May 17, 1949. D. J. PEEPS 2,470,718

SPRAY GUN

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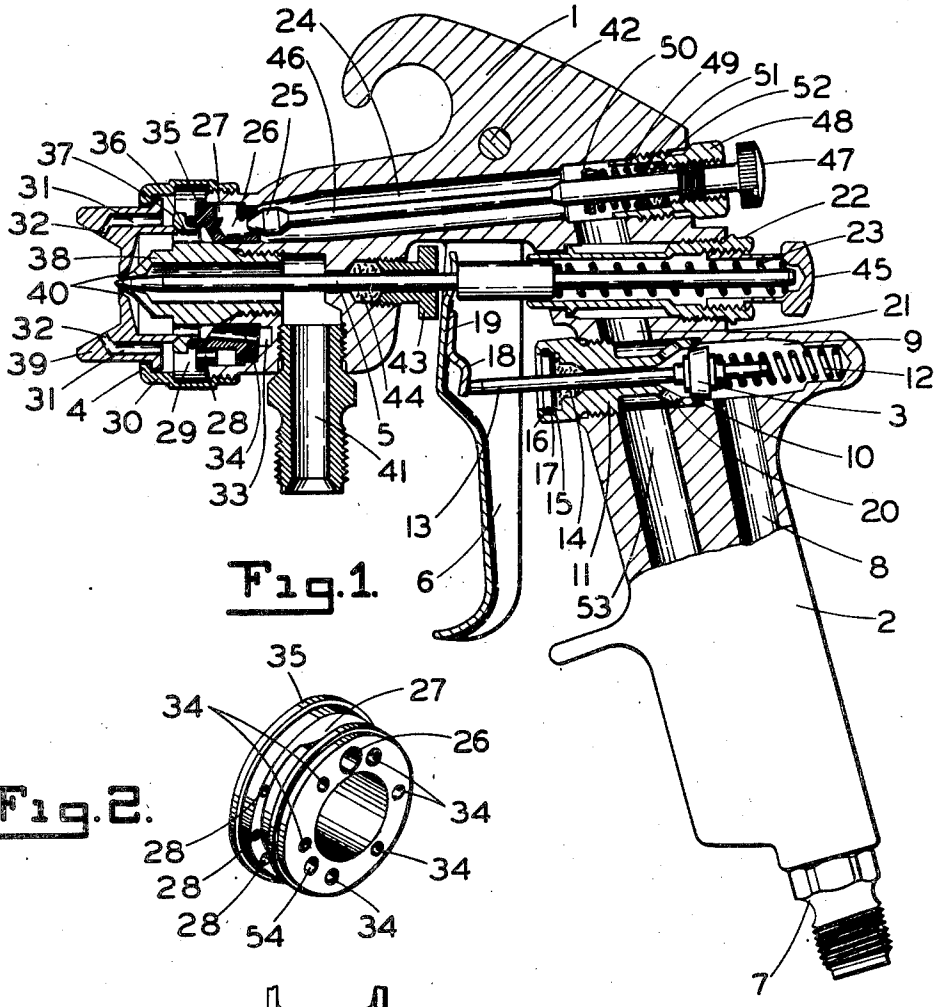

Fig. 1.

Fig. 2.

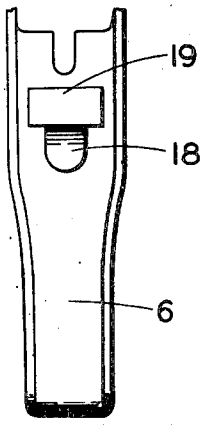

Fig. 3.

INVENTOR
DONALD J. PEEPS
BY W. P. Carr
ATTORNEY

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SPRAY GUN

Donald J. Peeps, Toledo, Ohio, assignor to The De Vilbiss Company, Toledo, Ohio, a corporation of Ohio

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1 Claim. (Cl. 299—140.1)

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This invention relates to a spray gun of the type using air for atomizing the material to be spray applied and which is designed for manual support and manipulation.

It is particularly desirable in view of the continuous use usually made of such a spray gun that it be light and compact in order to be non-tiring and easy to handle for the operator.

Because of the mechanism involved the length of hand spray guns are inclined to be greater than desirable. This characteristic makes it more difficult to direct the gun at various surfaces.

The primary purpose of this invention is to provide a spray gun with parts designed to permit the length to be shortened.

An associated object is to reduce the weight of the gun.

Another object is to simplify the design.

The means of accomplishing these purposes includes the combining into a single part a valve seat for the valve controlling the flow of the air to the horns with means for dividing the air into separate streams, one for the horns and the other for the center port of the air cap, and baffle means for distributing the air of both streams circumferentially about the axis of the spray nozzle.

The invention in its preferred form has other objects and advantages which may be noted on reading the following description and referring to the accompanying drawing in which:

Figure 1 is a vertical sectional view of a spray gun embodying my invention;

Figure 2 is a perspective view of the combination valve seat, air dividing and baffle part; and

Figure 3 is a rear elevational view of the lower portion of the trigger.

The spray gun shown in Figure 1 has a main body portion 1 with a depending handle 2. An air valve 3 for controlling the flow of atomizing air to the nozzle, generally referred to as 4, and the spray material needle valve 5 are both moved to open position through a rearward pull of the finger trigger 6.

