



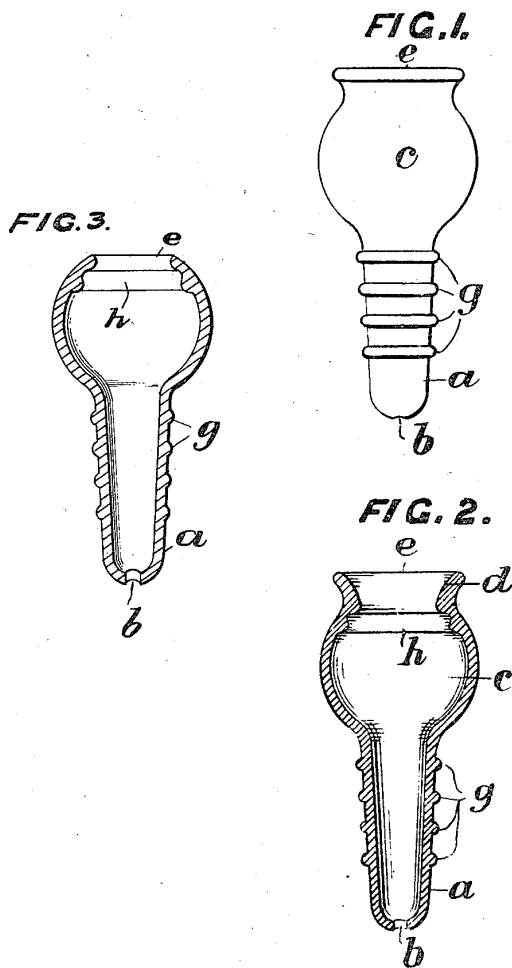
June 26, 1923.

C. R. FLEMING-WILLIAMS

1,459,975

NOZZLE FOR THE DELIVERY OF WATER OR OTHER LIQUID UNDER PRESSURE

Filed Sept. 1, 1921



Inventor.
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By Henry O. [Signature] Atty.



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UNITED STATES PATENT OFFICE.

CLIFFORD ROGER FLEMING-WILLIAMS, OF LAKE WINDERMERE, ENGLAND.

NOZZLE FOR THE DELIVERY OF WATER OR OTHER LIQUID UNDER PRESSURE.

Application filed September 1, 1921. Serial No. 497,778.

To all whom it may concern:

Be it known that I, CLIFFORD ROGER FLEMING-WILLIAMS, a subject of the King of Great Britain, residing at Hill of Oaks, Lake Windermere, in the county of Lancaster, England, have invented a new or improved Nozzle for the Delivery of Water or Other Liquid Under Pressure (for which I have filed an application in Great Britain on March 19, 1919, No. 6899), of which the following is a specification.

This invention relates to a new or improve nozzle and the object aimed at is to produce a nozzle of simple construction and capable of a high degree of efficiency, the said nozzle being of the type comprising a restricted orifice at a distance from the delivery orifice and adapted without the use of valves, for projecting either a solid concentrated jet of water or other liquid at a relatively high velocity, or, at will, a more diffused jet covering a larger area and at a materially lower pressure or velocity.

According to this invention, the nozzle comprises a tubular portion which is taper or cylindrical and is provided at the admission end with the relatively restricted opening or inlet referred to, the said tubular part merging, towards the delivery end, into a bulb or enlargement having a delivery orifice of less diameter than the greatest internal diameter or axis of the bulb. The end part of the device surrounding the restricted inlet opening is preferably made convex towards the flow, and the discharge or outlet orifice is conveniently provided with an annular flaring lip. The bulb or enlargement may be globular, but whether globular, egg-shaped or of less diameter axially than transversely, it may be provided with a rib or ribs on the interior and in the neighbourhood of the outlet orifice. These ribs may be concentric and parallel with the delivery orifice, or they may be axial or inclined to the axis. Upon turning on the water, a high velocity jet may be projected without touching the sides of the tubular body or bulb. If, then, a diffused jet is required, the delivery is checked as by placing the hand over the outlet orifice, whereupon the liquid will be obstructed in the nozzle and will form eddies therein, so that it is delivered in a diffused or annular form at a materially lower pressure or velocity than before.

In order to enable this invention to be

readily understood, reference is made to the accompanying drawing in which:

Figure 1 is a side elevation of a nozzle device constructed in accordance with these improvements, and

Figure 2 is a longitudinal section through the nozzle seen in Figure 1.

Fig. 3 is a longitudinal section of a modified form.

