

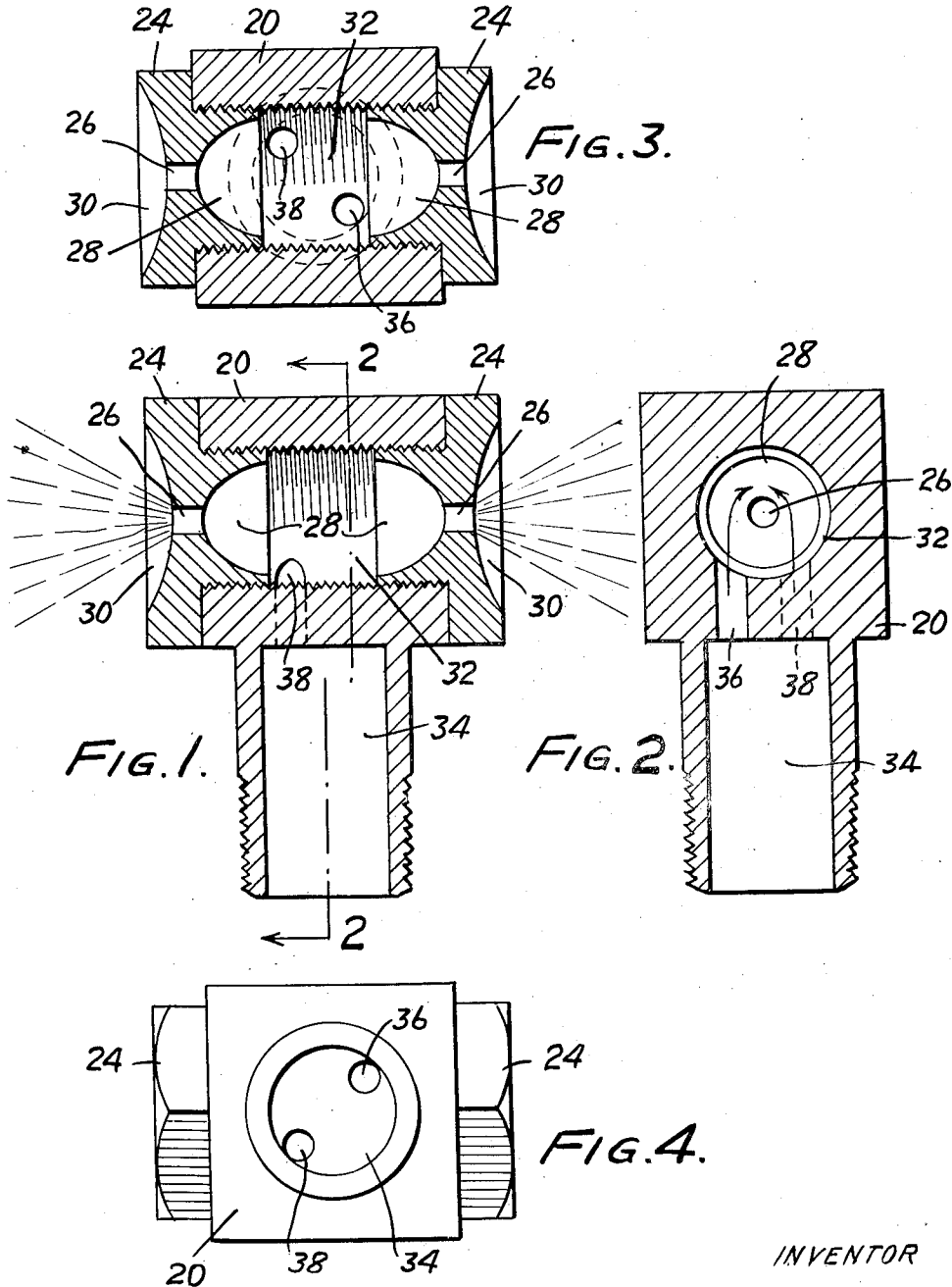
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DOUBLE ORIFICE SOLID CONE SPRAY NOZZLE

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WITNESS:

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DOUBLE ORIFICE SOLID CONE SPRAY
NOZZLE

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This invention relates to nozzles adapted for the production of a so-called solid cone spray, i. e., one in which a cross-section of the spray will show approximately uniform distribution of droplets through the entire cross-sectional circle as contrasted with a distribution concentrated in a peripheral region.

