

Aug. 9, 1927.

1,638,550

J. A. PAASCHE
AIR BRUSH AND THE LIKE

Filed June 4, 1925

2 Sheets-Sheet 1

Fig. 1.

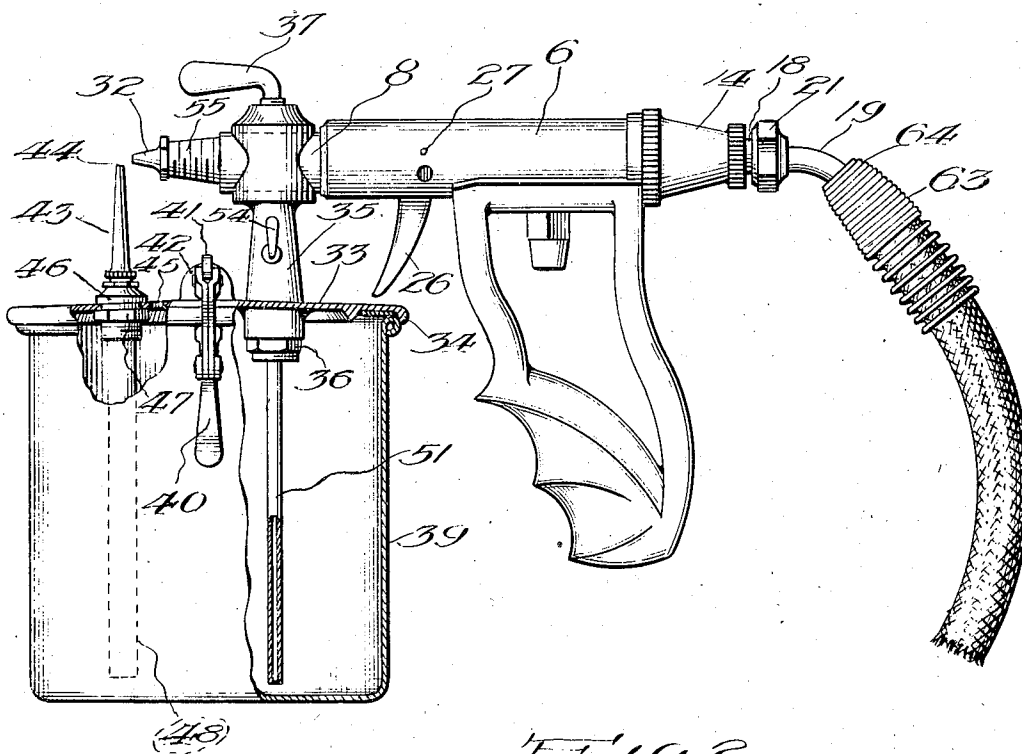
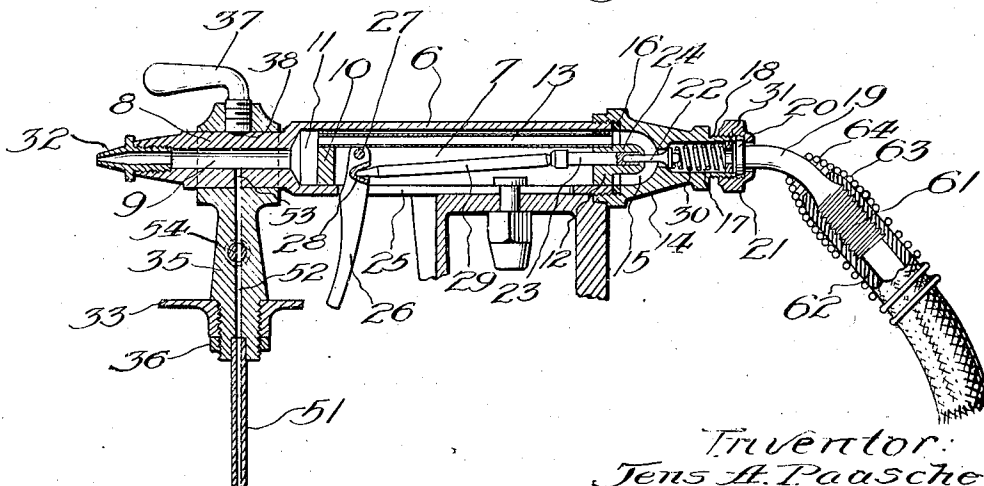


Fig. 2.



