

C. S. JONES.

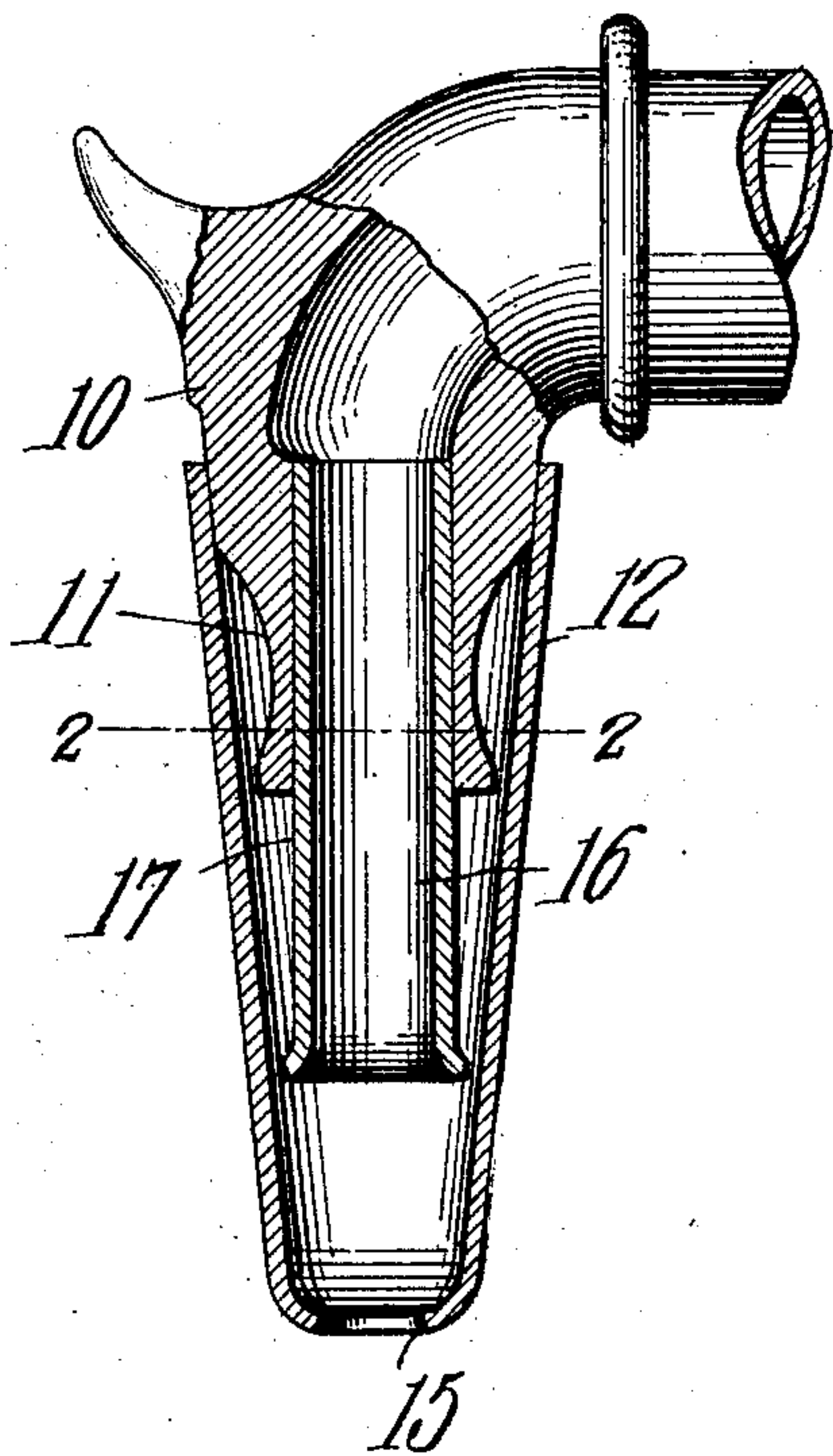
NOZZLE.

APPLICATION FILED JULY 20, 1909.

