

No. 623,057.

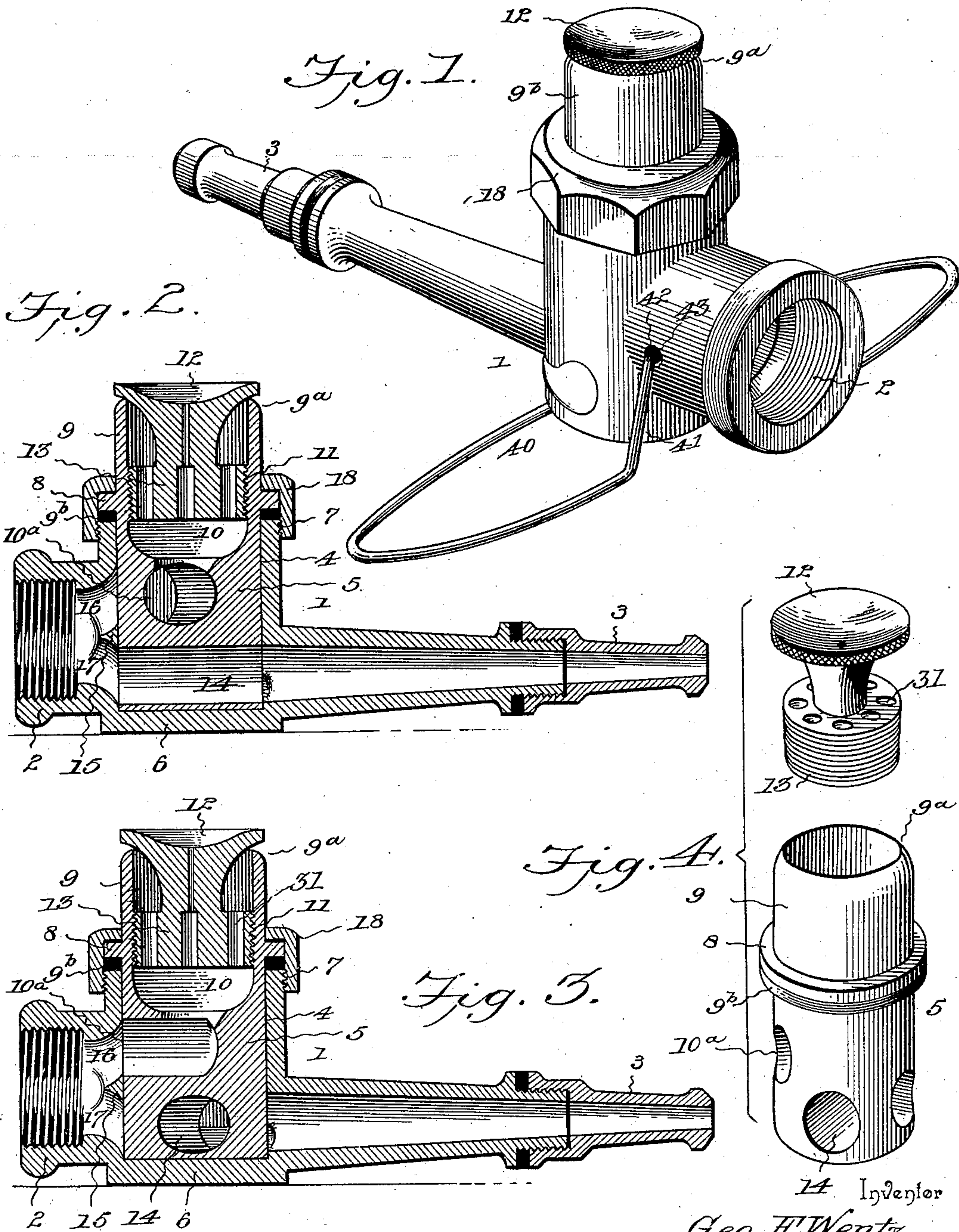
Patented Apr. 11, 1899.

G. F. WENTZ.  
COMBINED NOZZLE AND SPRAYER.

(No Model.)

(Application filed Nov. 4, 1897.)

