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L. R. S. AGASSIZ

PAINT SPRAYING MACHINE

Filed Dec. 14, 1926

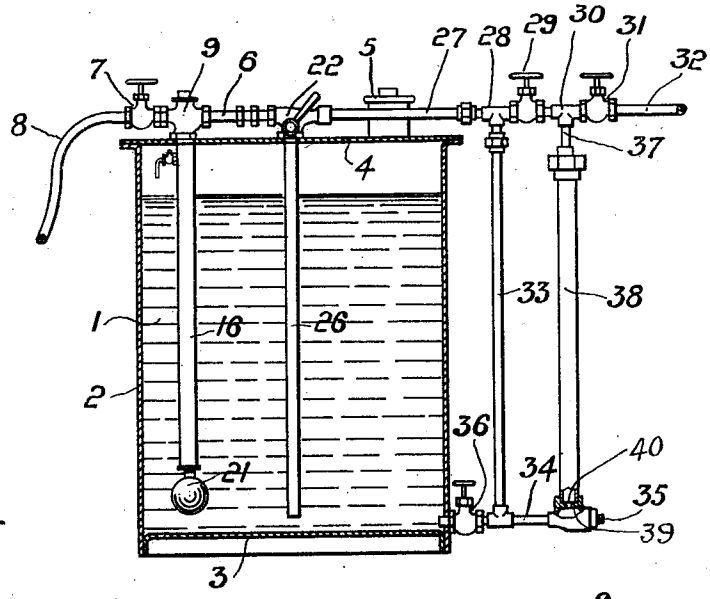



Fig. 1

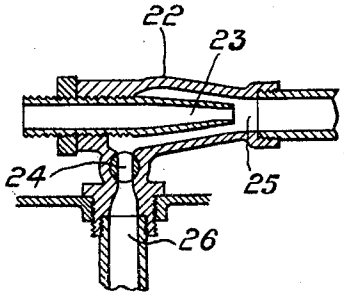



Fig. 2

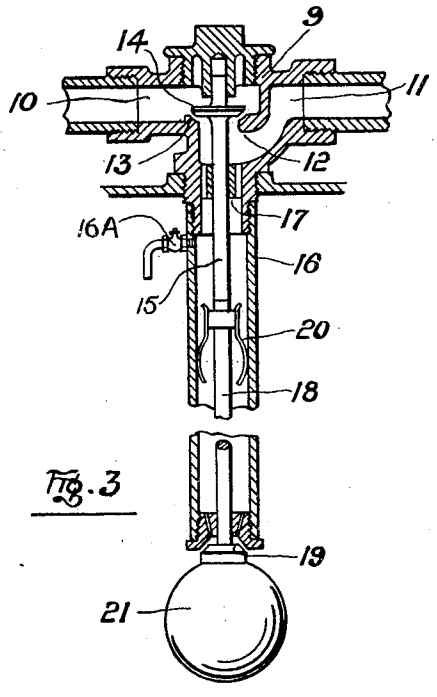



Fig. 3

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# UNITED STATES PATENT OFFICE.

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## PAINT-SPRAYING MACHINE.

Application filed December 14, 1926. Serial No. 154,830.

My invention relates to improvements in paint spraying machines, which has for its particular objects the provision of means whereby a definite indication is given to the operator when the supply of paint is reduced to a predetermined low level in the container by shutting off the supply of paint and air simultaneously; to provide a secondary agitation to the paint and to reduce the paint prior to spraying to a state of fine division.

The invention consists essentially of a container for paint, means for admitting air to the container and for removing paint therefrom, means for reducing the paint to spray form and for submitting it to a further agitation, and means for closing off the flow of air to the container and the delivery hose as a predetermined low paint level is attained, as will be more fully described in the following specification, in which:—

Fig. 1 is a general view of the invention, part in section.

Fig. 2 is a sectional view of the paint ejector.

Fig. 3 is a sectional view of the float controlled air valve.

In the drawings like characters of reference indicate corresponding parts in each figure.

The numeral 1 indicates generally a container having side walls 2, a bottom wall 3, a top closure 4 and a capped filler opening 5. The numeral 6 indicates a transverse header pipe having an air supply or a check valve 7 to which a hose 8 is connected from a suitable source of compressed air. An air valve 9 is fitted in the header 6 which is provided with an inlet passage 10, an outlet 11, a container branch outlet 12 and a valve seat 13 dividing the passage 10 from the outlets 11 and 12, which seat is provided with a poppet valve 14 having a stem 15. Extending from the branch outlet 12 is a pipe 16 having a check valve 16A adjacent its upper end which is adapted to open to release air pressure from the top of the container into the pipe 16, and a guide 17 at its lower end. Vertically movable in the pipe 16 is a rod 18, the lower end of which forms a valve 19 to prevent the passage of paint upwards into the pipe. Adjacent the upper end of the rod is a plurality of springs 20 which are adapted to bear against the inner side walls of the pipe 16 and are of such strength as to resist the free vertical movement of the rod. At the lower extremity of the rod 18 is a float 21 having such buoyancy when submerged as to overcome the resistance of the springs 20 and to move the rod and the poppet valve 14, which the rod engages, in an upward direction to open the valve, and is of such weight as to move the rod downwards against the resistance of the springs when but partially supported by liquid, and by so doing allow the poppet valve 14 to close upon its seat 13.

