

[54] **CONFINING NOZZLE FOR SPRAY GUN**
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 [22] Filed: **Dec. 10, 1973**
 [21] Appl. No.: **423,202**

3,463,395 8/1969 Binoche 239/296
 3,702,175 11/1972 Watkins 239/422

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[52] U.S. Cl. 239/290, 239/296, 239/422
 [51] Int. Cl. B05b 1/28
 [58] Field of Search 239/294, 295, 296, 297, 239/290, 422, 423

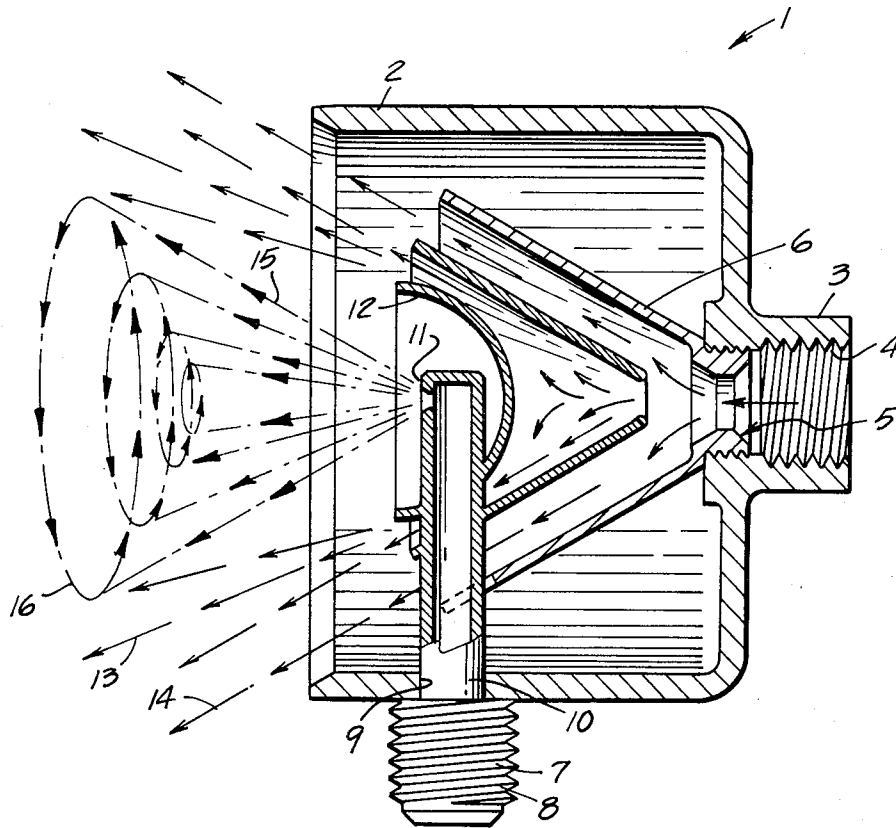
[57] **ABSTRACT**

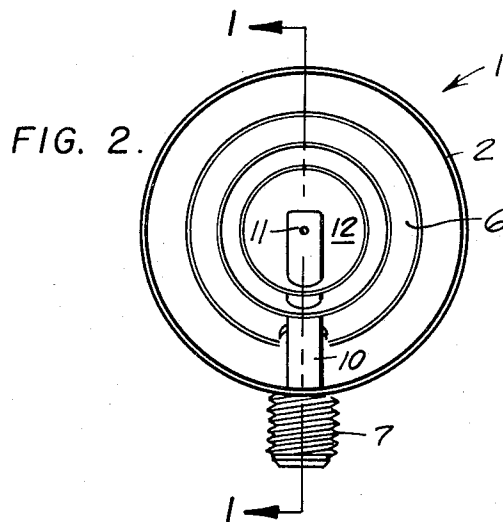
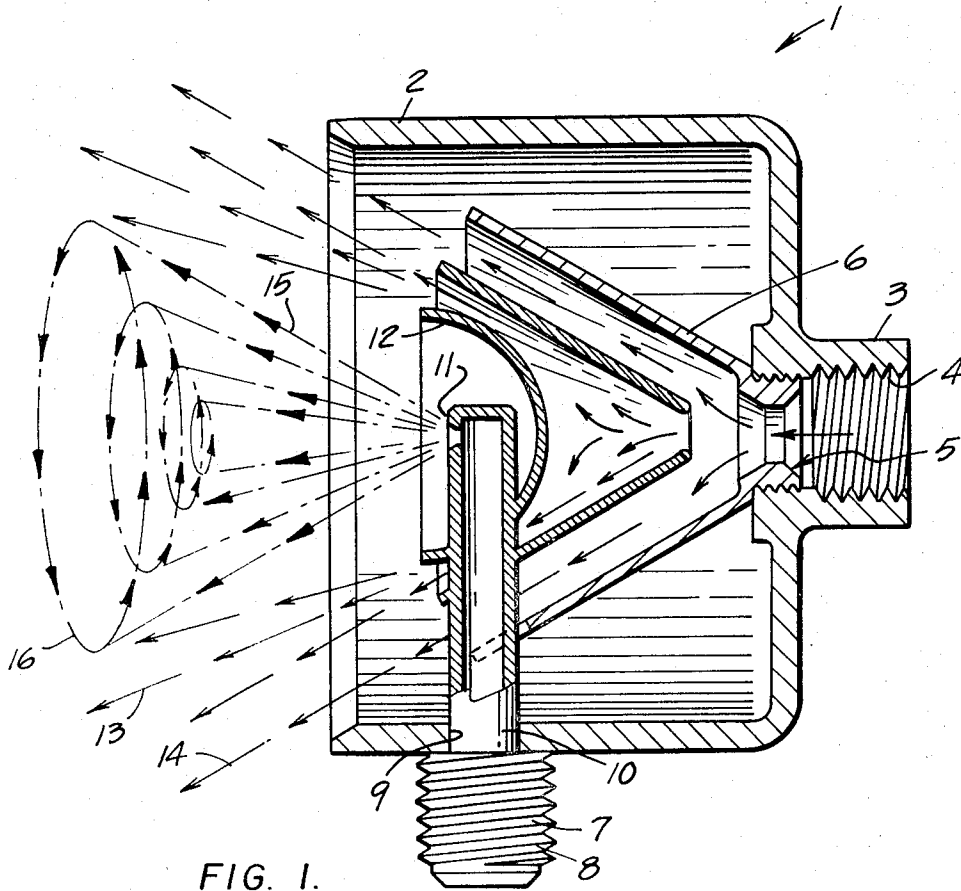
A nozzle for a spray gun for paint and the like utilizes a novel secondary air stream which combines with the pressurized fluid outlet nozzle action and a primary atomizing air outlet to not only produce a vortex action of the spray but to confine it to a definitely limited area thus preventing excessive splashing, waste of fluid and covering of areas which it is not desired to cover.

[56] **References Cited**
UNITED STATES PATENTS

1,608,833 11/1926 Birkenmaier et al. 239/297
 1,786,394 12/1930 Tracy 239/296
 2,787,497 4/1957 Kough 239/290

4 Claims, 2 Drawing Figures





CONFINING NOZZLE FOR SPRAY GUN

BACKGROUND OF THE INVENTION

Of course, the utilization of air pressure and air atomization to effect spraying of paint and the like is an old art. Numerous nozzles have been constructed to increase the efficiency and effectiveness of this process. Those known to the applicant at the time of this writing are set forth briefly below.

Heinrich U.S. Pat. No. 1,438,239 teaches the use of a crater-like or cup shaped nozzle which mixes with a secondary concentric air supply to give improved atomization of the fluid which is fed through the center of the nozzle.

Parker U.S. Pat. No. 1,463,332 uses a wing-shaped auxiliary nozzle which supplies an air stream directed at the emitting fluid stream to create a flared type of jet and simulate a flat brush action.

Bartling U.S. Pat. No. 1,539,536 also uses a wing type of auxiliary jet for air to combine with the main spray jet and produce an improved brush effect.

Johnston U.S. Pat. No. 1,974,538 teaches the use of an air actuated rotary central member in a nozzle which produces a very high degree of atomization approaching that of fog and is adapted especially for the spraying of insecticides.

Starkey U.S. Pat. No. 2,942,790 utilizes a series of skewed or tangentially oriented passages circumferentially spaced around a central nozzle opening to create a turbulent spray for viscous fluids. It is especially adapted for heavy oil, such as that used in oil burners.

Swan U.S. Pat. No. 3,082,960 utilizes a rotatable vaned rotor positioned in the liquid stream which likewise produces a high degree of dispersal or atomization and is especially adapted for use in devices such as fire hose nozzles.

