

(No Model.)

W. L. DEMING.
SPRAYING NOZZLE.

No. 511,728.

Patented Dec. 26, 1893.

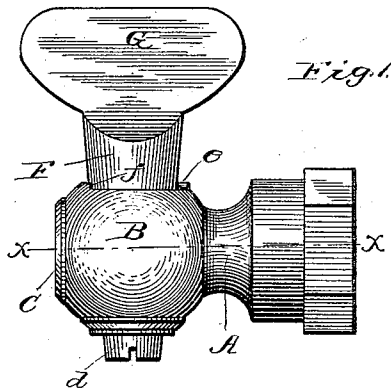


Fig. 1.

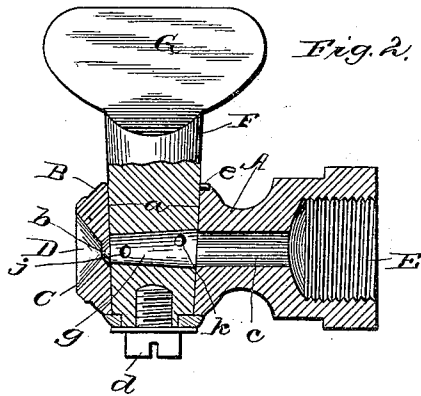


Fig. 2.

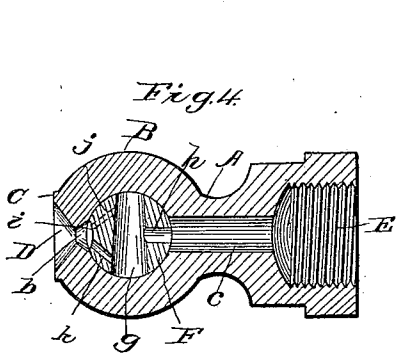


Fig. 4.

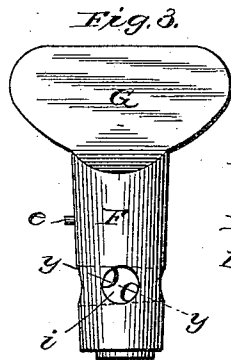


Fig. 3.

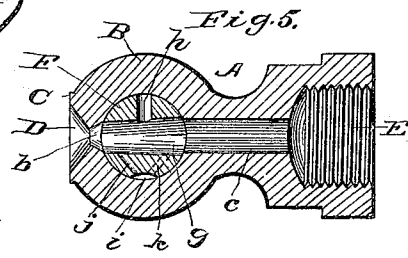


Fig. 5.

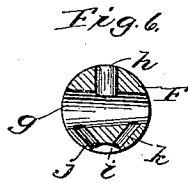


Fig. 6.

Witnesses.

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SPRAYING-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 511,728, dated December 26, 1893.

Application filed April 7, 1893. Serial No. 469,453. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM L. DEMING, a citizen of the United States, residing at Salem, in the county of Columbiana and State of Ohio, have invented certain new and useful Improvements in Spraying-Nozzles; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in the art of water distribution, and has for its object the production of a nozzle capable of ready attachment to a section of hose or tubing, and when used in connection with an ordinary force pump, adapted to throw a solid concentrated stream, or to atomize liquids for the purpose of spraying plants, bushes, or trees to rid them of vermin common to orchards and gardens generally.

The invention will be hereinafter described and particularly pointed out in the claims.

In the accompanying drawings which form part of this specification, Figure 1, represents a side elevation of my invention; Fig. 2, a longitudinal sectional view of same, with valve or plug in position for throwing a solid concentrated stream; Fig. 3, a side elevation of valve or plug constituting an important feature of my invention. Figs. 4 and 5, each represents a longitudinal central section of my improved nozzle taken on line *x, x*, Fig. 1; showing also, a transverse section of valve or plug in its position for spraying and for throwing a solid steam respectively, and Fig. 6, is a transverse section of valve or plug taken on the line *y, y*, Fig. 3.

Reference being had to the drawings, in which like letters indicate like parts wherever employed, A represents the body of my improved nozzle, preferably made of cast metal, and constructed with a globe or enlargement B at one end, the latter being perforated as shown in Fig. 2, thus forming a valve seat with tapering walls *a* for the reception of a valve or plug which will be hereinafter described.

