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SPRAY GUN NOZZLE

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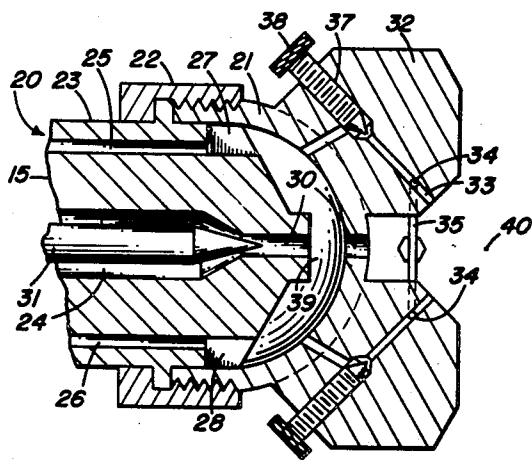


FIG. 2

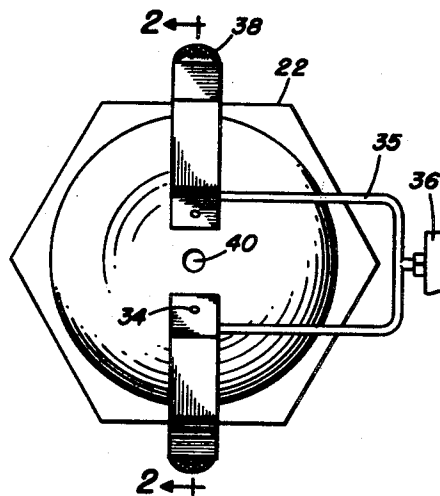


FIG. 1

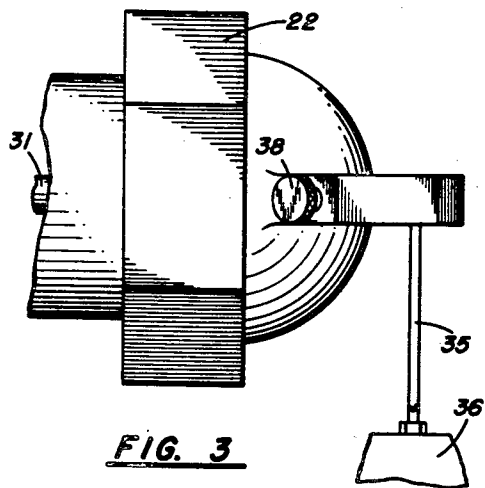


FIG. 3

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SPRAY GUN NOZZLE

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3 Claims. (Cl. 239—335)

(Granted under Title 35, U.S. Code (1952), sec. 266)

The invention described herein may be manufactured and used by or for the Government of the United States of America for governmental purposes without the payment of any royalties thereon or therefor.

The present invention relates to devices for spraying coating materials and more particularly to a spray gun for applying plastic resins catalyzed for accelerated hardening.

Various coating materials, such as plastic resin, require rapid curing and such curing may be affected by a catalyst which acts rapidly. In spraying a rapid-setting resin with an ordinary spray gun, it has been found that the plastic property of the resin causes the gun to eventually clog and renders the gun useless in a comparatively short time. For this reason, it is the present practice to apply resins with a brush instead of a spray.

The present invention is the conversion of a conventional spray gun nozzle so that it can be used for the spraying of plastic resins that require accelerators or catalysts in order to make a quick-set. The resin and catalyst are placed apart from each other and only the outer portion of the gun nozzle is used to intermix the above ingredients.

An object of the present invention is the provision of an improved spray gun.

Another object is to provide a spray gun for spraying a coating material and a catalyst simultaneously.

A further object of the invention is the provision of a conventional spray gun converted in such a manner as to permit the spraying of quick-setting materials.

Other objects and advantages of the invention will hereinafter become more fully apparent from the following description of the annexed drawings, which illustrate a preferred embodiment, and wherein:

Fig. 1 shows a front view of a preferred embodiment of the invention;

Fig. 2 illustrates a section of the device taken on the line 2—2 of Fig. 1 looking in the direction of the arrows;

Fig. 3 shows a top view of the apparatus.

