

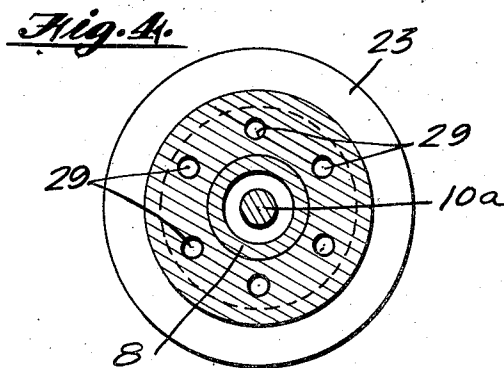
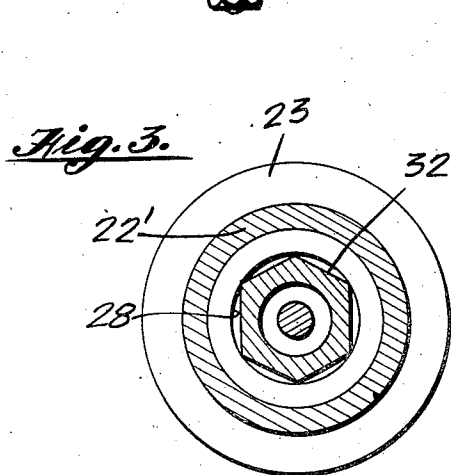
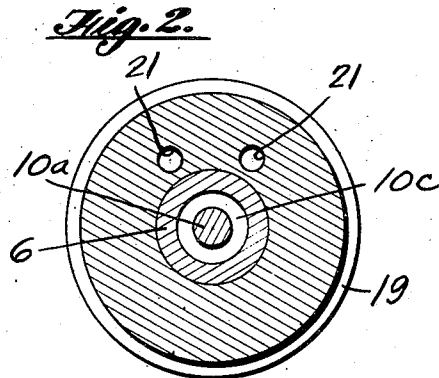
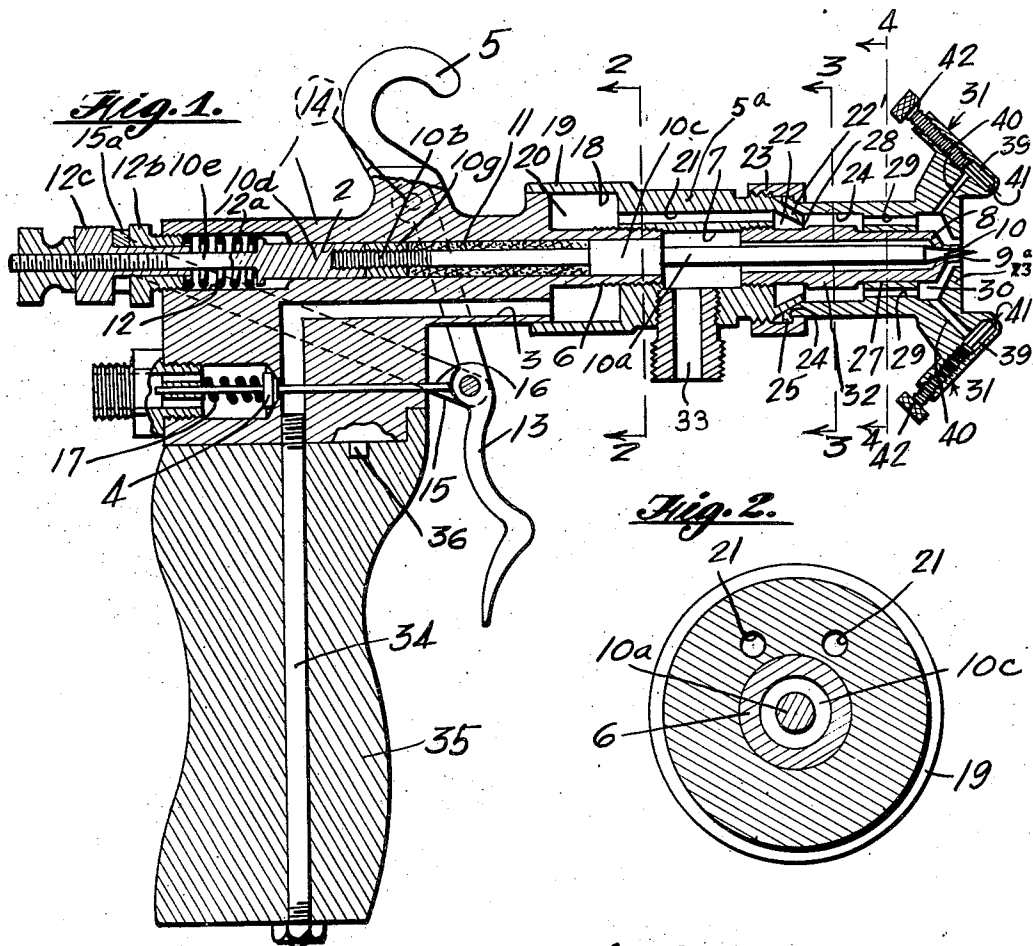
Nov. 13, 1923.

