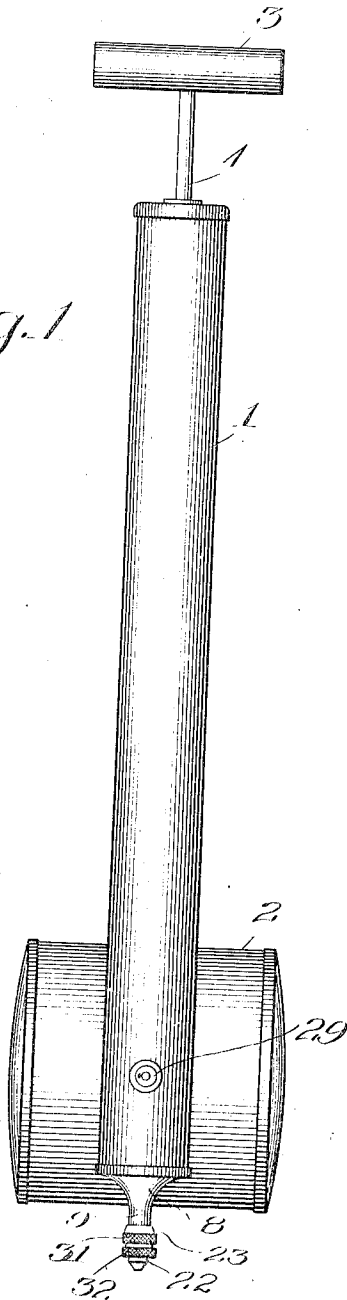


C. BROWN.
 SPRAYING IMPLEMENT.
 APPLICATION FILED FEB. 16, 1917.

1,359,485.

Patented Nov. 23, 1920.
 2 SHEETS—SHEET 1.

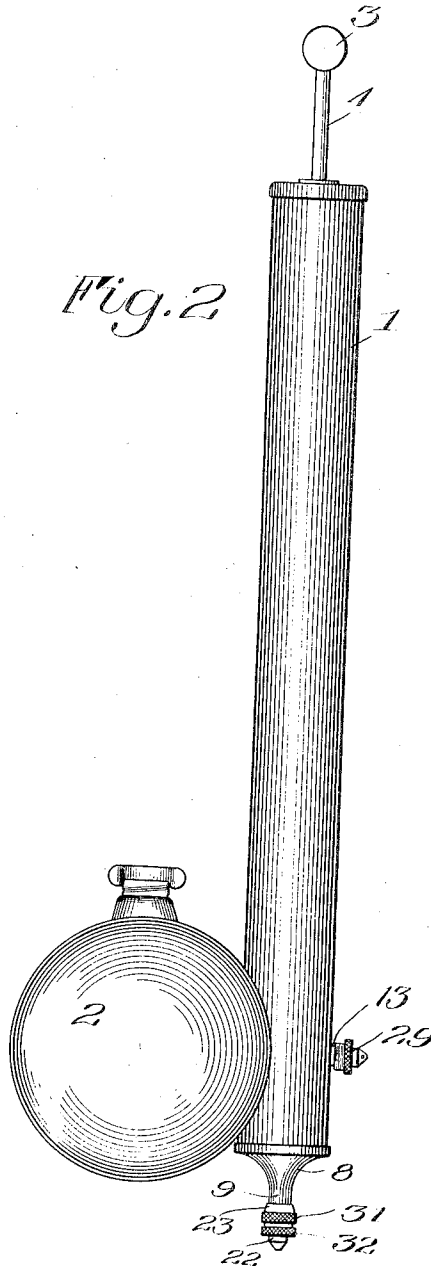
Fig. 1



WITNESSES:

