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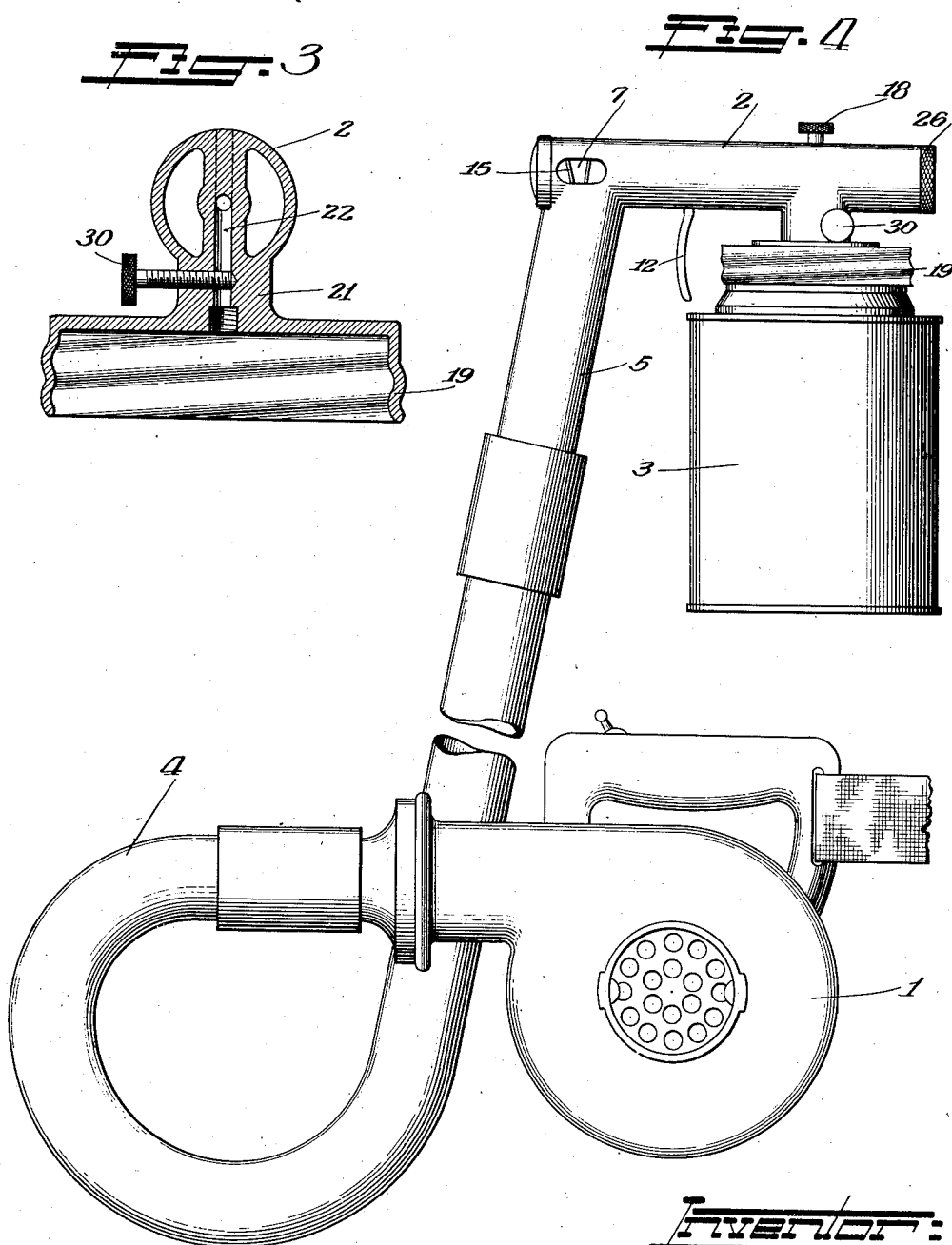
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SPRAYER

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

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SPRAYER

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This invention relates to a sprayer in which liquid such as paint is projected onto an object being painted by an air current and in which the paint is in the form of a spray suspended in the air current.

An object of the invention is to provide a paint sprayer in which the relation between the air pressure and the paint may be varied.

Another object is to provide a paint sprayer in which the air pressure entering the paint container and the pressure of the paint issuing therefrom may be differentiated so as to more finely atomize the paint whereby a more even coating of paint can be applied to an object.

Another object of the invention is to control the spread of the paint stream issuing from the sprayer.

A further object is to relieve the blower motor from load whenever the painting is stopped for a short interval.