Air is supplied to the spray gun through a flexible hose (not shown) connected to the threaded nipple 7. The air travels from this nipple upwardly through passage 8 into air valve chamber 9. The air valve 3 is held against its seat 10 on the valve cage 11 by spring 12.

A valve stem 13 extends forwardly through the cage which has a packing chamber 14. The packing is held within this chamber by retaining disc 15 which is clamped in place by split ring 16 sprung into groove 17. The exterior

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end of the stem 13 has motivating contact with a rearwardly bent tongue portion 18 of a small plate 19 integrally fixed to the rear side of trigger 6.

The distance between the air valve and the trigger is less in this gun than in conventional designs as the packing around the air valve stem in the latter type is held in place by a protruding packing nut.

The use of disc 15 and ring 16 has permitted the trigger to be moved closer to the air valve. This results in the body being foreshortened to a like degree reducing the weight of the gun as well as its length.

The air after passing air valve 3 flows through ports 20 in the cage 11. From here it proceeds upwardly through passage 21 and around casing 22 enclosing the needle valve spring 23. The air continues along horizontal passage 24. At the forward end of this passage the air for the horns passes valve 25 into bore 26 and then into annular chamber 27. From here the air moves forwardly through a series of circumferentially spaced ports 28 into the chamber 29 within the air cap retaining ring 30. The two passages 31 communicate with this chamber and deliver the air therefrom to the horn discharge ports 32.

The other portion of the air from horizontal passage 24 proceeds unregulated into annular space 33 which joins at the top with the passage 24. From this space the air moves forwardly through a series of circumferentially spaced ports 34 entering the rear side of member 35. These ports terminate behind a like series of ports 36 in flange 37 of the material discharge tip 38. From the space beyond the flange between the tip 38 and air cap 39 this air flows through the annular discharge port 40. The member 35 is set in a fixed position by the mating of opening 54 on its rear side with a locating pin extending from the body.

It may be noted that member 35 not only provides the valve seat for valve 25 but also distributes the regulated air circumferentially in chamber 27 before delivering it forwardly to the horn ports and in addition provides spaced ports 34 to deliver forwardly unregulated air to the central discharge port of the air cap. Two or three separate parts are normally utilized to serve the purposes accomplished by this single part 35. The use of this compact member permits the forward portion of the spray gun to be reduced in length.

The design of the trigger 6 is directed to minimizing the space it requires in relation to the

lengthwise dimension of the spray gun. It is a thinned wall stamping with rearwardly indented shape to receive the operators' fingers and to keep the trigger from contact with material supply nipple 41 and hose attached to the nipple. In order to retain the suitable contour for the fingers and to also present a flat contacting surface for the valve stem 13 the small bent plate 19 is welded to the main trigger body. To provide a straight pull for the operators' fingers on the trigger, the latter is positioned directly below its pivot pin 42.

Parts of the spray gun not heretofore explained, include the packing nut 43 which holds packing 44 around the stem of the material needle valve. The hollow adjusting nut 45 determines the degree of opening of the material valve as the end of the needle is stopped against its inner surface. The air valve 25 is mounted on a stem 46 which has exteriorly on its other end an adjusting knob 47. Upon turning the knob the valve is moved axially due to the threaded engagement of the stem with bushing 48. The spring 49 is tensioned between a cross pin 50 through the stem and packing retaining disc 51. It thus serves the dual purpose of keeping the packing 52 tight around the stem and furnishing a tension to resist any undesired turning of the knob.

The plugged bore 53 in the handle of the gun is necessary for machining the body beyond the air valve and the removal of stock also lightens the gun.

While there is herein described and shown a preferred embodiment of the invention, it is understood that the invention is not limited thereto as variations thereof may be made without departing from the spirit of the invention.

I claim:

In a spray gun of the type described, a body having a spray material duct and an air duct, an internally threaded cylindrical nipple extending axially from the forward end of the gun with which the spray material duct communicates, the air duct having its outlet above the nipple, a spray material tip with an axial bore and a ported peripheral flange, said tip being threadedly connected to the nipple, an air cap fitted over the tip and seating against the forward side of the edge of the flange, said cap being provided with

a central air port surrounding the outlet of the tip and with two opposed side air ports which have supply passages with entrances radially outside of the seating contact between the cap and the flange, an annular air dividing and baffling member fitting tightly in reenforcing engagement over the nipple and held between the rear side of the flange and the forward end of the body, there being an air chamber between the member and the body communicating with the air duct, said annular member having passages therethrough terminating on its forward face radially inside of the contacting surface between the rear side of the flange and the member, said passages directing air from the chamber forwardly through the ported tip flange to the central air port of the cap, said member also having secondary air passage means directing air from the chamber forwardly past the outer edge of the flange to the two opposed side air ports of the cap, the said secondary air passage means having a single entering port on the rear side of the member directly in line with the outlet of the air duct, a valve seating in said entering port, and a valve shank extending rearwardly and axially within the air duct and with a manually operable part extending exteriorly from the rearward portion of the spray gun.

DONALD J. PEEPS.

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