No. 649,431. Patented May 15, 1900.

C. L. BURDICK.

AIR BRUSH.

(Application filed Sept. 1, 1899.)

(No Model.)

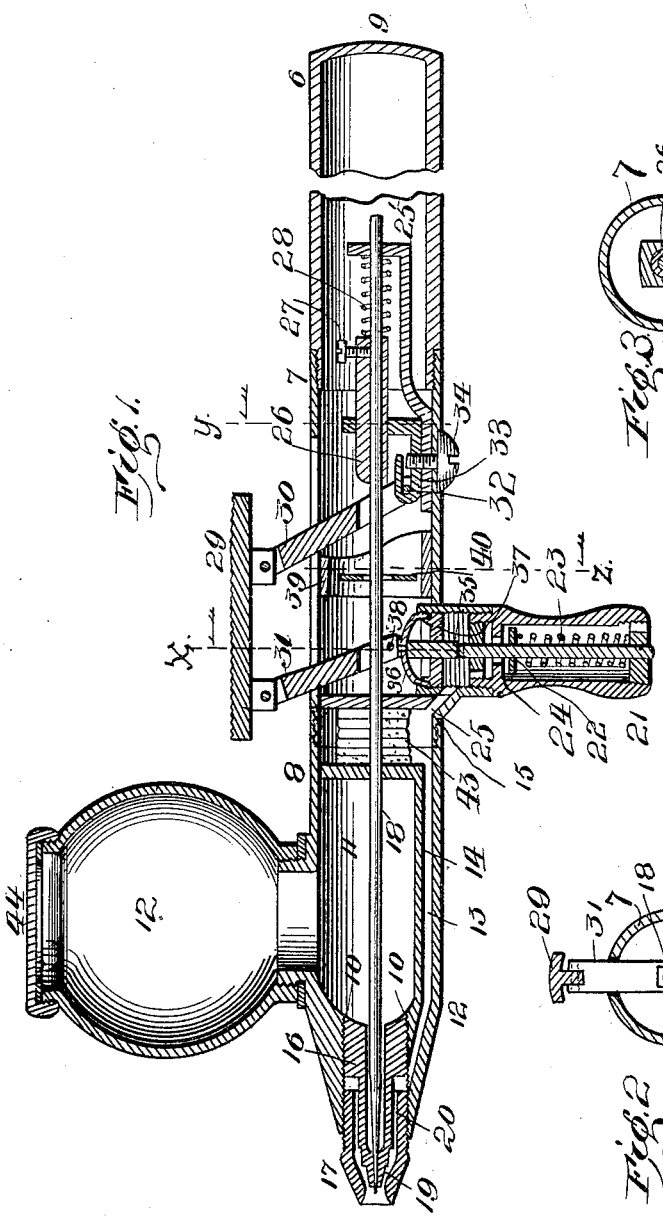

Fig. 1.

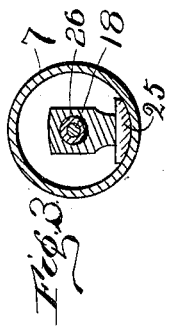

Fig. 3.

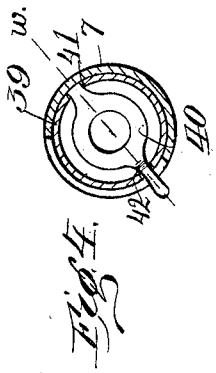

Fig. 4.

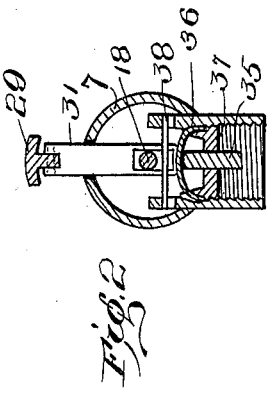

Fig. 2.

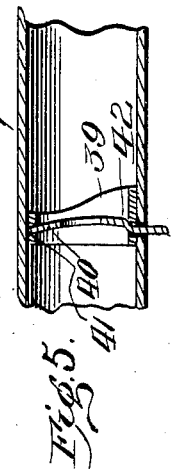

Fig. 5.

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UNITED STATES PATENT OFFICE.

CHARLES LAURENCE BURDICK, OF LONDON, ENGLAND.

AIR-BRUSH.

SPECIFICATION forming part of Letters Patent No. 649,431, dated May 15, 1900.

Application filed September 1, 1899. Serial No. 729,235. (No model.)