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Fig. 3.

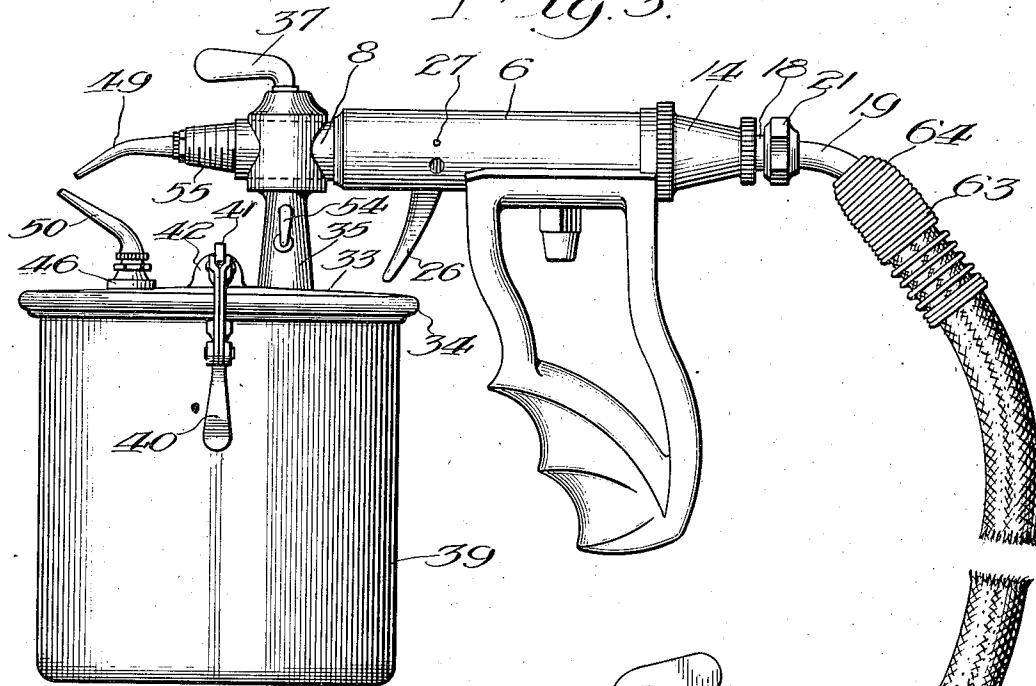


Fig. 4.

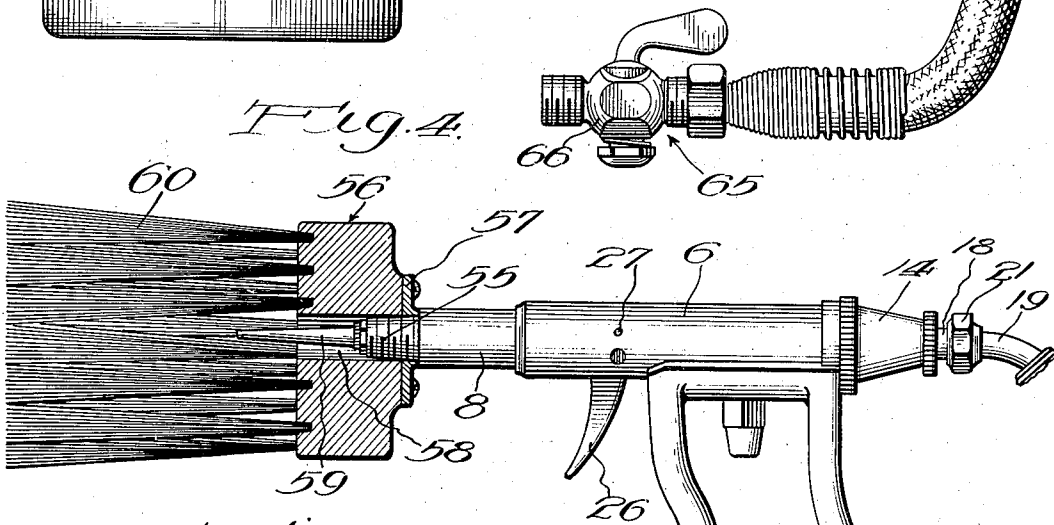
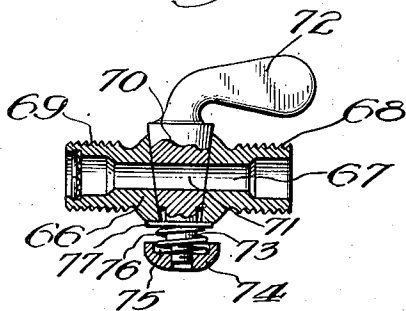


