(No Model.)

B. WRIGHT.

NOZZLE.

No. 385,653. Patented July 3, 1888.

Fig. 1.

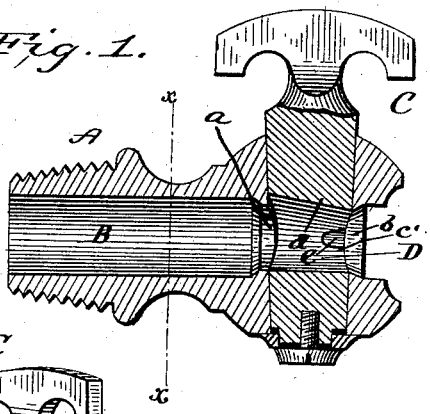


Fig. 3.

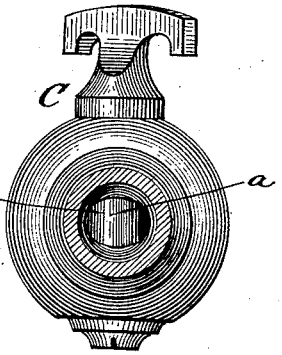


Fig. 2.

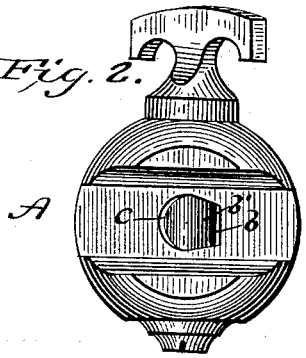


Fig. 6.

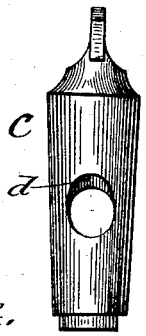


Fig. 4.

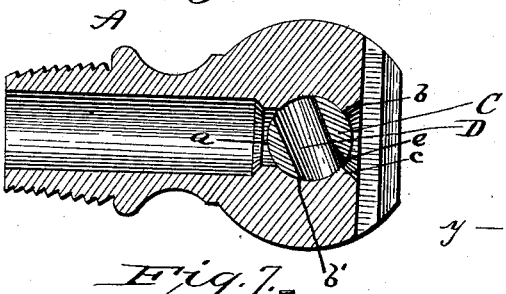


Fig. 5.

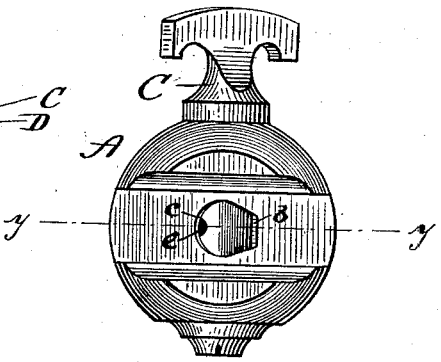
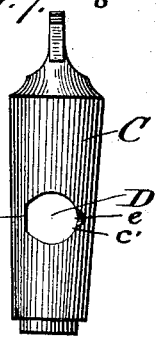


Fig. 7.



Witnesses,
John S. Finch Jr.
C. D. Davis.

Inventor,
Benjamin Wright.
By his Attorney.
C. A. Alexander Jr.

UNITED STATES PATENT OFFICE.

BENJAMIN WRIGHT, OF LOS GATOS, CALIFORNIA.

NOZZLE.

SPECIFICATION forming part of Letters Patent No. 385,653, dated July 3, 1888.

Application filed November 3, 1887. Serial No. 254,175. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN WRIGHT, a citizen of the United States, residing at Los Gatos, in the county of Santa Clara and State of California, have invented certain new and useful Improvements in Nozzles, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to certain new and useful improvements in nozzles, it having particular reference to that class or character of devices which are intended to project the water in a spray-like stream or a full stream, as may be desired, this being accomplished by a partial revolution of the plug or cock in the nozzle, as will presently more fully appear.

The invention is designed, essentially, to produce a nozzle of extremely simple and durable construction, whereby the stream issuing from the same may be made to assume a number of different shapes and volumes, as the exigencies of the case may require, by simply a partial revolution of the cock or plug, the stream being made to vary from a full stream to a very small concentrated stream, or made to assume a fan shape as it is projected from the exit-opening of the nozzle, as will be more fully set forth hereinafter.

Referring to the annexed drawings, which form a part of this specification, Figure 1 is a longitudinal sectional view of the improved nozzle, the cock being in a position to permit of the passage of a full stream; Fig. 2, an end elevation of the same, the cock being in a position to project a fan-shaped spray or stream; Fig. 3, a sectional view on line *x x* of Fig. 1, showing the cock in the position indicated in Fig. 2, the inlet side of the cock showing; Fig. 4, a horizontal sectional view showing the cock turned so as to cause the issuing liquid to assume a more concentrated far-reaching spray or stream; Fig. 5, an end view of the nozzle with the cock in the same position as indicated in Fig. 4; and Figs. 6 and 7, elevations of the cock detached, showing, respectively, the shape of the inlet and outlet openings.

