A. K. DYKE.

SPRAYING NOZZLE.

APPLICATION FILED APR. 23, 1913.

1,081,102. Patented Dec. 9, 1913.

Fig. 1.

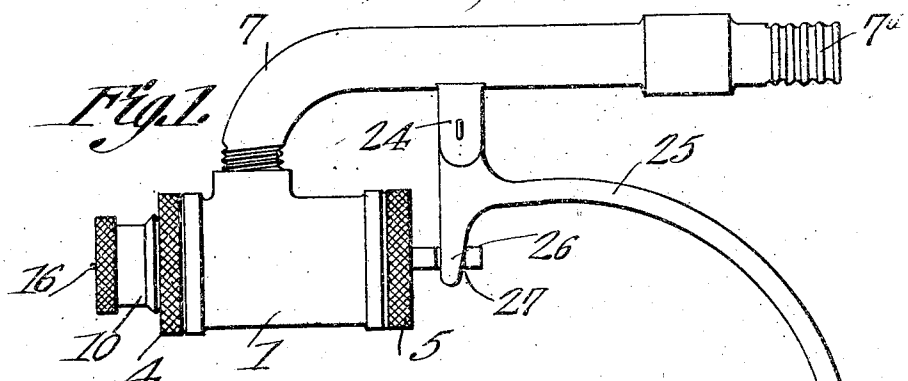


Fig. 2.

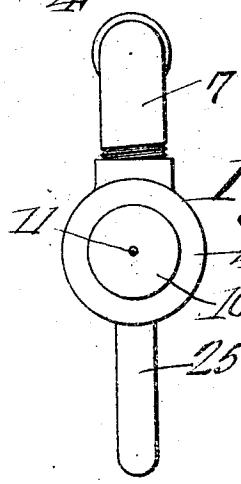


Fig. 3.

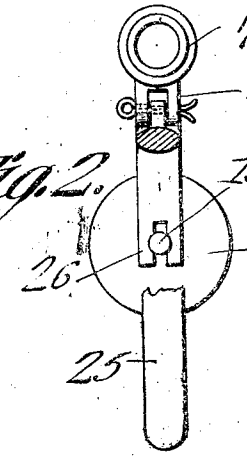
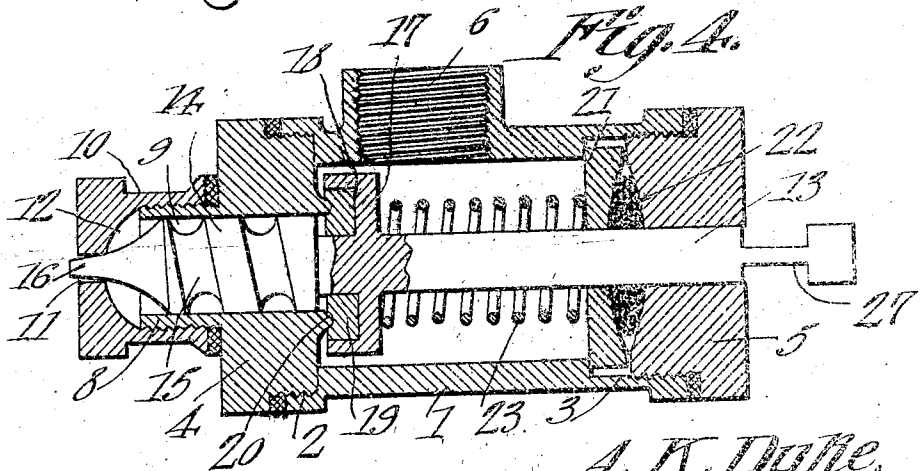


Fig. 4.



Witnesses

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UNITED STATES PATENT OFFICE.

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SPRAYING-NOZZLE.

1,081,102. Specification of Letters Patent. Patented Dec. 9, 1913.

Application filed April 23, 1913. Serial No. 763,151.