2 Sheets—Sheet 1.



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Witnesses

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H. J. Benckhoff

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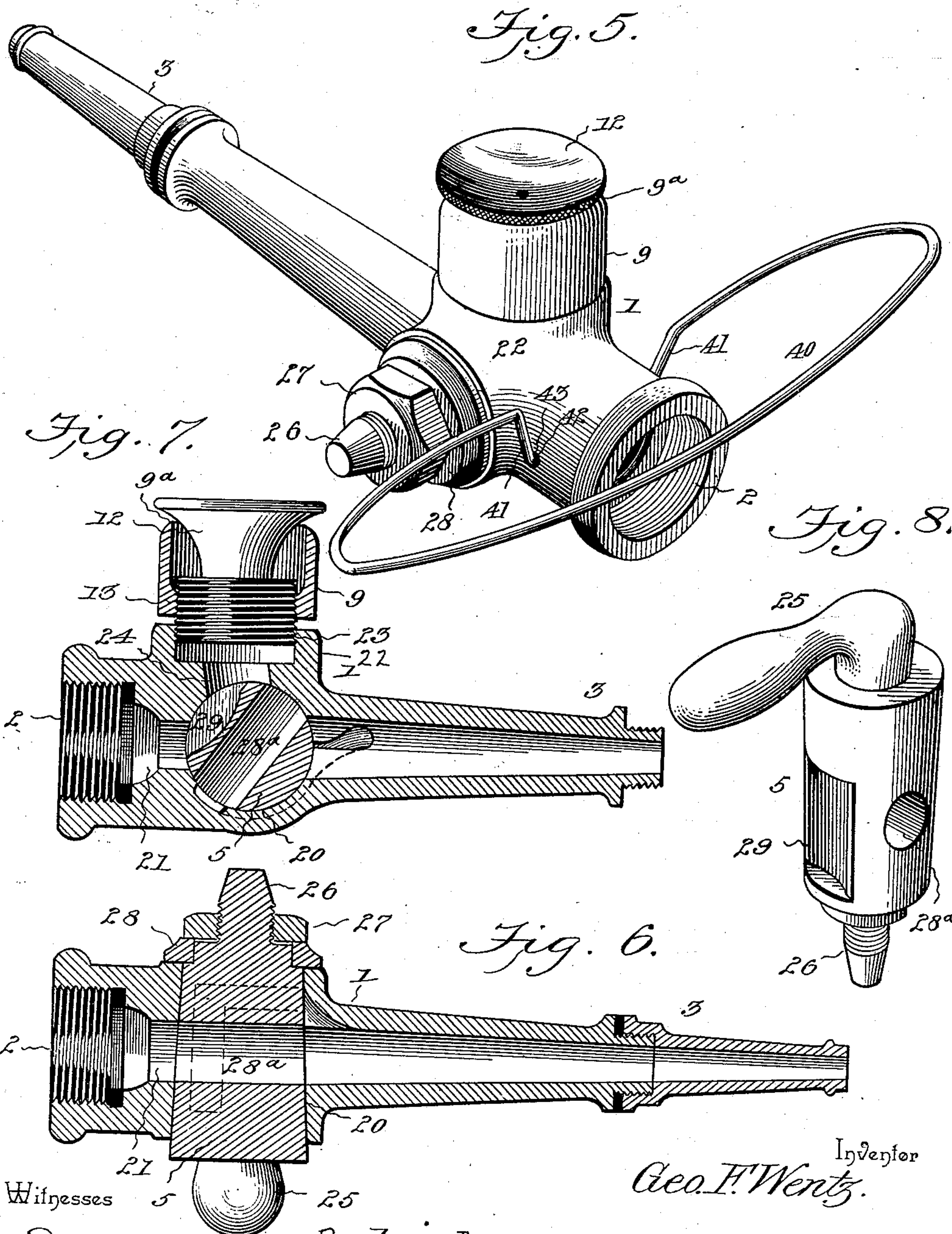
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2 Sheets—Sheet 2.



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# UNITED STATES PATENT OFFICE.

GEORGE FRANKLIN WENTZ, OF COLORADO SPRINGS, COLORADO.

## COMBINED NOZZLE AND SPRAYER.

SPECIFICATION forming part of Letters Patent No. 623,057, dated April 11, 1899.

Application filed November 4, 1897. Serial No. 657,414. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE FRANKLIN WENTZ, a citizen of the United States, residing at Colorado Springs, in the county of El Paso and State of Colorado, have invented a new and useful Combined Nozzle and Sprayer, of which the following is a specification.

