(No Model.)

E. A. & C. BENEDICT.

SPRAYING NOZZLE.

No. 564,500. Patented July 21, 1896.

Fig. 1.

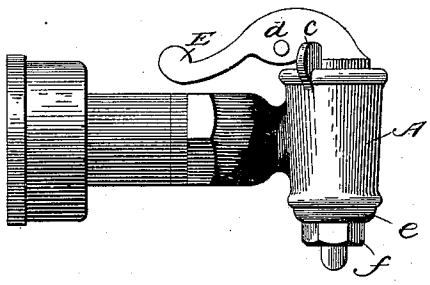


Fig. 2.

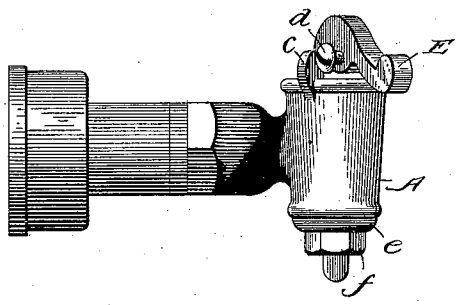


Fig. 3.

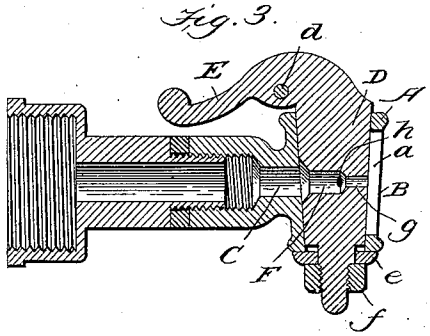


Fig. 4.

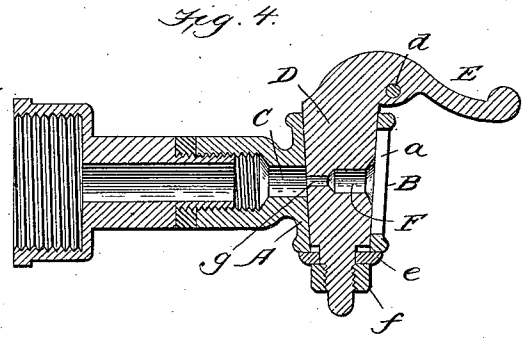
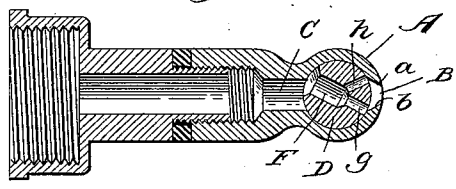


Fig. 5.



Witnesses.

Edwin L. Bradford

F. M. Ritter Jr.

Inventors:

Edward A. Benedict

and

Christie Benedict

By Wm. C. Dyre.

Attorney

UNITED STATES PATENT OFFICE.

EDWARD A. BENEDICT AND CHRISTIE BENEDICT, OF SALEM, OHIO, ASSIGNORS TO THE DEMING COMPANY, OF SAME PLACE.

SPRAYING-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 564,500, dated July 21, 1896.

Application filed April 17, 1895. Serial No. 546,017. (No model.)

To all whom it may concern:

Be it known that we, EDWARD A. BENEDICT and CHRISTIE BENEDICT, citizens 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 we 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.

Our invention relates to apparatus for spraying plants, bushes, vines, or trees for the purpose of treating them with various insecticides or disinfectants, the use of which in practice has been found so essential to their proper cultivation, protection, and development, as well as that of the fruit which they bear.

This being the nature of our invention, the improvements herein set forth consist particularly in a nozzle for use in connection with a suitable force-pump and intervening hose or tubing, by means of which liquid compounds may be forced from a reservoir or receptacle and conveniently applied to said trees, vines, and fruit with the greatest degree of economy. The characteristic features of this nozzle are a cylindrical valve-body, a rotatable valve-plug therein, means for limiting and graduating the extent of such rotation, means for throwing a solid stream, a single or a double converging fan-like spray, and means for readily disgorging or cleansing the nozzle when occasion requires, all as will now be more fully described, and particularly pointed out in the claims following.

In the accompanying drawings, which form part of this specification, and in which like letters indicate the same parts wherever employed, Figure 1 represents a side elevation of our improved nozzle with cock-handle in position for throwing a solid stream. Fig. 2 represents the same when valve is entirely closed. Fig. 3 is a central vertical section through Fig. 1; Fig. 4, a similar section with valve in position for disgorging. Fig. 5 is a horizontal central section cutting the valve body and plug, the latter being in position for delivering a double converging fan-like spray.

