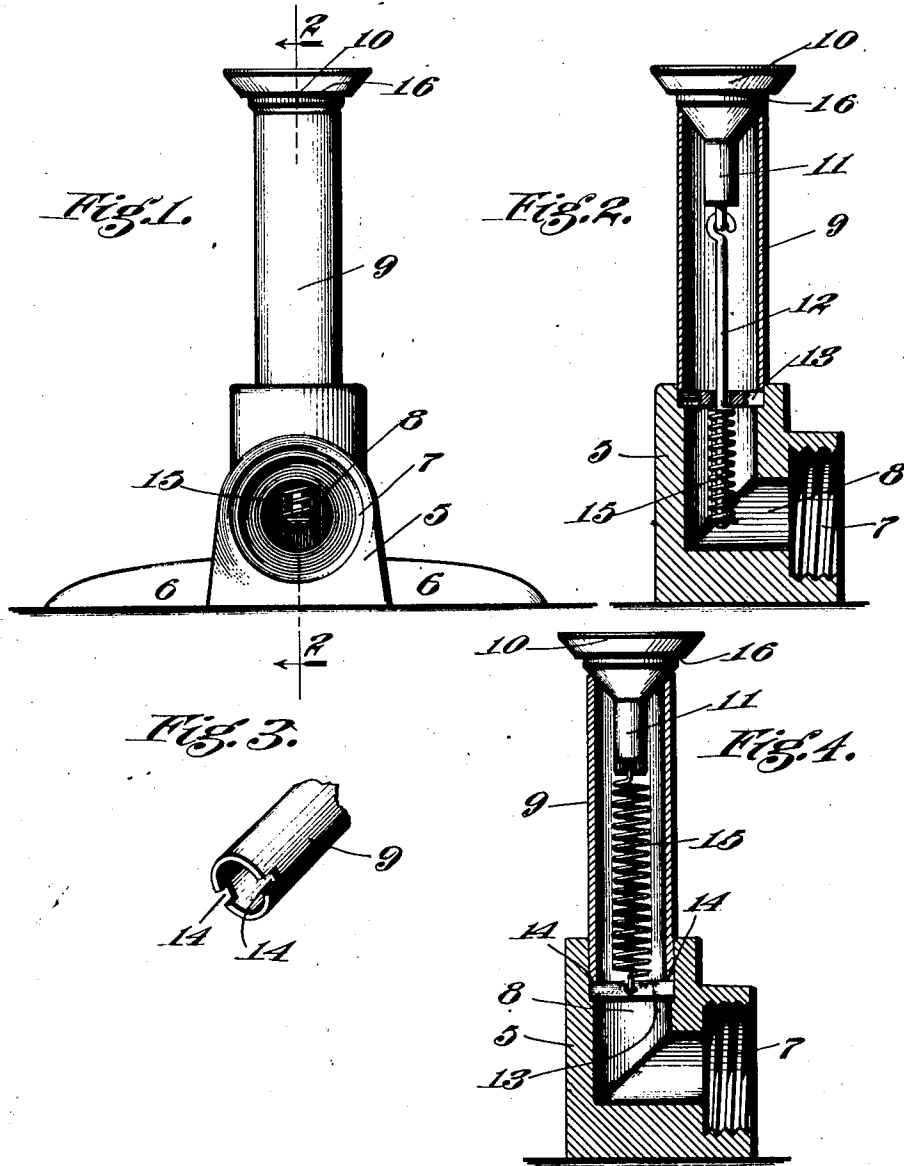


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NOZZLE.
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920,145.

Patented May 4, 1909.



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NOZZLE.

No. 920,145.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM G. HUGHES, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Nozzles, of which the following is a specification.

My invention relates to a nozzle adapted to sprinkling purposes and the prime object thereof is to provide a nozzle which will adjust itself to large variations of pressure and volume so that it will throw a fine spray uniformly over a large area under either a light or heavy pressure.

A further object is to provide a nozzle which will evenly distribute a fine spray over a large area and which will not become clogged by any foreign matter in the water fed to the same.

A further object is to provide a nozzle in which the wearing parts may be readily replaced by any new parts when worn out.

I accomplish these objects by means of the device described herein and illustrated in the accompanying drawings, in which:—

Figure 1.— is a front elevation of my improved nozzle. Fig. 2.— is a longitudinal section taken on line 2—2 of Fig. 1. Fig. 3.— is a perspective detail of the bottom end of the nozzle tube showing the notches therein. Fig. 4.— is a section similar to Fig. 2 of a modified form of nozzle.

Referring to the drawings, 5 designates a base, preferably made of cast metal and provided with projecting base lugs 6 which are adapted to impart stability in a direction at right angles to the hose, (not shown). The hose, which screws into threaded opening 7, imparts stability to the nozzle in the direction along the hose and thereby, with the assistance of base lugs 6, prevents it from tipping from its vertical position.

