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R. R. PELLAR

2,261,279

NOZZLE FOR SPRAY GUNS

Filed March 2, 1940

FIG. 1.

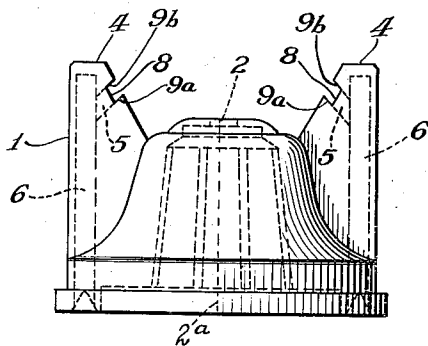


FIG. 2.

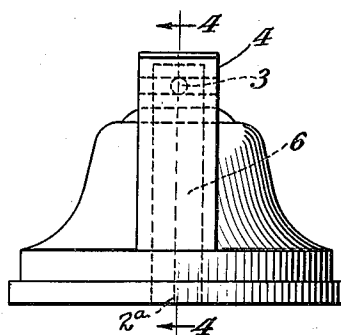


FIG. 3.

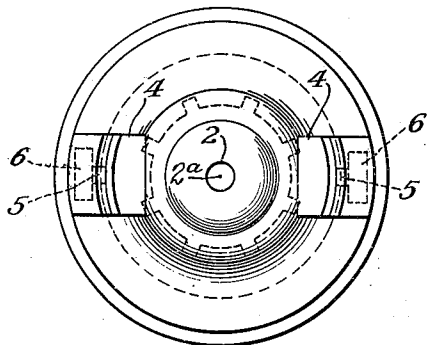
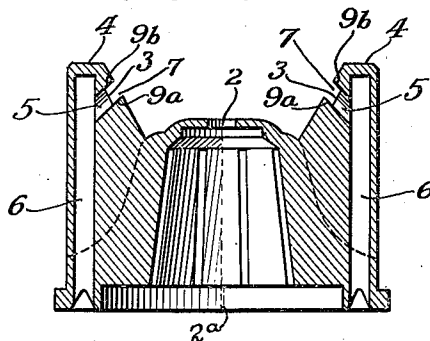


FIG. 4.



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NOZZLE FOR SPRAY GUNS

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3 Claims. (Cl. 299—141)

My invention relates to a nozzle or spray-head for a spray-gun or airbrush used for spraying paint or other surface coating materials and like purposes.

Supplemental air streams issuing from ports disposed on opposite sides of the material stream so as to converge upon and flatten the latter and produce a fan-like spray are commonly employed in such devices but the resulting spray is unevenly distributed, either split in the middle or heavy at the edges. My invention is intended to remedy this fault.

An object of my invention is to provide simple and efficient means for forming a fan-like spray of material of approximately uniform depth or thickness throughout substantially its entire width at a suitable distance in advance of the material orifice. This object is accomplished in my invention by providing in the conventional type of such a nozzle or spray-head an angularly disposed, transversely extending groove or channel in the face of each port wing in such relation to the port of such wing and of such configuration that the port will be at the base of such groove and approximately midway between the ends thereof and that the side walls of such groove, respectively, will be approximately tangential to opposite sides of said port and parallel. The side walls of such groove restrict the stream of air issuing from the port in each of two opposite directions but it is free to spread laterally in either direction, thus causing the air stream to become substantially flattened. Two such streams of air converging upon the material stream issuing from a central orifice cause the latter stream to spread evenly and become substantially fan-like and of approximately uniform thickness or depth throughout substantially its entire width, thus avoiding the bulges and uneven distribution of material generally experienced with devices of the prior art.

In the drawing—

Fig. 1 is a side view of a device embodying my invention, diagrammatically shown.

Fig. 2 is an end view of such a device.

Fig. 3 is a top or plan view of the same device.

Fig. 4 is a central sectional view of the device shown in Fig. 1.

Referring to the drawing, Figs. 1 to 4, inclusive, my invention may be described as follows:

The nozzle or spray-head 1 has a central material orifice 2, of any suitable shape but preferably circular. In the same axial plane are air ports 3, 3 also of any suitable shape but preferably circular, oppositely disposed in port wings

4, 4 approximately midway between the sides thereof and a suitable distance in advance of orifice 2. The ports 3, 3 are connected with a suitable air source through channels 5, 5 and 6, 6, channels 5, 5 being disposed at a suitable angle, preferably 45°, and each of such design and so positioned, respectively, as to project converging streams of air meeting at a suitable distance in front of said orifice and in a plane at right angles to said first mentioned plane passing through the material discharge axis 2^a.

An arcuate channel or groove 7 is provided in each port wing 4, said groove having base 8 and side walls 9^a, 9^b. The base 8 is preferably of approximately the same width as the diameter of the port 3 and the side walls 9^a, 9^b are preferably parallel or concentric and tangential to opposite sides of the said port and the walls of the channels 5, 5. In the form shown in Figs. 1, 2, 3 and 4, the grooves 7, 7 are circumferentially disposed with respect to the material discharge axis 2^a (this facilitates manufacture in that the nozzle may be placed in a lathe and revolved and the slots or grooves readily cut); the plane of the base 8 is perpendicular to the air discharge axis 3^a and the side walls 9^a and 9^b thereof and the axes 3^a, 3^a of the ports 3, 3 are disposed at an angle of substantially 45° with the axis 2^a but in the same plane therewith.

The configuration of the various parts, including the ports 3, 3 and the channels or grooves 7, 7, may be varied to suit the requirements of particular undertakings. The depth of the grooves 7, 7 depends upon the size of the air ports 3, 3, the width of the spray pattern desired, and the air pressure to be applied; e. g., to obtain a spray pattern of 10" to 12" spread and a depth of 1" to 1¼" using a material orifice of No. 32 drill and an air port of No. 55 drill, the groove may have a width equal to that of the No. 55 drill and a depth of approximately .030", the axes of the air ports being at an angle of approximately 45° with the material discharge axis. The groove will ordinarily extend the full width of the port wing.

Having thus described my invention, I claim:

1. A nozzle for a spray-gun having a central outlet, two opposed forwardly projecting outer horns, and two oppositely disposed, substantially circular air ports; each of said horns having an oblique inner face with a transversely extending, regressively-arcuate groove therein substantially in advance of said outlet; said grooves being approximately symmetrical and circumferentially disposed with respect to the axis of said

outlet, and one of said ports being positioned about midway between the ends and substantially at the base of each of said grooves and approximately tangential to the side walls thereof; the axes of discharge from said ports lying in a plane common to the axis of discharge from said outlet and converging with said axis substantially in advance of said outlet.

2. A nozzle for a spray-gun as set forth in claim 1 in which the grooves are open at their ends and the configuration of the grooves and air

ports is such as substantially to flatten air streams issuing from said ports so as to produce a material stream of substantially flat pattern.

3. A nozzle for a spray-gun as set forth in claim 1 in which the sidewalls of the respective grooves are concentric, the ends of the grooves are open, and the configuration of the ports and grooves is such that the converging streams of air will flatten the material stream into a fan-shape of substantially uniform cross-section.

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