Reference being had to the drawings and letters thereon, A indicates the body of our improved nozzle, being substantially cylindrical in form, though with tapering inside walls constituting a valve-seat.

B indicates a longitudinal slot or discharge-orifice, rectangular in form and operating through the end wall of body A, while at *a b* the sides or lips of said orifice are beveled inward for a purpose that will later appear.

C is the main inlet to valve-body A, located by preference diametrically opposite the discharge, and *c* is a projecting lug cast or otherwise formed upon the edge of body A, for use in limiting rotation of the valve.

D represents a rotatable valve-plug provided at one end with an angular handle E, carrying a set-screw *d*, adapted to coact with lug *c*, for graduating and limiting rotation of the valve, while at its opposite end said plug is provided with a suitable washer and nut *e f*, respectively, for retaining the plug in position and taking up wear thereof. Valve-plug D is perforated transversely by a channel F, which is rapidly reduced toward its discharge end and terminates in the comparatively small discharge-opening *g*, while in the same plane with the latter said plug is perforated by a second auxiliary opening *h*, of similar size, intersecting channel F at an angle thereto and at the juncture of said main channel F with the discharge-opening *g*.

This being substantially the construction of our invention, its use and operation are as follows: When it is desired to throw a solid stream, handle E is placed in the position shown by Fig, 1, whereupon the liquid in use will be forced directly through channel F, discharge-opening *g* of the plug D, and out between beveled sides *a b* of the orifice B. It being desired to throw a single fine fan-like spray, handle E is turned until the projecting end of set-screw *d* engages lug *c* on the body A, in which position discharge-opening *g* of plug D will be partly closed by the inner beveled lip *a* of the orifice B, and the liquid then breaking upon this lip is thoroughly disintegrated and spread. Thus it will be seen that set-screw *d*, engaging by its point the lug *c*, affords a positive stop for plug D in its rotation, enabling said plug to be re-

turned with accuracy and precision to a given position after being rotated upon its axis, as for the purpose of disgorging, and the adjustability of said screw *d* with relation to the lug *c* serves to present a greater or smaller portion of a stream from discharge-opening *g* to inclined lip *q* of orifice B, thereby producing a coarser or finer single fan-shaped spray, as may be desired. If, however, it should be desired to throw a spray of greatest body and coarsest quality, it is only necessary to rotate plug D, by means of handle E, until discharge-opening *g* registers with the beveled lip *b*, in like manner as it had in the former instance registered with the opposite lip, at which time auxiliary opening *h* in the plug will be partly closed by the lip *a* of orifice B, the openings *g* and *h* occupying corresponding positions with relation to the lips *b a*, respectively, whereupon a stream of the liquid in use will be projected upon each of the beveled lips *a* and *b* and by them deflected so as to converge, producing a coarse fan-like spray. Presuming now, as is sometimes the case when the heavier solutions are used, that the valve has become clogged by sediment or foreign matter, the several openings in plug D may be quickly and effectively cleansed by rotating the plug until its handle E points beyond the nozzle in the reverse direction from that indicated in Fig. 1; and when in this position it will be seen that the solution first enters the discharge-opening *g* and then passes out through the discharge-channel F, carrying with it all sediment. A still further revolution of plug D than that last described, to a point where the head of set-screw *d* abuts against one side of lug *c*, serves to entirely close all openings by interposing an unbroken portion of plug D beneath the orifice B, whereupon all discharge from the nozzle is effectively stopped.

Having thus described our invention, what we claim is—

1. In a spraying-nozzle the combination with a conical body having a discharge-orifice with oppositely-beveled deflecting sides, of a valve-plug having diverging discharge-passages therein adapted to register with both of said sides, substantially as described.

2. In a spraying-nozzle the combination with an inclosing body having a discharge-orifice with deflecting sides, a rotatable valve-plug having diverging discharge-passages adapted to register with both of said sides, a cock-handle for rotating the plug, a lug upon the body for limiting rotation of the plug, and a set-screw interposed between said handle and lug, substantially as described.

In testimony wherof we subscribe our signatures in presence of two witnesses.

EDWARD A. BENEDICT.
CHRISTIE BENEDICT.

Witnesses:
MARY A. SPRAGUE,
W. W. HOLE.