My invention relates to a device which may be used either as a nozzle for directing a stream of water or as a sprayer for sprinkling lawns; and the object that I have in view is to provide a simple and cheap construction by which these devices are combined into a single unitary structure.

A further object of the invention is to provide a device which may be readily adjusted for service to answer either of the purposes for which it is designed; further, to provide means whereby the fineness of the spray may be regulated and controlled wholly independent of the cut-off valve, and, finally, to simplify the construction with a view to rendering the device economical in manufacture.

To the accomplishment of these ends my invention consists in the combination of a nozzle having independent waterways, one of which is arranged to communicate through a valve with the main water-passage, a tubular sprayer-mouth communicating with the other passage and arranged at one side and wholly out of the plane of the main water-passage through the main nozzle, a flared deflector arranged to present its continuous flared surface to one face and edge of said tubular mouth, and a two-way valve seated within the nozzle to have either of its passages aline with the passages of the nozzle and arranged to direct the water either through the main nozzle-passage or through the sprayer-mouth; and the invention further consists in the novel combination of parts and in the construction and arrangement of elements, as will be hereinafter fully described and claimed.

To enable others skilled in the art to which the invention appertains to understand the same, I have illustrated the preferred embodiments of the invention in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a perspective view of one embodiment of the combined nozzle and sprayer.

Fig. 2 is a longitudinal sectional elevation thereof with the cut-off valve adjusted to permit the water to pass through the nozzle; and Fig. 3 is a similar sectional view, but with the cut-off valve adjusted to direct the water through the sprayer. Fig. 4 is a detail perspective view of the cut-off valve used in the construction shown by Figs. 1 to 3, inclusive. Fig. 5 is a perspective view of another embodiment of the invention in which I have provided a cut-off valve which is operated independently of any adjustment of the sprayer device. Fig. 6 is a longitudinal sectional view with the cut-off valve adjusted to provide for the passage of water through the nozzle. Fig. 7 is a transverse section with the cut-off valve adjusted to direct the water to the sprayer, and Fig. 8 is a detail perspective view of the valve-plug shown by Figs. 5, 6, and 7.

Like numerals of reference denote corresponding parts in all the figures of the drawings.

The accompanying drawings illustrate different embodiments of my nozzle, which may be used either for directing a stream of water upon a sidewalk or for other purposes or as a sprayer for sprinkling a lawn and the like, and in either embodiment of the invention I have so constructed the sprayer that the deflector may be adjusted to regulate the coarseness or fineness of the spray independently of any adjustment of the two-way cut-off valve.

Referring now more particularly to that form of the invention illustrated by Figs. 1 to 4, inclusive, the numeral 1 designates the body of the nozzle, which is provided with a threaded attaching-nipple 2 and with a detachable tip 3. In this body 1 I have provided a transverse seat 4 to accommodate the plug-valve 5, that constitutes the two-way cut-off of the device. The lower side of the round or cylindrical part of the body is closed by an integral flat head 6; but the upper side of the body is open and screw-threaded externally, as at 7, the screw-threaded open end of the body 1 standing at right angles to the threaded attaching-nipple 2. The plug-valve 5 is preferably of cylindrical form to correspond to the contour and dimensions of the seat 4 in the body or shell 1, and at an intermediate point of its length this cylindrical plug-valve



