(No Model.)

# M. CLEMENS.

## NOZZLE FOR HOSE AND DISCHARGE PIPES.

No. 302,542. Patented July 29, 1884.

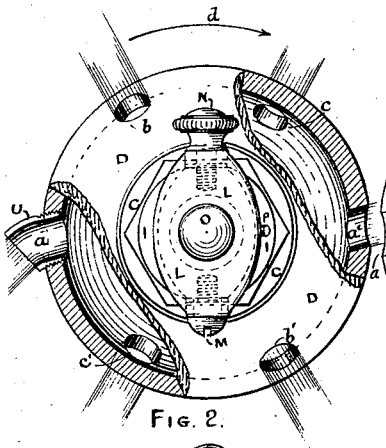


FIG. 2.

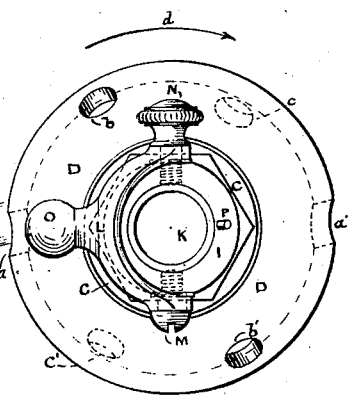


FIG. 4.

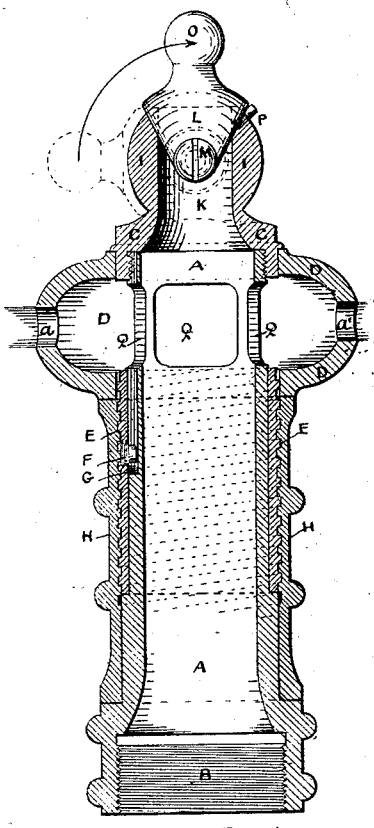


FIG. 1

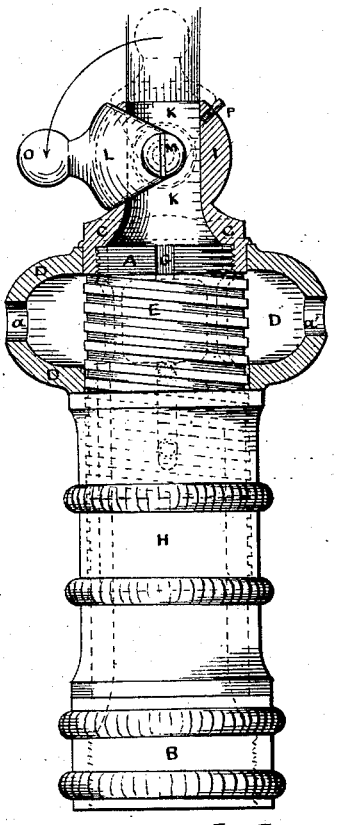


FIG. 3.

WITNESSES,

Terrance P. Brennan

John Kern

INVENTOR,

Melville Clemens

# UNITED STATES PATENT OFFICE.

MELVILLE CLEMENS, OF NEW YORK, N. Y., ASSIGNOR TO JOHN J. BRESNAN, OF SAME PLACE.

## NOZZLE FOR HOSE AND DISCHARGE PIPES.

SPECIFICATION forming part of Letters Patent No. 302,542, dated July 29, 1884.

Application filed October 22, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, MELVILLE CLEMENS, a citizen of the United States, residing at New York city, in the county and State of New York, have invented a new and useful Improvement in Nozzles for Hose and Discharge Pipes; and I do declare the following specification to be a full, clear, and exact description of my said invention.

My said invention consists, chiefly, in the adaptation and arrangement, in a fluid-discharge nozzle, of a hollow disk or shell fitted upon the nozzle-barrel to revolve freely thereon, and provided with orifices or discharge-ports in the disk or shell, so formed that when the nozzle is supplied with water or other fluid under pressure above the external pressure there will be discharged from the nozzle-ports streams directed in various lines and angles, and also the disk be caused to revolve upon its axis, thus distributing the discharging-fluid in various planes, so as to cover all space about the nozzle within its reach.

The invention also includes an arrangement for a closing-valve or "shut-off" for the said distributing-nozzle; and the said invention further includes the combination, with the said distributing-nozzle, of a "plain" or single round-stream nozzle, provided with an independent closing or shut-off valve from that of the distributing-nozzle, so that in the combined arrangement either the distributing-nozzle or the plain nozzle may be played alone, or both be played together, or both be shut off.

In the accompanying drawings, forming part of this specification, like letters of reference refer to like parts of the combinations.

