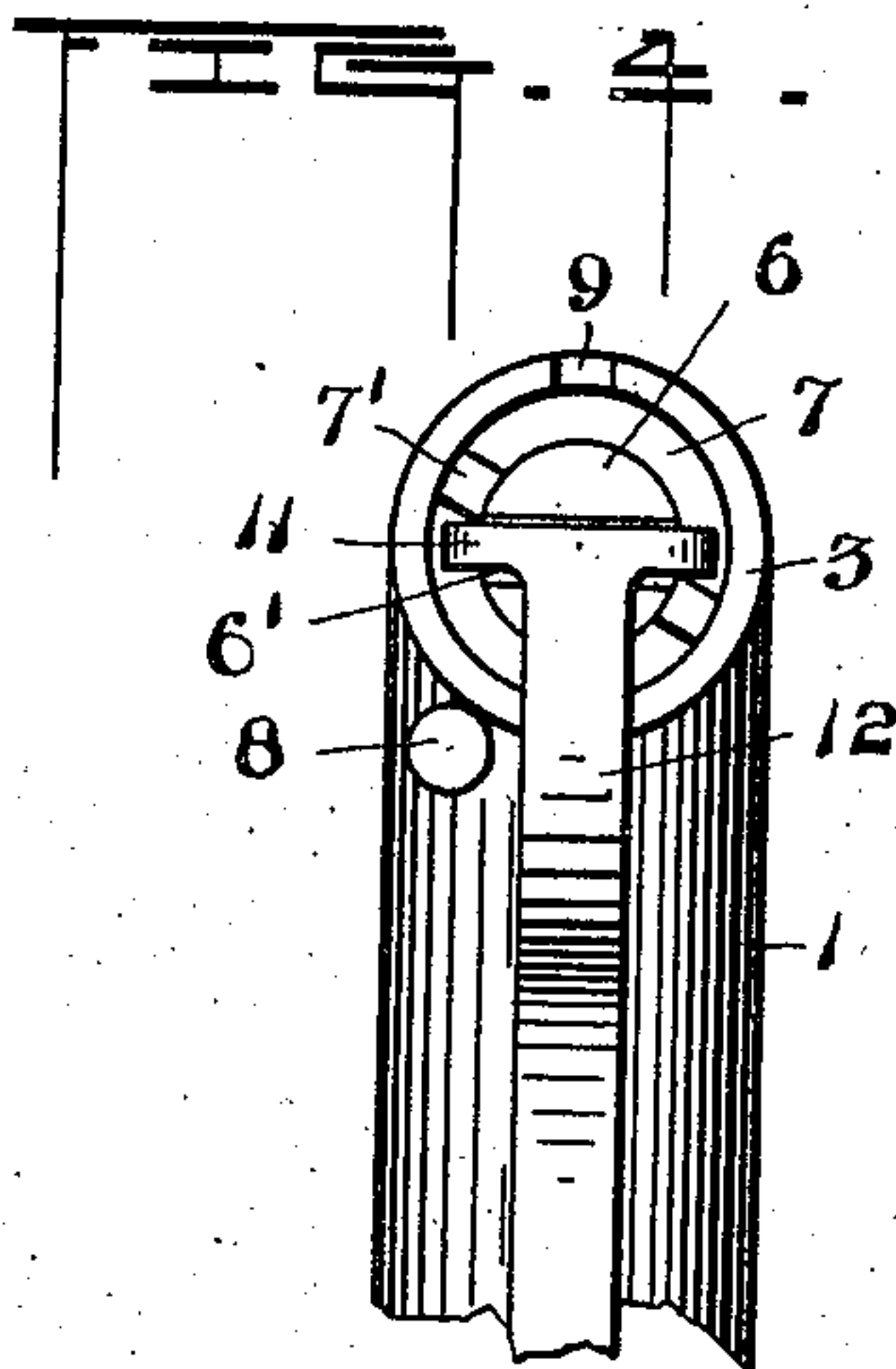
