Nov. 24, 1925. 1,562,957

W. L. HAMILTON

SPRAY NOZZLE

Filed June 15, 1925 2 Sheets-Sheet 1

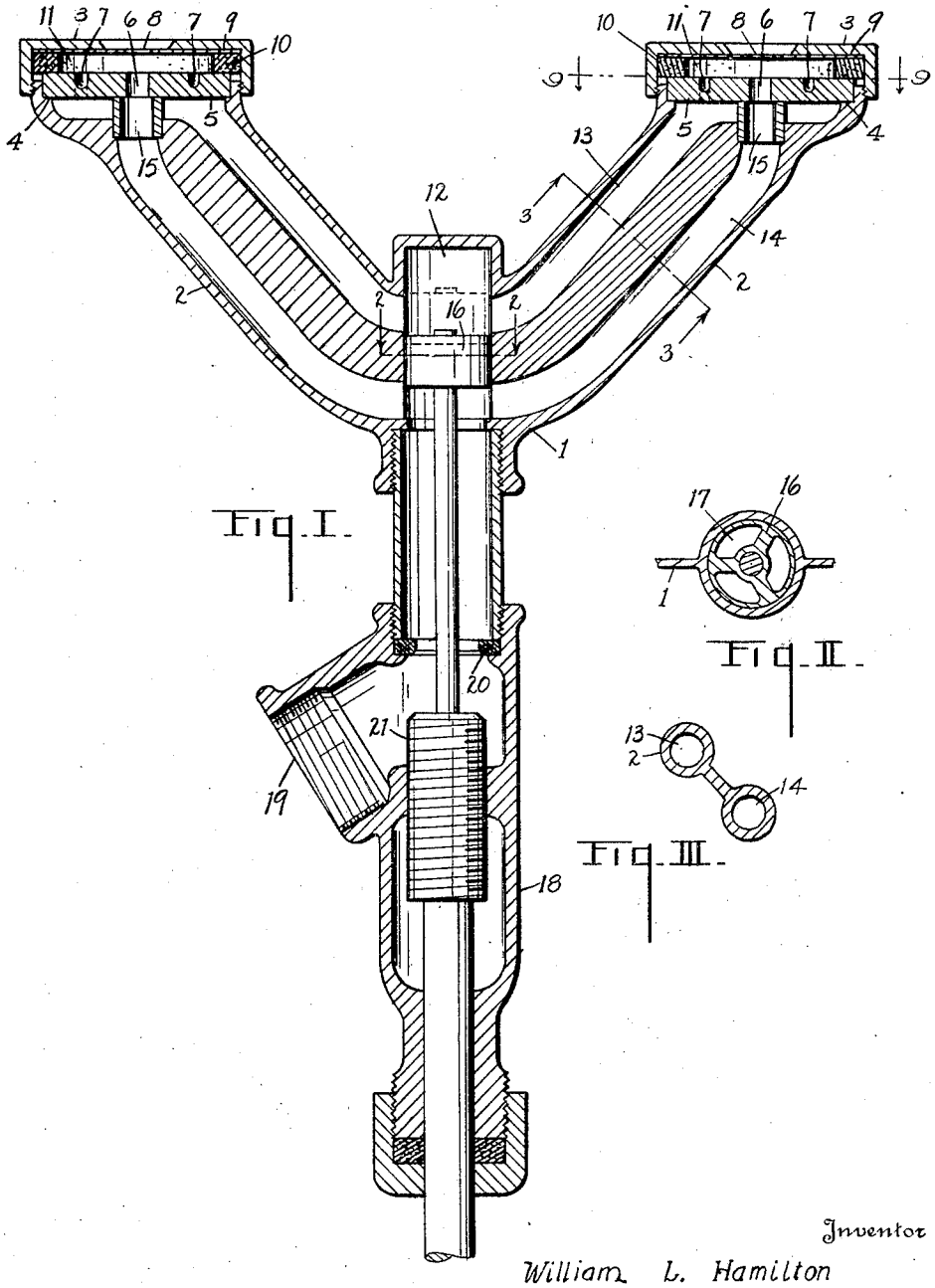


Fig. I.

Fig. II.

Fig. III.