I am not aware at this time of any device or nozzle which is especially adapted to confine and atomize a stream of fluid such as paint to a given predetermined area to prevent wastage and disfiguration of adjacent areas other than the area it is desired to cover.

SUMMARY OF THE INVENTION

I have discovered that by the use of the nozzle of my invention I am able to confine an atomized stream of fluid such as paint to a given limited area and prevent its spreading out beyond that area.

I provide first a nozzle connected to a source of fluid spray, such as paint, under pressure and disposed to eject said stream upon an exterior surface.

I next provide a primary air outlet which combines with the fluid stream to effect its atomization or division into fine particles.

I then provide a secondary air outlet concentric with the other two outlets which act as a confining means or shield to prevent the paint or other fluid from flying or being ejected beyond the screen so produced.

By the use of my invention I have found that I am able to prevent great wastage of fluid such as expensive paints and also to prevent covering areas adjacent to that which it is desired to cover unnecessarily and thus eliminating the need for excessive cleaning up afterwards.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross-sectional view of a preferred embodiment of the nozzle of my invention taken along the lines 1—1 of FIG. 2.

FIG. 2 is an end view looking into the nozzle outlets of my invention.

DESCRIPTION OF A PREFERRED EMBODIMENT

Referring now to the Figures, there is seen the body or housing of the nozzle of my invention 1 which is equipped with a projecting member 2 and a hub 3.

Hub 3 is equipped with an internal threaded section 4 which is adapted for screwing on the end of a suitable spray gun which in turn is connected to an air supply as is well known to those skilled in the art.

Air inlet 5 connects to the internal cone air supply member 6 of my nozzle.

An inlet for paint or other fluid is provided at 7 which may be connected to a source of paint under pressure by means of threaded section 8. This may be a hose connection which goes to a pressurized cannister and is controlled insofar as flow is concerned by an operating gun also in a manner known to those skilled in the art, but which is not shown.

A press fit section 9 in projecting member 2 is disposed to receive an internal pipe member 10 which leads to an orifice or outlet 11 positioned in the center of nozzle body 1. This orifice or nozzle may be a simple flared hole or may comprise other configurations which have been used for ejection of the fluid.

In casing outlet nozzle 11 I provide a semi-cylindrical baffle 12 positioned concentric with outlet nozzle 11.

My conical member 6 mentioned above in effect comprises two concentric cones as shown which in turn provide two separate conduits for air flow.

Thus I provide a primary air flow emanating from air inlet 5 and exiting around cylindrical baffle 12 as seen at 13.

I provide also a secondary air outlet from cone member 6 concentric with but enclosing or encompassing the primary air outlet 13 and the fluid spray outlet 15.

The combined action of the two latter air outlets and baffle 12 upon fluid spray outlet 15 is to produce a vortex 16 and the further action of my air outlets and particularly the secondary air 14 is to prevent the spray vortex 16 from penetrating outside of the area enclosed by the stream 14.

My combination of fluid and air streams aided by the special configuration of my cone member and semi-cylindrical baffle combine to produce the unusual effect of confining my atomized spray of fluid to a given predetermined and selected area which of course may be varied by varying the air pressures supplied by the spray gun (not shown).

I claim:

1. A nozzle for a fluid spray gun comprising: a housing of generally hollow cylindrical configuration having an open end; an orifice positioned concentrically within said housing and disposed for emission of a stream of fluid out of the open end of said housing; means for connecting said orifice to a source of fluid under pressure;

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a conical air supply member positioned concentrically within said housing;
 means for connecting said air supply member to the outlet of an air spray gun;
 said member comprising two separate concentric conical air conduits disposed for emitting a first inner air stream and a second outer air stream axially through said open end of housing,
 said streams being concentric with each other and having a generally circular cross-sectional configuration;
 said first inner air stream being disposed to impinge upon said fluid stream thereby effecting atomization of said fluid stream;
 said second outer stream being disposed to produce an air screen around said first stream thereby con-

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fining said first stream to a predetermined area.
 2. The nozzle of claim 1 including a semi-cylindrical baffle positioned concentrically within said housing and having its open end facing in the direction of the open end of said housing;
 said baffle being further positioned behind said orifice and within the flow of said first air stream, whereby the combined action of said baffle and said air stream produces a vortex action upon said atomized fluid stream.
 3. The nozzle of claim 2 including means for varying the pressure of the air supply to said conical member.
 4. The nozzle of claim 2 including means for varying the flow of fluid to said orifice.

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