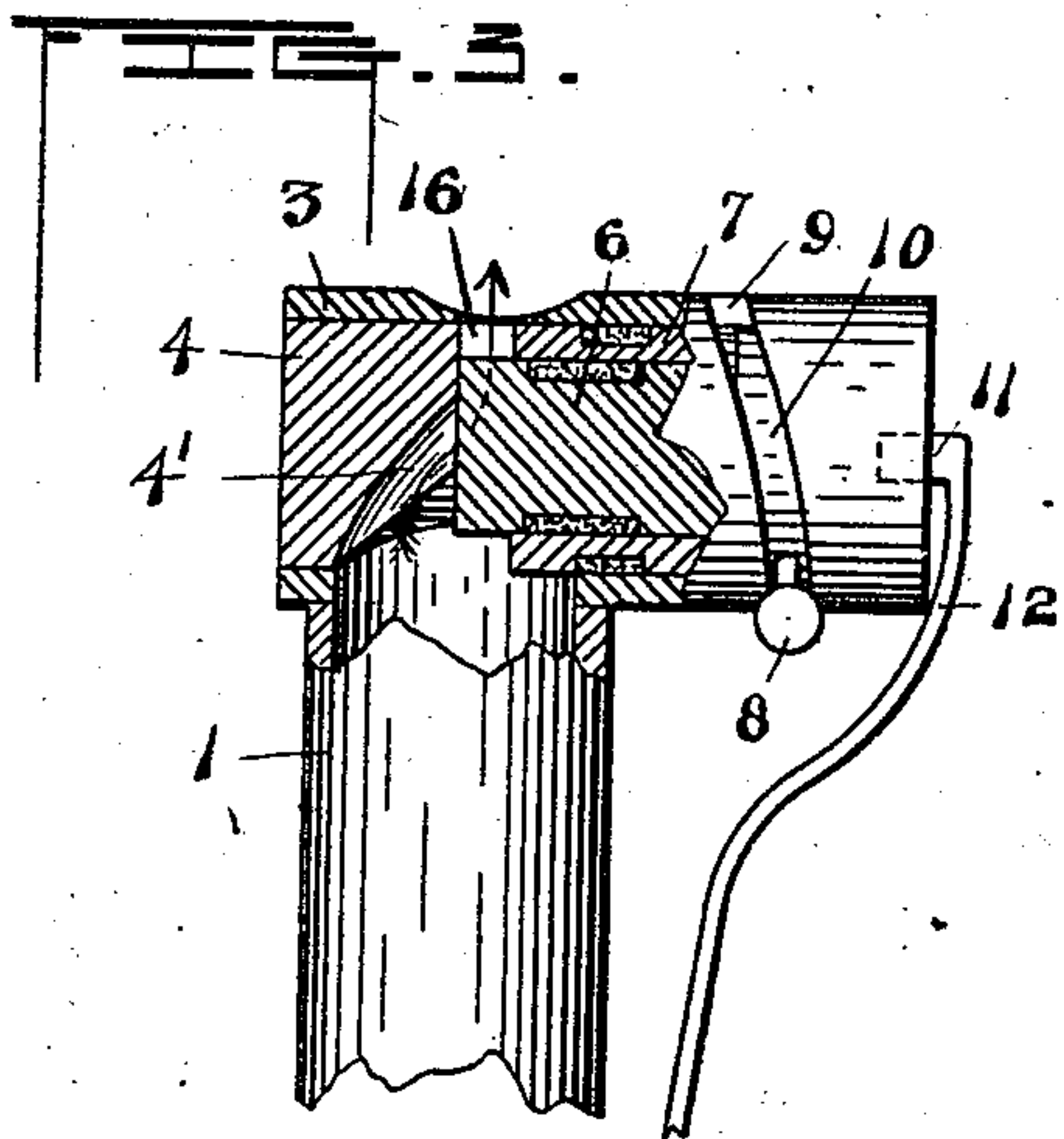
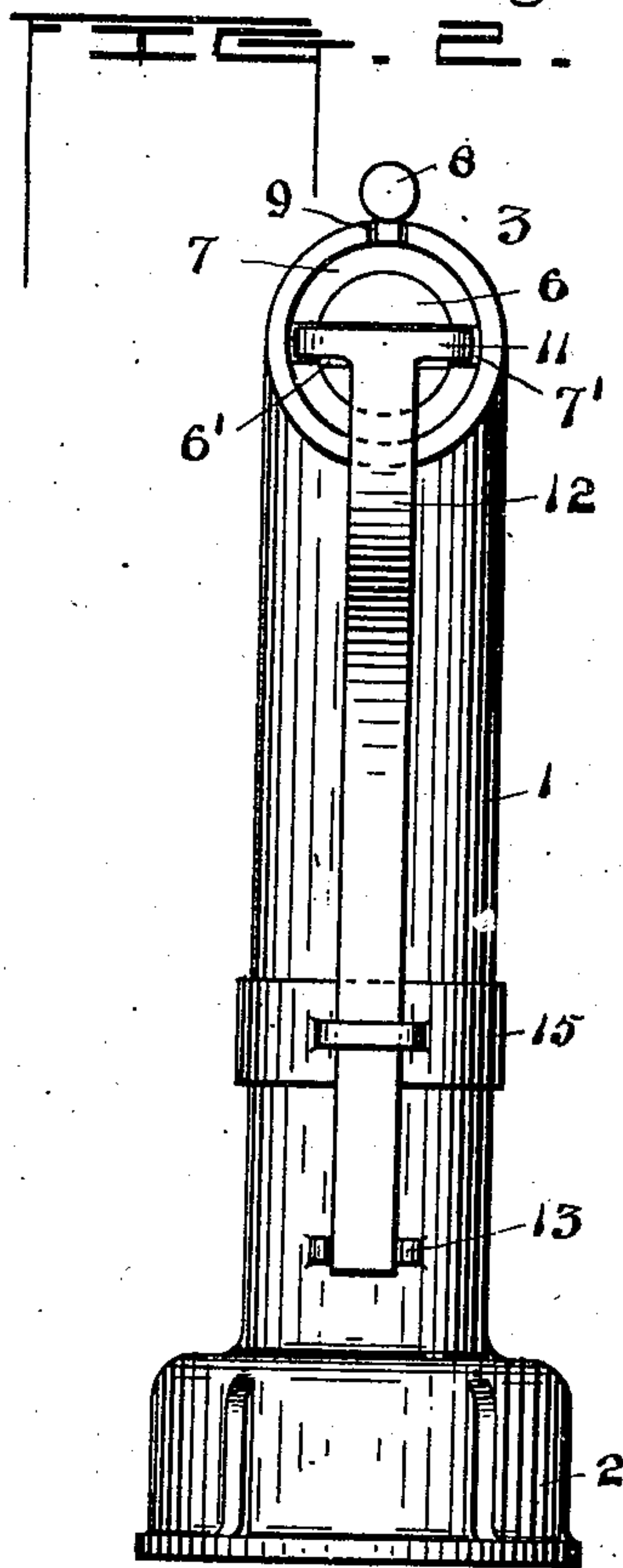