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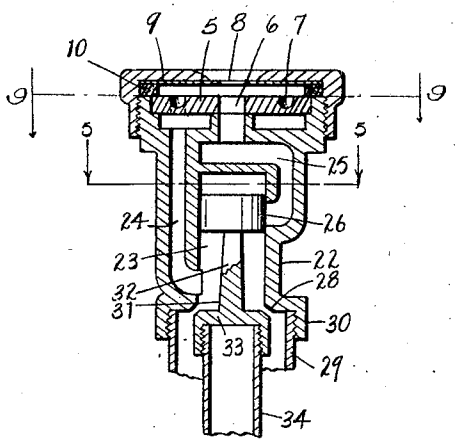


Fig. IV.

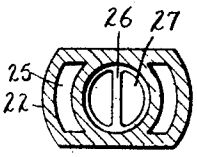


Fig. V.

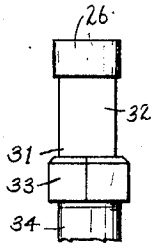
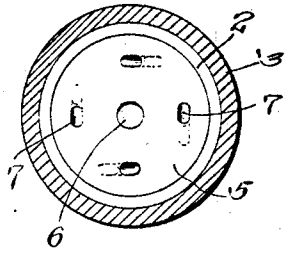


Fig. VI.

Fig. IX.



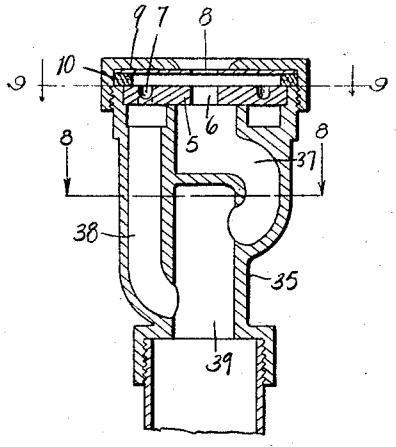


Fig. VII.

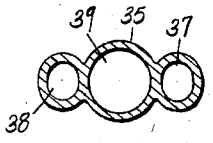


Fig. VIII.

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UNITED STATES PATENT OFFICE.

WILLIAM L. HAMILTON, OF BANGOR, MICHIGAN.

SPRAY NOZZLE.

Application filed June 15, 1925. Serial No. 37,201.

To all whom it may concern:

Be it known that I, WILLIAM L. HAMILTON, a citizen of the United States, residing at Bangor, county of Van Buren, State of Michigan, have invented certain new and useful Improvements in Spray Nozzles, of which the following is a specification.

This invention relates to improvements in spray nozzles.

The main object of this invention is to provide an improved nozzle of the two-stream type.

A further object is to provide in a nozzle of the two-stream type an improved control valve whereby either type of spray may be selectively secured, or the combined sprays.

Objects pertaining to details and economies of construction and operation will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification. The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of my invention is clearly illustrated in the accompanying drawing, forming a part of this application, in which:

Fig. I is a central longitudinal section of a spray apparatus embodying the features of my invention, the valves being shown in full lines.

Fig. II is a detail section on a line corresponding to line 2—2 of Fig. I.

Fig. III is a transverse section on a line corresponding to line 3—3 of Fig. I.

Fig. IV is a detail view mainly in longitudinal section of a modified form of my invention showing the same adapted to a single nozzle sprayer.

Fig. V is a transverse section on a line corresponding to line 5—5 of Fig. IV.

Fig. VI is a side elevation of the valves, the valve rod being broken away.

Fig. VII is a central longitudinal section of still another form or embodiment of my improvements.

Fig. VIII is a cross section on a line corresponding to line 8—8 of Fig. VII.

Fig. IX is a sectional view through the spray head on a line corresponding to line 9—9 of Figs. I, IV and VII.

In the drawing similar reference characters refer to similar parts throughout the several views, and the sectional views are taken looking in the direction of the little arrows at the ends of the section lines.

In the embodiment shown in Fig. I, I illustrate my improvements as embodied in a double nozzle structure, the nozzles being duplicates.