The numeral 22 indicates an ejector fitted to the header 6 which is provided with a nozzle 23, see Figure 2, an inlet valve 24 and an outlet passage 25. A paint suction pipe 26 is connected to the inlet passage 24 and leads from a point adjacent the bottom wall 3 of the container. A spray pipe 27 extends beyond the peripheral edge of the container 1, where it is fitted with a T 28, a valve 29, a T 30, a further valve 31 and a delivery hose 32. Extending from the T 28 is a pipe 33 which communicates with a bottom header generally indicated by the numeral 34, which is provided at its outer end with a clean out plug 35 and at its inner end with a valve 36 for the purpose of draining paint from the container when desired. Extending downwards from the T 30 is a pipe 37 which is enlarged as at 38 to a diameter in excess of the pipes 27 and 33 to form a re-agitating chamber which connects at its lower end with the bottom header 34 adjacent the plug 35. At the intersection of the re-agitating chamber 38 a disc 39 having one or more orifices 40 is fitted for the purpose of increasing the velocity of spray as it leaves the bottom header 34 and enters the re-agitating chamber.

Having thus described the several parts of my invention I will now briefly explain its function.

The air supply to the container 1 and to the ejector nozzle 23 is admitted through the valve 7, and during such time as a working supply of paint is in the container, the buoyancy of the float 21 immersed in the paint holds the valve 14 in elevated position, so that air may flow therethrough from the air supply to the nozzle 23. So long as the machine is being operated and paint withdrawn from the container through the velocity of air passing through the nozzle 23 and acting as an ejector, an amount of air equivalent to the paint displaced will descend the

tube and pass through the valve 19 at the lower extremity of the pipe 16. Should the air supply to the valve 7 be shut off, the air pressure throughout the system will become equalized and stationary. As the paint level in the container 1 falls to a point of floatation of the float 21, or that position where it would normally commence to fall, the resistance of the springs 20 upon the walls of the pipe 16 becomes effective to maintain the float at rest and the valve 14 open. As the paint continues to recede from the float the downward strain on the rod 18 increases until the spring resistance against the tube side walls is overcome, when the float 21 will fall into the paint to its point of floatation, which will be sufficient to close the valve 14 against its seat 13 and to stop the flow of compressed air into the pipe 6 or the container 1.

The paint on being projected into the header 27 is broken up by the jet of air from the nozzle 23 and enters the tube 33 and the bottom header as a spray, it is thence projected upwards in the tube 38, where it builds up a column of paint, or paint may if desired be introduced by the temporary opening of the valve 36. The subsequent spray of paint passing through the restricted orifice 40 enables the coarser particles thereof to be assimilated in the column of paint in the chamber, while the bubbles of air will become impregnated with paint, thus producing a spray of aerated paint of constant density to pass upwards therethrough for discharge through the hose 32 and the jet. Should the delivery hose 32 become disconnected or other similar accident occur when operating, the air in the container above the paint would expand from its working pressure to atmospheric and in so doing would open the check valve $16^A$ simultaneously with the rising of the float 21 and the consequent closing of the valve 19, this functioning of the check valve $16^A$ would release the imprisoned air from the container through the pipe 16 and the other connections to the atmosphere, and would prevent the ejection of paint from the machine. On the other hand, should the air supply to the machine be shut off at the valve 7 and the jet of the delivery hose 32 be opened while pressure exists in the container, a similar result will be obtained, the air in the container expanding and passing outwards therefrom through the check valve $16^A$, and will quickly equalize the air pressure at the top of the container and in the various pipes, so that no paint will be discharged from the ejector 22.

The valve 29 may be opened when desired to effect a direct blow through the top header.

What I claim as my invention is:

1. In a paint spraying machine having a paint container, a paint ejector, an aerated paint outlet, and an air inlet to the container and the paint ejector, a valve adapted to close against the air inlet, and means as the paint reaches a predetermined low level to close the valve.

2. In a paint spraying machine having a paint container, a paint ejector, an aerated paint outlet and an air inlet to the container and the paint ejector, a valve adapted to close against the inlet, and means for effecting said closure instantaneously when the paint reaches a predetermined low level.

3. In a paint spraying machine having a paint container, a paint ejector, an aerated paint outlet and an air inlet to the container and the paint ejector, a valve adapted to close against the inlet, and a float for operating the valve.

4. In a paint spraying machine having a paint container, a paint ejector, an aerated paint outlet, a valved air inlet to the machine having a normally open valve having a passage extending below the normal paint level of the container and through which air is admitted to the container, and means as the aerated paint outlet is closed for sealing the lower end of the passage to prevent the introduction of paint thereto.

5. In a paint spraying machine having a paint container, a paint ejector, an aerated paint outlet, an inlet to the ejector and an inlet pipe for delivering air to the container below the normal paint level, and a check valve communicating between the upper portion of the container and the inlet pipe.

6. In a paint spraying machine the combination of a paint container, a vertically extending tube having its lower end communicating with said container whereby a vertical column of paint is maintained in said tube, an air operated ejector through which paint is ejected from said container and means for causing the paint discharged by said ejector to pass upwardly through the vertical column of paint in said tube prior to being delivered to the point of use.

Dated at Vancouver, B. C., Canada this 7th day of December, 1926.

LEWIS RUDOLPH SHAFTO AGASSIZ.