Fig. 5.



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UNITED STATES PATENT OFFICE.

JENS A. PAASCHE, OF WILMETTE, ILLINOIS.

AIR BRUSH AND THE LIKE.

Application filed June 4, 1925. Serial No. 34,803.

This invention has to do with certain improvements in air brushes and the like. One of the features of the invention relates to improvements in the structure of the liquid carrying and feeding mechanism. In this connection, it is an object of the invention to provide a unitary structure in which the liquid may be carried in a cup directly supported by the air brush itself, so that the liquid will be delivered to the spray nozzle in a very direct manner and with the shortest possible path of travel.

In connection with the foregoing a further feature of the invention relates to the general construction of the liquid cup itself, as well as the manner of its attachment to the body of the air brush. In this connection, it is an object of the invention to provide a cup of such construction that its cover portion may be definitely connected either to the air brush or to an element supported thereby, the lower or cup portion being detachable with respect to said cover.

A further feature of the invention relates to the provision of a construction such that if desired the cup element and associated parts may be entirely removed from the body of the air brush, so that the air brush itself may then be used for such operations as dusting and cleaning by the use of air jet.

A further object in connection with the foregoing is to provide an arrangement such that a suitable form of air brush or the like may be attached to the air nozzle, the air jet being delivered into the body of such brush, so that together the parts constitute an admirable device for loosening up the dust and then removing it from the surface by the combined actions of the brush and jet.

Another feature of the invention relates to the provision of an improved attaching means for connecting the air hose to the nipple which in turn is attached to the body of the device. In this connection it is an object of the invention to provide a hose attachment of extremely simple form, one which will insure a very air tight and permanent connection, and one which can be manufactured at extremely small cost and from a minimum number of parts.

A further feature of the invention relates to the provision of an improved construction of plug valve, for controlling the air or other fluid flow. In this connection it is an object to provide an improved valve of sim-

ple form, one which will constantly and permanently take up for wear and similar changes, one which will at all times remain tight and dependable, and one which will not easily become jammed or stuck.

Other objects and uses of the invention will appear from a detailed description of the same, which consists in the features of construction and combinations of parts hereinafter described and claimed.

In the drawings:

Figure 1 shows a side elevation of an air brush embodying the features of the present invention having a liquid cup directly attached thereto, portions of the liquid cup and its cover being broken away so as to illustrate the details of construction;

Fig. 2 shows a longitudinal section through the air brush and the connections of liquid cup thereto;

Fig. 3 shows a view similar to that of Fig. 1, with the exception that spray and air nozzles of different shape have been substituted in place of those illustrated in Fig. 1. The construction shown in Fig. 3 is especially well adapted for spraying downwardly at a sharp angle instead of in a substantially horizontal direction;

Fig. 4 shows a side elevation of the air brush proper, the liquid cup having been removed, and a dusting brush substituted therefor; and

Fig. 5 shows a longitudinal section through an improved control valve.

