

[72] Inventor **Harold S. Watson**
Rainhill, near Liverpool, England
 [21] Appl. No **790,213**
 [22] Filed **Jan. 10, 1969**
 [45] Patented **July 20, 1971**
 [73] Assignee **Delavan Manufacturing**
 [32] Priority **May 31, 1968**
 [33] **Great Britain**
 [31] **26095/68**

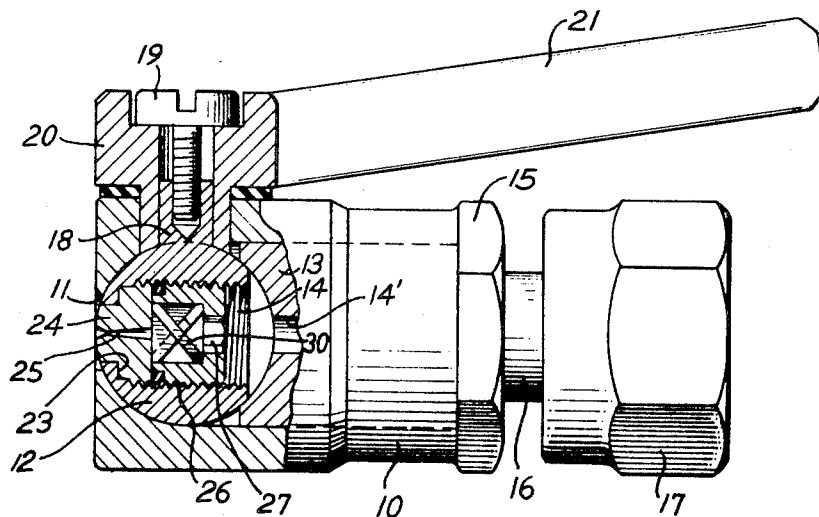
[56] **References Cited**
UNITED STATES PATENTS
 442,762 12/1890 Wainwright 239/106 X
 949,489 2/1910 Mastin 239/119
 2,140,903 12/1938 Fisk 239/119
 3,104,829 9/1963 Wahlin 239/465 X
 3,116,882 1/1964 Vork 239/587
 3,202,360 8/1965 O'Brien 239/119
 3,414,196 12/1968 Legeza et al. 239/587 X

Primary Examiner—Lloyd L. King
Assistant Examiner—John J. Love
Attorney—Molinare, Allegetti, Newitt & Witcoff

[54] **SPRAY HEAD**
10 Claims, 6 Drawing Figs.

[52] U.S. Cl. 239/119,
 239/507
 [51] Int. Cl. **B05b 15/02**
 [50] Field of Search 239/119,
 104, 106, 587, 505, 507, 465, 463

ABSTRACT: A spray head having a spray tip carrying holder which is rotatable between a spraying position and a spray tip cleaning position, includes a deflection member which breaks up the needlelike jet issuing from the spray tip when the tip is in issuing cleaning position.