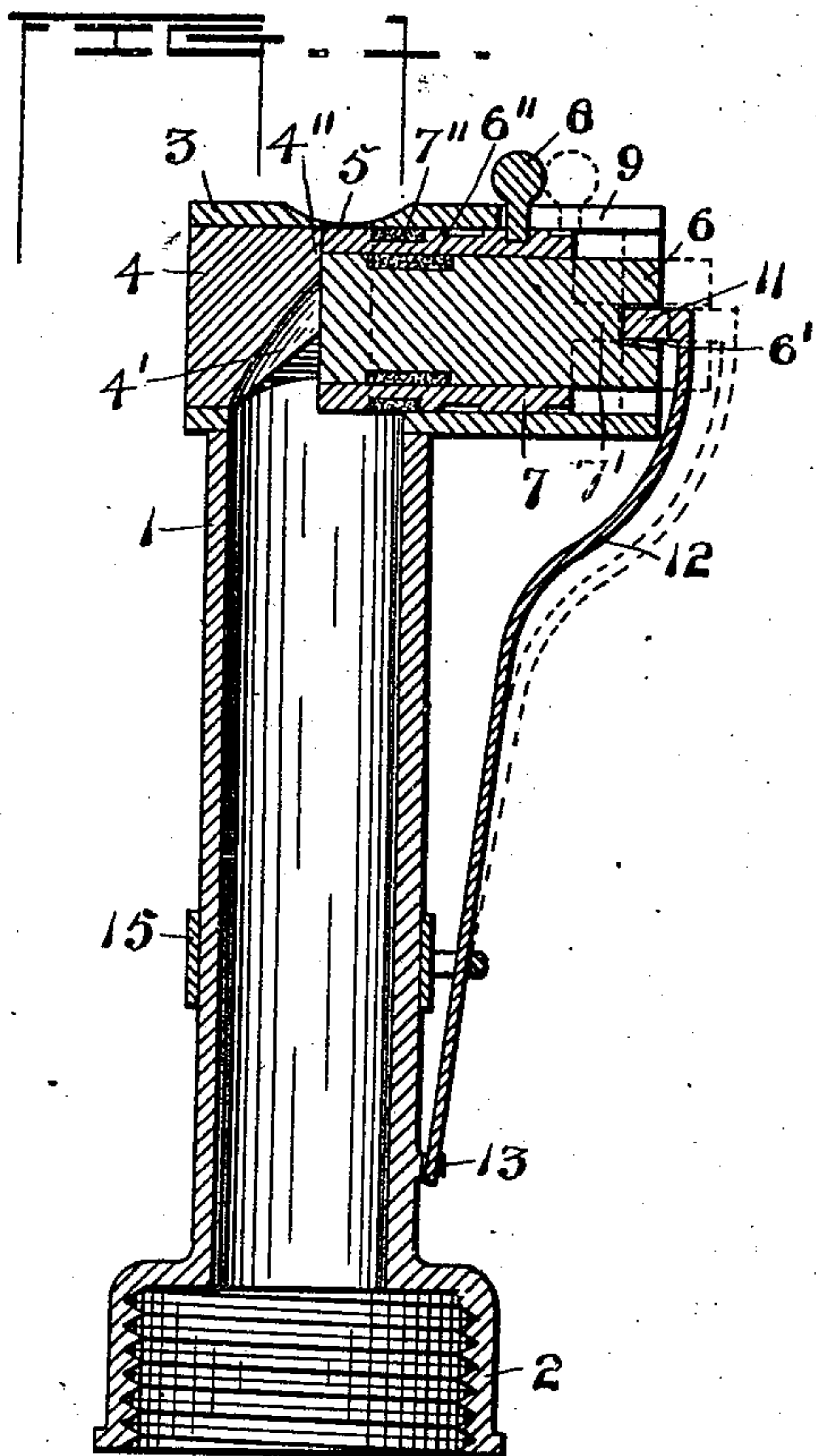