1,474,324

B. E. HOLTON

AIR BRUSH

Filed Oct. 6, 1921



INVENTOR.

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## UNITED STATES PATENT OFFICE.

BIRCHARD E. HOLTON, OF LOS ANGELES, CALIFORNIA.

## AIR BRUSH.

Application filed October 6, 1921. Serial No. 505,733.

*To all whom it may concern:*

Be it known that I, BIRCHARD E. HOLTON, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Air Brushes, of which the following is a specification.

This invention relates to an air brush and has certain novel improvements over my copending application, Serial No. 465,310, filed April 28, 1921.

One of the specific improvements of this brush is to provide a settling chamber in which any foreign matter will be deposited before the air carrying the same passes into the nozzle. In ordinary nozzle construction the apertures are very fine and any foreign matter will easily clog up the holes and cause the device to become inoperative.

Another object is to provide means for easily cleaning the conduit leading into the settling chamber. A still further object is to provide a practical means for journaling the spray cap upon the stem of the nozzle so that after long use no appreciable wear will take place which would ordinarily allow the nozzle to become worn thereby causing the stream of liquid to be thrown in an uneven spray.

Other objects and advantages will be seen and the invention readily understood from the following description of the accompanying drawings in which:

Fig. 1 is a longitudinal central section.

Figs. 2, 3 and 4 are transverse sections on the respective lines of Fig. 1.

My improved air spray, like my copending application, comprises substantially a body portion 1 with a longitudinal bore 2 and an air conduit 3 having a downwardly projecting portion which communicates with any suitable source of air supply (not shown) and regulated as by a valve 4, hook 5 is positioned on the upper side of the body so that the air brush may be conveniently hung up when not in use.

Positioned on the forward end of the body portion is an intermediate member 5<sup>a</sup> into which the liquid is passed and projecting forwardly from this member is an inner nozzle 8, upon which is rotatably mounted a nozzle cap 23<sup>a</sup> in which are air conduits communicating with external openings for causing either a fan or straight spray. The intermediate member 5<sup>a</sup> is suitably supported upon the body portion 1 which has a forwardly projecting extension 6 being in axial

alinement with a bore 2, the said intermediate member having an axial bore 7 which has screw threaded engagement with the extension 6. Projecting forwardly from the opposite end of the bore 7 is an inner nozzle 8 which also has a bore in axial alinement with the bore 2 and which terminates in a reduced opening 9 which a needle valve 10 is adapted to close.

The needle valve has a stem 10<sup>a</sup> extending rearwardly within the bore 2 and terminating in a threaded end 10<sup>b</sup> and an enlarged portion 10<sup>c</sup> is formed on the valve stem intermediate its ends and is slidably mounted within the forward end of the bore 2 so as to form a suitable support for the needle valve. Projecting rearwardly from the end 10<sup>b</sup> and having threaded engagement with the same is an enlarged portion 10<sup>d</sup> which has a stem 10<sup>e</sup> of reduced diameter projecting rearwardly therefrom. The portion 10<sup>e</sup> is slidably mounted within the bore 2 and a lock nut 10<sup>f</sup> may be placed on the valve stem so as to lock the portion 10<sup>d</sup> in any desired position along the threaded portion of the valve stem. The packing 11 which surrounds the valve stem between the enlarged portion 10<sup>c</sup> and the lock nut 10<sup>f</sup> can be tightened by shifting of the portion 10<sup>d</sup> so as to prevent leakage past the valve stem.

