

J. G. MASTIN.
LIQUID NOZZLE.

APPLICATION FILED SEPT. 28, 1908.

932,800.

Patented Aug. 31, 1909.

Fig. 1.

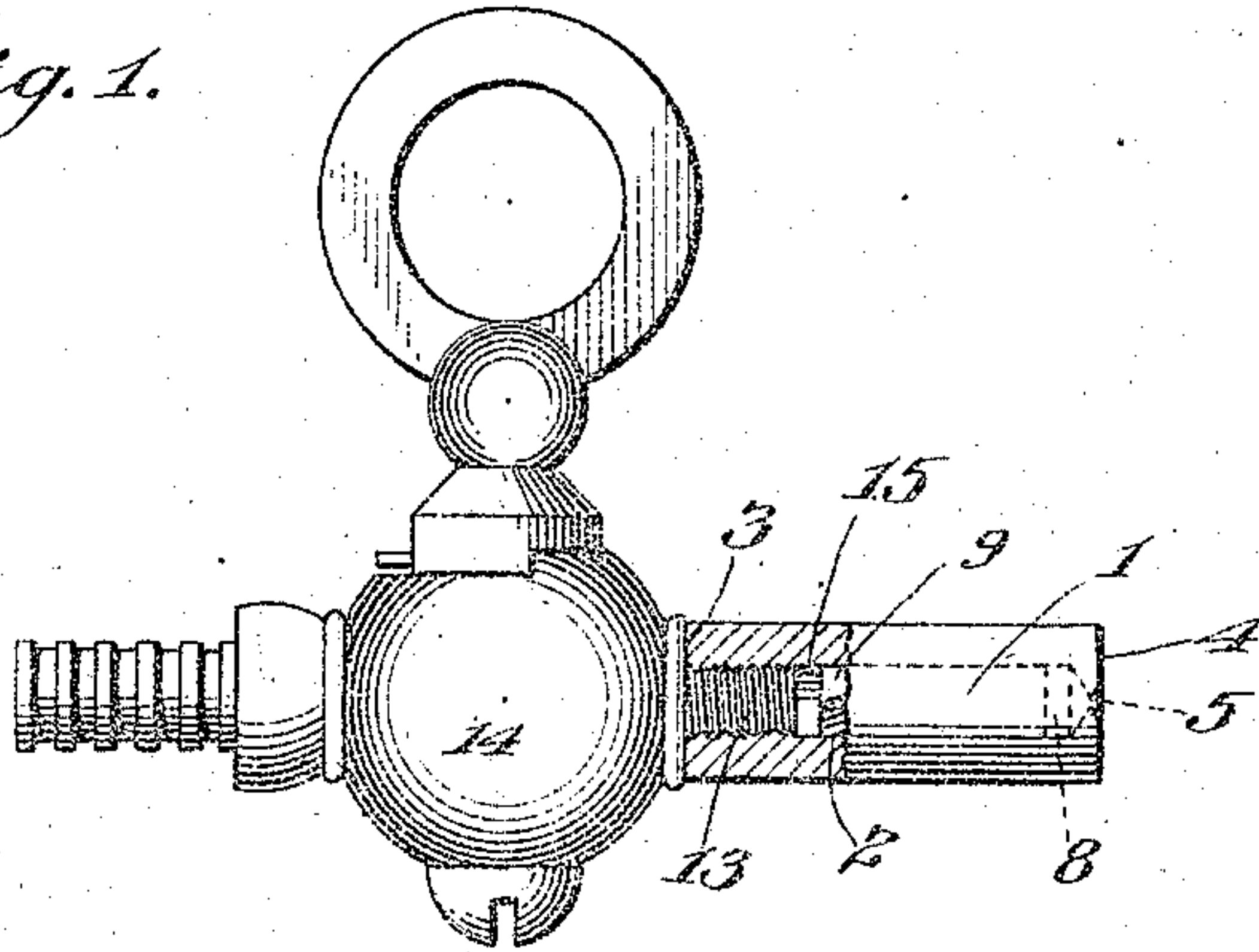


Fig. 2.

