Feb. 16, 1937. G. G. REID 2,071,218

LIQUID DISPENSING DEVICE

Filed May 18, 1936

Fig. 1.

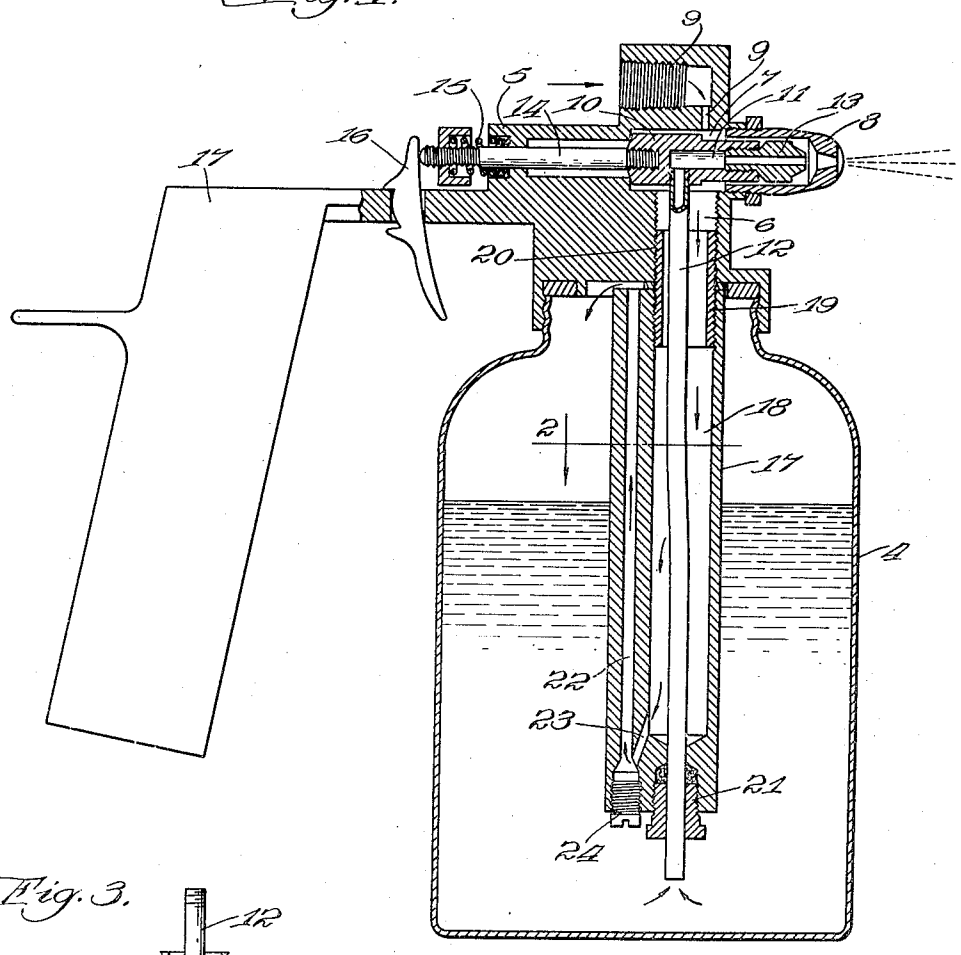


Fig. 3.

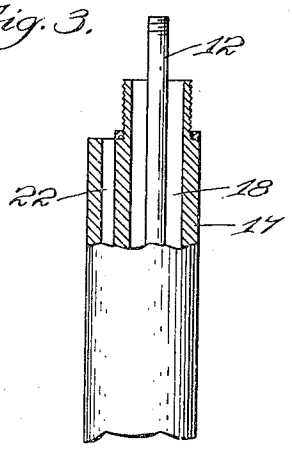
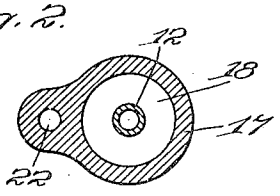


Fig. 2.



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LIQUID DISPENSING DEVICE

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2 Claims. (Cl. 299—89)

My invention relates generally to liquid dispensing devices of the type involving the use of fluid pressure, as for example, compressed air, to force the liquid to be dispensed, from the container; and more especially, though not exclusively, to devices for spraying paint or the like.

As these devices, provided for support by the hand of the operator and freely bodily turned or tilted into different positions in applying the liquid to differently positioned surfaces, have been hitherto constructed, they present the objection, when turned or tilted out of normal position, of the flowing of the liquid from the container therefor, provided as a part of the device held by the operator, into portions of the device which it is desired be kept free of the liquid to avoid objectionable clogging of the parts.

My primary objects are to provide improvements in the devices of the character above referred to whereby the device may be freely bodily turned or tilted into different positions without risk of the flow of the liquid to the parts which it is desired be maintained free thereof.

Referring to the accompanying drawing:

Figure 1 is a view in longitudinal sectional elevation of a spray device for paint or the like of a well known type and in which my invention is incorporated.

Figure 2 is a plan section taken at the line 2 on Fig. 1 and viewed in the direction of the arrow; and

Figure 3, a view in side elevation, partly in section, of the upper end of a liquid tube and fluid pressure conduit assembly forming a part of the construction of the preceding figures of the drawing.