Referring now to the drawing, wherein like reference characters designate like or corresponding parts throughout the several views, there is shown a head portion 15 of a conventional spray gun 20 with a nozzle portion 21 connected to the head portion by a coupling means 22. Mounted centrally within the nozzle portion 21 is an annular member 23 having a central passageway 24 therein through which a material, such as a plastic resin, is passed. Air passages 25, 26 leading to air chambers 27, 28 respectively are provided in the annular member 23 radially outward from the material passageway 24. Adjacent the forward section of the nozzle 21, the passageway 24 converges and is reduced to a duct 30 of lesser diameter. A valve stem 31 extending rearwardly in material passageway 24 is tapered so that the amount of material passing through chamber 24 is controlled by the longitudinal movement of the valve stem. Con-

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tional fan wings 32 having air jet stream bores 33 are affixed to the nozzle portion 21 and, in accomplishing the objects of the invention, air holes 34 are formed transverse and into the air jet stream bores of the wings.

A small tube 35 is inserted into each of the holes 34 to thereby create a vacuum over the ends of said tubes. In this manner, a suction through the tubes 35 is used to mix an accelerator or catalyst stored in a container 36 with a resin or similar material as the resin passes through duct 30. By providing two additional tapped holes 37 in each of the air jet stream bores 33, two needle point screws 38 are inserted for flow regulation of the catalyst in front of the spray gun at point 40.

The operation of the converted spray gun is as follows. The spray gun 20 is supplied with a material such as a plastic resin which requires an additional agent for quick setting. It is to be understood that the resin and its catalyst cannot be mixed within the material chamber 24 of the spray gun since the combined properties of the ingredients would quickly coagulate and thus block passage of the materials through said chamber 24 and duct 30. The resin passes through the duct 30 in the conventional manner; however, the catalytic agent is stored in a container 36 completely separated from the resin. By passing the catalyst through tubes 35, the catalyst is blown through the air jet stream bores 33 out of the spray gun to point 40. Manipulation of the needle point screws 38 permits the adjustment of the quantity of catalyst desired. The resin drawn through the chamber 24 and the catalyst drawn through the air jet stream bores 33 combine at the outer portion of the spray gun at point 40. The intermix is then forced by air pressure in spray form in any desired quantity.

Thus, the mixture of resin and accelerating catalyst cannot set or solidify within the spray gun since the combining of the materials is completed outside of the gun nozzle. When necessary, it is a simple procedure to replace the fan wings if clogging should ever occur. The conversion of the spray gun by the addition of holes and adjustment means within the fan wings thereby permits the use of a spray gun in a manner not heretofore feasible.

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment of the invention and that numerous modifications or alterations may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

Having thus described the invention, what is claimed is:

1. In a spray gun for the application of a coating material and a hardening-acceleration catalyst material in intermixed spray form, a nozzle for the spraying of the coating material alone, at least one fan wing affixed to said nozzle, said fan wing having an aperture and an air jet stream bore therein, a tube connected to said aperture for supplying said catalyst material, said bore connected to said aperture and providing a passage from the catalyst supply to the exterior of said gun whereby said catalyst material is introduced and mixed with said coating material on the exterior of said gun and is discharged in a spray form simultaneously.

2. The spray gun of claim 1, and a means for adjusting the rate of flow of the catalyst material through said bore whereby the setting rate of said mixture is controlled, said means comprising a needle point adjusting screw threadedly engaged within said bore.

3. In combination with a spray gun, a hemispheroidal spray head detachably secured thereto, said spray head having a centrally located annular orifice for spraying a coating resin material, means for supplying said resin to said orifice, at least one fan wing formed on said spray

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head, said fan wing having an interconnected aperture and an air jet stream bore formed therein, and means for supplying a hardening-accelerator catalyst to said aperture, said aperture in said fan wing being directed angularly with said centrally located annular orifice so that material sprayed from said orifice intersects material sprayed from said fan wing aperture outside the spray-head, said sprayed material being simultaneously mixed and applied to a surface to be coated therewith.

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