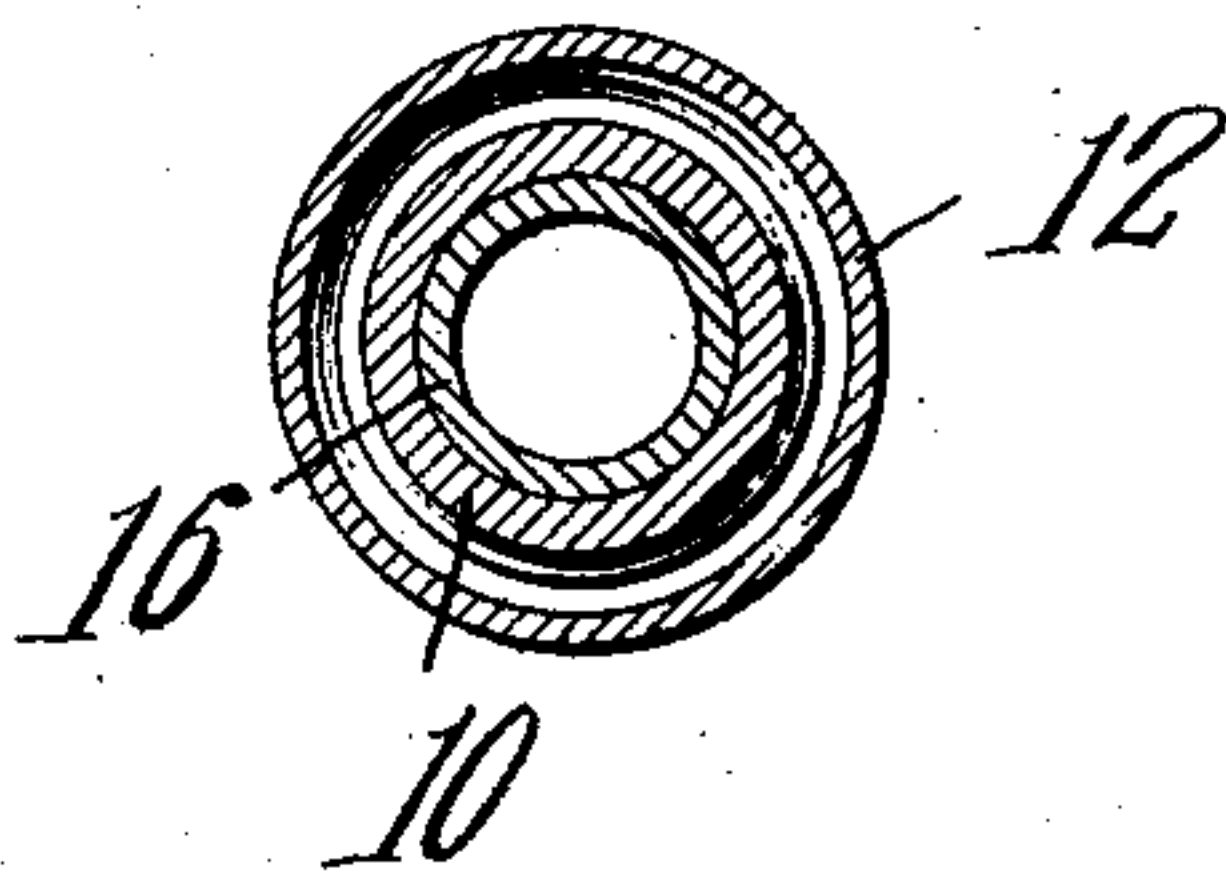
973,940.

Patented Oct. 25, 1910.

*Fig. 1.*



*Fig. 2.*



Witnesses

*E. H. Stewart*  
*J. M. & Porter*

*Charles S. Jones,*

Inventor

By

*C. A. Snow & Co.*

Attorneys

# UNITED STATES PATENT OFFICE.

CHARLES S. JONES, OF MARION, INDIANA.

## NOZZLE.

973,940.

Specification of Letters Patent.

Patented Oct. 25, 1910.

Original application filed May 31, 1907, Serial No. 376,538. Divided and this application filed July 20, 1909. Serial No. 508,584.

*To all whom it may concern:*

Be it known that I, CHARLES S. JONES, a citizen of the United States, residing at Marion, in the county of Grant and State of Indiana, have invented a new and useful Nozzle, of which the following is a specification.

