Feb. 27, 1934. M. O'CONNOR 1,948,824

NOZZLE

Filed March 28, 1931

Fig. 5.

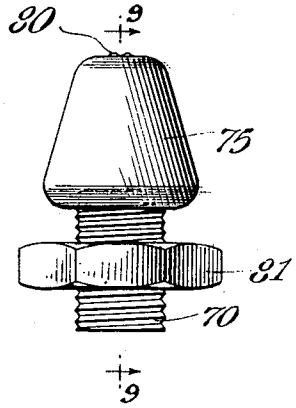


Fig. 6.

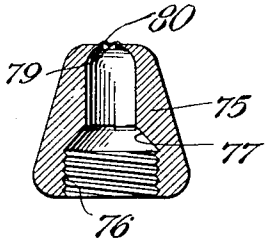


Fig. 7.

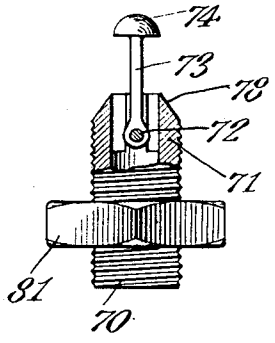


Fig. 8.

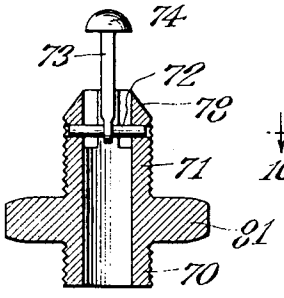


Fig. 9

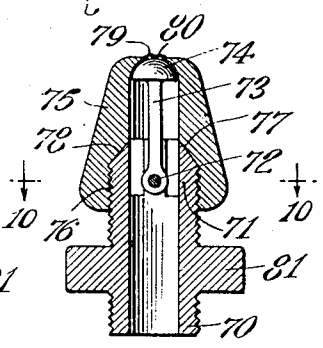


Fig. 10.

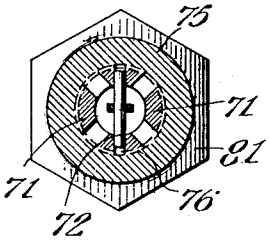


Fig. 11.

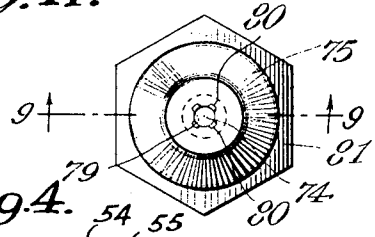


Fig. 2.

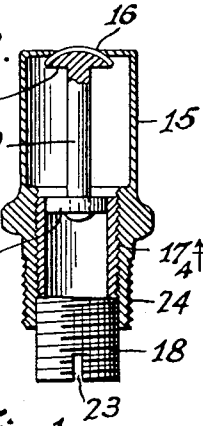


Fig. 3.

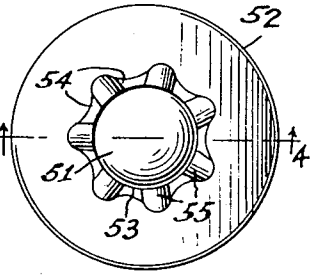
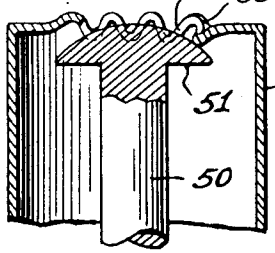


Fig. 4.



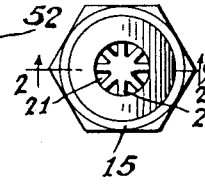


Fig. 1.

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NOZZLE

Martin O'Connor, Brooklyn, N. Y.

Application March 28, 1931. Serial No. 525,949

2 Claims. (Cl. 299—143)

This invention relates to nozzles, and more particularly to spray nozzles for use in watering plants and flowers.

An object of the invention is to provide a nozzle which will produce a fine spray or mist in which the particles are so finely divided that they become substantially the same temperature as the air before settling on the plants, and settle on the foliage and ground at a sufficiently slow rate to prevent injury or disturbance thereto and to simulate in a natural fog or mist.

Another object of the invention is to provide a cheap, simple, convenient and efficient device of the type above indicated.

A feature of the invention is a nozzle formed with an outer shell and an inner stem carrying a head which seats against suitable opening in said shell and in which either the head or the shell are provided with irregular surfaces which determine the minimum opening of the nozzle and permit passage of the fine stream which is necessary in producing the mist above mentioned.

The invention also consists in certain new and original features of construction and combinations of parts hereinafter set forth and claimed.

