

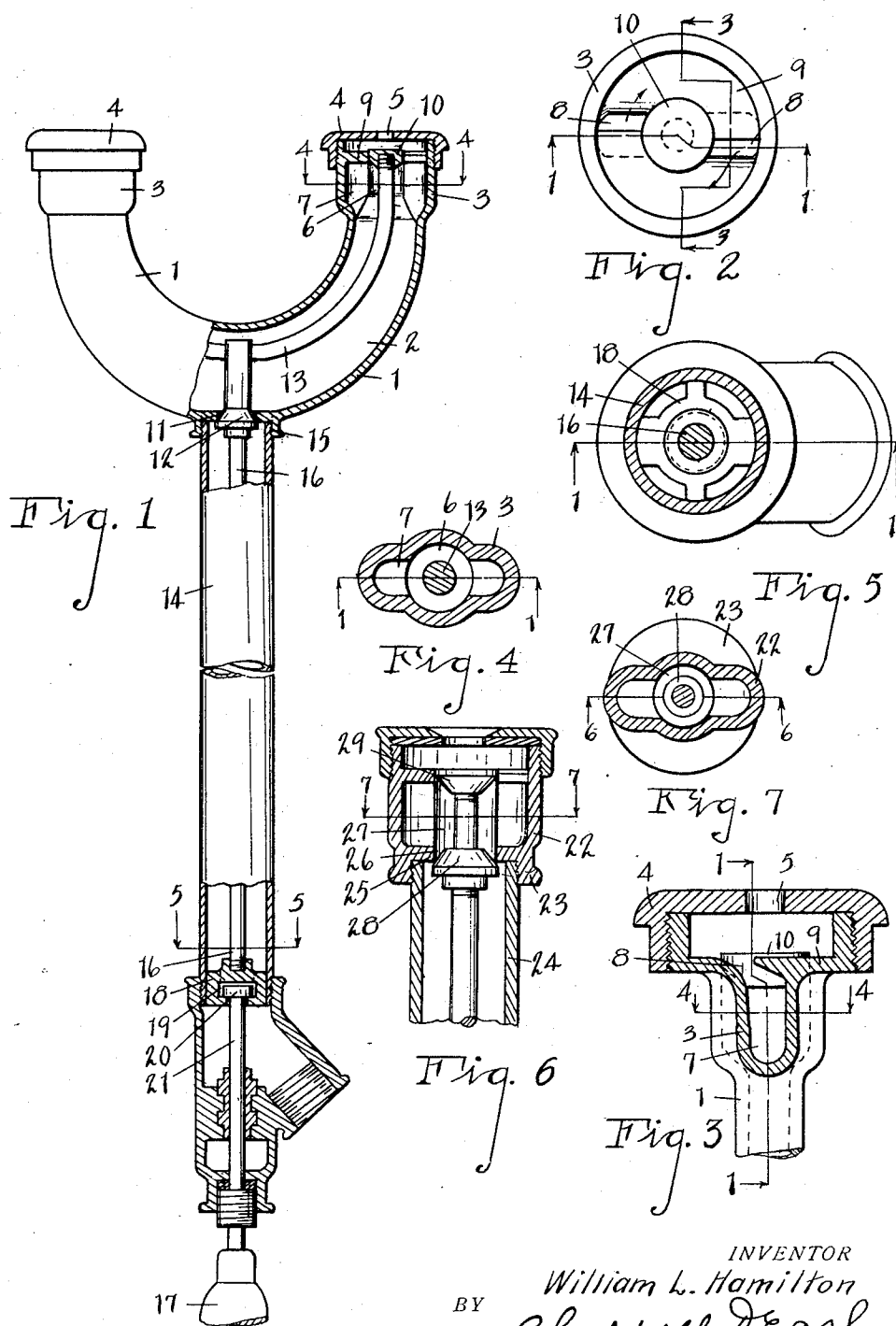
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W. L. HAMILTON

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SPRAYER

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INVENTOR
William L. Hamilton
BY Chappell & Earl
ATTORNEYS

UNITED STATES PATENT OFFICE

WILLIAM L. HAMILTON, OF BANGOR, MICHIGAN

SPRAYER

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The main objects of this invention are:

First, to provide a sprayer for the spraying of fruit trees and the like in which the character of the spray may be very greatly varied.

Second, to provide a sprayer having these advantages which is adapted to handle a large volume of liquid, is not likely to become clogged and is easily operated to vary the character of the spray.

Objects pertaining to details and economies of my invention will definitely appear from the detailed description to follow. The invention is defined in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings forming a part of this application, in which:

Fig. 1 is a fragmentary view of my improved sprayer partially in longitudinal section on a line corresponding to line 1—1 of Figs. 2, 3 and 5.

Fig. 2 is a plan view of a sprayer head embodying my invention, the nozzle or head tip being removed.