The advance end of globe B is flattened as at C and recessed as at D, giving to the nozzle a flaring bell mouth discharge; while immediately back of this a similar though smaller recess *b* is formed in the inner wall

of globe B which latter recess communicates with the former. The opposite end of body A is provided with the usual internal screw E for connection with a hose or pump, and communication is established between such hose and the valve seat by means of a longitudinal supply channel *c*.

F indicates a valve or plug ordinarily seated in globe B as shown, and adjustably held to its seat by means of screw *d* illustrated in Figs. 1 and 2; said valve being further provided with a thumb key G as a convenient means of turning the same axially, and a pin-
tle, *e*, projecting from one side for engaging stop *f* on globe B and thus limiting rotation of the valve. Near its lower end, this valve is perforated by a transverse channel *g*, gradually reduced in size from its inlet to its discharge end; while at right angles thereto is a communicating passage *h* of somewhat smaller bore for purposes that will hereinafter appear. Diametrically opposite the passage *h* and in the face of plug or valve F is formed a recess or cup-shaped depression *i*, adapted to register at times with recess *b* in globe B thus forming vortex chamber *b i* as shown by Fig. 4. Opening into the depression *i* are channels *j* *k*, arranged in different planes, and consequently entering said depression tangentially; while the opposite ends of each communicate with the channel *g* from which they are supplied. The channel *g*, thus it will be observed, performs a double function; namely, it not only serves to throw a solid stream when in the position shown by Fig. 5, but when in position shown by Fig. 4, serves the important function of a pressure chamber into which the water is received and held before being discharged. This being substantially the construction and arrangement of my improved nozzle, its use and operation are quite apparent. Water or spraying liquid being supplied to the nozzle from a force pump, may be thoroughly disintegrated and discharged in a fine spray by manipulation of key G and its plug, until they assume the relative position in globe B shown by Fig. 4, when the liquid will be conducted from the supply toward the discharge end of the nozzle through channels *c* and *h*, and by the latter introduced into the tapering channel *g*. The ends of said channel *g* in this position, being closed by walls *a*

of the valve seat, prevent passage of the liquid in these directions leaving but one means of escape; namely, by way of tangential channels *j, k*, into which the liquid is forced from opposite ends of the channel *g*. Owing to the reduced or smaller diameter of tangential channels *j, k*, it will be observed that the liquid is given an accelerated force when projected from them into depression *i*, and entering said depression in different planes the two streams are given a violent whirling motion in chamber *i—b* from whence the liquid is discharged through the flaring mouth *D* of the nozzle in the finest spray or mist.

15 If it is now desired to throw a solid concentrated stream from the same nozzle, it is only necessary to rotate plug or valve *F* until the smaller end of channel *g* registers with recess *b*, and its larger or opposite end with supply channel *c* as shown by Figs. 2 and 5. Again, it being desired to throw a coarse spray for sprinkling purposes, or for cleansing the several passages of the nozzle from sediment or foreign matter, it is only necessary to rotate

25 plug *F* in the same direction a few degrees further, when the channel *h* will register with the discharge opening *D* and the parts assume a position the reverse of that illustrated by Fig. 4; and when it is desired to stop the discharge of liquid from the nozzle positively, in order to avoid the waste of liquid, while for instance transferring the spraying apparatus from one part of an orchard or garden to another, the key *G* and plug *F* controlled there-

35 by, are given a still further turn until the pin-

tle *e* comes in contact with stop *f* where it is arrested.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a spraying nozzle, a plug or valve, having converging discharge passages arranged transversely therein in different planes, a pressure chamber from which said passages are supplied, and a channel communicating with said chamber, substantially as described.

2. In a spraying nozzle, a plug or valve, having transverse discharge passages in different planes converging toward their outer ends, a main supply channel, and a tapering or reduced pressure channel intersecting the plug and communicating with said passages and channels, substantially as described.

3. In a spraying nozzle, a longitudinal supply channel, a valve seat crossing the nozzle at right angles, a plug or valve located therein, a vortex chamber formed by a depression in the surface of said valve and a similar depression in the valve seat, and converging discharge passages crossing the plug transversely, in different planes, and entering said vortex chamber tangentially, substantially as described.

In testimony whereof I subscribe my signature in presence of two witnesses.

WILLIAM L. DEMING.

Witnesses:

E. J. THOBABEN,
R. W. JUDD.