

which cooperates with a countersurface 50 provided on a casing 49. Casing 49 is rigidly connected, by a thread 52, with casing 32 which guides valve piston 38. Besides, a pressure spring 51 is inserted between casing 49 and valve piston 38, so that the latter is held, together with valve element 37, in the upper terminal position by the force of spring 51.

In the position of operation shown, needle 37 of valve element 36 closes aperture 35 of diaphragm 34, so that no pressure medium can flow from line 11 via annular chamber 43 sealed by packings 42, via openings 44 provided in casing 32, and via pressure chamber 40 sealed by packings 41, into return line 13. When, however, the force exerted by the paint upon piston surface 39 exceeds the force of spring 51, piston 38 is moved downward and at least a portion of diaphragm aperture 35 is freed by needle 37. Thus paint can be discharged and the excess pressure is reduced. As soon as the balance between the compressive force produced by the paint and the force of spring 51 is reestablished, or the force of spring 51 is greater than the said compressive force, aperture 35 is closed. Air vent valve 12 acts therefore as relief valve jet.

When, however, switch 47 is turned, cam 48 thereof runs up on the countersurface 50 of casing 49, and needle 37 frees diaphragm aperture 35 according to the position indicated in dot-and-dash lines, since valve element 36, together with piston 38 and piston rod 45, is pulled downward. From the level of cam 48 the adjusting path of valve element 36 and, dependent thereon, the freed passage cross section of diaphragm aperture 35 can be determined so that a stepless cross section modification is possible under given circumstances. In this operating condition, spring 51 acts in the manner already described so that, with diaphragm aperture 35 only partially closed, the air vent valve 12 is also effective as relief valve jet.

When spray painting apparatus of FIG. 1 is put into operation and a paint mixture is in feed line 7, so that the enclosed air would possibly be compressed by pump 2 and therefore a faultless operation of apparatus 1 would not be assured, air vent valve 12 must be opened by turning switch 47. Thus the paint and air mixture can be discharged via line 13 into reservoir 3, and paint can be sucked off by pump 2 without difficulties. As soon as a constant feed flow is produced, valve 12 must be closed. By the conveyed paint the air present in filter 9 and line 10 is then expelled so that after a short time a faultless operation of the apparatus is assured.

When the air vent valve 12 is opened during the operation

of apparatus 1, the paint flows from lines 10 and filter 9 very rapidly via line 13 back into paint reservoir 3, in which process also an ejecting effect occurs. Filter 9 is flushed and in paint reservoir 3 the paint is churned so as to avoid clod formation. The provision of air vent valve 12 thus assures not only a rapid start of apparatus 1 but the operation thereof is further improved.

While there has been shown and described a particular embodiment of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention and, therefore, it is aimed to cover all such changes and modifications as fall within the true spirit and scope of the invention.

I claim:

1. In a spray coating apparatus where pressurization is accomplished by a diaphragm pump having its suction end in communication with a reservoir containing coating material, and a feed line connects the pressurized side of said pump with a spray gun, the improvement comprising an air vent valve in said feed line, said air vent valve including a pressure chamber, an apertured diaphragm at one end of said pressure chamber, a valve element axially movable in said pressure chamber and adapted to seat in said diaphragm aperture, a valve piston for actuating said valve element, means urging said valve piston and said valve element towards said diaphragm, and a branch-off line connecting said feed line with said pressure chamber at a point between said diaphragm and the face of said valve piston.

2. The apparatus of claim 1 wherein the air vent valve has a conduit terminating in said reservoir.

3. The apparatus of claim 1 wherein the air vent valve includes a stationary annular member and the axially movable valve element is cone shaped in the area which seats within the annular member.

4. The apparatus of claim 1 wherein a check valve is positioned between said diaphragm pump and said air vent valve.

5. The apparatus of claim 1 wherein means is provided to move said valve element including a lever, said lever is provided with a cam, said cam cooperates with a fixed surface and is rotatably mounted to operate means which thereby operates to adjust the valve element.

6. The apparatus of claim 5 wherein the piston is urged normally towards said annular member by resilient means.

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