C. EDGERTON.

SPRAY NOZZLE.

APPLICATION FILED FEB. 5, 1910.

984,082.

Patented Feb. 14, 1911.

Fig. 1.

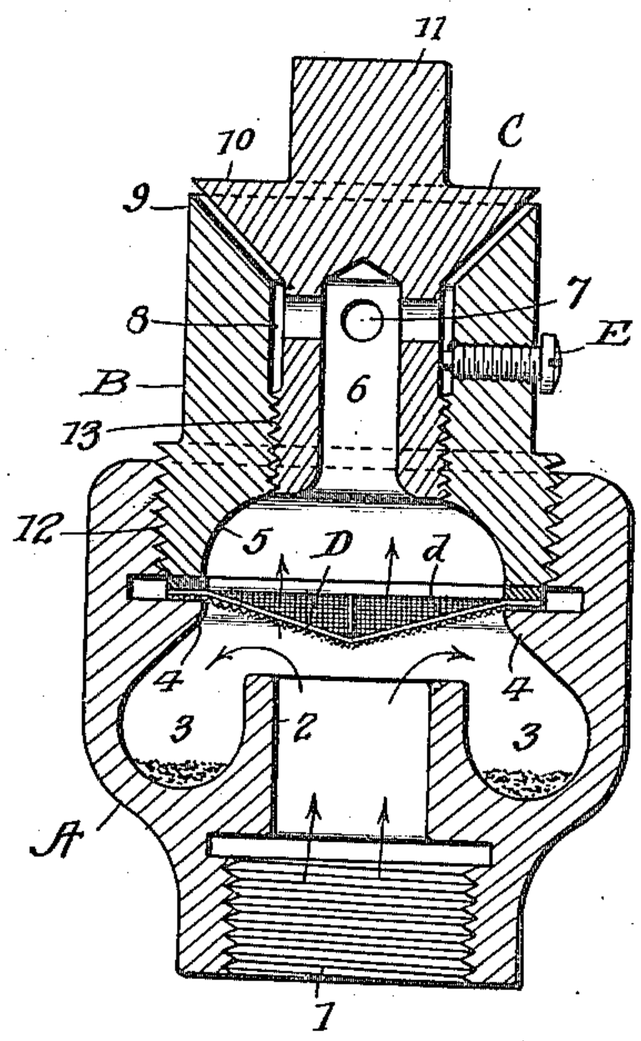
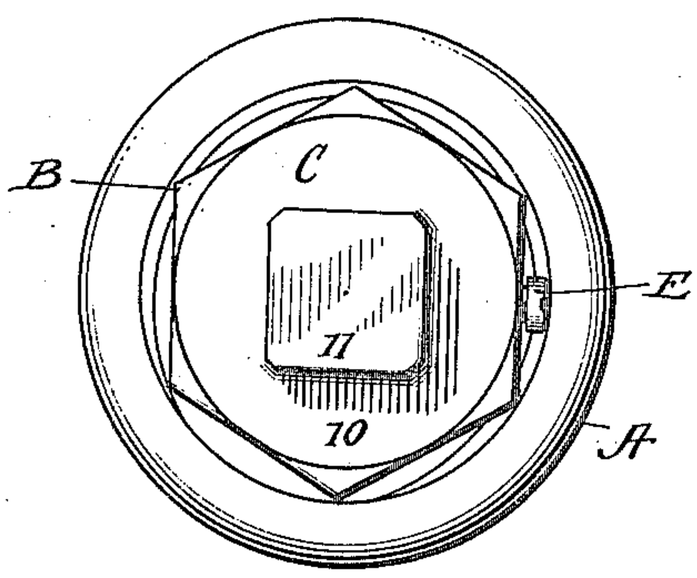


Fig. 2.



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SPRAY-NOZZLE.

984,082. Specification of Letters Patent. Patented Feb. 14, 1911.

Application filed February 5, 1910. Serial No. 542,186.

To all whom it may concern:

Be it known that I, CHARLES EDGERTON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Spray-Nozzles, of which the following is a specification.