Figures 1 and 2 show my combined distributing and plain nozzle, with the plain nozzle closed and the distributing-nozzle open, Fig. 1 being a longitudinal section, and Fig. 2 being a top view in part section. Figs. 3 and 4 show the same combination, with the distributing-nozzle closed and the plain nozzle open, Fig. 3 being, in part, a longitudinal section, and Fig. 4 being a full top view.

Referring to the drawings, a nozzle-barrel, A, with its head B fitted, as is commonly done, to screw on the "butt" or end of a hose or discharge-pipe, has screwed on its outer end a cap, C. A hollow disk or shell, D, shaped like a flattened sphere, is fitted to revolve freely on its axis, concentric to the axis of barrel A, with one journal-bearing formed on the screw-flange of cap C and another journal-bearing of it upon a tubular or sleeve valve, E, which fits freely and concentrically on barrel A. A flange of cap C keeps disk D in position on barrel A. In the valve E is fixed a stud-pin, F, fitted to slide freely in a groove, G, formed longitudinally in the outside of barrel A.

Exterior to barrel A and valve E is a "rib-knurled" hand-sleeve, H, fitting freely on barrel A, between flanges of disk D and the head B of barrel A, and having an internal left-hand screw-thread formed in it to match and engage a like external screw-thread formed on the sleeve-valve E, so that by turning the hand-sleeve H to the right the valve E may be closed by coming to its seat on the screw-flange of cap C, (see Fig. 3,) and by turning sleeve H to the left the valve E may be opened to the position shown in Fig. 1.

In the barrel A are formed transverse outlet-ports Q Q Q Q, leading from the interior of barrel A to the interior space of disk D, when valve E is opened, so that by opening and closing valve E the discharge-fluid is respectively admitted to or shut off from disk D. The disk D has six discharge-ports, *a a'*, *b b'*, and *c c'*, formed through its shell or walls, the ports *a a'* being central to the disk D in a plane at right angles to its axis of rotation, but made with their axes inclined from radial lines from the center of disk D, in order that when fluid (under pressure in disk D) is discharged out of them its reacting force shall cause the disk D to rotate slowly on its axis in the direction of arrow *d*. As the disk D is balanced, when under fluid-pressure within it, as to journal-end forces, and as it is also nearly balanced on its axis as to lateral forces, it is evident that it requires but very little reacting force from the outflowing jets or streams of the ports *a* and *a'* to rotate the disk on its axis, and therefore their inclination from radial lines to the center of disk D may be made slight and only enough to rotate the disk slowly, so as not to

break up and scatter into spray the issuing jets or streams by too rapid rotary distribution, but to deliver them solidly and effectively in their respective discharge-planes.

At port *a* is shown in Fig. 2 a short bent tube fixed in the port. Its use gives greater rotative force to the jet of the port, but is therefore objectionable, because it forms spray of the stream and acts to carry the outflowing fluid around oppositely to the direction of its natural outflow, and to thus reduce its effective velocity of outflow.

The ports *b b'* lead from opposite sides of the upper portion of disk D, at an angle of their axes of about forty-five degrees from the axis of disk D, and they discharge forward as the disk revolves. The ports *c c'* lead from opposite sides of the lower portion of disk D, inclined about forty-five degrees to the axis of D, discharging backward toward the pipe-butt as disk D revolves. Thus the ports *a a'* serve to revolve disk D, and, together with ports *b b'* and *c c'*, serve to distribute the six jets or streams substantially in all directions from the nozzle in a most efficient manner for fire-extinguishing.

The cap C has formed concentrically on it a ball, I, through which is formed a plain nozzle, K, in line with barrel A. This plain nozzle is provided with a closing or shut-off valve, L, which is a close-fitting shell on the ball I, pivoted in the transverse axis of the ball by a fixed screw-pivot, M, and an adjustable screw-clamping pivot, N, in ball I. The valve L is moved by a knob, O, back and forth from its position shown in Figs. 1 and 2 to that of Figs. 3 and 4, where its movement is stopped by pin P in ball I.

In Figs. 1 and 2 the plain nozzle K is shown closed by its shut-off valve L, and the distributing nozzle or disk D is shown opened by its valve E, so that only the distributing-disk D is discharging.

In Figs. 3 and 4 the distributing-disk D is shown closed by its shut-off valve E, and the plain nozzle K is shown opened by its valve L, so that only the plain nozzle K is discharging. By opening the two valves E and L both the disk D and nozzle K will discharge, and by closing E and L there will be no discharge. The diagonal disk D″ may therefore be substituted with advantageous results for the flattened-sphere disk D.

I am aware that nozzles for hose and discharge pipes for fire-extinguishing and other purposes of fluid distribution have been made prior to my invention in which the discharging-nozzles were made to revolve upon their axes or nozzle-barrels; but I know of no hose or distributing nozzles having the distinctive and effective features and principles of operation of my invention as set forth in my foregoing specification.

I claim as of my invention—

The described hose-nozzle, consisting of the hollow disk D, having the discharge-ports *a a' b b' c c'*, and arranged to revolve upon the nozzle-barrel A and to be supplied with water through ports Q Q Q Q in the barrel A, and provided with a shut-off valve, E, operated by the hand-sleeve H, all constructed, combined, and operating together, and with the described plain nozzle K and its shut-off valve L in the cap C, all substantially as and for the purposes set forth.

MELVILLE CLEMENS.

Witnesses:
TERRANCE P. BRENNAN,
JOHN HERN.