Referring first to Figs. 1 and 2 in particular, the air brush proper includes a cylindrical member 6 the body portion of which is hollow, as shown at 7, so that it can be entered from the rear. The front portion of this body member is preferably of reduced diameter, but is provided with a bore 9 reaching backwardly to the position of the hollow body portion.

A partition 10 is placed at the front end of the hollow chamber 7 so as to establish a flow air chamber 11. Another partition 12 is also placed at the back end of the chamber 7, and preferably flush with the rear end of the cylindrical member 6, as illustrated in Fig. 2. A tube 13 is sealed through both of the partitions 10 and 12.

A rear cap 14 has an internally threaded flange which may be threaded onto the rear end of the body member 6, as indicated in Fig. 2. This cap 14 is recessed, as shown at 15, so as to establish a back air chamber

immediately behind the rear partition 12, said chamber communicating with the chamber 11 through the tube 13. A gasket 16 may be placed at the rear end of the member 5, 6 so as to seal the cap thereto.

The cap 14 is provided with a backwardly reaching passage 17 which terminates in a threaded neck 18. A curved nipple 19 has its front end flanged, as shown at 20, so that it can be solidly attached to the neck 18 as by a union nut 21. The compressed air is delivered through the nipple 19.

A tappet valve 22 works through a bore between the passage 17 and the chamber 15 in the cap 14, the front end of the valve stem reaching into a socket in the rear end of a plunger 23. This plunger works freely through a rearwardly reaching neck 24 on the partition 12, said neck 24 reaching into the chamber 15. The plunger 23 effects a substantially air tight connection with the neck 24, so that leakage of air at this point is substantially eliminated.

The lower portion of the body member 25 6 is longitudinally slotted, as shown at 25, and a trigger 26 has its upper end pivoted within the chamber 7 on a cross pin 27. Said trigger reaches through the slot 25, just referred to.

The trigger is preferably formed of sheet metal, and during the forming operation there is established a V-shaped backwardly facing socket 28 close to the position of the pivot pin 27. A link 29 placed within the chamber 7 has one end set into said socket 28 and its rear end within a socket on the front of the plunger 23. A spring 30 within the passage 18 has its front end working against the tappet valve 22 and its rear end against a ring 31 which is seated into the rear end of the neck 18. This spring, of course, tends to keep the valve seated at all times. A removable discharge nipple 32 is threaded into the front end of the passage 9, already referred to. By making this nipple removable, it is possible to attach the device to a wide diversity of different uses, since nipples of different shapes and size may be readily substituted from time to time.

When the device is to be used for spraying liquids such as water, gasoline, benzene, and the like, as, for example, in the cleaning of an automobile or similar surface, a liquid container is to be placed at a position where the liquid will be syphoned therefrom by the action of the air jet delivered through the nipple 32. For this purpose I have provided a liquid cup construction which I will now describe in detail.

This cup includes a cover 33 having its edge portion preferably flanged downwardly, as shown at 34. A stand 35 is threaded through the cover and locked thereto by a nut 36 on its bottom end, as indicated in Fig. 2 particularly. The upper end of this

stand is provided with a through bore to receive the front end portion 8 of the body of the air brush proper; and the parts when thus assembled may be readily locked together by a wing nut or the like 37 threaded down through the upper end of the stand 35 and into engagement with a notch 38 on the top side of the body of the air brush.

There is provided a hollow cup 39 the upper end of which seats against the cover 33 just inside of the flange 34, and said hollow cup 39 may be secured to the cover by one or more toggle fingers 40 together with a cross bar 41 pivoted to the center of the cover at the point 42, according to the construction disclosed in my copending application for Letters Patent of the United States Serial No. 732,564, which was filed August 16, 1924. This construction is such that the bottom cup 39 may be very easily removed from the cover 33 for the purpose of cleaning it, and is also such that when the parts are locked together, they are joined in a perfectly air tight manner, and in a way which effectually prevents leakage or 90 spilling of the liquid.

