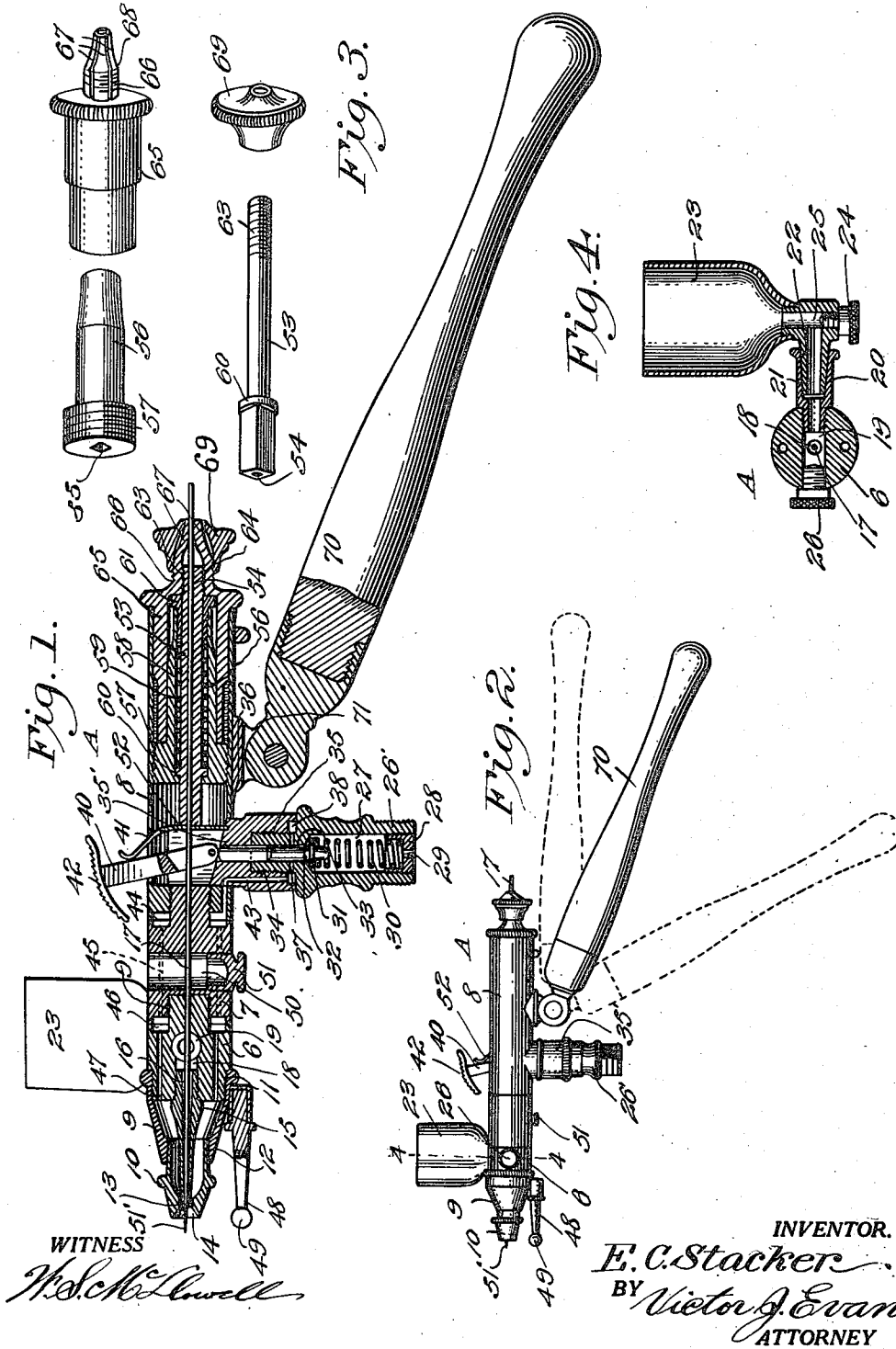


E. C. STACKER.
AIR BRUSH.
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1,268,403.

Patented June 4, 1918.



UNITED STATES PATENT OFFICE.

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AIR-BRUSH.

1,268,403.

Specification of Letters Patent.

Patented June 4, 1918.

Application filed March 28, 1916. Serial No. 87,306.

To all whom it may concern:

Be it known that I, ERNEST C. STACKER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented new and useful Improvements in Air-Brushes, of which the following is a specification.

This invention relates to air brushes or pigment dispensing atomizers of the type employed by artists and others for applying paint and other coloring matter, in a volatile condition, upon a specified surface.

An object of the present invention is to provide an air-brush, of the above character, with improved and simplified mechanism for readily controlling and adjusting the operation and action of the air-brush.

Another object of the invention resides in a peculiarly formed air conducting passage, which is designed to increase the velocity of the air and concentrate it at the discharge nozzle of the brush, thereby insuring a regulated and positive discharge of the coloring matter at said discharge nozzle.