(No Model.)

J. J. MCGOWEN.
SPRAYING NOZZLE.

No. 502,742.

Patented Aug. 8, 1893.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN J. MCGOWEN, OF FOREST HOME, NEW YORK.

SPRAYING-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 502,742, dated August 8, 1893.

Application filed January 26, 1893. Serial No. 459,905. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. MCGOWEN, a resident of Forest Home, in the county of Tompkins 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 invention, such as will enable others skilled in the art to which it pertains to make and use the same.

The invention relates to spraying nozzles for pipes, and has for its object to construct such a device so that it can be readily changed from a spraying to a long distance nozzle and will be adapted under either adjustment to clear itself of accidental obstructions, and it consists in the construction hereinafter described and particularly pointed out.

In the accompanying drawings Figure 1 is a longitudinal section of the nozzle, the clearing position of the parts being indicated in dotted lines. Fig. 2 is an end elevation partly in section. Fig. 3 is a side elevation of the device adjusted for spraying, partly in section, and Fig. 4 is a section on line 4--4 of Fig. 2.

Numeral 1 denotes a nozzle tube having a screw threaded socket 2 adapted to fit the correspondingly threaded end of a water pipe or hose coupling.

3 indicates a short transverse tube communicating with tube 1 and having its end stopped with a plug 4 having preferably its inner face 4' inclined to adapt it to change the direction of the current forced through the tubes toward the exit orifice 5.

6 indicates a piston and 7 a sleeve surrounding the same the latter being fitted to the tube and provided with packing 7'' both sleeve and piston being adapted to bear on the shoulder or end 4'' of the plug 4. To the sleeve 7 is fixed a knob 8 adapted to move either in the straight slot 9 or in the spiral slot 10 as required by the uses to be hereinafter described. In the end of the piston 6 is a slot 6' to receive the transverse bar or head 11 of a spring 12. The opposite end of the spring 12 is held between two lugs 13 fast on tube 1. 14 is a sleeve sliding freely on said tube and having a yoke 15 adapted to receive the spring the construction being such that the

moving of the sleeve toward the tube 3 increases the tension of the spring.

Upon the end of the piston sleeve 7 are projections 7' against which the cross bar 11 of the spring bears when both piston and sleeve bear upon the inner end of the plug 4 and the knob 8 is in slot 9. The spring at such time holds both sleeve and piston against the plug. The piston partially closes the port or passage made in the plug under the inclined wall 4' which port at its lower part is wider than the diameter of the piston and is always partially open unless closed by the sleeve 7. When adjusted as just stated this sleeve closes the passage to the outlet orifice, unless the pressure in tube 1 is sufficient to overcome the spring and move the piston and sleeve away from the plug to give escape to the fluid through orifice 5, as will be the case in actual operation for throwing the water long distances. In case of an obstruction at or near the junction of tubes 1 and 3 the tension of the spring having been previously suitably adjusted, the pressure will be sufficient to move the piston and sleeve to the positions indicated in dotted lines in Fig. 1 and give an exit to the obstruction, the parts being returned by the spring to their normal operating positions. In such clearing operation the knob 8 moves in the slot 9.