Nelson H. Copp
 C. M. Phillips

Fig. 2



INVENTOR

Colin Brown

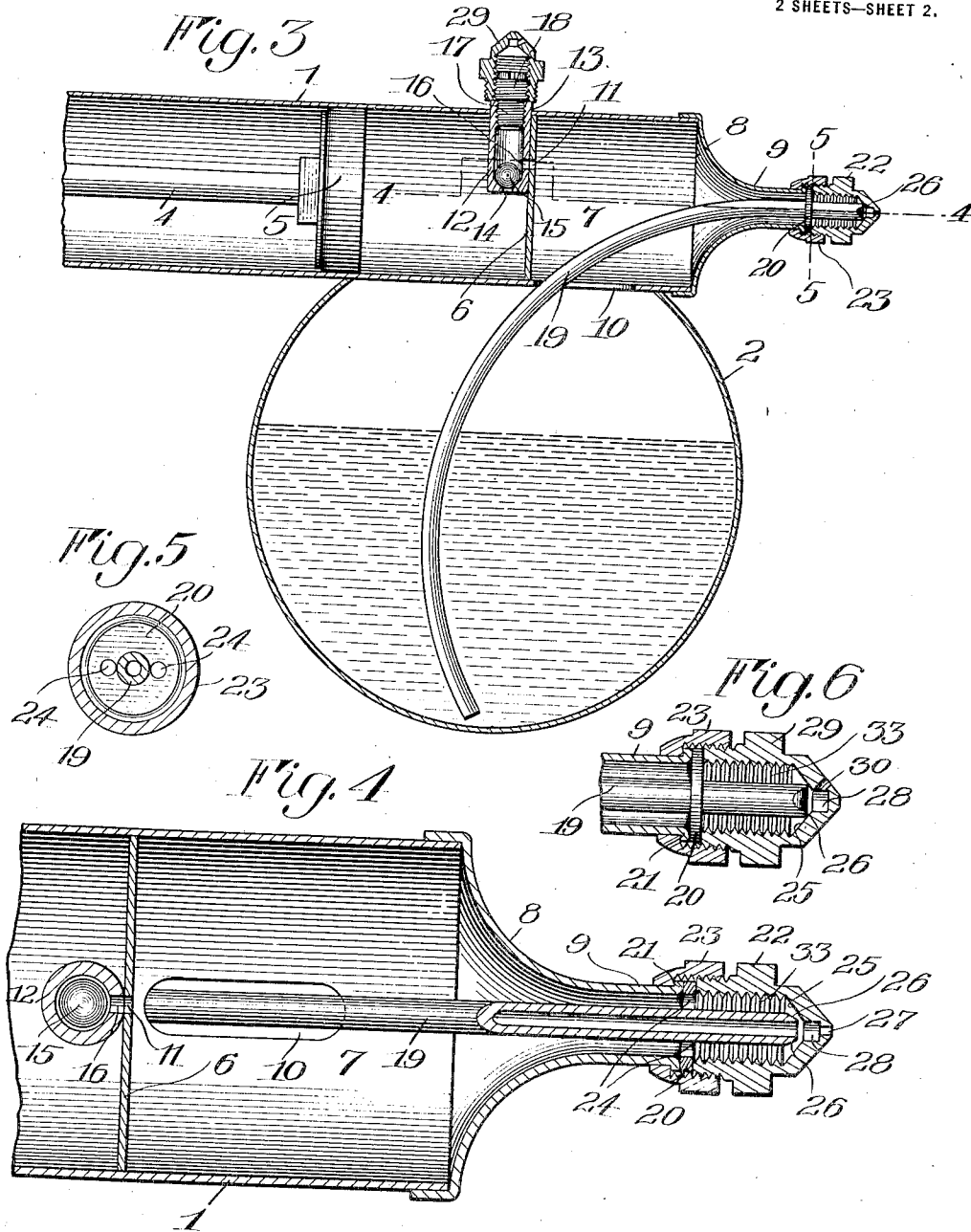
BY

Church & Pisk
 his ATTORNEYS

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WITNESSES:

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UNITED STATES PATENT OFFICE.

COLIN BROWN, OF ROCHESTER, NEW YORK, ASSIGNOR TO THE E. C. BROWN COMPANY,
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SPRAYING IMPLEMENT.

1,359,485.

Specification of Letters Patent. Patented Nov. 23, 1920.

Application filed February 16, 1917. Serial No. 148,942.

To all whom it may concern:

Be it known that I, COLIN BROWN, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Spraying Implements; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the reference-numerals marked thereon.

My present invention relates to spraying apparatus of the kind in which liquid contents are atomized and are discharged under air pressure, and it has for its object to provide a simple device of this character that can be economically manufactured and adjusted to various purposes with very little trouble. The improvements are directed in part to the construction of the spraying nozzle and its relationship to other parts, whereby a perfect cone of spray is formed and whereby this spray may be directed with the greatest convenience to the operator. To these and other ends the invention consists in certain improvements and combinations of parts all as will be hereinafter more fully described, the novel features being pointed out in the claim at the end of the specification.

In the drawings:

Figure 1 is a top plan view of a spraying implement constructed in accordance with and illustrating one embodiment of my invention;

Fig. 2 is a side elevation thereof;

Fig. 3 is an enlarged fragmentary section taken centrally through the spray nozzle, part of the pump cylinder and the reservoir;

Fig. 4 is an enlarged transverse section taken substantially on the line 4—4 of Fig. 3;

Fig. 5 is an enlarged detail section taken substantially on the line 5—5 of Fig. 3, and

Fig. 6 is a detail fragmentary section through a nozzle slightly different from the one shown in operative position in Figs. 3 and 4.

Similar reference numerals in the several figures indicate the same parts.