To all whom it may concern:

Be it known that I, AREND K. DYKE, a citizen of the United States, residing at Traverse City, in the county of Grand Traverse and State of Michigan, have invented a new and useful Spraying-Nozzle, of which the following is a specification.

The present invention appertains to spraying nozzles for insecticides and other liquids, and aims to provide a novel and improved device of that character.

It is the object of the present invention to provide a nozzle for the spraying of trees or other vegetation, or for other kindred purposes, which shall be so constructed and operable so as to produce a fine spray capable of covering either small or large areas at will, the size of the spray being regulated by the operator.

Another object of the present invention is to provide a device of the character indicated which shall embody means for cleaning out the outlet aperture or orifice after each operation, and which shall be so constructed as to eradicate dribbling.

The present invention also comprehends the provision of a device of the nature indicated which shall be improved generally in its construction and which shall possess a high degree of utility, as well as other characteristics most desirable.

With the foregoing general objects outlined and with other objects in view, which will be apparent as the description proceeds, the present invention resides in the combination and arrangement of parts and in the details of construction hereinafter described and claimed, it being understood that changes in the precise embodiment of the invention can be made within the scope of what is claimed without departing from the spirit of the invention.

The invention has been illustrated in its preferred embodiment in the accompanying drawing, wherein:—

Figure 1 is a side elevation of the nozzle. Fig. 2 is an end view thereof looking from the front. Fig. 3 is an opposite end view of the device, looking from the rear and a portion of the actuating lever being broken away. Fig. 4 is a longitudinal central section of the nozzle, parts being shown in full and parts being broken away.

In carrying out the invention, reference being had in detail to the drawing, there is provided a cylinder or barrel 1 having the respective counter bores 2 and 3 at its ends, into which are threaded the respective heads or ends 4 and 5. The cylinder 1 is also provided with a port 6 in its upper side, the cylinder being disposed horizontally, and adjoining the front end, a supply pipe 7 being threaded into the port 6 so as to communicate with the interior of the cylinder or barrel 1. The supply pipe is preferably L-shaped, or has its forward end bent angularly to engage into the port 6, the other or rear end of the pipe 7 being formed for the engagement of the supply tubing, as indicated by the numeral 7ª. It is to be understood, however, that the pipe 7 may be connected to any source of insecticide or liquid in any desirable manner. The head or forward end 4 is provided with an outwardly projecting nipple 8, a bore 9 passing through the head 4 and its nipple, and a cap 10 being threaded over and seated against the nipple 8. Suitable gaskets are disposed between the heads 4 and 5 and the respective ends of the cylinder 1 and between the rim of the cap 10 and the head 4, the gaskets being common and needing no particular mention. The cap 10 is provided with the outlet or orifice 11, and is provided with the counter sunk or concaved inner side 12 surrounding the aperture 11.

A stem 13 is slidable axially through the rear head 5 and at its forward end is provided with a cylindrical enlargement 14 working snugly within and almost coextensive with the bore 9 of the head 4, the enlargement 14 being provided with a spiral or helical groove 15. The enlargement 14 is also provided at its forward end with the conical tip 16 adapted to pass through the orifice or aperture 11. Directly in rear of the enlargement 14, the stem 13 is provided with an integral piston valve 17, which is provided in its forward face with an annular cavity or depression 18 containing

the packing washer or gasket 19. The head 4 is provided with an annular lip 20 projecting inwardly therefrom around the bore 9, and against which the valve 17, or rather the gasket 19, is adapted to seat. The piston valve 17 is preferably of a diameter somewhat smaller than the internal diameter of the cylinder 1.

A washer 21 is mounted on the stem 13 and is seated within the counter bore 3, suitable packing 22 being disposed between the adjoining or complementing faces of the head 5 and washer 21, the adjoining faces of the said parts being preferably dished or concaved so as to compress the packing 22 tightly against the stem 13. A coiled wire spring 23 is disposed around the stem 13 within the cylinder 1 with its ends or end convolutions bearing against the washer 21 and valve 17, respectively.