is formed with an external annular flange or rib 8, against the lower side of which is fitted a gasket or washer 9<sup>b</sup>, that is adapted to bear upon the upper edge of the threaded flange 7 of the body or shell, thus making a tight joint between flanged plug-valve and the shell or body in which it is seated. This plug-valve 5 is constructed in a peculiar manner to enable it to be used to direct the water either through the axial passage and tip 3 of the nozzle or to the sprayer. The upper part of the plug-valve is hollowed or chambered to form a sprayer-mouth 9, the edge of which is slightly curved, as at 9<sup>a</sup>, and from the bottom of the chamber extends an irregular passage 10, preferably of curved form, one end of said passage opening through the face of the plug-valve to form an inlet-port 10<sup>a</sup>. The chambered part of the plug-valve is provided with an interior screw-thread 11 at a point intermediate of its height, and with the said interiorly-threaded part 11 of the chambered plug-valve is adapted to be connected the adjustable deflector, forming a part of the sprayer. This adjustable deflector 12 is of flaring or approximately cone shape, and at its small inner end it has a disk 13 as an integral part thereof. The disk is externally screw-threaded to enable it to be screwed into the threaded part 11 of the chambered plug-valve, and this threaded engagement of the disk with the plug-valve provides an adjustable connection of the sprayer-deflector with the plug-valve, whereby the deflector may be adjusted with relation to the sprayer-mouth for the variation of the spray without affecting the position of the plug-valve in the seat within the body or shell 1. The flaring deflector is somewhat larger in diameter than the sprayer-mouth of the chambered plug-valve to enable the deflector to be screwed down within the chambered plug-valve until it rests upon the edge of the sprayer-mouth, thus closing the egress from the chamber or mouth; and the exposed edge of the deflector is milled or serrated, as shown, to enable a secure grip to be obtained on the deflector for the purpose of conveniently adjusting the same. The lower part of the plug-valve 5, which normally is housed or contained within the body or shell 1, is provided with a transverse waterway 14, which is formed in the plug on a plane below the channel 10, and which is adapted to aline with the axial passage in the nozzle to provide for the convenient and unobstructed passage of water from the nipple 2 to the nozzle, as will be readily understood. The nipple 2 is quite large in diameter to enable a hose-coupling to be readily attached thereto; and the nipple is provided with a transverse bridge 15, which extends across the nipple at the point where it opens into the seat 4 in the body or shell 1, thus providing two ports 16 17, situated one above the other. With the upper port or opening 16 is adapted to aline the port 10<sup>a</sup>

from the passage 10, which leads to the chamber of the sprayer-mouth in the plug-valve; but with the lower port 17 is adapted to aline the waterway 14 in the plug-valve. The waterway 14 extends through the plug-valve in a direction at right angles to the plane of the port 10<sup>a</sup> to the sprayer-mouth, and thus the port 10<sup>a</sup> cannot aline with the port 16 when the waterway 14 is in alinement with the port 17 to the nipple 2, and vice versa. The exposed part of the plug-valve, which protrudes from the flange 7 of the body or shell 1, provides a convenient means by which the plug-valve may be turned in the seat 4 of the body or shell, and said plug-valve may be adjusted to a position where the port 10<sup>a</sup> or the waterway 14 are both in alinement with the ports 16 17, leading to the nipple 2, thus cutting off the passage of water through the nozzle. If desired to throw a stream from the nozzle, the plug-valve may be adjusted to bring the waterway 14 therein into coincidence with the port 17, as shown by Fig. 2, thus permitting water to pass from the nipple 2 through the port 17, the waterway 14 in the valve, and through the axial passage in the nozzle. Again, the plug-valve may be adjusted by partly rotating the same to throw the waterway 14 out of coincidence with the port 17 and to bring the port 10<sup>a</sup> into alinement with the port 16, thus cutting off the passage of water through the nozzle and directing it through the port 16, the port 10<sup>a</sup>, the passage 10, and the sprayer-mouth to impinge against the conical deflector, so as to be projected in the form of a spray from the nozzle. The valve is confined within the shell or body by means of a coupling-gland 18, which may be slipped over the sprayer to bear against the annular flange thereon, and said coupling-gland 18 is internally threaded to enable it to be screwed on the threaded flange 7 of the body or shell 1. This gland may be screwed on the shell to draw the plug-valve downward, so as to compress the gasket or washer between the flange on said plug-valve and the shell or body, thus securing a tight joint between the parts; but when it is desired to adjust the plug-valve in the shell or body it is desirable to loosen the gland to enable the plug-valve to be conveniently turned.

In the embodiment of the invention represented by Figs. 5 to 8, inclusive, of the drawings I have shown the sprayer arranged on the body or shell 1 to have the ends of the plug-valve protrude from the shell or body, so that a handle may be used on one end of the plug-valve for conveniently turning the same, and this plug-valve is of the conical or tapered variety, so that it may be seated in the shell in a manner to dispense with the gasket or washer. In this form of the invention the body or shell is provided with a tapered valve-seat 20, and the nipple 2 is joined with the body or shell to communicate with the seat 20 through a single port 21. On one