Another object is to provide a paint sprayer in which the quantity of paint sprayed may be regulated.

A further object is to provide a paint sprayer in which the air pressure supplied to the paint stream may be regulated.

A further object is to provide a paint sprayer which is economical to manufacture, highly efficient in use and easy to operate.

The above, other and further objects of the invention will be apparent from the following description, accompanying drawings and appended claims.

According to the invention the sprayer comprises a nozzle which may be connected to a blower, which nozzle has a vent to the atmosphere controlled by a valve whereby the air from the blower will be discharged into the atmosphere whenever painting is suspended and until the motor is stopped.

The invention further contemplates a valve controlled restricted passage in the nozzle between the air admission opening to the container and the paint outlet therefrom, so that the pressure in the paint outlet from the container may be kept below the pressure in the inlet for ready operation of the sprayer.

A further feature of the invention resides in the provision of a tip which may be moved

with respect to the issuing stream of paint and air to control the spread of the same.

An embodiment of the invention is illustrated in the accompanying drawings and the views thereof are as follows:

Figure 1 is a vertical sectional central view with fragmental portions of the paint container embodying my invention.

Figure 2 is a central vertical section through the adjustable nozzle tip.

Figure 3 is a transverse vertical section taken on line III—III of Figure 1.

Figure 4 is a side elevation of a complete sprayer and blower.

The drawings will now be explained.

The sprayer as a whole includes an electric blower 1, a nozzle 2, a paint container 3 removably associated with the nozzle and a conduit 4 connecting the blower 1 with the nozzle.

The nozzle 2 comprises a tube-like member having an angularly arranged tubular connection 5 over which the hose or conduit 4 passes for delivering the air under pressure to the nozzle. The tube 5 is preferably in angular position with respect to the nozzle proper. An air entrance 6 to the nozzle 2 is formed at the junction between the extension 5 and the nozzle.

Air vents 7 are formed in the sides of the nozzle immediately above the ends of the extension 5 so that the air blown through the extension 5 by the motor 1 will pass to the atmosphere through these vents unless prevented.

A cylindrical slide valve 8 is arranged within the nozzle. Said valve has a closed end 9 and an open end 10 with an opening 11 near the closed end 9. A trigger 12 is secured in said slide valve 8 by being threaded therein at 13. Said trigger extends through a slot 14 in the lower side of the nozzle 2 which slot limits the axial movement of the valve.

A spring 15 is interposed between the rear end of the nozzle and the closed end 9 of the valve to maintain the same in position to close the air passageway through the nozzle and thus expose the air vent 7 to the air pressure in the extension 5.

The nozzle 2 is provided with a partition 16 having an axial passageway 17 there-through with a valve 18 extending into said passageway to vary the opening through the same for regulating the flow of air from the air supply to the discharge pipe 23.

The paint container 3 is removably associated with the nozzle 2 by having its upper end formed with screw threads for engaging a threaded cap or neck 19 formed integrally with the nozzle 2. The neck 19 is arranged below the partition 16 which partition is of substantial width.

A passage 20 is formed in a portion 21 of the neck for providing communication between the interior of the nozzle 2 and the container 3 through which the air under pressure passes for forcing the paint out of the container 3.

A paint outlet 22 is formed in the neck 19 parallel to the inlet 20 and extends to and communicates with the passageway 17 through the partition 16.

A pipe 23 is threaded into the partition 16 in axial alignment with the passageway 17 so that the paint forced through the outlet 22 passes out through the pipe 23.

A pipe 24 is threaded into the neck 21 in axial alignment with the outlet 22 which pipe extends downwardly into the container and stops short of the bottom thereof.

Outwardly of the partition 16 is an annular recess 25.

A tip 26 is threaded at 27 into the outer end of the nozzle 2 so as to be adjustable axially with respect to the pipe 23. The tip 22 has a converging well opening 28 which converges to a point 29 which is a slight distance inwardly from the front end of the tip 26. From the point 29 the opening is flared outwardly rather sharply.

A valve 30 is interposed in the outlet opening 22 between the paint container 3 and the storage pipe 23 for regulating the amount of paint withdrawn from the container.