The nozzle body 1 has arms 2, the cap-like nozzle tips 3 being threaded upon the outer ends of these arms. The nozzle arms have outwardly facing annular shoulders 4 forming seats for the nozzle plate 5. This nozzle plate has a central opening 6 therein and a plurality of openings 7. The opening 6 is aligned with the opening 8 in the tip plate 9 while the openings 7 are arranged out of alignment with this opening 8.

The gasket 10 disposed between the nozzle tip 3 and the nozzle plate 5 provides a nozzle chamber 11. The fluid which is discharged through the openings 7, in escaping, sets up a swirling motion in the chamber 11 and escaping through the tip opening 8, forms a wide or broad spray. The fluid discharged into the opening 6 passes directly into the opening 8 and forms a long narrow spray, this double form of two-stream spray, as it is known in the art, being well understood.

The body 1 has a central cylindrical piston valve chamber 12 therein, the passages 13 and 14 opening to this valve chamber in spaced relation. The passage 13 communicates with the opening 7 while the passage 14 communicates with the opening 6 through the coupling 15. The piston valve 16 is of such length that it may be adjusted to cover either the passage 13 or 14 or to an intermediate position. This valve 16 has longitudinal passages 17 therethrough so that when adjusted to an intermediate position, both passages 13 and 14 are open. The valve may, however, be adjusted to selectively close either of the passages, thus providing for the delivery of either type of spray or a combination of the two types, thus securing a third form of spray.

The nozzle is, in the embodiment shown in Fig. I, mounted upon a coupling member 18, the supply pipe being connected to the nipple 19. A valve seat 20 is provided for the supply valve 21 and when this valve 21 is seated, the delivery of fluid is entirely cut off.

In the modification shown in Fig. IV, I illustrate my improvements as adapted by me to single nozzle sprayers, the body 22

having a valve chamber 23 therein with nozzle passages 24 and 25 opening thereto in spaced relation. The valve 26 has longitudinal passages 27 therein which permit the flow of fluid thereto so that when the valve is adjusted to an intermediate position, both passages are open. The tip of the nozzle is substantially the same as described. The supply valve seat 28 is formed at the inner end of the valve body, the supply pipe 29 being threaded into the nipple 30 on the valve body. The valve 31 has a stem 32 connecting it with the supply valve 33 which coacts with the valve seat 28 to entirely cut off the delivery of the fluid. The valve rod 34 is threaded into the valve 33.

The valve body 35 shown in Figs. VII and VIII is very similar to that shown in Figs. IV and V, the main difference being in the form of the valve passages 37 and 38, the tip being the same. The passages open into the valve cylinder 39 which is adapted to receive the same type of valve as that shown in Fig. IV.

My improved spray nozzle is especially designed by me for spraying fruit trees, vines and other crops. It has the advantage of being easily manipulated to deliver the different character of sprays.

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

1. In a sprayer, the combination of a nozzle body or casing member provided with a variable spray head and having a piston valve chamber therein and nozzle passages independently opening to said valve chamber in spaced relation and independently communicating with said spray head, there being a supply valve seat disposed in advance of said valve chamber, a piston control valve in said valve chamber having a passage longitudinally therethrough, said valve being adapted to be adjusted to close or partially close either of said nozzle passages or to be adjusted to an intermediate position whereby both passages are fully open, and a supply valve coacting with said supply valve seat for closing said valve chamber.

2. In a sprayer, the combination of a nozzle body or casing member provided with a variable spray head and having a piston valve chamber therein and nozzle passages independently opening to said valve chamber in spaced relation and independently communicating with said spray head, and a piston control valve in said valve chamber having a passage longitudinally therethrough, said valve being adapted to be adjusted to close or partially close either of said nozzle passages or to be adjusted to an intermediate position whereby both passages are fully open.

3. In a sprayer, the combination of a body member provided with a variable spray nozzle head and having a piston valve chamber therein with independent nozzle passages opening thereto in spaced relation, and a piston valve adapted to be adjusted to close either or to open both of said passages, said valve having a longitudinal passage therein.

4. A sprayer comprising a body member provided with a variable spray nozzle head and having a piston valve chamber therein and a plurality of nozzle passages opening thereto in spaced relation, and a piston valve adjustable in said valve chamber to close either of said passages or to simultaneously open both of the passages, said valve having a longitudinal passage therein.

In witness whereof I have hereunto set my hand.

WILLIAM L. HAMILTON