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**SPRAY HEAD WITH CLEANING MEANS**

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4 Claims

**ABSTRACT OF THE DISCLOSURE**

A spray head adapted to enable rapid and easy cleaning and/or removal of the spray tip without disassembly of the head. A tubular body includes a chamber having a rotatable housing therein having a passage which carries the spray tip. The body includes a bore for carrying the fluid to be sprayed to the housing, an opening axially aligned with the bore for the exit of spray and a pair of openings in axial alignment for inserting and removing the spray tip from the housing. The housing includes a stem which extends through an aperture in the body and which carries a handle for rotating the housing. The housing may be rotated to a first position for spraying, a second position for inserting or removing the spray tip, and a third position wherein the spray tip may be cleaned by reverse flow of the fluid.

**BACKGROUND OF THE INVENTION**

This invention relates to a spray head or nozzle assembly for airless spray guns or the like and more particularly to a spray head assembly in which a spray tip may readily be cleaned or replaced without necessitating the disassembly of the spray head.

Spray heads of the kind referred to are known, but heretofore have had the disadvantages that removal of the spray tip from the spray head was a relatively difficult and time consuming operation. These disadvantages are due to the fact that the tip of the prior spray heads can only be inserted or removed from the nozzle in an axial direction when the spray tip is in reversed, i.e., in cleaning position. Moreover, such axial removal of the spray tip frequently results in an undesirable and untimely discharge of the fluid during the insertion or removal operation due to the escape of the fluid which either has been trapped in the spray head or is discharged through the spray head as a result of a leaky or inadvertently operated valve of the spray gun itself.

Accordingly, a spray head constructed in accordance with the principles of the invention, may be quickly and easily cleaned and/or the spray tip may be quickly and easily inserted or removed without disassembling the spray head and without experiencing an undesirable discharge of fluid.

**SUMMARY OF THE INVENTION**

A spray head assembly, employing the principles of the invention, comprises a tubular body having a chamber at one end, and a rotatable housing located in the chamber and carrying the spray tip in a passage therein. The housing may be rotated to a first position wherein the spray tip is aligned with a fluid carrying bore in the body to provide a spray through an opening in the body. The housing may be rotated to a second position where the spray tip may either be inserted into or removed from the housing. And the housing may be rotated to still a third position where the spray tip may be reverse cleaned, if desired.

These and other objects, features and advantages of

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the present invention will be more clearly understood through a consideration of the following detailed description.

**BRIEF DESCRIPTION OF THE DRAWINGS**

In the course of this description, reference will frequently be made to the attached drawings in which:

FIG. 1 is a cross-sectioned elevation view of a spray head assembly constructed in accordance with the principles of the invention with the housing rotated to a spraying position;

FIG. 2 is a partial cross-sectioned plan view taken along line 2—2 of FIG. 1 wherein the housing is rotated to a spray tip replacement position.

FIG. 3 is a cross-sectioned side elevation view of the spray tip holder taken along line 3—3 of FIG. 2; and FIG. 4 is an end elevation view thereof.

**DESCRIPTION OF THE PREFERRED EMBODIMENT**

Referring to the drawings, a main tubular body portion 8 defines a chamber 9 at its front end. A circular discharge opening 11 is disposed in the forepart of said body in communication with the chamber 9. Located in the chamber 9 is a substantially spherical holder 12 which is rotatably seated between the appropriately shaped margin of the discharge opening 11 and a bearing seal 13. The bearing seal 13 may be composed of any suitable substance, e.g., a synthetic polymeric substance, and the seal 13 includes a bore 14. The bearing seal 13 is maintained in operative position by means of an O-ring seal 15 and a hexagonally headed plug 16, which is screw-threaded into the body 8 by screw-threads 17 and 18. The plug 16 has an axial bore fitted with a supply tube 19 and the latter is flanged as at 20 and fitted with a union nut 21 whereby the nozzle assembly can be connected with a conventional or other spray gun.

The holder 12 includes a stem 22 which projects through apertures 23 in the body 8. The stem 22 is drilled and tapped as at 24 whereby a boss 25 of a handle 26 may be attached thereto by means of a screw 27. The stem 22 is formed with flat portions 28 whereby it is non-rotatably associated with the boss 25 in a keyed relationship.

Referring to FIG. 2, formed in the walls of the body 10 are axially aligned side openings 29 and 30 communicating with chamber 9 the axes of which are normal to the axis of rotation of the holder 12.