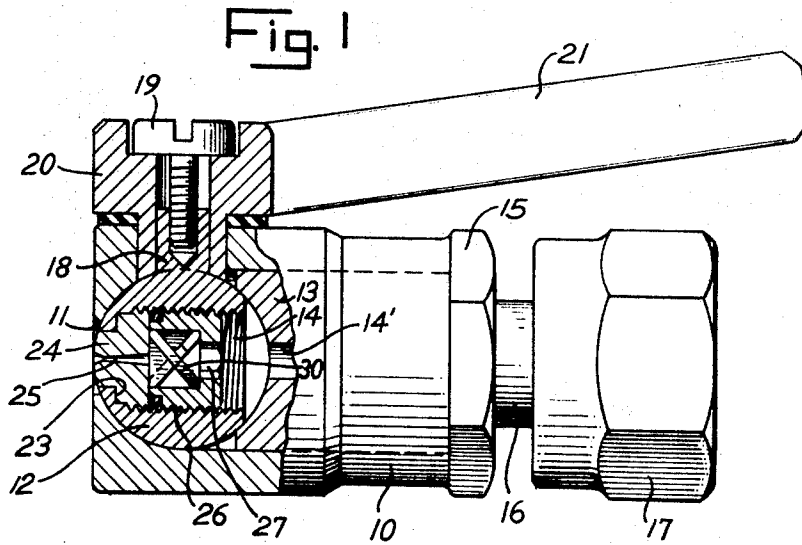


Fig. 3

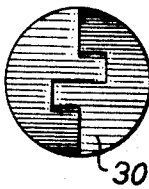


Fig. 2

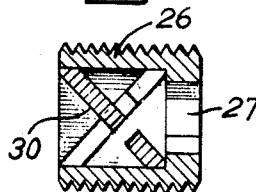


Fig. 4

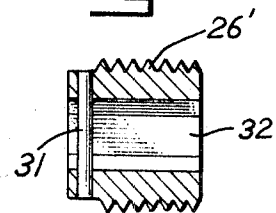


Fig. 5

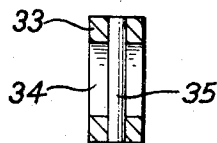
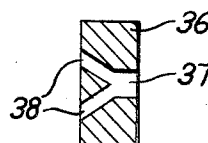


Fig. 6



INVENTOR.
HAROLD SMORTHIT WATSON
BY *Bair, Freeman*
& Malinara
ATTORNEYS

SPRAY HEAD

BACKGROUND AND SUMMARY OF THE INVENTION

This invention relates to the spray head or nozzle assemblies of spray guns, and more particularly, nozzle assemblies of the kind which embody a reversible spray tip whereby the spray orifice thereof may readily be cleaned by a reverse flow of liquid therethrough.

Nozzle assemblies of the kind referred to are known and usually comprises a main tubular body portion one end of which is adapted to be connected to a source of pressurized fluid which is to be sprayed and the other end of which has a spray outlet opening, a spray tip holder mounted for rotation within a bore in the body about an axis normal to the axis of the bore, and means for angularly displacing the spray tip holder when desired from an operative spraying position to a reversed position for cleaning.

Such nozzle assemblies, while functioning effectively in the reverse flow cleaning and clearing of the spray tip orifice, have a disadvantage in that, in the reversed position of the spray tip, there is liable to be ejected from the nozzle a fine or needlelike jet of fluid. Due to the high pressures conventionally used in spraying operations, such fine jets of fluid and, more particularly liquid, can constitute a danger, especially to the operator, if misdirected. For example in certain high-pressure airless painting devices, the jet issuing from the spray tip may be of sufficient piercing quality to pierce a man's heart, lungs or extremities.

The present invention has for its object to provide in and for use with a spray head or nozzle assembly as referred to, simple and effective means whereby the ejection of a dangerous fine or needle jet of liquid during cleaning of the spray tip is obviated.

According to the preferred embodiment of the invention there is provided within the spray tip holder in substantial axial alignment with the orifice or bore of the spray tip, a liquid dispersal member which, in the reverse cleaning position of the spray tip, functions to break up and diffuse the jet issuing from the spray tip. Such liquid dispersing means may be constituted by a baffle or vane or other obstructive member incorporated within the locking screw which functions to hold the spray tip in operative position within the spray holder, or may be associated with an insert or washer inserted between the locking screw and said spray tip.

These and other objects, features and advantages of the present invention will be more clearly understood through a consideration of the following detailed description.

BRIEF DESCRIPTION OF THE DRAWING

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

FIG. 1 is a partially sectioned elevation view of a spray head incorporating the principles of my invention;

FIG. 2 is an enlarged sectioned elevation view of the spray tip locking screw and deflection element of FIG. 1;

FIG. 3 is an end view of the deflection element shown in FIG. 2;

FIG. 4 is an enlarged sectioned elevation view of another embodiment of deflection element of my invention;

FIG. 5 is an enlarged sectioned elevation view of a deflection element mounted on a washer or insert; and

FIG. 6 is an enlarged sectioned elevation view of still another deflection element of my invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. 1 and 2, the numeral 10 generally denotes a main tubular body formed at its front end with a circular discharge opening 11. In the forepart of the body is a spray tip holder 12 which is rotatably seated between the rear margin of the opening 11, which is appropriately shaped, and a bearing seal 13 which may be composed of a suitable sub-

stance, such as a plastic material. The holder 12 is formed with a passage 14 which communicates with the bore 14' of the body 10. The rear of the body is provided with a screw-threaded plug 15 which functions to hold the seal 13 in operative position, and a supply tube 16 and a union nut 17 for connecting the body assembly with a source of the pressurized fluid which is to be sprayed. The spray tip holder 12 is formed with a stem 18, and fitted thereto by a screw 19 is the boss 20 of a handle 21 for effecting angular displacement of the spray tip holder.