As a means for actuating the valve stem 13, an actuating lever 25 has been pivoted to a lug or extension 24 provided on the pipe 7, the actuating lever 25 being approximately L-shaped or the form of a bell crank, with its shorter arm bifurcated as at 26, and straddling the rear or outer end of the stem 13, the stem being provided with the opposite notches 27 receiving the tines or branches of the bifurcated or forked portion. The outer or free arm of the actuating lever 25 is preferably curved or arcuate in order to be readily graspable by the fingers.

The present nozzle may be employed for divers purposes, which will be apparent to those versed in the art, it being understood that the inlet pipe 7 may be attached to any suitable source of liquid by means of tubing or other connections. Ordinarily, when the lever 25 is free, the spring 23 will press the valve 17 into seated position against the inner face of the head 4, the gasket 19 tightly engaging the lip 20 so as to close the passage through the bore 9. Then, by grasping the lever 29 by the hand, the stem 13 may be easily forced rearwardly, so as to unseat the valve 17 and thereby open or establish communication through the bore 9 to the atmosphere. The liquid in being forced through the bore 9 will be whirled due to its passage through the spiral groove 15 and in striking the concavature 12 of the cap 10 will be directed toward the aperture 11 or a central point. Liquid will then be forced through the aperture 11, the spray being regulated by the tip 16.

The operator may, by the proper manipulation of the actuating lever 25, regulate the spray according to his wishes. When the tip 16 is completely retracted, the liquid will be discharged in a small stream, and when the tip 16 is more or less projected through or into the aperture 11, the spray will be divided and will cover a greater area. It is thus possible for the operator to adjust the spray to a nicety according to the conditions, the flow of liquid being quickly established and cut off or arrested, and a continuous or non-interrupted flow being established when the valve is unseated. The spiral motion of the liquid through the bore 9 and the centripetal motion of the liquid toward the aperture 11, due to the concavature of the cap, will prevent any particles from lodging or remaining within the bore 9 and cap 10. When the valve 17 is seated, there will be no chamber or space between the valve seat and the outlet orifice where the liquid and air might remain so as to cause dribbling.

Another salient feature of the present invention is the fact that whenever the valve is seated, the tip 16 will pass through the outlet aperture or orifice 11 and will clean out said aperture in order that when said valve is unseated, the liquid will have the free and unrestricted exit. It will be noted that the clean out tip 16 is not liable to become broken or otherwise injured, the enlargement 14 as well as the valve 17 being integral with the stem 15. The valve may be readily unseated by merely swinging the actuating lever 25 upwardly, which may be conveniently accomplished by the entire hand and without undue exertion, and the spray may be regulated to a nicety by properly swinging the actuating lever. The valve is automatically seated whenever the actuating lever is released, it being noted that the tension of the spring is assisted by the pressure of the liquid in seating the valve. The packing 22 serves as an additional precaution against dribbling at the rear, the packing 22 being compressed under the tension of the spring 23 so as to tightly embrace the stem 13.

From the foregoing, taken in connection with the drawing, the advantages and capabilities of the present device will be apparent, it being noted that the objects have been carried out satisfactorily, and that the present device provides a desirable one for the purposes for which it is designed.

Having thus described the invention what is claimed as new is:—

In a spraying nozzle, a cylinder having a side port, a head attached to one end of the cylinder, the head having a nipple and a bore extending through the nipple, a cap engaging over and seating against the nipple, the cap having a central outlet aperture and an inner countersunk portion surrounding the aperture, and a stem disposed axially within the cylinder, and having a cylindrical enlargement almost coextensive

with and fitting snugly within the said bore, the cylindrical enlargement having a spiral groove and a conical tip coöperating with said aperture, and the stem having a valve directly adjoining the cylindrical enlargement and normally seatable against the said head.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

AREND K. DYKE.

Witnesses:

JOHN L. NOVAK,

CONCHESSIA G. KARNS.