Other objects of the invention reside in the following important features; a novelly formed actuating trigger which is designed to simultaneously open or close the air and pigment admitting valves of the air-brush upon a slight movement of said trigger; a pivoted adjustable supporting handle which permits the air-brush to be handled in a natural and convenient manner without cramping the hand of the operator, as is the case in the construction of air-brushes now in common use which are grasped in a manner similarly to that of an ordinary lead pencil or fountain pen; an air-brush equipped with interchangeable color receiving cups which may be applied to either the right or left sides of the air-brush, to suit the convenience of operators using their right or left hand in using the device; in means for readily cleaning the color receiving cups whereby the ports thereof may be readily cleaned so as to remove hardened particles of the coloring matter, thus preventing the clogging of said ports; in an improved mechanism for clamping and adjusting the controlling needle without removing or in any way interfering with the mechanism or casings of the device, and in the general accessibility of the device whereby the several parts thereof may be

readily cleaned, removed, replaced or adjusted.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction herein described and the scope of the application of which will be indicated in the following claim.

In the accompanying drawing wherein is shown one of the various possible embodiments of the invention.

Figure 1 is an enlarged vertical sectional view taken through the air-brush comprising the present invention,

Fig. 2 is a side elevation thereof disclosing by dotted lines several positions of the supporting handle,

Fig. 3 is a group view showing in perspective the controlling needle adjusting and clamping mechanism and

Fig. 4 is a transverse sectional view on the line 4—4 of Fig. 2.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring to the drawings, the invention preferably consists of a barrel A, consisting of a plurality of threadedly connected sections 6, 7 and 8, which are threadedly connected as at 9 to form a unitary structure, but are capable of being readily separated so that the interior of the barrel A can be conveniently cleaned or otherwise adjusted. The forward end of the section 6 is provided with concentric nozzles 9 and 10, the nozzle 9 being threaded to the outer periphery of the section 6, as at 11, and is connected with the continued nozzle 10 by means of a threaded connection 12. The nozzle 10 is provided with the usual reduced portion 13 and flared ends 14. Positioned interiorly of the nozzles 9 and 10 is a paint controlling nozzle 15 which extends from the reduced portion 14 of the nozzle 10 to a point within the section 6. A tapered bore 16 extends centrally through the nozzle 15 and is adapted to receive a controlling needle 17, the operation of which will be presently set forth. Communicating with the tapered opening 16 in the nozzle 15 is a bore 18 formed in the section 6, the latter being intersected by a transversely extending bore

19, extending through the section 6. The outer ends of the bore 19 are threaded, one end of which being adapted to receive a tubular element 20, provided with a tapered socket 21 for the reception of a similarly formed extension 22 on a color or pigment receiving cup or receptacle 23, the latter being provided at its lower extremity with a threaded cap 24, which is adapted to close the outlet port 25 of the cup 23, however, when sediment or other surplus matter collects within the port 25 the same may be removed by unscrewing the cap 24 and passing a suitable cleaning instrument through the port 25. The opposite end of the bore 19 is provided with a removable nut 26 which may be readily removed from said bore 19 so that the position of the cup or receptacle 23 may be reversed to the opposite side of the barrel A, this construction being particularly desirable for different artists who work with their right or left hands.

In order to admit air into the barrel A, an air hose (not shown) is connected in any suitable manner to a hollow sleeve 26' which is provided with an internal chamber 27, closed at one end by threaded cap 28 having a central bore 29 formed therein to permit air to gain entrance into the chamber 27. A coiled spring 30 is positioned within the chamber 27 and has its lowermost extremity contacting with the threaded cap 28 while the upper extremity of the spring engages with the under face of a plunger valve 31, the latter being provided with an enlarged conical portion 32 which is adapted to close an air port 33 formed in a reduced extension 34, provided on the upper end of the sleeve 26'. The portion 34 is threaded into a socket 35 formed in the lower central extremity of a depending tubular member 35', the latter being secured to the interior of the section 8 and projects out of said section 8 through an opening 36 formed therein. A plurality of horizontally extending, radial openings 37 are formed in the reduced extension 34 of the sleeve 26' and establish communication between the bore 33 thereof and an annular chamber 38 formed in the lowermost portion of the tubular member 35. An actuating trigger 40 or hand lever is pivotally mounted in a slot 41 formed in the upper portion of the tubular member 35. The shank of the trigger protrudes outwardly of the section 8 and is provided with a finger gripping portion 42. By rocking the trigger 34 the lowermost end 35 thereof will be caused to contact with the plunger valve 31 which will force the latter downwardly, against the tension of the spring 30, thereby opening the air port 33 and permitting the air to enter the radial openings 37, thence into the annular chamber 38, for a purpose to be presently set forth.