This invention relates to nozzles for the discharge of liquids, and has for its principal object to provide a nozzle from which all drip will be prevented after the flow of liquid ceases.

A further object of the invention is to provide a nozzle with a chamber or chambers of such nature that a vacuum or partial vacuum will be created by the action of the current of liquid, the refilling of the vacuum with air after the flow of liquid is cut off serving to prevent the discharge of any liquid that may be retained within the nozzle.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in certain novel features of construction and arrangement of parts, hereinafter fully described, illustrated in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that various changes in the form, proportions, size and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings:—Figure 1 is a sectional elevation of a nozzle constructed in accordance with the invention. Fig. 2 is a sectional plan view of the same on the line 2—2 of Fig. 1.

Similar numerals of reference are employed to indicate corresponding parts throughout the several figures of the drawings.

The present invention is a division of an application for Letters-Patent for measuring pumps filed by me on May 31, 1907, Serial No. 376,538 which application eventuated in Patent No. 869,246, dated October 29, 1907.

The body portion 10 of the nozzle has a tapered outer face, and this outer face is provided with a peripheral groove 11 which, in the present instance, is shown as curved in cross section. Over the tapered face of the nozzle fits a tapered spout 12, the upper portion of which fits snugly against the pe-

riphery of the nozzle without, however, coming into contact with that portion of the nozzle below the groove 11, so that the groove will remain in communication with the interior of the spout 12, and will form a chamber from which the air is withdrawn during the outflow of liquid. The lower end of the spout 12 is turned inward forming a discharge opening 15 of somewhat contracted area.

Fitting within the nozzle proper is a discharge tube 16 that extends down to a point about midway between the bottom of the nozzle and the bottom of the spout 12, and the lower end of said discharge tube 16 is flared outward in order to form a narrow annular passage between the tube and the inner wall of the spout, thus forming an additional air chamber 17 that communicates with the air chamber or groove 11.

In operation the descending column of liquid flows through the tube 16, and thence into and through the spout 12. During the discharge of the liquid the air will be drawn from the lower chamber 17 and then from the upper chamber 11 until a more or less complete vacuum is established in both chambers, the degree of vacuum being proportioned to the volume of liquid passing and to some extent to the duration of flow. After the flow of liquid is cut off by a valve or other means, a small quantity of liquid may be retained within the lower portion of the spout 12. This liquid which will accumulate in the form of drops is drawn upward and distributed over the inner surface of the spout 12 by the volume of air which rushes in through the opening 15 to fill the vacuums formed in the chambers 17 and 11, and any large drops which may have accumulated will be broken up as they arrive at the contracted passage between the spout and the tube 16.

It is found in practice that any small quantity of liquid remaining in the nozzle will be drawn upward and held by capillary attraction, thus preventing drip.

I claim:—

1. In apparatus of the class described, a nozzle having a tapered outer face provided with a peripheral groove forming an air chamber, a tube depending from and forming a continuation of the nozzle, said tube having an outwardly flared lower end, and a spout member fitting over the tube and



the nozzle and forming in connection therewith a pair of chambers in which a partial vacuum is created by the downrush of liquid through the tube, the lower end of said spout member having an inturned flange.

2. In apparatus of the class described, a delivery nozzle having an extension tube, the periphery of the nozzle being provided with an annular groove, and a spout member fitting over the tube, and the nozzle forming in connection therewith a pair of chambers in which a partial vacuum is created on the discharge of the liquid.

3. A nozzle having an air chamber which is open to the atmosphere at all times except when liquid is flowing through the nozzle, whereby a partial vacuum is created in said air chamber by the flow of liquid through the nozzle, the opening in said chamber being shaped to hold water therein by suction and capillary attraction.

4. A nozzle having a pair of connected air chambers open at their lower ends, in each of which a partial vacuum is created by the discharge of liquid through the nozzle.

5. A nozzle having an air chamber, which is open at its lower end and in which a partial vacuum is created by the discharge of liquid through the nozzle, the opening at the lower end of said air chamber being narrower than the portion of the chamber above said opening so as to hold a seal of water in said opening by suction and capillary attraction.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES S. JONES.

Witnesses:

N. L. GARRETT,  
CHRIS DREITZLER.