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REMOVABLE NOZZLE SPRAY GUN

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FIG. 1.

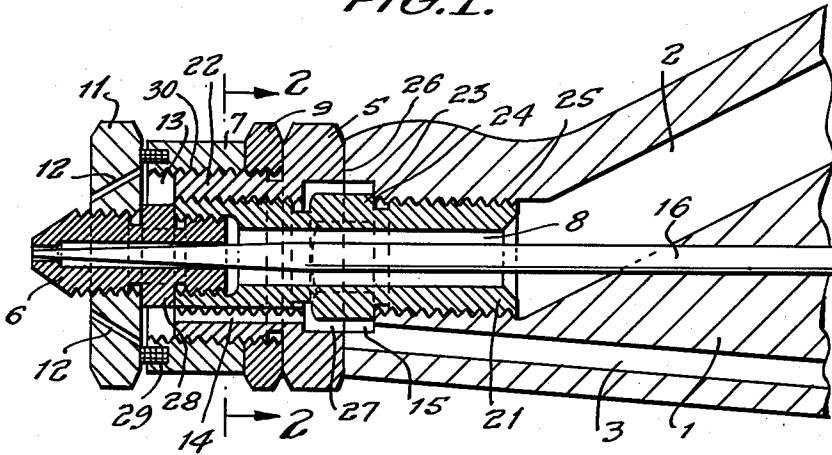


FIG. 2.

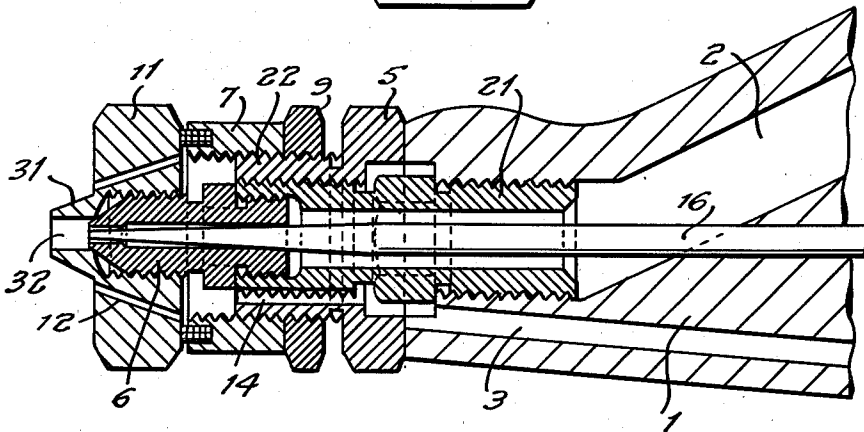
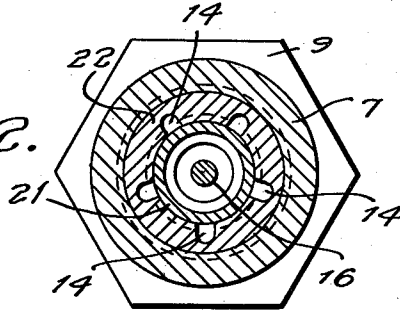


FIG. 3.

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REMOVABLE NOZZLE SPRAY GUN

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4 Claims. (Cl. 299—141)

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This invention relates to spray guns of the type provided with nozzles for a coating composition and for air mounted on a handle.

The object of the invention is to provide an improved arrangement of the composition and air nozzles permitting of a rapid exchange of nozzles for various purposes and of taking the nozzle device apart for the purpose of cleaning the same.

The invention is principally distinguished by the feature that the coating composition and air are supplied to the nozzles through separate channels which are connected to corresponding passages or passage systems in a nozzle nipple, which is removably arranged on a nozzle holder extending from the handle, and on which the composition and air nozzles are exchangeably mounted.

The invention will be described with reference to the accompanying drawings, which illustrate preferred embodiments of a nozzle arrangement according to the invention.