Reaching up from the cover 33 at a point just in advance of the air nozzle 32 is a liquid syphon nozzle 43. The nozzle illustrated in Fig. 1 stands perfectly upright and has its upper discharge end and orifice 44 at a point close to but slightly below the axis of the air nozzle 32. Consequently, the liquid will be syphoned up through said nozzle. A vent opening 45 is established in the cover so as to allow air to enter as needed to replace the liquid so syphoned.

As a matter of construction, I prefer to attach the liquid nozzle to the cover in the following manner: A fixture 46 has its upper end shouldered and seated against the top surface of the cover 33, and said fixture reaches through the cover and into the body of the liquid cup itself, being held firmly to the cover by a nut 47 threaded on said fixture and against the bottom surface of the cover. A tube 48 reaches down from said fixture to a position low enough to syphon substantially all of the contents from the cup 39 so as to drain the same.

It will be noted that the air and liquid nipples 32 and 43, respectively, may be very easily changed from time to time either for the purpose of substituting other nipples of different shape and size, or for renewal. For example, the nipples illustrated in Fig. 1 are adapted to establish a direct forward discharge with respect to the body of the device, and are, therefore, particularly well suited for use in work where it is desired to produce a practically horizontal spray. On the contrary in Fig. 3, I have illustrated another pair of nozzles 49 and 50 for the air and liquid respectively, the air nozzle being turned down and the liq-

uid nozzle forward at such angles that the nozzle is adapted to discharge its spray downwards at an angle of substantially 45° with respect to the general axis of the body of the device. This arrangement, therefore, is especially suited for operations where it is desired to direct the spray downwards at a greater or less angle.

In connection with the foregoing it is noted that in manipulating the device it is not desirable to tilt the same at too steep an angle downwardly, since otherwise the tendency will be for the liquid to run out of its nozzle instead of being syphoned out as is desired. By the use, however, of nipples of the proper shape the desired downward spray is secured without the aforementioned difficulty being encountered.

In some cases it may be desirable to agitate the liquid within the cup 39. For this purpose, I have provided an agitator tube 51 reaching down from the lower end of the stand 35 to a position close to the floor of the cup 39. This tube 51 communicates with a vertical bore 52 in the stand 35, said bore reaching to the top of the stand and being adapted to align with a downwardly facing opening 53 in the neck of the body member 6. By reason of the provision of the recess 38 in said neck 8 for receiving the wing nut 37, assurance is had that when the wing nut is tightened up, the neck 8 will occupy such a position as to insure registry of the opening 53 with the passage 52 aforesaid.

A valve 54 may be placed in the stand 35 for controlling the delivery of air for agitation. It will be noted that the liquid cup together with its cover may be readily removed from the neck 8 of the air brush proper by simply loosening up the wing nut 37. This fact makes it possible to very readily use the air brush proper for other purposes than liquid spray. For example, it can be used for dusting or similar operations.

As shown particularly in Figs. 1, 3 and 4, the front portion of the body member 6 may be threaded, as shown at 55, to receive a dusting brush 56, said brush being preferably provided with a back plate 57 which is threaded to take the threads 55. When using the device in this manner, it is preferred that the brush 56 be provided with a through opening 58, and that an air nozzle 59 be placed on the device reaching through the opening 58 so as to deliver air into the body of the brush bristles 60.

The air may be delivered to the nipple 19 at the rear end of the device in any convenient manner. However, the construction which I will now describe is found to possess many features of advantage and desirability. In this construction the nipple 19 is turned down at an angle of substantially

45° and is externally threaded, as shown at 61, so that the end portion of the hose 62 may be threaded thereon. A coiled wire fitting 63 may be used for clamping the hose more tightly to the nipple and for protecting the same. This wire fitting preferably comprises a helix of wire having its convolutions at one end packed closely together and of substantially uniform diameter for a certain distance along the length of the fitting, and then of continually reducing diameter, as shown at 64, so that the end portion of the hose proper is firmly clamped tight against the nipple at a point somewhat beyond the position of the threads 61.