To all whom it may concern:

Be it known that I, CHARLES LAURENCE BURDICK, a citizen of the United States, residing at London, in the county of Middlesex, England, have invented a new and useful Improvement in Air-Brushes; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to that class of devices called "air-brushes," by means of which india-ink and other paints of more or less fluid consistency are applied by artists in pictorial and decorative work. Its objects are—

First, to provide simple and effective means for operating with a single finger or thumb two separate valves, one controlling the paint-delivery and the other the air-delivery.

Second, to provide means for controlling the paint-delivery so that a gage may be set to deliver a line of any desired width, and yet leave the implement free to deliver greater widths at the will of the operator. Heretofore gages have been set to limit the enlargement of the delivery beyond a given width, but in many cases that limits the utility of the implement.

Third, to adapt the various parts for simple construction and easy assembling, and other objects that will appear in the following description.

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

Figure 1 is a longitudinal vertical section of an air-brush according to my invention. Fig. 2 is a transverse section at the line *x* of Fig. 1. Fig. 3 is a transverse section at the line *y* of Fig. 1. Fig. 4 is a transverse section at the line *z* of Fig. 1. Fig. 5 is a longitudinal section at the line *w* of Fig. 4.

Numeral 6 represents the rear section, 7 the middle section, and 8 the forward section, of the body of the air-brush, which is tubular and closed at the rear end 9. This may be of the size of a lead-pencil or larger, according to the service demanded, and it may be of metal, hard rubber, or other suitably stiff material. The delivery end of the forward section or receiving-chamber 8 is tapering and screw-threaded through its central bore 10 to its main cavity 11, which is separated from the side passage 13 by a partition 14. The passage 13 leads from the rear end of section 8 into the side of the bore 10.

12 is a receptacle for paint, removably screwed upon the side of the chamber 8. The whole receiving-chamber 8 is separable at 15 from the middle section 7 of the body.

16 is the delivery-valve tube, screw-threaded into the bore 10 and reduced along its body to admit the nozzle 17 around it into the same bore 10.

18 is a needle-valve fitting the tapering seat 19 in the valve-tube 16, and it is reciprocated longitudinally to open and close the valve. The mouth in nozzle 17 is a little larger than the delivery end of the valve-tube and is flaring. There is a passage 20 for air between the nozzle 17 and the valve-tube 16, whereby air that has been received into the bore 10 from passage 13 may escape through the nozzle.

21 is a nipple projecting laterally from the middle section 7 to be connected by a rubber or other flexible tube with a source of compressed-air supply.

22 is a valve impelled by a spring 23 to engage a seat 24 to prevent the escape of air, and 25 is a passage communicating with the air-passage 13.

The body or stem of valve 18 passes through the rear wall of section 8, the front wall of section 7, and a bracket 25', which are bearings that serve as a slideway for the valve-stem 18.

26 is a block secured upon the valve-stem by a binding-screw 27.

28 is a spring acting against the block 26 to close the valve 18 into its seat 19.

29 is the operating-key, pivotally mounted upon parallel bars consisting of the lever 30 and the pitman 31. The lever 30 is bifurcated to straddle the stem of valve 18 and is pivoted at 32 to a bracket 33, which bracket is made fast to section 7 by a binding-screw 34. The pitman 31 is also bifurcated and provided with a pivot 38, that slides in slots in the upper end of nipple 21 to act against the stem of the air-valve 22.

36 is a dish-shaped piece of leather, rubber, or some similarly-flexible and impermeable

sheet material firmly secured at its edges by means of a screw-nut 37, which binds the disk 36 to the surrounding portion of the nipple 21. This disk is closely secured to the rod 35 to play up and down therewith, and it serves the double purpose of communicating motion between the valve 22 and its operating-brace 31 and as a substitute for the usual piston-packing, there being no opening in the disk for wear or for air to escape.

39 is an annular cam fitted to partially rotate within the section 7 across the path of the lever 30, limiting the forward motion of the lever. The lever bears against the block 26 and is therefore impelled forward by the spring 28 in the action of closing the valve 18.

40 is a lever projecting through a slot in the case 7 and engaging the cam 39, whereby the cam may be rotated to set it so as to permit the valve 18 to be closed or so as to stop its closing at any desired degree of opening. This lever passes through the cam 39 at 41 to bear against the section 7, and it has a shoulder at 42 bearing against the cam, while its midway portion is arched and under tension to extend its ends and bear against the inside of section 7 as a frictional holder for the cam. The end of lever 40, projecting through the case 7 in a narrow slot, serves to keep the cam in place against the endwise thrust of the spring 28. The bracket 33 is open rearward for the pin 32 to be put in or taken out, and the end of screw 34 projects into the outward path of the pin to keep it in place until the screw is partially turned out. This screw holds both brackets 25 and 33 as fixtures in section 7.