side of the shell or body it is formed with a circular flange or protuberance 22, which is internally threaded at 23, and the chamber or space inclosed by said flange or protuberance communicates with the valve-seat 20 through a single port or opening 24. The plug-valve 5 is of conical form to adapt it to fit snugly to the seat 20 in the body, and at one end this plug-valve has a suitable handle 25, while at its other end is a threaded stem 26, on which is screwed a nut 27, a washer 28 being interposed between the nut and the face of the shell or body 1. This plug-valve is provided with the transverse waterway 28<sup>a</sup>, corresponding to the waterway 4 in the nozzle shown by Figs. 1 to 4, inclusive, and said plug-valve is also provided with a recess 29 in its outer surface, which recess extends across said face of the valve to enable it to communicate with the ports 21 24 when the plug-valve is adjusted to one position. The threaded flange or protuberance 22 is formed with a flat outer edge, which forms a seat for the sprayer-mouth 9, which in the present construction is made separate from the body and the plug-valve and is adapted to be held in position on its seat by the conical deflector. This conical deflector is similar in construction to the deflector hereinbefore described, and in the present instance the threaded disk of the deflector is screwed into the threaded flange or protuberance 22 and into the sprayer-mouth, which is internally threaded for the purpose of receiving the threaded disk or head of the deflector, whereby said deflector serves as a means for coupling the sprayer-mouth to the flange 22 of the body. The deflector may be screwed into the flange 22 to bring the outer enlarged end of the deflector into close relation to or contact with the edge of the sprayer-mouth, and thus the deflector is adjustable independently of the adjustment of the two-way valve.

In both forms of my invention hereinbefore described I make the head of the deflector with a plurality of transverse openings 31, which constitute the ports for the passage of water from the plug-valve or from the body to the space or chamber within the sprayer-mouth, and as the water passes under pressure into the sprayer-mouth it impinges against the inclined surfaces of the deflector, thus breaking up the stream into the form of spray.

With the nozzle constructed as just described and as shown by Figs. 5 to 8, inclusive, the plug-valve may be adjusted to bring its ports to a position out of line with the nozzle and the nipple or with the sprayer-mouth, thus cutting off the passage of water through the nozzle. By partially rotating the plug-valve the waterway therein may be brought into alinement with the port 21 and with the passage through the nozzle; but said plug-valve may also be turned to a position where its transverse recess communicates with the ports 21 24, thus providing for the passage of

water from the nipple 2 through the recess 29 and the port 24 into the sprayer-mouth, from whence the water issues in the form of a spray.

The nozzle shown by Figs. 5 to 8, inclusive, embraces the same generic features as the valved nozzle shown by Figs. 1 to 4—that is to say, the nozzle has two waterways. A plug-valve is fitted transversely in said nozzle and provided with two water-passages adapted on axial adjustment of the valve to communicate individually with the separate passages in the nozzle, so as to direct the water into either of the nozzle-passages, a tubular sprayer-mouth coupled to the nozzle-body to lie at right angles to the same and adapted to communicate with one water-passage in the body to receive from the passage in the plug-valve on a certain adjustment of the latter, and a spray-deflector having an adjustable connection with the nozzle through the plug and lying within the sprayer-mouth, said deflector having a perforated head through which the water may flow. It will be understood the sprayer-deflector is the same in construction whether used in the nozzle shown by Figs. 1 to 4 or the nozzle shown by Figs. 5 to 8, and in Fig. 7 this deflector is shown in elevation, while in Figs. 2 and 3 the deflector appears in section. The plug-valve, with the passage 28<sup>a</sup> and the recess 29 in one face, (shown by Fig. 8,) is the equivalent of the plug-valve shown by Figs. 2 and 3, in which two passages are formed directly in the body or plug of the valve itself.

In the practical service of the nozzle as a lawn-sprinkler the device is adapted to rest on the ground, and when so used the device is liable to tilt or cant over, so that the sprayer would not operate properly to distribute the water. To overcome this operation, I have devised a base 40, which may be attached to or disconnected from the body or shell of the instrument or which may be allowed to remain attached to the instrument, as desired. As shown by Fig. 5, the base consists of a bail bent, preferably, from a single length of wire into the elongated form shown substantially by Figs. 1 and 5 of the drawings, the last-named figure illustrating the base swung up into an inoperative position. The length of this bail greatly exceeds the width of the base, and said bail has the angular arms 41, terminating in the prongs 42. The bail is fitted transversely across the nozzle body or shell to project from opposite sides thereof, and said bail is attached detachably to the body by springing its terminal prongs into opposite sockets 43, provided in the body or shell of the nozzle. The base may be used in connection with sockets or cavities in either style or type of nozzle, as shown by the drawings. When the bail is attached to the nozzle, it provides a wide bearing or supporting surface which effectually overcomes any tendency of the nozzle to tilt over sidewise, and



when the nozzle is dragged over the lawn or ground by pulling on the base the base keeps the nozzle in its proper upright position.