My invention is designed to provide an improved spray nozzle for spraying vegetables, shrubs and trees of orange groves and orchards either for protection against cold or for the destruction of insects and fungous growths. In Florida irrigation devices are employed which consist of iron pipes with upright connections in the form of stand pipes having spray nozzles so placed that the sprays will cover the entire ground, or, in case where they are used for spraying trees, a stand pipe is carried up through the tree and a spray device is placed on the top of the pipe. Such spray devices, if allowed to have large issue orifices, use a great deal of water or spray liquid, and if reduced in size to the minimum requirements are almost certain to become quickly clogged by small particles of sand, dirt, or insoluble sediment, so that they become closed and inoperative. As there are very many of these spray nozzles in an orchard of any size, it is a very troublesome job to clear out the obstructed orifices, especially if it be necessary to ascend the trees to do so.

My invention is designed to provide a spray nozzle which may have its spray orifice or orifices adjusted to a very small size so as to use a minimum amount of spray liquid and produce a fine and well distributed mist and at the same time be self clearing of obstruction, so that the nozzle will remain in continuous effective operation as long as desired.

To these ends it consists in the novel construction and arrangement of the spray nozzle as will be hereinafter more fully described with reference to the drawing, in which:

Figure 1 is a vertical central section, and Fig. 2 is a top plan view.

In the drawing A B represent the main body portion of the nozzle, of which A has an interiorly screw threaded neck portion 1 adapted to connect with an upright iron supply pipe. This body portion A is expanded to an increased transverse dimension at its upper end and is constructed also interiorly with an upwardly extending circular lip 2 forming an enlarged annular trap chamber 3 below the lip 2 the inner and outer walls of which are integral. Above this point it is formed with an inwardly projecting shoulder 4 and above this it has an interiorly screw threaded portion 12 of greater diameter than the shoulder 4. The body portion B is a sleeve whose lower end is larger than the upper end and on the exterior of whose larger lower end is formed a screw thread that engages the interior screw thread 12 on the upper part of the body portion A. The larger lower end of the part B is of less diameter than the lower body portion A and enters the same. Said portion B is arranged to clamp between it and the shoulder 4 a filtering screen D of finely perforated sheet metal or woven wire which is thus tightly clamped and held in place in the enlarged chamber of the nozzle. This enlarged chamber 3 is of larger diameter than the filtering screen D for the purpose hereafter described. To permit the turning of the sleeve B its exterior wall is made of polygonal shape to permit the application of a wrench thereto, as seen in Fig. 2. The sleeve portion B is also formed at its lower end with an interior screw thread 13 and above this point is turned out to form an enlarged annular chamber 8 and a concave conical face 9.

C is an adjustable screw plug which is exteriorly screw threaded at its lower end and has a central bore 6 communicating with the enlarged nozzle chamber below and into which central bore are drilled laterally the radial holes 7 which communicate with the annular space 8. The upper end of the screw plug is formed with a cone 10 whose face approaches and forms with the conical face 9 of the sleeve B an annular conical issue orifice of variable size which is regulated by turning the screw plug. This turning of the screw plug is effected by a square lug 11, to which a wrench may be applied, or by any other desired means. After the desired adjustment has been made it is fixed and maintained by means of a set-screw E tapped laterally through the top of the sleeve B and binding against the screw plug.

With the nozzle as thus constructed it will be seen that an enlarged inner chamber is provided which accommodates a relatively

large diameter of filtering screen or strainer D, thus permitting a screen with small openings through it whose size is less than the width of the space of the annular conical issue orifice, so that no sedimentary particles can pass through the strainer except such as are too small to make any obstruction in the annular conical issue orifice. By making the sediment chamber of larger diameter than the inlet opening through the lip 2, I am not only enabled to use a larger size of strainer, but the velocity of the body of water passing through this enlarged chamber is correspondingly reduced so that impurities and sediment in the water or other liquid have time to settle down in the annular trap by subsidence. Furthermore as the annular subsidence chamber is of larger diameter than the strainer, the water as it spreads radially outward from contact with the strainer loses in velocity and becomes more nearly still which allows the sediment to deposit, and furthermore a large sediment chamber is provided which allows the nozzle to be operative for a long time without attention for cleaning out and also allows the nozzle to be made quite short as the sediment chamber is broad and shallow. It will also be seen that the inwardly projecting shoulder of the outer wall not only supports the strainer, but gives a curved surface for turning the currents down into the sediment chamber.