To adjust the device for near at hand spraying the knob is moved into the inclined slot 10 and the sleeve thereby turned, with the effect to disengage the projections 7' on said sleeve from the head of the spring and move said sleeve away from plug 4 as indicated in Fig. 3. By this adjustment, circumferential outlets 16 are opened one on each side of the piston 6 through which opposing currents may issue with the effect to break each other into fine spray, to which direction is given in part by the concave face surrounding the orifice 5. Under this adjustment the outlet will be automatically enlarged to give escape to an obstruction as in the case first described, the spring yielding to allow the piston to move out of the path of such obstruction. The size of the opening can be adjusted by turning the sleeve by the medium of the knob.

It should be understood that the outlets or openings above referred to are circumferen-

tial spaces at the sides of piston 6 and at the end of sleeve 7 and between the end of said sleeve and the plug 4. These outlets are closed by the sleeve abutting against the plug 5 as indicated in Fig. 1 and they are opened by withdrawing the sleeve, as shown in Fig. 3 by means of knob 8 and slot 10 in which latter case there is free communication from the interior pipe 1 along the inclined wall 4' of the plug and out on each side around the piston through said circumferential openings 16 at the inner end of the sleeve. The piston never entirely closes the passage or port under the inclined wall 4'. From the above description it will be understood that the piston is in substance a valve always partially open and adapted to be automatically opened wider by pressure in the pipe to permit the discharge of an obstruction and that the sleeve is in effect a valve controlled at the will of the operator to entirely close or open the outlet.

I am aware that spraying nozzle valves have been provided with handles whereby they might be opened wide to discharge obstructions and that in other cases the spray openings are normally closed except when opened by pressure in the water pipe and such matters are not of my invention.

I am aware that a spraying device has been provided with a spring-held valve of frusto-conical form having a longitudinal groove in its exterior and arranged and adjusted to be opened by a lever to permit the escape of obstructions, the supply pipe being provided with a cock, and such device is not of my invention. It is characteristic of my improvement that the device is automatically opened by interior pressure being constructed and arranged for that purpose. And to this end are provided one or more orifices or ports such as 5 communicating directly with the pipe interior and so related to the pressure-operated valve or piston that the movement of the latter is transverse to the pipe passage and to the orifice and therefore adapted to open said orifice to its full extent by a comparatively small movement of the valve.

Having thus fully described my invention, what I claim is—

1. In a spraying nozzle a pipe, an outlet 5 communicating directly with the pipe, a valve movable transversely of the pipe and outlet and adapted to partially close said outlet and adjusted to be automatically opened by interior pressure, a spring to hold the valve partially closed except when its tension is over-

come by pressure within the supply pipe, and a distinct cut off valve to entirely close said outlet 5 at will all combined substantially as set forth. 60

2. In a spraying nozzle the combination of the tube 3 stopped at one end by plug 4, the piston valve 6, the sleeve 7 surrounding the piston and adjustable independently thereof, and the spring adapted to yield to permit the piston valve to move out of the path of the current or of an obstruction, substantially as set forth. 65

3. In a spraying nozzle the combination of the tube 3 stopped at one end by plug 4, the piston valve 6, the sleeve 7 surrounding said piston and adjustable independently thereof, and the spring, said sleeve being adapted in one position to be held together with the piston in yielding manner by the spring and under such adjustment to be moved lengthwise by pressure in the pipe and also adapted to be relieved from the spring and held against such pressure, substantially as set forth. 70

4. In a spraying nozzle the tube 1 having cross tube 3, the piston 6 having slot 6', the sleeve 7 having projections 7' and the spring secured on tube 1 and provided with a head to engage the slot, substantially as set forth. 75

5. In a spraying nozzle the tube 1 having cross tube 3, the piston 6 having slot 6', the sleeve 7 having projections 7' and the spring secured on tube 1 between the lugs and provided with a head to engage the slot, and the tension adjusting sleeve, substantially as set forth. 80

6. In a spraying nozzle the tube 1 having cross tube 3 provided with an exit orifice and slots 9 and 10, the piston, the sleeve having the knob adapted to move in either of said slots and the spring to hold the piston in closed position, substantially as set forth. 85

7. In a spraying nozzle the tube 1 provided with cross tube 3 the latter being provided with an outlet orifice and stopped at one end with a plug having the inclined face 4' and shoulder 4'', the piston and piston sleeve and a spring tending to hold said piston and sleeve against the shoulder under the orifice, substantially as set forth. 90

In testimony whereof I have signed this specification in the presence of two subscribing witnesses. 105

JOHN J. MCGOWEN.

Witnesses:

FRANK M. LEARY,
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