In order that others skilled in the art may construct and use my invention, I will now proceed to more particularly describe its construction, reference being made to the drawings by letters.

A in the drawings designates the body of the nozzle, which may be of any improved form or configuration, it being provided with the usual longitudinal passage, B, for the liquid, and C the usual tapering cock or plug securely held in its tapering seat in the body of the nozzle by means of the usual screw, and provided with the usual thumb-piece and a transverse passage, D, which is in line and registers with the longitudinal passage through the nozzle-body. The liquid-passage *a*, adjacent to the inlet side of the plug, is slightly enlarged laterally, as shown in Fig. 3, presenting, practically, the shape of an ellipse, this form of opening being used in lieu of the usual circular opening for a purpose hereinafter set forth. The spray or exit opening of this passage is so shaped that it presents to the issuing stream on one side a straight sharp edge, *b*, and on the opposite side therefrom a curved edge, *c*, these edges being adapted to operate in conjunction with the plug to project, respectively, a broad fan-shaped spray or a more or less concentrated stream or spray, as will presently appear.

The transverse passage through the plug is enlarged vertically, as shown at *d*, Figs. 1 and 6, so that as the plug wears away and the screw is tightened the passage of the liquid therethrough will not be interrupted by the partial closing of the inlet-opening *a*, as is usual with the class of devices, but will have a free uninterrupted passage at all times until the nozzle is entirely worn out.

The peculiar importance of this vertically-enlarged passage will be appreciated fully when it is remembered that in this class of nozzles the plug or cock is subjected to a great deal more wear than in the ordinary devices of this character, for the reason that the cock is turned oftener in order to vary the volume and shape of the stream or spray.

The opening in the exit side of the cock adjacent to the exit-opening of the nozzle (shown in Fig. 7) is in shape somewhat similar to the exit-opening of the nozzle, it having a straight flattened side or edge, *b'*, on one side, and on the opposite side thereto a curved edge or side, *c'*, the latter side having formed in its inner side a short groove or channel, *e*, as shown clearly in Figs. 1 and 7.

When it is desired to project the stream of

water in a thin sheet or fan-shaped spray, the plug is turned so that the flat straight side of the exit-opening in the same will come in close relation to the sharp straight edge of the exit-opening of the nozzle, as shown in Fig. 2, the volume of the stream being regulated at will by turning the cock; and when it is desired to project a concentrated stream that will be far-reaching and small in volume, the plug is turned so that the groove *e* in the curved side *c'* will be brought in close proximity to the curved sharp edge *c* of the exit-opening in the nozzle, as shown in Fig. 5, the size of the opening thus formed being regulated by turning the plug.

The object of enlarging the opening in the inlet end of the nozzle-passage, adjacent to the plug laterally, is to always permit of the free passage of the water to the cock-passage when the cock is adjusted to project a concentrated or fan-shape spray, as shown in Figs. 3 and 4, it being obvious that were the said opening circular, as is usual, the water would be practically cut off when the cock would be so adjusted.

I do not confine myself to the exact construction of the parts described and shown, for it is obvious that minor changes may be made by a person skilled in the art without departing from my invention.

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

1. The combination, with the nozzle body provided with a longitudinal liquid-passage through it, the said passage at its exit end being flattened or formed straight on one side, as at *b*, of the turning plug intersecting the said passage near its exit end and provided with a transverse passage through it which registers with the passage through the nozzle-body, the exit end of this passage through the plug being flattened or formed straight on one side, as at *b'*, whereby the issuing liquid may be made to vary from a full stream to a thin broad fan-shaped spray by turning the plug and bringing the straight edges *b b'* adjacent to each other, substantially as described.

2. The combination, with the nozzle-body provided with the usual longitudinal liquid-passage through it, of the turning plug intersecting the said passage through the body near its exit end and provided with a transverse passage through it which registers with said body-passage, the said passage through the plug at its exit end being formed into a small channel or groove, as at *e*, whereby the issuing liquid may be made to vary from a full stream to a very small concentrated and far-reaching stream by turning the plug, substantially as herein set forth.

3. The combination of the nozzle-body provided with the usual longitudinal passage through it, this passage at its exit end being formed flat or straight, as at *b*, on one side and curved on the opposite side, as at *c*, and the turning plug intersecting the passage through the body of the nozzle and provided with a transverse passage which registers with the body-passage, the exit end of the said plug-passage on one side being provided with a straight flat edge, as at *b'*, and on the opposite side with a small channel or groove, as at *e*, whereby the issuing liquid may be made to assume a full stream or a small concentrated stream or a broad thin fan-shaped spray by turning the plug, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

BENJAMIN WRIGHT.

Witnesses:
H. J. BLAND,
JOHN F. TOBIN.