Heretofore it has been customary to provide solid cone sprays by the use of nozzles in which the discharge is parallel with the inlet, the liquid from the inlet passing through slots or spiral grooves into a swirl chamber, into which a center jet discharges directly from the inlet behind the discharge orifice. Such constructions have the disadvantage that to secure a good quality spray a series of tangential streams or jets, comprising at least two, is essential to secure proper balance. Since the total area for a particular capacity of flow is approximately fixed, such an arrangement utilizing multiple jets to produce a swirling action is likely to clog because each jet must be small.

If there is directed tangentially into a chamber communicating with an exit orifice a single jet producing swirling in one direction only, the result, as is well known, is the production of a hollow cone spray.

In accordance with the present invention an arrangement is provided in which two oppositely disposed tangential inlets into a swirl chamber will produce two oppositely directed symmetrical cone sprays from the swirl chamber.

Another object of my invention is to provide a nozzle in which the inlets are at right angles to two oppositely directed outlets, whereby simplicity of construction is secured.

For the washing or absorption of gases passing through ducts it is usually undesirable to either retard or increase the velocity of the gas materially, requiring the placing of say one nozzle to spray in the same direction as the passing of the gases and another to spray in countercurrent. The use of my combined nozzle eliminates the use of a separate nozzle as it sprays in opposite directions at the same time.

In particular, the nozzle is of such a type as to be capable of formation from bar stock, for example, square and hexagonal stock, as a screw machine product. While the invention is not limited to such formation of the nozzle, since in larger sizes the body thereof may be cast, the possibility of making it as a screw machine product is highly advantageous for turning out large quantities inexpensively.

Fig. 1 is a longitudinal section through one

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form of spray nozzle, constructed in accordance with my invention;

Fig. 2 is a sectional view on the line 2—2 of Fig. 1;

Fig. 3 is a transverse sectional view of the nozzle; and

Fig. 4 is a bottom plan view of the nozzle.

The specific structure illustrated in the drawings comprises a body 20 having a cap 24 threaded in each end of the body.

Each cap is provided with a central orifice 26, which communicates with an inner central concaved recess 28 and an outer concaved recess 30.

Formed in the body 20 between the caps 24 is a swirl chamber 32, to which liquid is delivered from an inlet chamber 34 within a threaded member which is connected to a liquid supply not shown.

In the nozzle illustrated there are two openings 36 and 38 communicating with the swirl chamber 32 and the inlet chamber 34. Both jets extend in tangential directions with relation to the swirl chamber 32, one of the openings being adjacent to one of the caps 24, while the other is adjacent to the other cap. The opening 36 is so positioned that a jet of liquid projected therefrom will swirl in a clockwise direction in chamber 32, while the jet of liquid projected from opening 38 will swirl in a counter-clockwise direction, see Fig. 2.

This oppositely swirling motion of the liquid in the chamber 32, caused by delivering the jets tangentially into the chamber in opposite directions, will project full or solid cone sprays from the orifices 26 of the nozzle.

What I claim and desire to protect by Letters Patent is:

1. A nozzle for delivering two solid cone sprays having means for forming a swirl chamber which is circular in cross section, said swirl chamber having opposite end walls and an axially directed discharge orifice in each of said end walls, there being two passageways leading into the swirl chamber for delivering two jets of liquid to said swirl chamber, said passageways lying on opposite sides of a plane transverse to the axis of said discharge orifices, being substantially tangent to the periphery of the swirl chamber, and being directed to discharge in opposite directions.

2. A spray nozzle for delivering two solid cone sprays having means for forming a swirl chamber which is circular in cross section, a cap connected to each end thereof, each cap having an axially directed discharge orifice therethrough and having a centrally located recess in its inner face, there being two passageways leading into the

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swirl chamber for delivering two jets of liquid to said swirl chamber, said passageways lying on opposite sides of a plane transverse to the axis of said discharge orifices, being substantially tangent to the periphery of the swirl chamber, and being directed to discharge in opposite directions.

3. A spray nozzle having a hollow body forming a swirl chamber which is circular in cross section, a cap connected to each end thereof, each cap having an axially directed discharge orifice there-through and having a centrally located recess in its inner face, means for connecting an inlet pipe to the body having an inlet chamber, the axis of the pipe connecting means being normal to the axis of the swirl chamber, there being two passageways leading from the inlet chamber into the swirl chamber for delivering two jets of liquid to said swirl chamber, said passageways lying on opposite sides of a plane transverse to the axis of said discharge orifices, being substan-

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tially tangent to the periphery of the swirl chamber, and being directed to discharge in opposite directions.

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