43 represents one or more disks, of leather or other suitable packing, interposed between the ends of sections 7 and 8 and pressed close by screwing the two sections together to prevent the escape of air that surrounds the packing on its way to passage 13. As the valve-stem 18 plays through paint in cavity 11 the packing 43 will become gummed; but being directly at the joint of two sections it may be readily removed for cleaning.

In operation either a receptacle 12 or a flexible tube communicating with a source of paint-supply may be attached to the section 8 to deliver paint into the cavity 11. With a finger upon the key 29 the operator may draw the lever 30 back, opening the valve 18. This does not affect the valve 22; but by pressing down upon the forward end of the key 29 the pitman 31 will depress the disk 36, forcing the rod 35 to open the valve 22. This permits air to pass under pressure through passages 25, 13, and 20 to and out through the nozzle 17, forming a suction around the valve-tube 16, that draws paint from the receptacle 11 12 and discharges it as directly by the operator. By screwing the nozzle 17 into or out of the bore 10 the size of the delivery-stream may be gaged. By drawing the key 29 back more or less the flow of paint will be controlled at will. By pressing the key down more or less the flow of air may be also controlled to produce the effect desired. By setting the cam 39 the forward movement of the lever 30 and the valve 18 will be limited, and the closing of the valve 18 will be fixed to deliver a line of no less than a given width, yet the rearward motion of the valve is free, so that it may be opened indefinitely for broader lines and heavy spraying. It is evident that if the rod 35 were replaced by the stem of the valve 22, extended up against the disk 36, and the pitman 31 or its pin 38 acting on top of the disk, substantially the same result would be produced. The cap 44 to receptacle 12 is non-essential, as that receptacle might have a closed bottom where the cap is, and, thus being inverted, its delivery would be through its mouth, screwed upon section 8 of the body. The tube of either the middle section 7 or the paint-receptacle section 8, or each, extending over its end partition, forms a chamber for the packing 43, and, being screw-threaded to join with the other section, the forward section may be removed for cleaning, so that the strong solvents often required to clean off the paint may not soil the mechanical parts of the air-brush.

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

1. In an air-brush, a paint-receptacle section having a paint-delivery, a valve-seat therefor, and an air-passage thereto; a handle-section having a needle-valve projecting into the receptacle-section to engage the aforesaid valve-seat, and means for operating the valve; the said sections being provided each with an end partition, and the tubular body of one of the sections projecting beyond its end partition and removably engaging the other section, and forming a chamber between the end partitions; the aforesaid air-passage communicating with the said chamber and means in the handle for admitting and controlling the supply of air to the said chamber; the stem of the said valve passing through the said end partitions and the chamber between, and packing material around the said stem in the said chamber.

2. In an air-brush, a paint-receptacle section having a screw-threaded bore through its front end; a valve-tube screw-threaded into the rear end of the said bore, and externally reduced along its forward portion, and having a valve-seat within; an air-passage leading into the said bore at the reduced portion of the valve-tube; a nozzle screw-threaded into the bore, and a passage for air within the nozzle and along the reduced portion of the valve-tube.

3. In an air-brush, a paint-receptacle having a nozzle delivery, a valve-seat, and an air-passage leading to the nozzle; a handle connected with the receptacle; a paint-delivery valve extending from the handle to the said valve-seat and a spring therefor; a nipple on the handle to connect with a com-

pressed-air-supply pipe; an air-delivery valve in the nipple, and a passage therefrom communicating with the passage leading to the nozzle; an operating-key pivotally mounted on parallel bars, one of the said bars being a lever communicating with the paint-delivery valve, and the other bar being a pitman communicating with the air-delivery valve.

4. In an air-brush, a handle; a needle-valve mounted longitudinally therein and having a block attached to it; an operating-lever bifurcated to straddle the valve and having a pivot-pin across from leg to leg; a bracket in the handle, hook-shaped to engage the said pin between the legs, and a screw securing the bracket to the handle, the end of the screw entering the bracket-hook opening to prevent misplacement of the said pivot-pin.

5. In an air-brush a tubular handle having a partially-circumferential slot at one side; a valve-operating lever pivoted in the handle for longitudinal motion; a ring fitted to partially rotate within the tube of the handle and shaped at one edge as a cam located across the path of forward movement of the said lever; a spring passing through the said ring, one end of the spring bearing on the inner side of the handle; a shoulder near the other end of the spring bearing on the inner side of the ring, the spring being arched midway and projecting as a handle through the aforesaid slot in the air-brush handle.

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

CHARLES LAURENCE BURDICK.

Witnesses:

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D. CARROLL DIGGES.