W. E. BOYCE.

SPRAYING NOZZLE.

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1,432,958.

Patented Oct. 24, 1922.

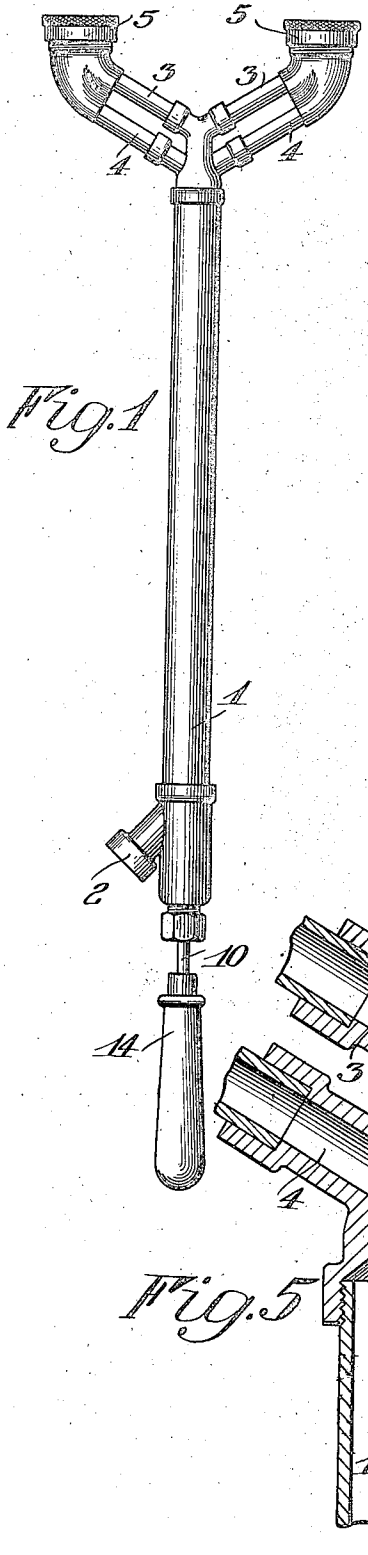


Fig. 1

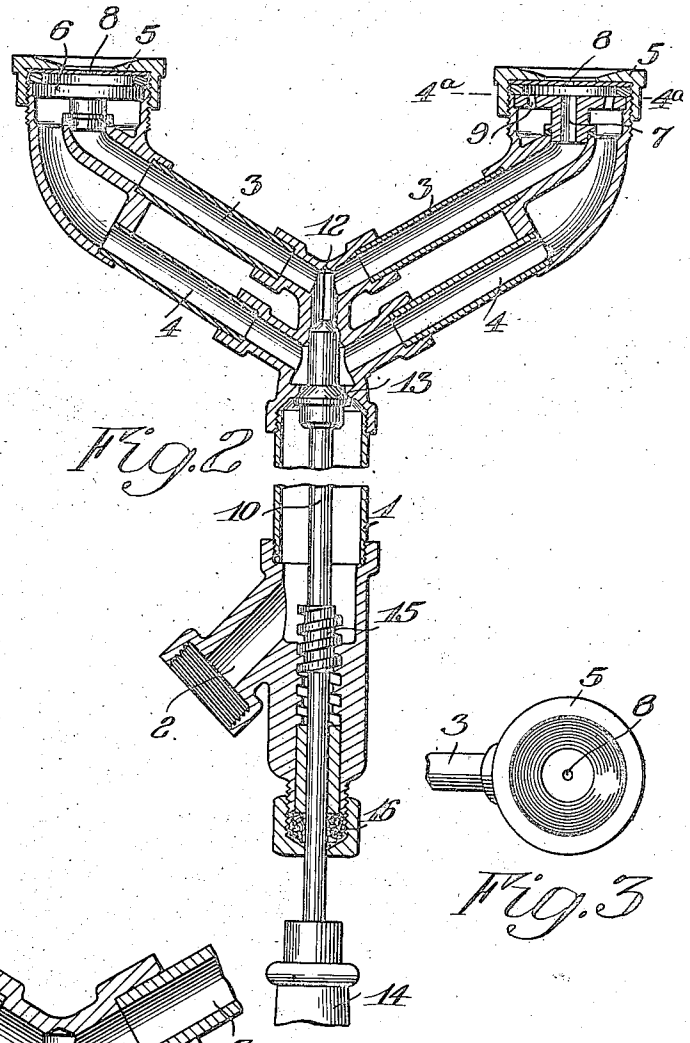


Fig. 2

Fig. 3

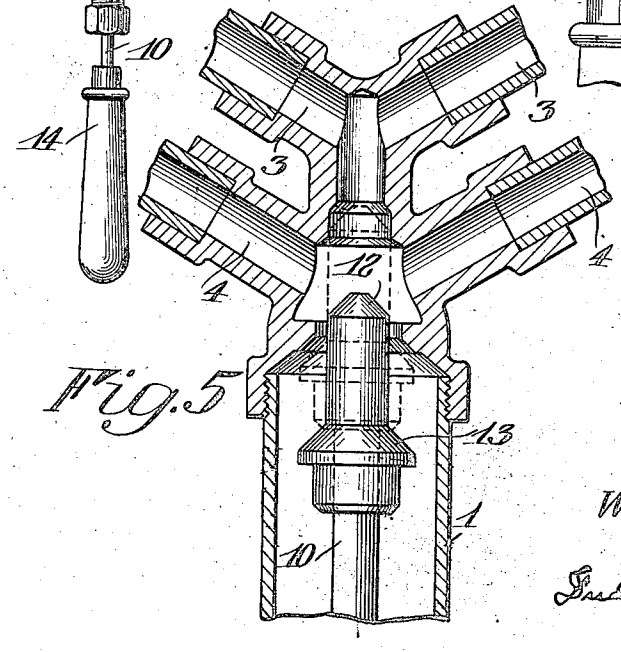


Fig. 5

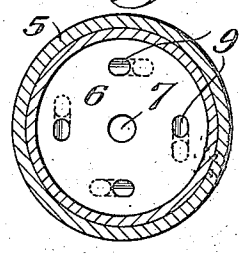


Fig. 4

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UNITED STATES PATENT OFFICE.

WILLIAM E. BOYCE, OF ALBION, NEW YORK.

SPRAYING NOZZLE.

Application filed July 14, 1920. Serial No. 396,118.

To all whom it may concern:

Be it known that I, WILLIAM E. BOYCE, a citizen of the United States, residing at Albion, in the county of Orleans and State of New York, have invented certain new and useful Improvements in Spraying Nozzles; 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 invention relates to nozzles and particularly to those spraying nozzles which may have both a wide or conical whirling spray and a relatively long and narrow stream, and the object is to provide improvements therein whereby the flow from the nozzle may be regulated and controlled with facility. 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 claims at the end of the specification.

In the drawings:

Figure 1 represents a side view of my nozzle.

Figure 2 shows a side view in section.

Figure 3 represents a top plan view of one of my nozzles.

Figure 4 a section on the line 4^a—4^a of Figure 2.

Figure 5 is an enlarged sectional view showing both valves open.

Similar reference numerals throughout the several views indicate the same parts.