When this nozzle is screwed onto a stand pipe the water, or other liquid, entering at 1 will be strained by the screen D and thence pass up through the central bore of the screw plug and through the radial channels 7 to the annular space 8 and thence will issue in a spray of regulatable fineness through the conical orifice, the fineness of the spray being adjusted by the turning of the screw plug.

In constructing the filtering screen D it is preferably made conical or dished, as shown, so that the entering liquid will not strike the same at right angles and drive the sedimentary particles into its interstices, but will strike the screen at an acute angle and thus scour off and deposit the sedimentary matters in the annular trap chamber 3 below the inlet lip 2. This makes the nozzle self cleaning and, therefore, maintains its continuous efficiency, it being understood that if an ordinary screen were employed the lodgment of sedimentary matters thereagainst, from hydrostatic pressure, would soon obstruct the filtering screen so that it would become entirely clogged and, therefore, render the nozzle as ineffective as if the issue orifices themselves had been obstructed. Not only this, but the conical or dished shape of the screen projecting toward the inlet gives it a trussed or braced effect against the hydrostatic pressure of the liquid that prevents the latter from bending the screen. Such conical or dished form of strainer furnishes for ordinary pressure a sufficient resistance to the water, but when the pressure is high I may employ a reinforcing brace *d* above the strainer, which brace with a suitable gasket or packing ring is clamped between the abutting parts 4 and 5 of the body of the nozzle.

For supplying this nozzle, water or other liquid from a head or pumping apparatus is used to keep it in action, suitable valves being employed to control each nozzle.

When it is desired to remove the accumulated sediment from the trap chamber, it is only necessary to unscrew the section A B and clean out the trap. As the sediment is usually small in quantity, this need only be done at long intervals.

I claim:

1. A spray nozzle having an inlet at one end and a spray outlet at the other, a strainer arranged between the two and an annular chamber arranged between the strainer and the inlet opening and made of larger diameter than the strainer, the outlet wall of said annular chamber being extended inwardly to form a shoulder for the strainer.

2. A spray nozzle having an inlet at one end and a spray outlet at the other, a strainer arranged between the two and a sediment chamber between the strainer and inlet opening, said sediment chamber being of larger diameter than the strainer and constructed in the form of a broad, shallow annular trap surrounding the inlet opening, the inner and outer walls of which trap are integral, and the outer wall of which annular chamber is extended inwardly to form a shoulder for the strainer.

3. A spray nozzle having an inlet opening, a minute issue orifice an annular sediment chamber between the two and a conical strainer above said chamber having openings in the same of smaller size than the transverse dimensions of the issue orifice said strainer being of smaller diameter than the annular sediment chamber.

4. A spray nozzle comprising a body portion made in two pieces, the lower one being made of larger diameter with an annular sediment chamber and the upper one of said pieces being constructed as a sleeve with a concave conical face at the end and a screw threaded lower end, a strainer clamped between the two pieces of the body portion and a screw plug having a central bore with lateral openings, a lower exteriorly screw threaded end and a cone at its upper end forming with the sleeve of the body portion an annular, conical and adjustable issue orifice.

5. A spray nozzle comprising a body portion made in two pieces, the lower one being made of larger diameter than the upper one

and with an inlet opening having an annular sediment chamber having integral inner and outer walls, the upper piece of the body portion having an enlarged and screw threaded lower end connecting with the lower portion, a strainer clamped between said two pieces of the body portion and a central screw plug adjustably connected to the upper piece of the body portion and having a channel through the same and a spray forming end.

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

CHARLES EDGERTON.

Witnesses:
HENRY R. WALTON,
J. HENRY WILLIAMS.