

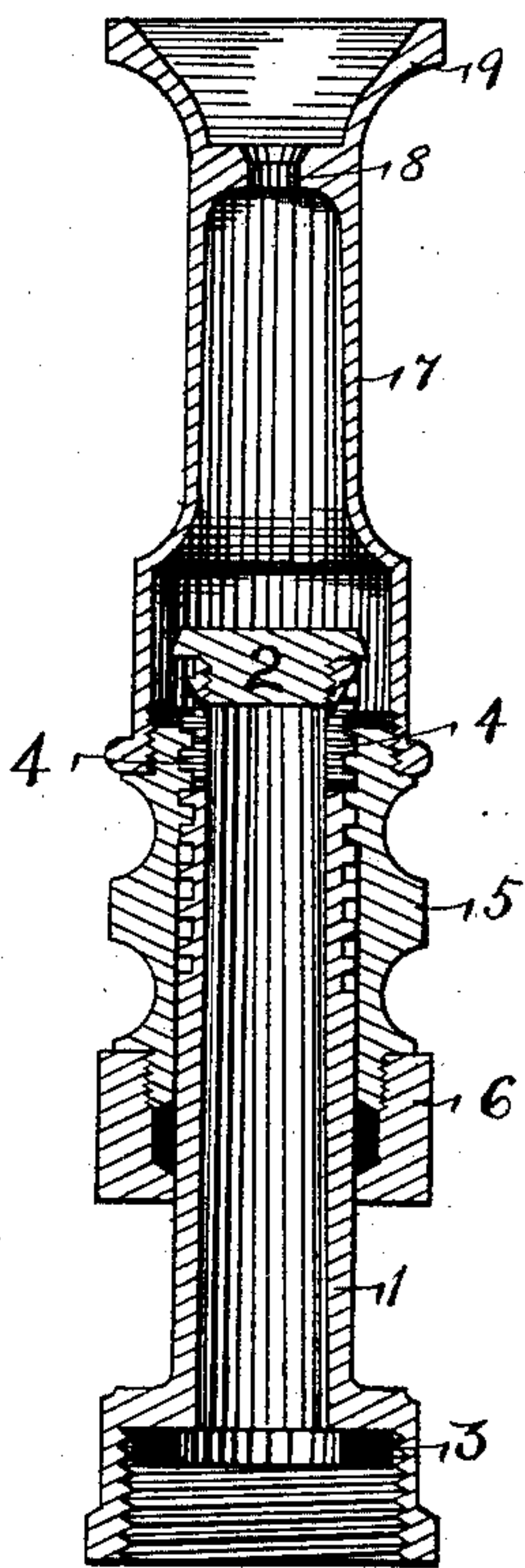
(No Model.)

A. HALLOWELL.

HOSE NOZZLE.

No. 375,624.

Patented Dec. 27, 1887.



WITNESSES:

*Percy N. Kenway.*  
*Charles H. Fisher.*

INVENTOR:

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# UNITED STATES PATENT OFFICE.

ALBERT HALLOWELL, OF LOWELL, MASSACHUSETTS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE HALLOWELL BRASS COMPANY, OF PORTLAND, MAINE.

## HOSE-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 375,624, dated December 27, 1887.

Application filed February 5, 1887. Serial No. 226,614. (No model.)

*To all whom it may concern:*

Be it known that I, ALBERT HALLOWELL, a citizen of the United States, residing at Lowell, in the county of Middlesex and Commonwealth of Massachusetts, have invented a new and useful Improvement in Hose-Nozzles, of which the following is a specification.

My invention relates to that class of hose-nozzles which can be used either for delivering a solid stream of water, a fine spray, or a coarse spray, and which are now known as "graduating-spray" nozzles, the various functions of which are brought into play at will by adjusting the position of certain parts of the apparatus, and without the removal of any part thereof. The object of my invention is to provide an inexpensive means of doing this work in a superior manner.

My invention is illustrated in the accompanying drawing, which is a central longitudinal section of a hose-nozzle.

This nozzle is made up of the main water-tube 1, having the valve 2 at its forward end, and provided with means of attaching it to a hose-coupling, and the packing-washer 3, to prevent leakage at the joint between itself and the hose-coupling. The main water-tube is also shown as provided with a screw upon its exterior surface, and it has one or more water-passages, 4, in its side. Upon the exterior of the main water-tube 1 and behind the said valve there fits the valve-seat and discharge-nozzle carrier 5, that is provided with a packing-confining nut, 6, that holds a ring of some suitable packing, which prevents the escape of water backwardly between the tube 1 and the carrier 5. The carrier 5 engages with the screw upon the exterior of the tube 1 in a portion of its interior surface, as shown. The upper end of the carrier 5 forms a valve-seat which engages with the valve 2. This valve may be opened or closed by rotating the carrier 5 upon the main tube 1. The valve 2 is larger than that part of the water-tube with which it is in contact, and thus forms a deflector, upon which the escaping liquid strikes and is deflected outward when a spray is being formed, and it serves to shut off the flow of liquid entirely when its backward side, which

overhangs the inner edge of the forward end of the valve-seat carrier 5, is brought into contact with the valve-seat upon the forward end of said carrier. I prefer to form the screw-thread upon the outer surface of the main water-tube, as shown, commencing on the forward end directly under the valve 2 and cutting the ports 4 directly through the tube and the screw-thread surrounding it.