Fig. 3 is a fragmentary view in section on a line corresponding to broken line 3—3 of Fig. 2.

Fig. 4 is a horizontal section on line 4—4 of Fig. 1.

Fig. 5 is a section on line 5—5 of Fig. 1 showing details of the valve operating means.

Fig. 6 is a detail view mainly in longitudinal section of a modified form or embodiment of my invention.

Fig. 7 is a transverse section on line 7—7 of Fig. 6.

In the embodiment illustrated in Fig. 1 I show my improvements as I have embodied the same in a multiple head sprayer. The structure comprises a U-shaped body member 1 having a chamber 2 therein, each arm terminating in a head 3 upon which the nozzle tip 4 is threaded. This nozzle tip has a central discharge opening 5 therein.

The head 3 is provided with a central cylindrical bore 6 with longitudinal channels 7 opening thereto. This bore 6 is, in effect, a central delivery port for the head. The channels 7 are provided with oppositely dis-

posed inclined slot-like delivery ports 8 opening to the bore 6 at their inner ends. The ports 8 are formed in a transverse wall 9 in the head, the wall constituting the end walls for the channels or passages 7.

The port 6 is controlled by the plunger 10 which reciprocates therein and may be retracted to allow the fluid to flow through the port 6 as well as through the ports 8, the ports 8 always being open, the plunger however closing the inner ends of the ports when the plunger is in the position shown in the drawing in which position the valve is closed during a substantial opening movement of the valve. By this arrangement I provide a sprayer having very wide variation in the character of the spray, this being controlled by the adjustment of the plunger. When the plunger is fully retracted a long narrow spray results. As it is moved to entirely close the port 6 a wide fine spray results. Adjustment between these extremes results in varying the character of the spray. Also, of course, the force under which the fluid is delivered affects the character of the spray. Should the ports 8 become clogged they may be very effectively freed by fully withdrawing the plunger as this not only allows a full stream of water to flow but opens the inner ends of these ports so that the wedging action of the clogging material is relieved.

As the heads are duplicates a description of one will suffice.

The body member 1 is provided with an inlet port 11 which is controlled by the valve 12, this valve being connected to the yoke 13 disposed in the chamber 2 so that the plunger and valve are simultaneously operated. The supply pipe 14 is connected to the collar 15 surrounding the port 11. The stem 16 is connected to the handpiece 17 which is threaded for adjustment by means of a swivel consisting of the guide member 18 reciprocating in the conduit 14 and having a recess 19 therein engaged by the head 20 on the shank 21 of the handpiece 17. This swivel connection is a matter of convenience as it permits the firm grasping of the handpiece 17 and manipulation of the sprayer without affecting the valve, the valve being operated by a

longitudinal movement only. If the handle were non-rotatable, more or less strain would be placed on the operator's wrist in swinging the sprayer about or it would be necessary for the operator to allow the grip to turn in his hands.

In the modification shown in Figs. 6 and 7 the head 22 is provided with a collar 23 to receive the conduit 24, the head having a wall 25 with a port 26 therein opening to the bore or port 27 corresponding to the port 6 of the structure described. In other respects the structure is substantially that described, the valve 28 controlling the delivery of the fluid as does the valve 12 and being connected to the plunger 29.

My improved sprayer is, as stated, of large capacity, is not likely to become clogged, and the character of the spray may be very greatly varied.

I have illustrated and described embodiments of my invention which I consider very practical. I have not attempted to illustrate or describe other embodiments or adaptations which I contemplate as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

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

1. A sprayer comprising a chambered head provided with a nozzle tip having a central delivery opening therein, said head having a transverse wall spaced from said tip and having a central port aligned with the nozzle delivery opening and oppositely disposed slot-like auxiliary ports extending laterally from said central port and opening thereto and through the face of said transverse wall to the space between said transverse wall and said nozzle tip, and a valve for said central port aligned with said nozzle delivery opening.

2. A sprayer comprising a head having a central longitudinal cylindrical bore and longitudinal channels open at their inner edges to said bore, said channels being provided with oppositely disposed inclined slot-like auxiliary delivery ports in the plane of the delivery end of said bore and opening at their inner edges to said bore, a nozzle disposed in spaced relation to said ports and provided with a delivery opening aligned centrally with said bore, and a plunger of a length substantially less than the bore reciprocating therein to be adjusted to close the bore and the inner edges of said ports or to be retracted within said bore permitting the discharge of fluid through said bore.

3. A sprayer comprising a chambered head provided with a transverse wall spaced from the end thereof, said wall having a central discharge port therein and oppositely disposed slot-like discharge ports inclined in op-

posite directions and opening through the face of said wall and opening at their inner ends to said central port, an inlet port substantially spaced from said wall, a nozzle tip mounted in spaced relation to said wall and having a central delivery opening therein, a plunger reciprocable in said central port and adapted to be entirely withdrawn therefrom, and a control valve movable with said plunger and adapted to partially open said inlet port prior to the withdrawal of said plunger from said central discharge port, said plunger constituting a closure for the open inner ends of said slot-like ports during a substantial movement of the valve.