The holder 12 is also provided with a passage 31 formed in two diameters so as to provide a shoulder 32 against which may be located a replaceable spray tip 33 of more or less conventional type and having orifice 34 which determines the flow rate and spray pattern. The passage 31, for the greater part of its length, is screw-threaded as at 35. A retaining plug 36, having a bore 37, is threadably received in the passage 31 and serves to lock the spray tip 33 in position within the holder 31 with its aperture 34 correctly orientated relative to the opening 11 of the body 8. The bore 37 is preferably of hexagonal or other suitable cross-section, thus adapting it to receive a tightening tool. The diameter of the lateral openings 29 and 30 are such that the spray tip 33 can be inserted or removed therethrough when the holder 12 is turned so that the axis of its passage 31 is in line with the diametrically opposed openings 29 and 30, as shown in FIG. 2.

In operation, the holder 12 may be moved by its handle lever 26 to at least three positions: a spraying position, as shown in FIG. 1, a reversed position for cleaning, and a position at right angles to the first two positions, as shown in FIG. 2. In the latter position the bore 14 is closed and the plug 36 can readily be removed by

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means of an appropriate tool inserted through one of the openings (for example 30 as viewed in FIG. 2) and into the bore 37. The spray tip 33 may then be withdrawn for replacement or renewal through the opening. Either one of the openings 29 or 30 may be used to remove tip 33; the other opposed opening allowing the insertion of means, if necessary, to tap the spray tip loose if it is stuck.

It will be evident, when considering the above description of the preferred embodiment of spray head assembly of my invention, that my invention overcomes the disadvantages of the prior spray head assemblies without sacrificing any of their advantages. Thus, the spray tip may be rapidly and easily removed from the spray head assembly and replaced even when the spray tip is firmly stuck, which is a frequent occurrence where the fluid sprayed is paint, etc. Moreover, during the course of the replacement of the spray tip, the spray head need not be disassembled. Also undesirable and untimely discharge of fluid is prevented.

It should be understood that the embodiment of the invention which has been described is merely illustrative of an application of the principles of the invention. Numerous modifications may be made by those skilled in the art without departing from the true spirit and scope of the invention.

What is claimed is:

1. A spray head comprising:

a closed elongated body having a cylindrical passage closed at one end extending from one end of said body to the other end of said body,

sealing means positioned intermediate the length of said passage defining a closed substantially spherical chamber with said one end of said passage adjacent said one end of said body,

means adjacent said other end of said body for adapting said passage to be connected with a source of pressurized fluid,

a first pair of coaxial bores extending through said sealing means and said one end of said body and communicating with said closed spherical chamber,

a second pair of coaxial bores extending through said body and communicating with said closed spherical chamber,

a third bore extending through said body and communicating with said closed spherical chamber, the axes of each one of said bores intersecting the axes of the other bores and extending substantially perpendicular to the plane of the other axes,

a moveable substantially spherical holder entirely enclosed within said closed spherical chamber, said spherical holder having a passage extending there-through adapted to carry spray means therein, and

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stem means extending into said third bore for maintaining the axis of said holder passage in coplanar relationship with the axes of said first or second pairs of bores, the diameter of said spherical holder being substantially equal to the diameter of said cylindrical passage in said body so that said holder may be positioned in said chamber through said cylindrical passage only and substantially larger than the diameter of said bores,

mounting means in said holder passage for mounting spray means in said passage which has a diameter smaller than at least one of said second pair of bores to enable insertion or removal of the spray means through said second pair of bores, and

means associated with said stem means for rotating said spherical holder to a first position wherein said holder passage is in communication with said first pair of bores, to a second position wherein said holder passage is in communication with said second pair of bores and communication between said first pair of bores is blocked, and to a third position wherein said holder passage is reversed and is in communication with said first pair of bores.

2. The spray head of claim 1 wherein said holder passage comprises a longitudinally extending passage, said second pair of bores and said longitudinally extending passage being in substantial axial alignment with each other when said housing is in said second position.

3. The spray head of claim 1 wherein said holder passage comprises a longitudinally extending passage, said first pair of bores and said longitudinally extending passage being in substantial axial alignment with each other when said housing is in said first position.

4. The spray head of claim 1 wherein said sealing means includes a first resilient bearing seal which sealingly bears against said holder and wherein a second bearing seal is formed by said body in said chamber and sealingly bears against said holder.

#### References Cited

##### UNITED STATES PATENTS

1,933,903	11/1933	Hamer	-----	137—584
2,233,074	2/1941	Corbin	-----	137—584
2,236,873	4/1941	Hamer	-----	137—584
3,202,360	8/1965	O'Brien	-----	239—119

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