A supply pipe 1 of suitable length to serve as a convenient handle or holding means for my nozzles is provided at 2 with some suitable connection to the source of fluid under pressure used. At one end of the supply pipe 1, pairs of tubes or passageways 3 and 4 connect the nozzles 5 with the supply pipe 1. Each nozzle comprises, preferably, a disk 6 centrally perforated at 7 to enable the emission of the fluid contained in the passageway 3 which has a direct path out the nozzle through the central aperture 7 and the orifice 8 of the nozzle, whereby a relatively long and narrow stream results. The fluid in the passageway 4 surrounds the bottom of the disk 6 and in passing through the disk 6 is given a circular or whirling motion by reason of the inclination of the apertures 9 within the disk 6 which so rotate the fluid from the passageway 4 as to cause the same to be emitted in a wide-spread whirling and conical spray through the main orifice 8 of the nozzle. Provided within the supply pipe 1 is a valve rod 10 on one end of which are located the valves 12 and 13 for closing the passageways 3 and 4 respectively. At the other end of the valve rod 10 is provided an adjusting handle 14 while intermediate the valves and handle is a screw threaded portion 15 adapted for threaded engagement with the casing whereby rotation of the handle produces longitudinal movement of the valve rod 10 to open and close valves 12 and 13. If desired a suitable packing or stuffing box 16 may be provided where the valve rod passes out of the supply pipe. The Y connection formed where the passageways 3 and 4 join the supply pipe is preferably a casting of brass, bronze or other non-corrosive material, of which the entire structure may be formed if desired. From an inspection of the drawings it will be seen that as the valve rod 10 is moved to close the passageways 3 and 4 that the valve 12 closes the passageway 3 before the valve 13 shuts off the passageway 4, as is shown in the dotted line position of the valves in Figure 5. Thus it will be seen that the valves 12 and 13 not only open and close both passageways and adjust the flow of fluid therein, but also may close the passageway 3 while the passageway 4 is still left open to the fluid within the supply pipe 1.

In operation if it is desired to spray the tops of tall trees where a long and narrow stream is necessary the valve rod is rotated to open both valves 12 and 13 when the fluid in the supply pipe passes through passageways 3 and 4 and out the nozzle in a combination of a long and narrow stream and a wide-spread whirling conical spray. Should it be desired to spray only the short or low trees or shrubs the adjusting handle 14 may be rotated to close the valve 12 but still allow the fluid to pass through the valve 13 and passageway 4 and out through the nozzle 5 in a broad whirling spray.

Among the advantages of my invention may be enumerated the fact that the adjustment of the discharge from the nozzle is possible from the lower end or handle of the supply pipe 10 without the necessity of continually holding the handle in adjusted position.

Although my invention has been described in connection with two parallel nozzles, it will be obvious that my invention is not necessarily so limited, but may be used with one nozzle if desired or if a more wide-spread spray is necessary the two nozzles shown may be given any desired angular relationship. The use of two nozzles instead of one is effective in causing the spray to extend over a wider area. An especially noteworthy feature of my invention resides in the fact that the adjusting means for the nozzles is enclosed within the supply pipe, and is not located on the outside of and adjacent the nozzles where it might easily get in the way of any obstruction. It will be apparent that each stream or spray from each nozzle may be regulated as well as opened or closed by manipulation of the adjusting handle 14. Spacing the valves 12 and 13 on the valve rod 10 so that one of them may close in advance of the other enables the long narrow stream to be cut out when the wide-spread conical spray is used on low trees or shrubs.

I claim as my invention:

1. The combination with a supply pipe, of a plurality of two stream nozzles, pairs of supply passageways joining each nozzle with the supply pipe and a single valve device simultaneously controlling one passageway of each pair without substantially changing the condition in the other passageway of each pair of supply passageways.

2. The combination with a plurality of two stream nozzles of a progressively movable valve device for controlling both streams in succession in each of the plurality of nozzles at the same time.

3. The combination with a supply pipe of a plurality of spraying nozzles thereon, each of which is adapted to emit a wide-spread whirling conical spray and a relatively long and narrow stream, and a single means for adjusting the spray and stream of each nozzle, said means being adapted to cut off said long stream while the wide-spread spray continues.

4. The combination with a supply pipe of a plurality of parallel spraying nozzles thereon each of which is adapted to emit a wide-spread whirling conical spray and a relatively long and narrow stream, a pair of passageways connecting each nozzle with the supply-pipe, a valve rod in said supply pipe and an adjusting handle on said valve rod remote from said passageways and nozzles, and a pair of spaced valves on said valve rod, one of which is adapted to control the flow of the wide-spread spray of each nozzle, and the other or second valve to control the long stream of each nozzle, said second valve being adapted to close before the first mentioned valve.

WILLIAM E. BOYCE.