Base 5 is provided with a passage 8 which leads from hose opening 7 horizontally and then upwardly to nozzle tube 9 into which the water is discharged from the hose. Tube 9 is preferably secured to base 5 by solder and is provided with a preferably cone shaped stopper 10 having a downwardly extending stem 11 to the lower end of which is hooked the upper end of a rod 12. The lower end of rod 12 passes through a detachable bar 13 which fits across the lower end of tube 9 in notches 14 cut in the tube for that purpose. A compression spring 15 sur-

rounds the end of rod 12 below bar 13 exerting a downward pressure on a washer on the end of the rod. Spring 15 is considerably smaller in diameter than the passageway so as to leave a sufficient space around it to provide for the passage therethrough of foreign substances. In the normal position of stopper 10, spring 15 is in compression so as to hold stopper 10 on its seat against a considerable pressure of water underneath the same.

In Fig. 4 I have shown a modified form of nozzle in which a tension spring is utilized in place of the compression spring and rod therefor in the first form. In this form the upper end of the spring is secured directly to the stopper and the lower end to crossbar 13.

In the operation of my nozzle, the water pressure in tube 9 under stopper 10 will raise the same until a sufficient opening has been created between the tube and the stopper to allow the amount of water being supplied to the nozzle to flow out through the opening. In this manner the water is spread into a cone shaped sheet until it strikes a shoulder 16 where the sheet is broken up into a fine spray, part of the water entering the cut below the shoulder and rebounding therefrom to strike the body of water in the cone shaped sheet and break it up into small particles, which rebound in every direction so that the resultant spray is evenly distributed within the radius of operation of the nozzle.

The above explained action will take place with a large or small amount of water as the stopper will rise off of its seat on the top of the tube just enough to allow the amount of water fed to the nozzle to escape. The spraying action will take place with a small amount of water as well as with a large amount of water as the spring holds the stopper down until a sufficient pressure has been raised inside the nozzle to force the water into a spray. On account of the universal connection formed by the hook and eye between rod 12 and stopper 10, it will be observed that the stopper is permitted to be moved freely by the water passing around it. If the stopper were rigidly mounted in a transverse direction it is seen that especial care would have to be taken to make it perfectly concentric with the tube so that the water would flow equally on all sides of it. With the present construction

the stopper is allowed to take a position of equilibrium in the exact center of the tube, being held in that position by the water passing around it. Thus the water is distributed equally on all sides of the nozzle.

It will be observed that it is impossible to clog this nozzle as any foreign matter will pass out of the tube along with the water. The passageways of my nozzle are all sufficiently large to insure the passage therethrough of any growth which often occurs in water systems and which is the source of constant clogging of all spraying nozzles which employ small passageways. Should a stone or other solid substance lodge in the nozzle it will be forced upwardly to the stopper when the stopper will rise enough to permit the escape of such solid substance. Thus it will be seen that nothing except a very large stone or the like can clog my nozzle, and any substance of that size is prevented from entering water systems by filters or similar devices.

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

1. A sprinkler nozzle, comprising a tube adapted to be connected at one end to a source of water supply, a stopper for the discharge end of said tube, and resiliently actuated means to hold said stopper in place, said means being universally connected to said stopper.

2. A sprinkler nozzle, comprising a tube adapted to be connected at one end to a source of water supply, a conical stopper for the discharge end of said tube, said stopper being provided with an annular shoulder thereon, and resiliently actuated means to

hold said stopper in place, said means being universally connected to said stopper.

3. A sprinkler nozzle, comprising a tube adapted to be connected at one end to a source of water supply, a conical stopper for the discharge end of said tube, said stopper being provided with an annular groove therein beyond the end of the tube, and a spring actuated rod mounted in said tube, said rod being universally connected to said stopper.

4. A sprinkler nozzle comprising a vertically disposed tube, a base for said tube, said base adapted to be connected to a source of water supply and being provided with a water passage leading to the base of said tube, an inverted conical stopper adapted to close the upper end of said tube, said stopper having an annular groove above the upper end of said tube, a bar across the lower end of said tube, a rod pivotally attached to said stopper and passing downwardly through said bar, and a compression spring around said rod below said bar, said spring being adapted to force said rod downwardly.

5. A sprinkler nozzle, comprising a tube adapted to be connected at one end to a source of water supply, a stopper for the discharge end of said tube, and a spring actuated rod mounted in said tube, said rod being universally connected to said stopper.

In witness that I claim the foregoing I have hereunto subscribed my name this 26th day of June, 1907.

WILLIAM G. HUGHES.

Witnesses:

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