The through passage 14 of the spray tip holder 12 is formed in two diameters so as to provide a shoulder 23 against which a replaceable spray tip 24 is seated. The spray tip 24 may be of the conventional type having an orifice 25 which determines the flow rate and spray pattern. The passage 14 of the holder 12, for the greater part of its length, is screw threaded so as to operatively receive a lock screw 26 for locking the spray tip 24, the screw 26 including a bore with a hexagonal or other shaped cross section 27 so that it may receive a suitable tightening tool. The screw 26 thus serves to lock the spray tip 24 in position within the holder 12. It will be seen that the spray tip holder 12 may be angularly displaced by means of the handle 21 from an operative spraying position, as shown in FIG. 1, to a reverse position for cleaning the orifice 25 of the spray tip 24.

In order to prevent the ejection of a dangerous jet of fluid or liquid when the spray tip 24 is in its reversed cleaning position, vane or baffle 30 is provided in the lock screw 26, which, while providing for an operational supply of liquid to the spray tip 24 during use, functions effectively during a cleaning operation to prevent the ejection of a fine jet by deflecting, breaking up and dispersing same by causing the liquid to swirl. The shape of a preferred form of baffle 30 is shown in FIGS. 2 and 3.

FIG. 4 illustrates a modified form of plug or lock screw 26'. In this form of screw, the walls of the screw are drilled so as to receive a pin 31 which is positioned so that it is located diametrically across the hexagonal bore 32 of said screw and in the path of the jet when the spray tip is reversed to the cleaning position.

In FIG. 5, a washerlike insert 33 includes a bore 34, across which a diametrically located pin 35 extends. In use, the insert 33 is located between a lock screw similar to 26 and spray tip 24 of the spray head, e.g. as illustrated in FIG. 1. In such position the pin 35 is located across the axis of the spray tip orifice 25 and functions effectively to prevent the ejection of a dangerous jet of liquid during reverse flow of the liquid through the spray tip 24.

FIG. 6 also illustrates an insert for location between a lock screw similar to 26 and spray tip 24. In this instance, the insert 36 is provided with a central aperture or bore 37 and two or more divergent passages or bores 38 extending from said central bore. Here again the arrangement is such that flow of liquid through a reversed spray tip to clean same will be effectively dispersed and the formation of a dangerous jet prevented since the jet is divided and diverted through the bores 38.

It should be understood that the embodiments of the invention which have been described are merely illustrative of a few of the applications 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 I claim is:

1. A spray head assembly comprising a body, a moveable holder carried by said body, spray means in said moveable holder for spraying fluid from said body, a passage defined in said body, said passage communicating with said spray means to deliver the fluid thereto which is to be sprayed, deflection means in and moveable with said moveable holder, said deflection means being normally moved to a first position between said spray means and said passage

3

4

and out of the path of the fluid stream issuing from the spray means when the moveable holder is moved to a first position and said deflection means being moveable to a second position wherein said spray means is positioned between said deflection means and said passage when the moveable holder is moved to a second position, said deflection means being positioned in the path of the fluid stream issuing from the spray means when said moveable holder is in said second position whereby said deflection means is impinged by said fluid stream to diffuse the fluid stream.

2. The assembly of claim 1 wherein said moveable holder is rotatable and is rotated approximately 180° between said first and second positions.

3. The assembly of claim 1 wherein said deflection means comprises a vane means.

4. The assembly of claim 3 wherein said vane means is spiral in form and swirls the fluid stream issuing from the spray means when said moveable holder is moved to said second position.

5. The assembly of claim 1 wherein said deflection means comprises means for producing turbulence in the fluid stream issuing from said spray means when said moveable holder is moved to said second position.

6. The assembly of claim 1 wherein said deflection means comprises a pin.

7. The assembly of claim 1 wherein said deflection means comprises a first bore communicating with said spray means and a plurality of second bores communicating with said first bore the fluid stream issuing from said spray means entering said first bore and exiting from said second bores when said moveable holder is moved to said second position.

8. The assembly of claim 1 wherein said moveable holder defines a passage therethrough in communication with said fluid-delivering passage, said spray means being positioned in said holder passage, and plug means in said holder passage carrying and positioning said deflection means and maintaining said spray means in said holder passage.

9. The assembly of claim 1 wherein said moveable holder defines a passage therethrough in communication with said fluid delivering passage, said spray means being positioned in said holder passage, plug means in said holder passage, insert means in said holder passage between said spray means and said plug means, said insert means carrying and positioning said deflection means, and said plug means maintaining said spray means and said insert means in said holder passage.

10. The assembly of claim 1 wherein when said moveable holder is moved to said second position, the flow of fluid through said spray means is reversed for cleansing the spray means.

30

35

40

45

50

55

60

65

70

75