An air brush comprising a handle, a main barrel, a pigment reservoir, a needle passing through said reservoir, a pigment cup, connections therefor, a compressed air tube connected to said main barrel, means whereby air may be admitted within said brush, quick detachable means for uniting said connections to said main barrel and eccentric means for locking said needle in different adjusted positions.

5. An air brush comprising a handle, a main barrel, a pigment reservoir, a needle

passing through said reservoir and eccentric means for holding said needle in different adjusted positions.

6. An air brush comprising a handle, a hand barrel, a pigment reservoir, a needle passing through said reservoir, a pair of pigment cups, one within the other in open communication with said reservoir.

7. An air brush comprising a handle, a main barrel, a pigment reservoir, a needle passing through said reservoir, a pair of pigment cups one within the other in open communication with said reservoir, the interior of said pair of cups being readily removable from the outer cup and in open communication therewith.

In witness whereof, I have hereunto subscribed my name.

JOHANNES BERG.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."