4. A sprayer comprising a chambered head provided with a transverse wall spaced from the end thereof, said wall having a central discharge port therein and oppositely disposed slot-like discharge ports inclined in opposite directions and opening through the face of said wall and opening at their inner ends to said central port, a nozzle tip mounted in spaced relation to said wall and having a central delivery opening therein, and a plunger reciprocable in said central port and adapted to be entirely withdrawn therefrom, said plunger constituting a closure for the open inner ends of said slot-like ports.

5. A sprayer comprising a chambered head provided with a transverse wall spaced from the end thereof, said wall having a central discharge port therein and oppositely disposed slot-like discharge ports inclined in opposite directions and opening through the face of said wall and opening at their inner ends to said central port, a nozzle tip spaced from said wall and having a delivery opening aligned with said central discharge port, a plunger reciprocable in said central port and adapted to be entirely withdrawn therefrom, and a control valve movable with said plunger and adapted to partially open prior to the withdrawal of said plunger from said central discharge port, said plunger constituting a closure for the open inner ends of said slot-like ports during a substantial movement of the valve.

6. A sprayer comprising a chambered head provided with a transverse wall spaced from the end thereof, said wall having a central discharge port therein and oppositely disposed slot-like discharge ports inclined in opposite directions and opening through the face of said wall and opening at their inner ends to said central port, a nozzle tip spaced from said wall and having a delivery opening aligned with said central discharge port, and a plunger reciprocable in said central port and adapted to be entirely withdrawn therefrom, said plunger constituting a closure for the open inner ends of said slot-like ports.

7. In a sprayer, the combination of a chambered U-shaped body member having a

central inlet port at the base thereof and a projecting collar surrounding said port, the arms of said body member terminating in integral chambered heads, each having a central delivery port and a slot-like supplemental delivery port opening at its inner end to said central delivery port, said heads being provided with nozzle tips having central nozzle openings therein, plungers controlling said central delivery ports of said heads, a yoke connecting said plungers, a supply conduit connected to said collar on said body member, a valve for said inlet port connected to said yoke, said valve having a stem disposed longitudinally of said conduit, and means for controlling said valve comprising a swiveled hand piece threaded for swiveled connection to said valve stem.

8. In a sprayer, the combination of a chambered U-shaped body member having a central inlet port at the base thereof and a projecting collar surrounding said port, the arms of said body member terminating in integral chambered heads, each having a central delivery port and a slot-like supplemental delivery port opening at its inner end to said central delivery port, said heads being provided with nozzle tips having central nozzle openings therein, plungers controlling said central delivery ports of said heads, a yoke connecting said plungers, a supply conduit connected to said collar on said body member, and a valve for said inlet port connected to said yoke.

9. In a sprayer, the combination of a chambered U-shaped body member having an inlet port at the base thereof, the arms of said body member terminating in chambered heads, each having a central delivery port and a slot-like supplemental delivery port opening at its inner end to said central delivery port, said heads being provided with nozzle tips having nozzle openings alined with said central delivery ports, plungers controlling said central delivery ports of said heads, a yoke connecting said plungers, and a valve for said inlet port connected to said yoke.

10. In a sprayer, the combination of a chambered forked body member having an inlet port at the base thereof with an outwardly facing valve seat, a supply pipe constituting a handle for said body member and opening to said port, variable spray nozzle units on the arms of said body members, each nozzle unit including a reciprocating control plunger for varying the character of the spray, a yoke connecting said control plungers, and a valve for said inlet port connected to said yoke and provided with a control rod arranged longitudinally within said supply pipe.

11. In a sprayer, the combination of a chambered forked body member having an inlet port at the base thereof, variable spray

nozzle units on the arms of said body members, each nozzle unit including a reciprocating control plunger for varying the character of the spray, a yoke connecting said control plungers, and a valve for said inlet port connected to said yoke.

12. In a sprayer, the combination of a chambered forked body member having an inlet port at the base thereof, variable spray nozzle units on the arms of said body member, each nozzle unit including a reciprocating control member for varying the character of the spray, an outwardly opening valve for said inlet port, connections for said valve to said reciprocating nozzle members whereby they are operated in unison, and means for controlling said valve.

13. In a sprayer, the combination of a chambered body member, each arm of the body member terminating in a spray nozzle unit including an internal reciprocating control member, said body member having an inlet port, a manually operated valve for said inlet port, and operating connections for said inlet valve to said spray nozzle members whereby they are simultaneously operated.

In witness whereof I have hereunto set my hand.

WILLIAM L HAMILTON.