H. H. HARDIE.

SPRAYING NOZZLE.

APPLICATION FILED OCT. 28, 1916.

1,246,092. Patented Nov. 13, 1917.

Fig. 1.

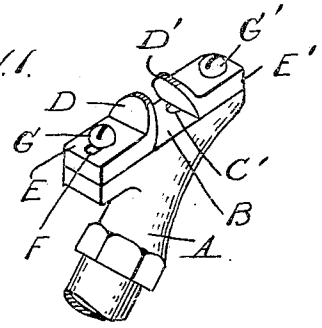


Fig. 2.

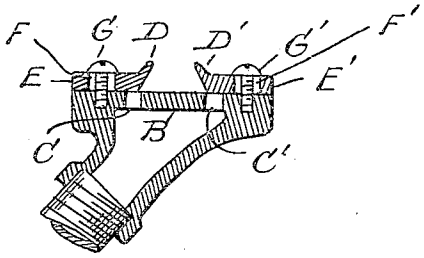


Fig. 3.

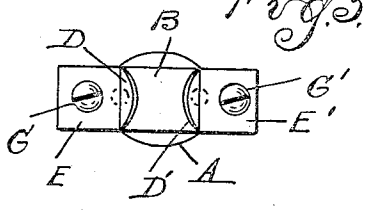
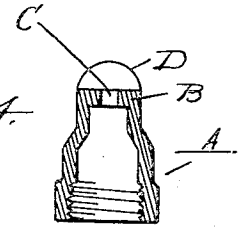


Fig. 4.



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UNITED STATES PATENT OFFICE.

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SPRAYING-NOZZLE.

1,246,092. Specification of Letters Patent. Patented Nov. 13, 1917.

Application filed October 28, 1916. Serial No. 128,199.

To all whom it may concern:

Be it known that I, HENRY H. HARDIE, a citizen of the United States of America, residing at Hudson, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Spraying-Nozzles, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to nozzles more particularly designed for use in spraying trees and other vegetation, and it is the object of the invention, first, to obtain a finer atomization of the liquid; second, to avoid dripping from the nozzle; and third, to provide an easy adjustment to compensate for wear so as to maintain a uniform action.

In the drawings:

Figure 1 is a perspective view of the nozzle;

Fig. 2 is a longitudinal section therethrough;

Fig. 3 is a plan view;

Fig. 4 is a cross-section.

In the present state of the art spraying nozzles for the purpose described are usually formed with a jet opening arranged to direct the liquid at an angle against a distributing surface by which the stream is flattened out into a spray. Difficulty has been experienced in a dripping of some of the liquid from the distributing surface and various expedients have been tried to overcome this defect. Another difficulty is that the spray delivered from the surface is not as finely atomized as desirable. With the present invention I have obtained a construction which very effectually prevents any dripping of liquid from the nozzle and which forms a spray more highly atomized than with constructions heretofore devised. There is also provision for adjustment and re-setting of the nozzle to compensate for wear and to maintain uniform efficiency at all times.

In detail, A is a fitting for connection to the end of the liquid conduit, which is provided with a flat elongated face B. C and C′ are apertures through the face B communicating with the chamber within the fitting. D and D′ are inclined spraying surfaces arranged to partially cover the apertures C and C′ and to direct the liquid in converging planes. These surfaces are substantially semi-circular and are arranged concentric with the apertures C and C′, so that the radial length from said apertures to each point in the periphery of the surface is substantially equal. To adjust the size of the apertures C and C′ the parts D and D′ are longitudinally adjustable, preferably by providing them with flanges E and E′ slotted at F and F′ and secured to the surface B by clamping screws G and G′.

With the construction described, when the members D and D′ are properly set they will extend across the apertures C and C′ so as to cut the stream of liquid, permitting the latter to flatten out upon the surface without entrapping air. As the liquid is traveling at high velocity through the aperture and is directed at an angle to the surface it will be flattened out into a thin radially-expanding sheet, which at a point beyond the nozzle will intersect the plane of the sheet from the opposite surface. The meeting of these two sheets will highly atomize the liquid, and as the radial length from the jet to the periphery of each surface is uniform in length there will be no dripping.

The spraying materials commonly used in apparatus of this kind contain solid particles of a gritty nature which have an abrasive action on the nozzle. Thus the apertures C and C′ will be gradually enlarged, which will tend to lessen the velocity of the liquid passing therethrough and to interfere with the efficiency of the spray. This difficulty is avoided by adjusting the members D and D′ whenever necessary, thereby maintaining a uniform area of opening.

As the members D and D′ are separately formed from the fitting A, they may be made of a harder material so as to better withstand the wear.

What I claim as my invention is:

1. A spray nozzle, comprising a hollow fitting having a plane face and a pair of discharge apertures opening in said face, a pair of members longitudinally adjustably secured to said surface to variably obstruct the respective apertures, said members having arc-shaped surfaces inclined to the axes of the discharge apertures and concentric thereto, the intersection of the planes of said surfaces being outside of the nozzle.

2. A spray nozzle, comprising a fitting having a liquid inlet and a pair of liquid discharge apertures opening in a plane surface of said fitting, and a pair of members

adjustable to and from each other upon said surface to variably obstruct said discharge apertures, said members having deflecting surfaces oppositely inclined with the apertured surface.

3. A spray nozzle, comprising a fitting having a liquid inlet and a pair of liquid discharge apertures, a pair of members mounted upon said fitting and adjustable to respectively variably obstruct the respective apertures, said members having deflecting faces registering with said apertures, which faces are oppositely inclined, members for clamping the respective deflectors to the fitting, the deflector members being slotted to receive the clamping members and to permit adjustment relative thereto.

In testimony whereof I affix my signature.

HENRY H. HARDIE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."