Other equivalent means of moving the valve-seat upon the carrier 5 longitudinally with respect to the valve 2 may be substituted for the screw upon the surface of the main tube 1 when it is desirable to do so.

Upon the end of the carrier 5 is fastened the discharge-nozzle 7, which has unperforated sides and is provided with a contracted central discharge-orifice, 8, and which, with the forward end of the valve-seat carrier, forms an unobstructed chamber between the said orifice and the point of contact between the valve and the valve-seat. I prefer to make the water-passage outside the valve 2, and between it and the walls of the said intermediate chamber, of greater area than that of the discharge-orifice 8, and the area of the water-passages 4 through the walls of the main tube 1 also greater than that of the orifice 8. The bell 9 upon the end of the discharge-nozzle 7 serves no useful purpose in the practical working thereof beyond giving some support to the hand of the operator of the nozzle and protecting the discharge-orifice from becoming jammed by being thrown upon hard substances, and may be dispensed with whenever it is desirable to do so. Although I have not found it to be absolutely necessary to contract the area of the intermediate chamber as the discharge-orifice is approached, I prefer to do so, as shown in the drawing.

The countersink, which is formed in the outer end of the discharge-orifice, may be dispensed with whenever the diaphragm which surrounds the said orifice is made thin enough, as would usually be the case in a well-constructed nozzle. The junction between the diaphragm which surrounds the orifice 8 and the walls of the intermediate chamber is shown as I prefer to make it—that is, well rounded—



although I have found that this junction may be perfectly square without destroying the efficiency of the nozzle. The valve-seat is shown as having its surface at right angles to the axis of the main tube 1, although I do not desire to limit myself to such a formed seat, since sometimes I desire to make the said seat a conical one, with its larger diameter toward the discharge-orifice 8. Sometimes the valve 2 may have an additional seat formed in the discharge-nozzle 7 between the valve 2 and the discharge-orifice 8, although I prefer to close the said valve by bringing it backward into contact with a seat upon the end of the carrier 5.

The operation of this nozzle is as follows: If a solid stream is desired, the carrier 5 is turned around the main tube 1, so as to remove the valve 2 from its seat a considerable distance, and the quantity of water thus delivered may be regulated with the greatest ease by removing the said valve from its seat to a greater or less extent.

If a spray is desired, it may be immediately produced by bringing the valve 2 very close to the seat at the end of the carrier 5, when the water will issue with great force and in one or more thin sheets, the number depending upon the number of water-passages 4 in the sides of the main water-tube, outwardly and directly against the interior surface of the unperforated sides of the discharge-nozzle, and then be guided by the said sides to the discharge-orifice, whence it will issue in a cone-shaped body of spray whose apex is at the said orifice and whose consistency may be readily controlled by bringing the valve more or less closely to its seat. The controlling of the quantity of liquid delivered and the fineness of the spray produced by adjusting the position of the valve with respect to the valve-seat carrier is accomplished, in the example illustrated, by turning the carrier upon the exterior of the main tube 1.

What I claim as new, and desire to secure by Letters Patent, is—

1. The main water-tube, with one or more liquid-passages through its side, and the deflecting-valve upon its forward end and pro-

jecting outwardly therefrom, combined with the valve-seat carrier surrounding the main water-tube, supported thereby, and having the valve-seat upon its forward end engaging with the backward side of said deflecting-valve, and the inner edge of its forward end overhung thereby, means of adjusting the valve-seat carrier longitudinally upon the main water-tube, and the discharge-nozzle, with its discharge-orifice and its unperforated sides, that is secured to the forward end of the valve-seat carrier and forms therewith an unobstructed chamber between the said discharge-orifice and the valve-seat, and directly against the walls of which the escaping liquid is deflected outwardly in one or more thin sheets by the backward side of said valve, and along the walls of which the liquid flows to the discharge-orifice, substantially as described, and for the purposes specified.

2. The main water-tube, with one or more liquid-passages through its side, the deflecting-valve upon its forward end and projecting outwardly therefrom, and the screw-thread upon its exterior surface extending to the under side of said valve, combined with the valve-seat carrier surrounding the main water-tube, provided with the screw-thread in its interior surface that engages with the screw-thread upon the exterior of the main water-tube, and the valve-seat upon its forward end engaging with the backward side of said valve, and the inner edge of its forward end overhung thereby, and the discharge-nozzle with its discharge-orifice and unperforated sides, forming with the forward end of said valve-seat carrier an unobstructed chamber contracted toward the discharge-orifice, and directly against the walls of which the escaping liquid is deflected by said valve outwardly in one or more thin sheets, and along the walls of which the liquid flows to the discharge-orifice, substantially as described, and for the purposes set forth.

ALBERT HALLOWELL.

Witnesses:

PERCY N. KENWAY,  
CHARLES H. FISHER.