Fig. 1 is an axial section through the nozzle holder extending from the handle and the nozzles arranged thereon according to an embodiment of the invention;

Fig. 2 is a cross section on line 2—2 in Fig. 1; and

Fig. 3 shows a modified construction of the nozzle arrangement.

In the construction shown in Fig. 1, the nozzle nipple carrying the nozzles for the coating composition and for the air is divided into two sleeve-shaped members 21, 22, the outer one of which, i. e. the sleeve 22 provided with a hexagonal head 5, being threaded onto the outer end of the internal sleeve 21, which is in turn threaded with the inner end thereof into the nozzle holder 1, and being so arranged that the centre bore 8 thereof communicates with the supply passage 2 for the coating composition. The object of this construction of the nozzle nipple is to render possible efficient tightening of the connection of the nipple to the passage 2 as well as to the air passage 3. The tightening effect against the passage 2 is brought about by the feature that the internal sleeve 21 is provided with a collar 23 formed into a nut head, said collar bearing tightly at 24, against a plane surface on the end of the nozzle holder 1. The coating composition is prevented from being pressed out between the threads 25 to the annular space 15 provided in the outer end of the nozzle holder, said space having the air passage 3 opening into the same. Similarly, a tight connection of the nozzle nipple

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to the air passage 3 is obtained by the feature that the outer sleeve 22 is adapted by means of the nut head 5, and independently of the internal sleeve 21, to be set against a plane surface 26 on the end of the nozzle holder 1, so that air cannot leak out at this point. The air passages 14 in the outer sleeve 22 of the nozzle nipple communicate with the air passage 3 through a recess 27 in the nut head 5 corresponding to the recess 15.

Then nozzle 6 for the coating composition is screwed into the nozzle nipple, that is to say, in this case into the outer sleeve 22 of the nozzle nipple, a tightening connection to the passage 8 being obtained by the fact that the nozzle is provided with a collar 28 formed into a nut head, said collar being set against the plane end of the sleeve 21 to tighten thereagainst in the screwing-in operation. The needle valve 16 is adapted to bear with its conical end portion against the inner end of the nozzle 6, for the purpose of cutting off the composition supply. The valve seat is thus located at the inner end of the passage extending through the nozzle. This arrangement has the advantage that the valve seat can be made independent, with respect to the position and size thereof, so that varying widths of the exit opening of the nozzle can be obtained. Thus, when another nozzle having a different exit opening is inserted, the same needle valve 16 may still be used, said needle valve then co-operating with a valve seat having the same width in all nozzles and being situated at the inner end of the nozzle.

Furthermore, the arrangement has the advantage that the needle valve can be made slightly tapering from the valve seat toward the point thereof, so that a greater degree of vernier adjustment is obtained.

A further improvement consists in that the air nozzle 7, 11 is adjustable in the axial direction relatively to the nozzle 6 for the coating composition. To this end, the air nozzle is divided into two parts, one 11 being provided with the air passages 12 and formed into a nut and being threaded onto the nozzle 6, whereas the sleeve-shaped member 7 is threaded onto the outer sleeve 22 of the nozzle nipple. By turning the member 11 relatively to the nozzle 6, the air nozzle may thus be displaced axially outwards or inwards to render possible a suitable adjustment of the air passages 12 relatively to the jet ejected from the composition nozzle. The adjustment of the member 11 having been effected, the sleeve 7 is set against the inside of said member to pro-

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vide an outward tightening of the intermediate space 12. To provide for a good tightening effect, a packing ring 29 is interposed between the end portion of the sleeve 7 and the member 11. The sleeve 7 having been set against the member 11, it is locked in position by the nut 9, an efficient tightening effect being obtained at the same time, which will prevent air from leaking out along the threads 30. Fig. 1 shows the air nozzle screwed into its innermost extreme position.