In the present instance the invention is shown embodied in a hand sprayer, comprising a pump cylinder 1 with a reservoir or tank 2 carried at the far end thereof and adapted to contain the liquid that is to be

sprayed. In Figs. 1 and 2, the pump handle is shown at 3 and the piston rod at 4, while Fig. 3 shows the piston 5, these parts being of the usual or any preferred construction. The outer end of the cylinder 1 is divided by a partition 6 to form an air pressure chamber 7 having a cap 8 that provides a tubular extension or air pipe 9 of restricted diameter for the attachment of the nozzle hereinafter described. This pressure chamber communicates with the interior of the reservoir 2 through an opening 10 and with the interior of the pump cylinder 1 through an opening 11 in the partition 6. The communication with the cylinder is controlled by a check valve comprising a tubular cage 12 secured against the partition 6 and having a neck 13 going to the exterior of the cylinder 1. A valve opening 14 at the bottom of the tube 12 is normally closed by a ball 15 that seats thereon, and which is unseated by excess pressure in the pump cylinder. When so unseated the air compressed by the pump discharges into the pressure chamber 7 through an opening 16 in the tubular cage 12 that registers with the opening 11 in the partition. The ball seats again during the return of the piston or as soon as the pressure in the chamber 7 exceeds that in the pump cylinder. In this way, air is accumulated in the pressure chamber 7 and by reason of the opening 10 exerts its pressure against the surface of liquid contained in the reservoir 2. The tubular cage 12 of the check valve is normally closed by a plug 17 having a reduced portion threaded into the neck 13 thereof and a projecting enlarged threaded portion 18 that is utilized in a manner hereinafter described.

A curved liquid conducting tube 19 (known in the trade as the "siphon" tube) extends to a point near the bottom of the reservoir tube, passing through opening 10 in the pressure chamber, and projects beyond the end of the air tube 9, being spaced from the wall to the latter. It is provided in this region with an encircling disk or collar 20. The air tube 9 also terminates in an annular flange or collar 21 against the outer face of which the collar 20 is disposed. The latter is clamped in this position by the spray nozzle 22 that is drawn against it by a threaded coupling sleeve 23 that surrounds and is rotatable upon the air tube 9 but interlocks with the collar 21

thereon. In this way the liquid tube 19 is held rigidly in place in spaced relationship to the walls of the air tube 9 and the air is allowed to escape past the collar 20 through perforations 24 therein (Fig. 5).

The interior end wall of the nozzle 22 is conical, as indicated at 25 and abuts the end of the liquid tube 19, but the latter is beveled on opposite sides, as indicated at 26, to permit the simultaneous escape through a jet opening 27 in the nozzle in alinement with the tube 19 of air under pressure from the chamber 7 and tube 9. This air impinges upon the liquid stream at an angle at this point and provides the atomizing action, as will be understood. Preferably the jet orifice 27 is countersunk at 28 to promote a thorough mixture of air and liquid.

The general operation of the device requires no description, the liquid being forced by the accumulated air pressure in the chamber 7 through the tube 19 at the same time that it escapes in company with this air at the nozzle 22.

The nozzle 22, shown in operative position in a majority of the views, is the "straight" nozzle having its orifice 27 axially arranged to direct the spray forwardly in alinement with the cylinder 1. For the purpose of directing the spray laterally, which is useful in spraying the undersides of the leaves of plants for instance, the nozzle indicated at 29 in Fig. 6 is employed. Here the orifice 30 is inclined laterally to meet the counterbore 28 at an angle, the construction of the nozzle in other respects being the same. In both instances, the nozzle is held tightly by the coupling 23 with relation to the air and liquid tubes without the possibility of leakage occurring at the joint to destroy the power of the spray, but in the case of this angle nozzle it is sometimes desired to direct the spray upwardly and sometimes downwardly or

horizontally. With the construction shown this may be accomplished by rotating both the coupling 23 and the nozzle 29 together upon the air tube 9 and liquid tube collar 20 so that the jet orifice 30 is given any direction desired. For this purpose both of said parts are provided with knurled peripheries 31 and 32, as shown in Figs. 1 and 2. In this way the tightness of the nozzle joint is not affected.

In the practice of my invention, each sprayer is equipped with the two nozzles and when one is in use in operative position on the air tube 9 I prevent the loss of the other by screwing it down upon the projecting threaded portion 18 of the plug 17 for the check valve cage 12, as best shown in Fig. 3. For this purpose both nozzles are threaded interiorly at 33 to conform to the threads on the plug. The latter thus performs this nozzle retaining function in addition to constituting a removable closure for the valve cage, whereby the ball 15 may be removed easily and cleaned, should it become corroded.

I claim as my invention:

In a spraying device, the combination with an outer air tube having a collar thereon, an inner liquid tube having a collar thereon, and means for supplying air and liquid under pressure to said tubes, respectively, of a nozzle having a laterally directed spraying orifice, and a coupling interlocked with but rotatable on the collar of the air tube and having a threaded engagement with the nozzle operating to clamp the collar of the liquid tube between the latter and the collar of the air tube and permit the rotation of the nozzle without loosening its connection.

COLIN BROWN.

Witnesses:

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AGNES NESBITT BISSELL.