When using this wire fitting the same is slipped over the end portion of the hose 62 until the convolutions of reduced size are forced snugly against the end portion of the hose. Then by turning up the fitting with a threading action it will be compelled to clamp the hose firmly against the threads of the nipple.

A suitable valve 65 is preferably provided for controlling the air delivered through the hose, and for this purpose the valve, shown in detail in Fig. 5 is preferred. It includes a body member 66 having a through bore 67 together with end connections 68 and 69 which are externally threaded.

A tapered plug 70 is seated through a suitable transverse opening in the body of the valve, said plug having a passage 71 in line with the body portion 67. The plug 70 is preferably provided with a relatively flat sidewise reaching wing 72 by which it can be easily turned.

The lower portion of the plug is of reduced size, as shown at 73, and its external end is threaded to receive an end cap 74. This cap is recessed, as shown at 75, to receive a spring 76, the other end of which sets against a washer 77 which seats against the bottom face of the body member 66.

It will be understood that the nipple 19 is swivelly connected to the rear cap 14 by means of the union nut 21, so that the hose connection can be directed in various directions by merely loosening up the nut 21 a slight amount and again tightening it after the nipple 19 has been turned.

It will also be noted that by the use of the attachment herein disclosed the hose can be very readily connected to the nipple without the use of any tools whatsoever. This is a great advantage over previous hose connections with which I am aware. In connection with the above, the tapered spring sleeve serves to clinch the hose very tightly to the stem of the nipple, and the outer portion of the spring coil serves to support the hose for some distance beyond the position of the nipple so as to eliminate breaking and tearing of the hose at the end of the nipple.

While I have herein shown and described

only certain embodiments of the features of my present invention, still I do not limit myself to the same, except as I may do so in the claims.

6 I claim:

1. In an air brush, the combination of a cylindrical body member having a longitudinal bore in its rear portion communicating with a forwardly reaching passage at its front end, a partition across the front portion of said bore establishing a front chamber communicating with said passage, a partition across the rear end of the bore, an air tube reaching through the bore and through the partition, a cap member secured to the rear end of the cylindrical member and establishing a rear chamber in conjunction with the rear partition, a valve chamber in the rear portion of said cap member, a port in the cap member between the valve chamber and the rear chamber aforesaid, a spring seated tappet valve working in said port, a trigger pivotally mounted in the front portion of the bore of the cylindrical member, a rearwardly facing recess in said trigger, a link reaching between said recess and the valve aforesaid, and a suitable connection for the supply of compressed air to the cap member, substantially as described.

2. In an air brush, the combination of a cylindrical body member having a longitudinal bore in its rear portion communicating with a forwardly reaching passage at its front end, said front end being cylindrical and of substantially uniform size, an air nozzle at the front end of said passage, means for establishing a rear chamber at the rear end of the body member, an air tube connecting said rear chamber with the front chamber aforesaid, means for supplying

compressed air to the rear chamber under control of the operator, a receptacle for liquid comprising a cup together with a removable cap therefor, a stand secured to said cap and having a through opening for the reception of the front portion of the body member, there being a recess in said front portion, a screw threaded member in the stand adapted to engage said recess effectively to lock the parts together, a liquid nozzle reaching upwardly from the cap member to a point directly in advance of the nozzle aforesaid, and a tube secured to the cap member and reaching between said liquid nozzle and the lower portion of the cup, substantially as described.

3. In an air brush, the combination of a cylindrical body member having a longitudinal bore in its rear portion communicating with a forwardly reaching passage at its front end, a partition across the front portion of said bore establishing a front chamber communicating with said passage, a partition across the rear end of the bore, an air tube reaching through the bore and through the partition, a cap member secured to the rear end of the cylindrical member and establishing a rear chamber in conjunction with the rear partition, a valve chamber in the rear portion of said cap member, a port in the cap member between the valve chamber and the rear chamber aforesaid, a spring seated tappet valve working in said port, a trigger pivotally mounted in the front portion of the bore of the cylindrical member, a link reaching between said trigger and the valve aforesaid, and a suitable connection for the supply of compressed air to the cap member, substantially as described.

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