The adjustment of the air nozzle 11 relatively to the composition jet has for its object to render possible different effects in the squirting of the composition. When the air nozzle 11 is removed, so that the air jets escaping from the passages 12 are caused to hit the composition jet at a greater distance from the mouth of the composition nozzle, the composition jet is atomized in a lesser degree so that a greater concentration of the filamentary composition particles on the surface adapted to receive same is obtained. On the other hand, when the air nozzle is screwed into position, greater spreading of the atomized composition jet is obtained, inasmuch as the air jet escaping through the passages 12 will then hit the composition jet nearer to the mouth of the composition nozzle, the jet being thus atomized into greater particles and being deposited in the form of filamentary splashes on the object receiving the composition. This adjustment of the air nozzle relatively to the composition nozzle is of particular importance in the use of comparatively viscous compositions. With the use of compositions of greater liquidity the formation of splash may also be obtained to a certain extent by a regulation of the air nozzle relatively to the composition nozzle.

The embodiment shown in Fig. 3 differs from the construction according to Figs. 1 and 2 only by the formation of the member 11 of the air nozzle containing the air passages, in that said member is provided with a central portion formed into a nozzle 31, said central portion having the nozzle 6 opening into the same. In this case, too, the member 11 may be adjusted axially with respect to the nozzle 6 by being screwed inwardly and outwardly on the nozzle 6, the sleeve 7 being then, as in Fig. 1, set against the member 1 after the adjustment thereof has been effected. In the drawing, the air nozzle 11 is shown in its innermost position, the inner edge of the bore 32 in the nozzle 31 abutting against the end of the nozzle 6.

The embodiment according to Fig. 3 is particularly intended for splash squirting, a piece of yarn being clamped between the nozzles 6 and 31, for the purpose of obtaining larger composition particles.

What I claim is:

1. A spray gun, comprising in combination, a nozzle holder; a central nipple member screwed into said nozzle holder and having a paint channel and a first tightening collar; a sleeve-shaped nipple member screwed on said central nipple member and having air channels and a second tightening collar; tightening surfaces on the end of said nozzle holder opposite said tightening collars; a paint nozzle screwed into said central

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nipple member; an air nozzle screwed on the end of said paint nozzle and having air passages; and means forming an air-tight connection between said air passages and said air channels in said sleeve-shaped member.

2. A spray gun, comprising in combination, a nozzle holder; a central nipple member screwed into said nozzle holder and having a paint channel and a first tightening collar; a sleeve-shaped nipple member screwed on said central nipple member and having air channels and a second tightening collar; tightening surfaces on the end of said nozzle holder opposite said tightening collars; a paint nozzle screwed into said central nipple member; an air nozzle screwed on the end of said paint nozzle and having air passages; means forming an air-tight connection between said air passages and said air channels in said sleeve-shaped member, said air-tight connection including a sleeve screwed on said sleeve-shaped nipple member; and tightening means arranged between said air nozzle and said sleeve.

3. A spray gun comprising in combination, a nozzle holder; a two-part nozzle nipple including a central paint-carrying nipple member screwed into said nozzle holder and a sleeve-shaped nipple member screwed on said central nipple member; air channels extending through said nozzle nipple; a paint nozzle screwed into said central nipple member; an air nozzle screwed on the end of said paint nozzle; and means forming an air-tight connection between said air nozzle and said nozzle nipple.

4. A spray gun comprising in combination a nozzle holder; a two-part nozzle nipple including a central paint carrying nipple member screwed into said nozzle holder and a sleeve-shaped nipple member screwed on said nipple member; air channels extending through said nozzle nipple; a paint nozzle screwed into said central nipple member; an air nozzle screwed to and displaceable lengthwise of said paint nozzle; a sleeve screwed on said sleeve-shaped nipple member and enclosing an air space formed between said sleeve and said paint nozzle; air passages in said air nozzle communicating through said space with said air channels in said nozzle nipple; and tightening means arranged between said air nozzle and said sleeve.

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