Referring to the drawing, *a* is the tubular part of the nozzle formed with the restricted inlet or opening *b* at the inlet end, that is to say the end that is inserted into the hose or other pipe. The tubular part *a* merges into a bulbous part *c* which, as shown in the drawing may be globular, although it may be of any bulbous formation, as indicated above. The bulbous part *c* may be formed with a flared lip *d* around the delivery orifice *e*, as shown in Fig. 2. The lip however is not essential and the bulb *c* may be formed without it as indicated in Fig. 3.

The exterior of the tubular part may be formed with ribs *g* or the like for improving its hold in a hose pipe in known manner. In the construction illustrated, the interior of the bulb *c* is formed with annular ribs, serrations, or other suitable projections *h*, these being preferably concentric with the delivery orifice and adjacent thereto. It will be noted that the portion of the nozzle surrounding the inlet opening *b* is made convex towards the direction of the flow, this formation being preferred in practice.

In use, the nozzle is fitted on to a hose in any suitable manner, as by forcing the tubular part *a* with the ribs *g* into the end of a hose pipe, or by screwing, or by any other known means. Upon turning on the water, a jet may pass straight through from the inlet opening *b* to the delivery orifice *e*, without touching the interior of the tubular part *a* or the bulbous part *c*. Such a jet would have a high velocity and be of a solid and concentrated form. When a diffused jet is required, the hand, or any other obstruction, is placed over the delivery orifice *e* or in the way of the jet so as to sufficiently obstruct the same. Thereupon, the nozzle or bulb becomes more or less filled, so that the water strikes the interior and particularly the ribs or the like at *h*. This action will continue after removing the hand, so that the user will now have the diffused jet, or jet of lower velocity, as will be readily understood. When the high velocity jet is



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again required, it is only necessary to shake the nozzle, with the result that the liquid flowing along the internal walls of the nozzle is detached therefrom and the water then
5 concentrates into a high velocity solid jet again.

The nozzle device may be made wholly or partly of metal, but it may also be made of india rubber, vulcanite or other suitable
10 material. If the bulb be made of rubber, the momentary cessation or retardation of the flow may be effected by pinching the bulb.

A nozzle constructed in accordance with
15 these improvements, may be used wherever it is required to deliver water or other liquid sometimes in a concentrated jet form and sometimes in diffused form. For example, in washing coach work, and where the mud is thickly caked, only a strong jet will remove the mud, but a diffused jet is essential when the same is to strike the delicate surface of the paint or varnish of the coach work.

25 I claim:—

1. A nozzle of the kind herein referred to and comprising a tubular portion having a restricted orifice at one end, and a bulbous chamber of larger cross sectional dimensions
30 than said tubular portion, said chamber communicating with said tubular portion and having a relatively large delivery orifice in axial alignment with said tubular portion substantially as set forth.

35 2. A nozzle of the kind herein referred to and comprising a tubular part having a restricted orifice at one end, a bulbous chamber connected with said tubular portion and having larger cross sectional dimensions
40 than said tubular portion and a delivery orifice of relatively large diameter opposite the point of connection of said tubular portion, and formations presenting an uneven surface on the interior of said chamber substantially as set forth.
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3. A nozzle of the kind herein referred to and comprising a tubular part having a restricted orifice at one end, a bulbous chamber connected with said tubular portion and having larger cross sectional dimensions
50 than said tubular portion and a delivery orifice of relatively large diameter opposite the point of connection of said tubular portion, and ribs on the interior surface of said chamber said ribs being adjacent to the
55 parallel with said orifice substantially as set forth.

4. A nozzle of the kind herein referred to and comprising a tubular part having one end closed by an outwardly convex wall
60 formed with a small central aperture and a hollow bulb joined to the opposite end of said tubular portion, said bulb having a delivery orifice of relatively large diameter axially aligned with said aperture substantially as set forth.
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5. A nozzle of the kind herein referred to and comprising a tapered tubular part formed with a restricted inlet opening at its small end and merging into a globular enlargement at its delivery end, said enlargement being formed with a relatively large
70 delivery orifice axially aligned with said inlet opening substantially as set forth.

6. A nozzle of the kind herein referred to and comprising a tubular part having a restricted inlet orifice at one end and a deformable bulb at its opposite end said bulb having a delivery orifice of relatively large
75 diameter axially aligned with said inlet orifice substantially as set forth.
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7. A nozzle of the kind herein referred to and comprising a tubular portion with a restricted inlet orifice at one end and a bulbous chamber at the other end, said chamber having a delivery orifice of smaller area than the greatest cross sectional area of said bulb but of much larger area than said inlet orifice substantially as set forth.
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