

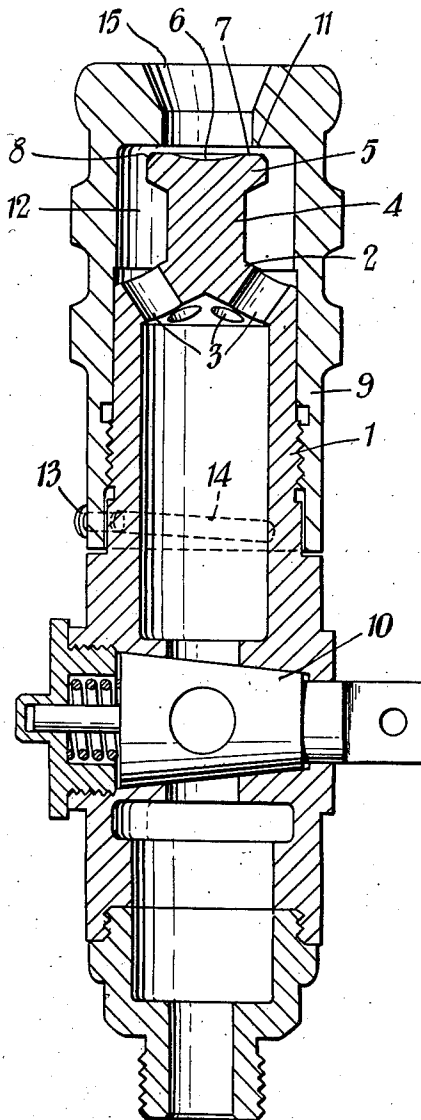
June 25, 1957

E. R. A. FULLER

2,797,134

NOZZLE FOR PRODUCING SPRAY AND MIST

Filed Sept. 15, 1954



INVENTOR

Eric R. A. Fuller

By Munn, Liddy, Nathanson & March

ATTORNEYS

1

2,797,134

NOZZLE FOR PRODUCING SPRAY AND MIST

Eric Robert Alfred Fuller, London, England, assignor of one-half to The General Fire Appliance Co. Limited, London, England

Application September 15, 1954, Serial No. 456,197

Claims priority, application Great Britain
September 22, 1953

4 Claims. (Cl. 299—136)

A very fine spray or mist of water or other liquid which can be thrown a considerable distance from the nozzle of a hose or the like is needed for various purposes for example for spraying fruit, for saturation and for smoke driving and in particular for fighting oil or petrol fires.

The present invention is concerned with nozzles, effective for such purposes, by which the liquid is projected in a converging annular jet.

From one aspect a nozzle for producing spray and mist according to the invention has means whereby fluid is directed radially inwards before emerging from the nozzle in a convergent annular jet.

From another aspect, the invention provides a nozzle for producing spray and mist comprising a central tubular member for connection to a source of fluid pressure closed at one end but provided with apertures for the passage of fluid, an extension of the closed end of the central member, formed with an end piece of mushroom shape and having on its top surface a peripheral flat annular surface and an outer tubular member defining with the extension of the inner member a fluid pressure chamber and having an inwardly directed flange at its outer end defining with the flat peripheral surface of the inner member a narrow annular passage through which fluid is directed inwardly towards the axis of the nozzle.

The outer end surface of the central member may be plane but it has been found advantageous to provide a depression at the centre as this increases the turbulence in the fluid effected by the impingement of the radially directed fluid particles on one another.

The outer circumferential edge of the inner member may be conically convergent in the direction of fluid flow, or cylindrical or may be curved so as to be convergent in the direction of flow where it is overlain by the inwardly directed flange.

The nozzle finds a particularly advantageous application in a method of fire fighting (particularly oil or petrol fires) which comprises directing a spray of fluid through the nozzle from a container by a pressure considerably less than that hitherto used. For example there may be used an initial pressure of 100 lbs./sq. in. falling to 50 lbs./sq. in. or less as the container is emptied whereas hitherto pressures above 150 lbs./sq. in. (and usually considerably above) have been used.

It has also been found that the use of chlorobromomethane with this method is particularly effective especially with the improved nozzle.

Other parts of the invention are embodied in the preferred form which will now be described in some detail by way of example.

The figure shown in the drawing is a central longitudinal

2

sectional view through a nozzle embodying the features of the present invention.

A central tubular member 1 of the nozzle is generally of somewhat greater diameter than the hose or other line from which it receives the supply. Its front is closed by a web 2 except for a series of apertures 3 for the passage of fluid and is extended with a mushroom-like stem 4 to an end piece 5 of somewhat less diameter than the tube.

The top surface of the mushroom is formed with a concave depression 6 which is surrounded by a plane annular face 7. The periphery of the end piece 5 is chamfered at 8 so that the top edge is in effect convergent in the direction of fluid flow.

An external thread is formed on the tube some way behind its closed end for the reception of an outer tubular member 9 having a divergent outlet 15.

Behind the external thread the central member 1 is formed with a body for a spring pressed shutoff plug valve 10 and the body is extended to provide a union connection for a source of pressurized fluid.

The outer tubular member 9 threaded onto the external thread on the central member 1 has its front end inwardly flanged at 11 in front of the end piece 5 of the central member 1 and the flange is sufficiently wide to overlie the plane annular face 7. The dimensions of both members are such that an annular chamber 12 of substantial cross-sectional area is formed between the inner and outer members behind the annular aperture defined between the forward ends. The fluid pressure within this chamber 12 is supplied through the apertures 3 in the inner member. Preferably the arrangement is such that the outer member 9 can be screwed down to close the annular aperture defined with the central member 1 and adjusted between limits set by a pin 13 and a slot 14 to give the small clearance necessary for optimum results, but where conditions of volume and pressure of the fluid supply are sufficiently constant a permanent setting can be used.

Fluid emerging from the annular chamber 12 through the annular passage defined between the face 7 and flange 11 is directed inwardly towards the central depression 6, becomes very turbulent and is directed in an annular convergent spray from the divergent outlet nozzle 15.

It will be understood that the invention is not restricted to the details of the preferred form which may be modified without departure from the scope of the following claims:

I claim:

1. A nozzle for producing spray and mist comprising a central tubular member for connection to a source of fluid pressure closed at one end but provided with apertures for the passage of fluid, an extension of the closed end of the central member, formed with an end piece of mushroom shape and having in its top surface a central concave depression and a peripheral flat annular surface and an outer tubular member defining with an extension of the inner member a fluid pressure chamber and having a flat inwardly directed flange at its outer end defining with the flat peripheral surface of the inner member a narrow annular passage through which fluid is directed inwardly towards the axis of the nozzle.

2. A nozzle according to claim 1 in which the outer circumferential edge of the central member is convergent in the direction of fluid flow.

3

3. A nozzle according to claim 2 in which the outer tubular member is threaded onto the central member and is adjustable to vary the opening between the outer end of the central member and the inwardly directed flange.

4. A nozzle according to claim 2 in which the central member incorporates a shut-off valve.

References Cited in the file of this patent

UNITED STATES PATENTS

264,317 McTighe et al. ----- Sept. 12, 1882

375,624
1,182,506
2,271,800
2,474,332
5 2,576,534
2,688,515

10

652,140

4

Hallowell ----- Dec. 27, 1887
Reininger ----- May 9, 1916
Meussdorffer ----- Feb. 3, 1942
Sciuto ----- June 28, 1949
Paasche ----- Nov. 27, 1951
Filliung ----- Sept. 7, 1954

FOREIGN PATENTS

Great Britain ----- Apr. 18, 1951