Formed in the tubular extension 35 is a vertical bore 43 having the lower end thereof opening into the chamber 38, while the upper end of the bore 43 extends laterally and is in communication with an annular chamber 44 formed between the end section 8 and the central section 7. Bores 45 are formed in the central section 7 and establish communication between the chamber 44 and a second chamber 46 formed between the section 7 and the forward section 6. Reduced openings 47 connect the chamber 46 with the interior of the nozzles 9 and 10. It will now be seen that by rocking the trigger 40, the valve 31 will be open to permit the entrance of air into the chamber 38, whence the air will be directed by way of the bore 43 to the chambers 45 and 46 and to the discharge nozzle 10. Briefly stated, the action of the air being expelled from the nozzle 10 creates a suction within the nozzle 15 thereby drawing the color or pigment from the cup 23 to the nozzle 15 and is then discharged from the nozzle 10. A protecting element 48 is secured to the nozzle section 9 and is provided with a ball head 49 to prevent the end of the controlling needle 17 from becoming damaged by being brought into sudden contact with the surface upon which the color is being distributed. A vertical bore 50 is formed in the section 7 and its function is to supply air to the nozzle 15 when suction has been created by air passing out of the nozzle 10, thereby facilitating the flow of the paint or color from the cup 23. In some instances a threaded cap 51 is threaded into the section 7 so as to partially cut off the supply of air to the nozzle 15 by way of the bore 50. Air entering the bore 50 is conveyed to the bore 18 by way of the longitudinal opening, formed in the sections 6 and 7, for the reception of the needle 17. This relatively minute quantity of air greatly facilitates the flow of the pigment from the cups 23 to the tapering bore 16 of the nozzle 15. Said bore 50 does not intersect the bores 45 found in the section 7, but is interposed between the latter.

Normally the tapered end 51' of the controlling needle 17 prevents the escape of the coloring matter from the nozzle 15, due to the fact that the end of the needle completely fills the restricted area of said nozzle. In order to permit the escape of coloring matter through the tapered bore 16 of the nozzle at the time immediately after or practically simultaneously with the admission of air into the barrel A, the tubular member 35' has secured thereto a spring lever 52 which contacts with the actuating trigger 40, so that when the latter is operated the lever 52 will be rocked rearwardly with the trigger.

Surrounding the rear extremity of the needle 17 is a spring pressed sleeve 53 the same being provided with a central opening

54 for the reception of the needle 17. A squared extremity 54 is formed on one end of the sleeve 53 and passes through a similar opening 55 formed in a guiding sleeve 56, the latter being threaded as at 57 into the interior of the section 8. Communicating with the opening 55 formed in the sleeve 56 is an enlarged bore 58 into which is inserted a coiled spring 59 bearing against an enlarged shoulder 60 formed on the sleeve 53 and against an adjustable nut 61 threaded into one end of the enlarged bore 58. By this construction it will be obvious that when the trigger 40 is pressed rearwardly the lever 52 will receive a similar movement, thereby resulting in a rearward movement of the sleeve 53 against the influence of the spring 59 in the guiding sleeve 56. The rearward movement imparted to the sleeve 53 is transmitted to the needle 17 in the following manner. Threads 63 are formed upon the rear extremity of the sleeve 53 and cooperate with similar threads 64 formed internally of a casing 65, the latter being provided with a rearwardly extending extension 66 which is formed with a plurality of gripping fingers 67 having inclined faces 68. A clamping nut 69 is threaded upon the extension 66 and is adapted to engage with the inclined faces of the fingers 67 so that the latter will be forced into firm and positive frictional engagement with the rear extremity of the needle 17, thus when rearward movement is imparted to the sleeve 53 by means of the lever 52, the movement will be directly transmitted to the casing 65 which, due to its engagement with the needle 17 by reason of the clamping nut 69, the needle will be caused to move rearwardly in unison with the operating trigger 40.

One of the most important features of the present invention resides in equipping an air-brush with an adjustable handle 70, which is pivoted to a yoke 71 depending and secured to the section 8. The handle 70 permits the operator of the brush to conveniently grasp the same in a natural and convenient manner, thus permitting the work to be accomplished by the brush to be performed in an accurate manner with a

free movement of the hand and wrist, which is very important in work of this character.

It will thus be seen that there is provided a device in which the objects of this invention are achieved and all the advantageous features above mentioned are, among others, present. The apparatus is efficient in operation, of few parts and simple in construction. The parts are so disposed as to prevent crowding and yet are positively and conveniently controlled from a single accessible point. Several changes of relation may be accomplished by a minimum expenditure of time and labor and when the parts are once set the mechanism is of such character as to insure against slipping and thus render the action of the air-brush thoroughly reliable.

Having described the invention what is claimed as new is,

An air brush of the character described, the combination with a barrel, an air-admitting valve, a source of pigment supply and a color ejecting nozzle, a needle operable to regulate the flow of pigment through said nozzle, a trigger for simultaneously adjusting the valve and needle to open and closed positions, of means for exteriorly effecting the adjustments of said needle with regard to said nozzle, irrespective of the trigger adjustments, said means consisting of a spring-pressed sleeve, normally movable in unison with said trigger, and having a bore formed therein for the reception of said needle, a casing threaded to said sleeve, yieldable fingers formed with said casing and having portions thereof threaded and substantially inclined, a nut located exteriorly of said barrel adapted to engage the inclined and threaded fingers to clamp said needle to the casing, whereby upon the removal of said nut said needle will be capable of being manually adjusted within said barrel and a guiding sleeve operatively engaging the barrel interposed between the spring pressed sleeve and the casing for removably securing the parts in position.

In testimony whereof I affix my signature.
ERNEST C. STACKER.