The operation of the device is as follows: The motor 1 being connected to the nozzle 2 by the hose 4, as shown in Figure 4, is put in operation whereupon a blast of air passes upwardly. The paint container 2 has been filled with paint of proper thinness. The operator grasps the extension 5 holding the nozzle by such extension. The slide valve 8 being in the full line position of Figure 1 the air from the motor 1 will pass to the atmosphere through the vent 7. When the operator is ready to apply the paint he pulls the trigger 12 back into dotted line position of Figure 1 whereupon said valve closes the vents 7 and through the opening 11 in said valve the air pressure passes into the nozzle 2. The air then enters the container through the inlet orifice or port 20, whence the paint in said container is moved up through the pipe 24, the outlet 22 and into the discharge

pipe 23. Some of the air pressure within the nozzle 2 passes through the passageway 17 and engages the paint issuing from the container. The valve 18 is manipulated so that the pressures in the inlet 20 and the outlet 22 are differentiated to such an extent that proper force is applied to the paint stream issuing from the discharge pipe 23 against the object to be painted. The tip 26 is moved by turning the same into such position as to control the spread of the paint stream. The tip 26 in the position shown in Figure 1 will permit the greatest spread of the paint stream and when moved outwardly as shown in Figure 2 will restrict such spread. Should the tip 26 be moved too far, enough air would be admitted through the tip to neutralize the pressure of the paint stream and thus the sprayer would stop. The manipulation of the tip 26 must, of course, be made in accordance with the air pressure applied to the issuing paint stream.

The valve 18 in the passageway 17 as before described regulates the air pressures in the inlet 20 and outlet 22 so that the pressure in the latter will be less than that in the former. Otherwise, if the pressures in these two passages were the same no paint would issue from the container. Proper manipulation of the valve 18 will be had to secure the proper pressure differential in these two passages.

Whenever it is desired to suspend painting for an interval, the operator releases the trigger 12 whereby the spring 15 moves the valve 9 into full line position of Figure 1 allowing the air to escape to the atmosphere through the vents 7.

I have found that the sprayer of my invention is very efficient in use and that proper manipulation of the valves 18 and 30 and the tip 26 secures a regulation of the issuing paint stream which is impossible with other sprayers in use at the present time.

Furthermore, manipulation of the valve 18 seems to atomize the paint to a greater degree than is possible with the present sprayers.

I have found that the use of the valve 8 permits momentary stopping of the painting operation without having to stop the motor, thus preventing clogging of the paint passages and also prevents loss of paint which occurs when the motor is stopped and started at frequent intervals.

While I have described more or less precisely the details of construction of my invention, yet I do not wish to be understood as limiting myself thereto as I am aware that changes may be made in the arrangement and proportion of parts and that equivalents may be substituted, all without departing from the spirit and scope of my invention.

I claim as my invention:

1. A paint sprayer comprising a nozzle, a

paint container removably associated therewith, a blower, said nozzle having a partition therein with a restricted passageway there-through, a valve in said passageway, said nozzle having a passage communicating with said container rearwardly of said valve and another passage communicating with said passageway forwardly of said valve, a valve for regulating flow through said last mentioned passage, and a discharge tube connected to said restricted passageway through which paint is discharged from said second named passage, said valve in said restricted passageway regulating the pressure of air passing through said passageway into the paint stream issuing from said second named passage.

2. A sprayer comprising a nozzle having an air entrance and a restricted discharge orifice, a partition in said nozzle having a restricted passageway in alignment with said discharge orifice, a valve in said passageway, a paint container removably associated with said nozzle, a cap for said container integral with said nozzle adjacent said partition, said cap having an air inlet passage through the same rearwardly of said valve to the container and a liquid outlet passage communicating with said restricted passageway beyond said valve, a pipe connected to said second passage extending into the container, and a valve in said second passage.

3. A paint sprayer comprising a tubular nozzle having a partition therein with a restricted passageway therethrough, a paint container removably associated with said nozzle, an air inlet between said nozzle and said container, an outlet pipe extending into said container and communicating with the passageway in said partition, a valve between said air inlet and said outlet pipe for varying the opening through said passageway, said nozzle having a port communicating with the atmosphere, and a tubular slide valve within said nozzle for closing said port.

4. A paint sprayer including a blower and a nozzle, said nozzle having an air entrance from said blower and having a vent adjacent said entrance, a slide valve in said nozzle cooperating with said air entrance and said vent, a partition in said nozzle having a valve controlled passageway through the same, a paint container communicating with said nozzle between said partition and the air entrance thereto, said container having communication with said passageway in said partition beyond the valve therein whereby the air pressures in said communications may be differentiated, and a discharge pipe in axial alignment with said passageway.

In testimony whereof I have hereunto subscribed my name at Chicago, Cook County, Illinois.

ADAM A. BREUER.