Referring to the particular illustrated type of spray device, it comprises a container 4 for the liquid, such as for example paint, and a frame casting 5 screwed upon the open, upper, end of the container and of hollow construction to provide a vertical passage 6 open at its lower end and opening at its upper end into a horizontal passage 7 provided at its outer end with a spray nozzle 8, the passage 7, and likewise the passage 6, communicating at all times with a passage 9 through which fluid pressure, as for example compressed air, from any suitable source, is supplied.

Located in, and spaced from, the surrounding wall of the horizontal passage 7 is a reciprocable member 10 having a passage 11 communicating at one end with the upper end of a tube 12 secured to the member 10 and depending into the container 4, the tube 12 being of considerably smaller diameter than the passage 6. The outer end of the passage 11 is provided with a liquid nozzle 13.

The slide member 10 is connected with a push rod 14 slidable in the casting 5 and associated at its outer end with a coiled spring 15 which tends to hold the member 10 in the position shown. A trigger 16 pivoted on the frame 5 adjacent a hand grip 17 provided thereon, and bearing against the outer end of the push rod 14, serves as a means for forcing the member 10 to the right in Fig. 1.

It may be here stated that in the type of device shown, assuming it to be in the normal position illustrated and connected with a supply of fluid pressure, the freedom of the passage of air from the passage 9 through the bore 7 and out through the nozzle 8 is such that the pressure flowing through the passage 6 to the liquid is insufficient to force the liquid upwardly through the tube 12 to the nozzle 13. When, however, the member 10 is moved to the right in Fig. 1 to throttle the passage between the nozzles 8 and 13 to a certain degree, the fluid pressure entering the container through the passageway 6 is sufficient to force the liquid upwardly through the tube 12 and through the nozzle 13 from which it discharges into the path of the fluid flowing to the nozzle 8 and thereby becomes atomized.

In accordance with the preferred illustrated embodiment of my invention I provide for the directing of the fluid pressure from the passage 6 downwardly and thence upwardly to a point of discharge adjacent the upper end of the container, to the end of permitting the operator to turn or tilt the device at will without danger of the liquid in the container running through the passage 6 into the moving parts of the dispenser device.

The form of device shown for this purpose comprises a casting 17 containing a conduit portion 18 open at its upper end and screwed upon the lower end of a nipple 19 which in turn is screwed into the thread portion 20 of the passage 6, this nipple being of considerably greater internal diameter than the external diameter of the tube 12 to prevent obstruction to the movement, by the operator, of the member 10 and with it the upper end of the tube 12.

The tube 12 which preferably is made of spring metal, as for example steel, extends downwardly through the conduit section 18 and opens at its lower end into the container 4 to receive the liquid, a stuffing box 21 surrounding the tube 12 and screwed into the casting 17 sealing the joint

between the lower end of the tube 12 and the casting.

At one side of the conduit section 18 is an upwardly extending conduit section 22 which opens, adjacent its lower end, into the conduit section 18 through a passage 23, the conduit section 22 extending upwardly to a point closely adjacent the upper end of the container 4. Preferably the bore of the conduit section 22 extends entirely through the casting 17 at both ends, with the lower end thereof closed by a removable and replaceable plug 24.

As will be understood from the foregoing, the fluid pressure for forcing the liquid upwardly through the pipe 12 and out through the nozzle 13 for the purpose above stated, flows downwardly through the conduit section 18, thence through the passage 23 to the conduit section 22 in which it rises discharging into the container through the open upper end of the conduit section 23.

The provision of the conduit sections as stated permits of the free tilting or turning of the device into the various positions necessary for spraying differently positioned surfaces, while preventing the flow of the liquid in the container 4 into the conduit sections and thence to the operating parts of the device. The provision of the conduit section 22 as of relatively small diameter as shown, with relatively high velocity flow of the pressure fluid upwardly therethrough, further insures against the flow of the liquid into this conduit section in any tilted or turned position of the device by the scavenging therefrom, by the pressure fluid, of any liquid which may have entered this conduit section prior to the supplying of fluid pressure to the device.

While I have illustrated and described my invention as incorporated in a particular type of liquid dispensing device and have illustrated and described a particular embodiment of the invention, I do not wish to be understood as intending to limit it thereto as the same may be variously modified and altered and the invention incorporated in other types of fluid dispensing devices employing fluid pressure as the means for forcing the liquid from the container, without departing from the spirit of my invention.

What I claim as new, and desire to secure by Letters Patent, is:

1. A liquid dispensing device comprising a container for the liquid, a closure for the container, flow-controlling means for the liquid and comprising a movable part, a tube carried by said movable part and extending downwardly into said container and through which the liquid is discharged therefrom, means for conducting fluid pressure into said closure means, and a conduit in communication with said second-named means and surrounding said tube with a space therebetween permitting said tube to move with said first-referred-to means and fluid pressure to flow through said conduit, said conduit having an outlet communicating with said container adjacent the upper end of the latter.

2. A liquid dispensing device comprising a container for the liquid, a closure for the container, flow-controlling means for the liquid and comprising a movable part, a tube carried by said movable part and extending downwardly into said container and through which the liquid is discharged therefrom, means for conducting fluid pressure into said closure means, a conduit in communication with said second-named means and surrounding said tube with a space therebetween permitting said tube to move with said first-referred-to means and fluid pressure to flow through said conduit, said conduit having an outlet communicating with said container adjacent the upper end of the latter, said conduit having an opening adjacent its lower end into which said tube extends, and means for sealing the joint between the tube and conduit at said opening.

GEORGE G. REID.