The bore 2 terminates in an enlarged bore 12 in which is mounted a spring 12<sup>a</sup> having engagement at its forward end with the enlarged portion 10<sup>d</sup> and at its rear end with an adjusting nut 12<sup>b</sup> which has threaded engagement with the bore 12. The stem 10<sup>e</sup> projects through and is slidably supported in the nut 12<sup>b</sup> and lock nuts 12<sup>c</sup> are positioned on the rear end of the stem and spaced from the nut 12<sup>b</sup> when in normal position so that a thrust collar 15<sup>a</sup> may be positioned in said space.

The means for actuating the needle valve 10 which controls the liquid and the air valve 4, comprises substantially a valve lever 13 pivoted upon the body in any suitable manner and having a pivot point 14 to which a connecting link 15 is fastened, said link adapted to actuate the stem 10, through the collar 15<sup>a</sup> and the air valve stem 16 slidably engages the valve lever 13 so that the valves will be opened simultaneously. A spring 17 may be positioned behind the valve 4 so as to normally keep the valves closed.

The settling chamber is formed within

the intermediate member as by having an annular recess 18 formed in the end adjacent the forward end of the body portion and the wall of this recess forms a peripheral flange 19 adapted to engage the periphery of the body.

The inlet conduit 3 communicates with the lower portion of the chamber 20 formed by the recess and outlet conduits 21 lead to a tapered distributing chamber 22 formed by having a tapered extension 22' projecting forwardly from the end of the intermediate member. The cap 23<sup>a</sup> that is rotatably mounted upon the inner nozzle 8 comprises substantially a straight portion with an annular recess 24 formed therein adjacent the distributing chamber 22, and a radial ring 25 is formed on the straight portion after a lock nut 23 is placed upon the cap. This ring can be soldered or pressed on in any suitable manner.

The end of the nozzle cap 23<sup>a</sup> has a tapered surface adapted to be seated upon the tapering portion 22' and a central portion of the member has rotatable engagement with the inner nozzle 8 by a straight cylindrical ground joint 27, forming a journal. An opening 28 leads from the distributing chamber 22 to the annular recess 24 and conduits 29 lead from this recess to a point near the end of the inner nozzle 8, where there is an auxiliary chamber 30, from which air can be selectively distributed through either of the fan spray nozzles 31, whenever it is desired to use the latter.

The fan spray nozzles positioned at the sides of the central or straight spray opening in nozzle cap 23<sup>a</sup> comprise substantially laterally extending conduits 40 having communication with the conduits 29 through the auxiliary chamber 30 and with conduits 39, which extend across the conduits 40. The forward end of the conduits 39 terminates in outlets 41 which are adapted to be independently opened or closed as by needle valves 42 which have threaded engagement with the conduits 39 so that when the valve stem 42 is removed, a straight passage way with open ends will be formed which will enable the operator to readily clean the same as by a wire without having to force the wire around angles, as is necessary in the usual construction of nozzles. It is thus seen that if it is desired to spray an under surface such as the underside of the eaves of a house, it is only necessary to close the upper needle valve and if it is desired to rotate the spray without rotation of the handle, the lock nut 23 may be slightly loosened which will permit rotation of the cap.

As is seen, the conduits 21 being on the upper side of the intermediate member, means are provided for evenly distributing the air from the distributing chamber 22 through the conduits 29 and such means

comprises substantially an enlarged portion 32 formed upon the inner nozzle 8 just forward of the central opening in the distributing chamber and this enlarged portion is shown in Fig. 3 as a hexagonal surface, the corners of which, are in alinement with the edges of the opening and it has been found by such a construction that the air is evenly distributed.

In the operation, and whether or not either of the fan spray nozzles 31 be used, the liquid to be distributed will enter the conduit 33 and when the valves are open, air will flow through the settling chamber 22, conduits 21, distributing chamber, conduits 29, and to the central distributing opening in the nozzle cap 23<sup>a</sup>, so as to evenly spread the liquid flowing through the opening 9 in the inner nozzle 8, the flow of this liquid to be optionally acted upon by the fan nozzles, and being variable, as described, by means of the valve 10. After a period of use it will be necessary to clean the settling chamber and such means are provided by having a rod 34 passing upwardly through a handle 35 and screw threaded into the end of the downwardly projecting portion of the conduit 3. The body portion has a downwardly projecting portion 36 adapted to engage the upward portion of the handle so as to prevent rotation of the same upon the rod 34 and it will thus be seen that when the rod is removed, the handle can be removed and a wire thus forced up through the conduit so as to successfully clean it and the settling chamber.

Various changes may be made in the details of construction by those skilled in the art, without departing from the spirit of my invention as set forth in the appended claims.