Although the novel features which are believed to be characteristic of this invention will be particularly pointed out in the claims appended hereto, the invention itself, as to its objects and advantages, and the manner in which it may be carried out, may be better understood by referring to the following description taken in connection with the accompanying drawing forming a part thereof, in which

Fig. 1 is a plan view of one form of nozzle constructed in accordance with the present invention;

Fig. 2 is a longitudinal sectional view taken along the line 2—2 of Fig. 1;

Fig. 3 is a plan view of still another form of valve stem and casing;

Fig. 4 is a section taken on the line 4—4 of Fig. 3;

Fig. 5 is a side elevation of still another form of nozzle;

Fig. 6 is a longitudinal section of the cap;

Fig. 7 is a longitudinal section of the threaded carrier;

Fig. 8 is a longitudinal section of the carrier taken at right angles to the Fig. 7;

Fig. 9 is a longitudinal section of the complete assembly taken on line 9—9 of Figs. 5 and 11;

Fig. 10 is a sectional view taken on the line 10—10 of Fig. 9; and

Fig. 11 is a top plan view of the structure shown in Figure 5.

Like reference characters denote like parts in the several figures of the drawing.

In the following description and in the claims, various details will be identified by specific names for convenience, but they are intended to be as generic in their application as the art will permit.

Referring to Figs. 1 and 2 of the drawing, the nozzle is shown as comprising a casing 15 having an orifice 16 formed in the end thereof and being internally threaded at 17 to receive a threaded carrier 18 to which a cross arm or spider 19 is secured. Valve stem 20 is secured in said cross arm 19, preferably by riveting the end of said stem in said cross arm in such manner that relative rotational movement is permitted. Valve stem 20 is provided with a head 21 comprising a spherical surface having a plurality of grooves 22 formed therein. The arrangement is such that the spherical surface of head 21 seats in the opening 16 of casing 15 and determines the closed position of the valve in which small streams may be passed through grooves 22. Said streams meet at a point ahead of the nozzle and are broken up into a fine spray or mist which, as outlined above, is suitable for use in irrigating vegetation. Carrier 18 may be provided with a slot 23 to receive a screw driver or other adjusting instrument to permit the opening of the nozzle to be varied. Casing 15 may also be provided with external threads 24 which permit the nozzle to be applied to a hose or other liquid carrier.

In Figs. 3 and 4 a form of the invention is shown comprising a valve stem 50 carrying a spherical head 51. Casing 52 is provided adjacent opening 53 with a plurality of depressed sections 54 and a plurality of elevated sections 55 which are alternately disposed. The relative depression and elevation of said sections determine the maximum closing of valve 51 and provides channels through which the liquid is passed. It is to be understood that a spacing means could be provided by omitting either depressions 54 or elevated sections 55 and relying on the alternate members for providing the necessary spacing for the liquid channel. Casing 52 and stem 50 are otherwise similar to casing 15 and stem 20 of Figs. 1 and 2 and are similarly mounted.

Referring to Figs. 5–11, a form of nozzle is shown comprising a threaded carrier 70 having one end split into four sections 71. Between two of said sections is mounted a wrist pin 72 carrying a valve stem 73 having an enlarged valve head 74. The stem is preferably loosely mount-

ed on the wrist pin to permit the same to be accurately centered. Thus the water will pass around the valve head 74 equally on all sides and allow the mist to be properly formed or created. A cap 75 is provided with internal threads 76 to engage said carrier, and with tapered shoulders 77 which engage similar shoulders 78 on sections 71 of said carrier. The head is also provided with an aperture 79 which is adapted to seat over valve head 74 and is preferably formed with a series of depressions 80 which determine the extent of movement of said cap and provide a space for liquid flow when the valve is completely seated. It is to be understood that the depressions may be omitted if desired. The arrangement is preferably such that the depressions 80 engage head 74 at the same time that shoulders 77 engage shoulders 78. Carrier 70 is preferably provided with an enlarged section 81 having gripping surfaces to receive a tool, such as a wrench, for purposes of adjustment.

It will be noted that in any of the above described forms of nozzle, depressions or elevations are formed either on the casing itself or on the valve head which determines the minimum opening of the valve and the direction of the liquid streams as they leave the nozzle. Furthermore, the valve stem is carried on an internal carrier which does not interfere with the mounting of the casing on a hose or similar article and may be readily adjusted when the nozzle is removed from the hose. Furthermore the adjustment when once made is permanent and is maintained while the nozzle is in use.

While certain novel features of the invention have been disclosed and are pointed out in the annexed claims, it will be understood that various omissions, substitutions and changes may be made by those skilled in the art without departing from the spirit of the invention.

What is claimed is:

1. A liquid nozzle adapted to produce a fine spray or mist comprising a casing having an aperture therein, a valve stem having a head adapted to seat in said aperture and spacing means for determining the minimum opening of said head comprising depressions formed in said casing in a position to engage said head and limit the movement thereof and to provide grooves for the passage of liquid when said head is seated thereagainst, said grooves being arranged to cause the liquid to meet at a point in advance of the nozzle and to become broken into a fine mist.

2. A fluid nozzle comprising a casing having an aperture therein, a valve member engaging said aperture, means for determining the minimum opening of said valve member comprising depressions formed in said casing around said aperture to provide grooves for the passage of fluid when said valve member is seated against said aperture, said grooves being arranged to cause the fluid to meet at a point in advance of the nozzle and to become broken into a fine mist.

MARTIN O'CONNOR.