I am aware that slight changes in the form and proportion of parts and in the details of construction may be made without departing from the spirit or sacrificing any of the advantages of the invention.

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

1. The combination of a nozzle having independent waterways one of which is arranged to communicate through a valve with the main water-passage of the nozzle, a tubular sprayer-mouth communicating with the other passage and arranged at one side, and wholly out of the plane of, the main water-passage through the nozzle, a flared deflector arranged to present its continuous flared surface to one face and edge of said tubular mouth, and a two-way valve seated within the nozzle to have either of its passages aline with the passages of the nozzle and arranged to direct the water either through the main nozzle-passage or through the sprayer-mouth, substantially as described.

2. The combination of a nozzle having a main water-passage and a branch water-passage in a different plane from the main passage, a two-way valve seated in said nozzle, a tubular sprayer-mouth communicating with the branched water-passage, and a deflector provided with a perforated head which is fastened to the nozzle and with a continuously-flared surface which lies within the sprayer-mouth and is opposite to the edge thereof, said deflector being adjustable with relation to the edge of the sprayer-mouth, substantially as described.

3. The combination with a nozzle having independent waterways, and a two-way valve seated in said nozzle, of a tubular sprayer-mouth lying at right angles to said nozzle and communicating with one of the waterways therein, and a deflector having an exteriorly-threaded and interiorly-perforated head adjustably fitted within the sprayer-mouth and also provided with a working surface which flares in an outward direction from said head and has its enlarged outer extremity overhanging the edge of the sprayer-mouth, said deflector presenting a continuously-flared surface to the inner face and edge of the sprayer-mouth, substantially as described.

4. The combination of a nozzle, a plug-valve seated therein and provided with a chamber which forms a sprayer-mouth and also provided with independent water-passages, and a sprayer-deflector mounted in said sprayer-mouth of the chambered valve,

for the purposes described, substantially as set forth.

5. The combination with a nozzle, of a sprayer-mouth, a two-way valve for directing the water either through the nozzle or the sprayer-mouth, and a conical deflector having a threaded head and the transverse ports, substantially as described.

6. The combination with a nozzle having independent waterways, of a two-way valve seated transversely in the nozzle and provided with an exposed sprayer-mouth which is concentric to the axis of said valve and communicates directly with one water-passage therein, and a flared deflector having its head connected adjustably to the valve and lying within the sprayer-mouth thereof, substantially as described.

7. The combination of a nozzle provided with sockets or cavities, and an elastic bail-like base sprung into engagement with the cavities or sockets of the nozzle and arranged to extend across the nozzle, substantially as described.

8. The combination with a nozzle, of a two-way valve seated therein and provided with a cylindrical sprayer-mouth which is concentric with the axis of the valve and is extended beyond the nozzle, a coupling operatively connected with said nozzle and the valve, and a flaring deflector adjustably attached to the valve to lie within the sprayer-mouth thereof and presenting its continuous working face to the edge of the sprayer-mouth, substantially as described.

9. The combination with a nozzle, of an axially-turning valve having an axial concentric sprayer-mouth which is exposed beyond the nozzle and also provided with independent waterways, one of which communicates with the sprayer-mouth, and a deflector adjustably fitted within said sprayer-mouth and having a flaring working face which is presented to the face and edge of the sprayer-mouth, substantially as described.

10. The combination of a nozzle, a two-way valve fitted therein and provided with an axial extended sprayer-mouth, which is interiorly threaded for a part of its length, and a deflector having a perforated head screwed into the threaded part of the sprayer-mouth and formed with a flaring surface which is presented to the inner face and edge of the sprayer-mouth, substantially as described.

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

GEORGE FRANKLIN WENTZ.

Witnesses:

J. F. LILLY,

H. E. BASSETT.