What is claimed is:

1. An air brush comprising a nozzle cap having a central distribution opening, a settling chamber having an inlet conduit leading into the lower portion of said chamber and an outlet conduit leading from the upper portion of said chamber and communicating with said opening in said nozzle.

2. An air brush comprising an intermediate member having a tapered portion and an inner nozzle having a straight portion, a nozzle cap rotatably journaled on said straight portion and seated on said tapered portion, said cap having conduits communicating with an air supply.

3. An air brush comprising a body portion, an intermediate member projecting forwardly from said portion, a conduit in said body portion communicating with a chamber in said intermediate portion, a handle, a rod passing through said handle and detachably fastened in the end of said conduit, so that said conduit will be accessible by the detachment of said rod.

4. An air brush comprising a body member, an intermediate member having a tapering extension with a central opening projecting forwardly from said member, an  
 5 inner nozzle projecting forwardly from said intermediate member through said opening, a passageway formed between said inner nozzle and the walls of said opening, said inner nozzle having a distributing enlargement positioned in front of said passageway.  
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5. An air brush comprising a body portion, a reduced axial extension projecting forwardly from said portion, an intermediate member with an axial bore having screw threaded engagement with said extension, there being an annular recess in one end of said member adjacent said body portion, said recess forming a settling chamber, a  
 15 conduit leading into said chamber, and a conduit leading from said chamber through said member to a nozzle.
6. An air brush comprising a body portion, a reduced axial extension projecting  
 25 forwardly from said portion, an intermediate member with an axial bore having screw threaded engagement with said extension, an annular recess in one end of said member surrounded by a peripheral flange, said  
 30 flange engaging said body portion and forming an annular settling chamber around said extension, an inner nozzle projecting forwardly from the opposite end of said bore, a tapering extension projecting forwardly  
 35 from the corresponding end of said member, said tapering extension forming a distributing chamber with a central opening, a conduit leading from the upper portion of said annular settling chamber to said distributing chamber, said inner nozzle projecting  
 40 forwardly through said central opening, a passageway from said distributing chamber along the outside of said inner nozzle, a distributing enlargement formed on said inner nozzle in front of said passageway, and a  
 45 nozzle cap rotatably journaled outside of said inner nozzle and seated upon said tapering extension.
7. An air brush having a nozzle cap provided with a straight spray opening and fan spray nozzles supported at the sides of said  
 50 straight spray opening, said fan spray nozzle comprising lateral extending conduits communicating with conduits to said straight spray opening, straight secondary conduits extending across said lateral conduits, out-  
 55 lets on the forward end of said secondary conduits, removable needle valves in said secondary conduits for independently closing or opening said outlets, said valves when  
 60 removed from said conduits adapted to leave a straight passageway with free open ends.
8. An air brush having a straight spray opening and fan spray nozzles supported at the sides thereof, said spray nozzle comprising  
 65 angularly disposed straight conduits communicating with conduits for said straight nozzle, outlets connecting with the forward end of said straight conduits; removable needle valves in said straight conduits for independently closing or opening  
 70 said nozzles, said valves when removed from said conduits adapted to leave a straight passageway with free open ends.
9. An air brush having a straight spray  
 75 opening in a nozzle cap, fan spray nozzles supported by said nozzle cap, said nozzles fed from common conduits, and means for independently closing or opening any one of said fan spray nozzles.  
 80
10. An air brush having a straight spray opening in a nozzle cap, fan spray nozzles supported by said nozzle cap, said nozzles fed from common conduits, means for independently closing or opening any one of  
 85 said fan spray nozzles, and means for varying the flow of liquid to be acted upon by said fan nozzles.
11. An air brush comprising a body portion, a straight inner nozzle supported by  
 90 said body, a fan spray, means carried by a nozzle cap journaled on said inner nozzle, and means whereby said cap may be rotated independently of said body portion so as to rotate the spray.  
 95
12. An air brush comprising a body portion, a straight inner nozzle supported by  
 100 said body, a fan spray, means carried by a nozzle cap journaled on said inner nozzle, means whereby said cap may be rotated independently of said body portion so as to rotate the spray with said attachment, and means for positively locking said cap in any position.
13. An air brush comprising a nozzle, and settling means within said air brush for separating foreign matter from the air before the same passes through said nozzle.

In testimony whereof I have signed my name to this specification.

BIRCHARD E. HOLTON.