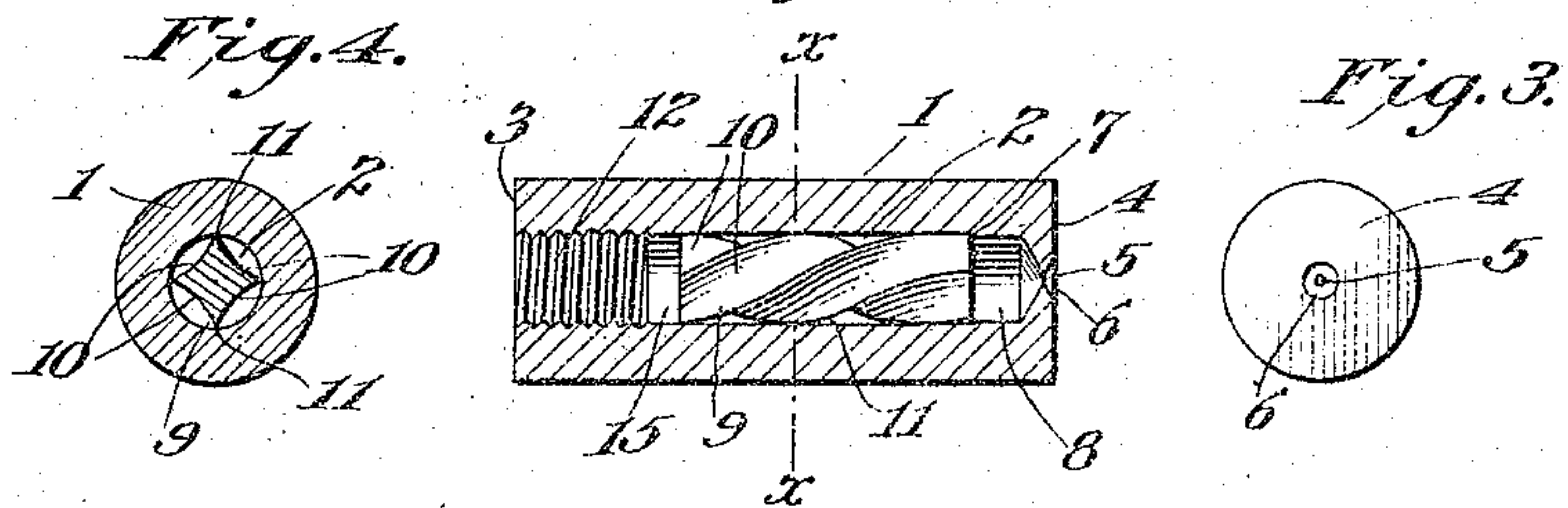


Fig. 4.

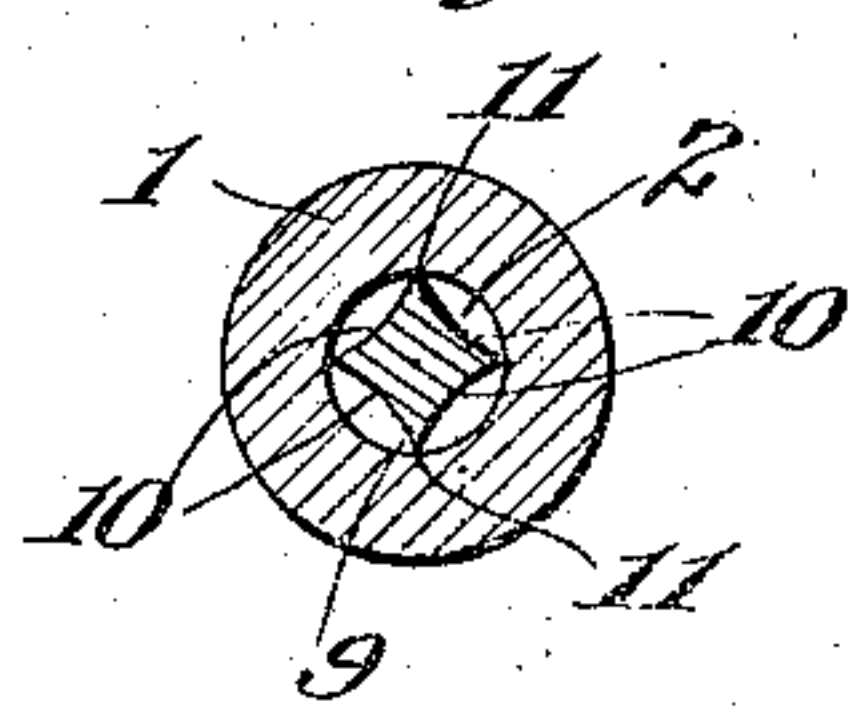


Fig. 3.

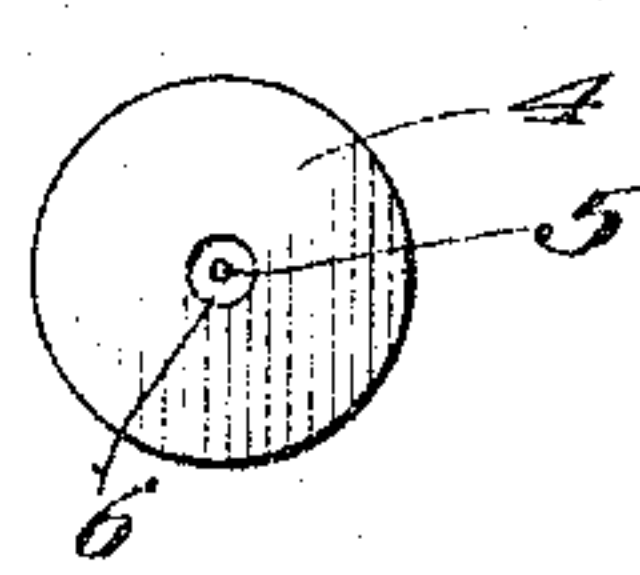
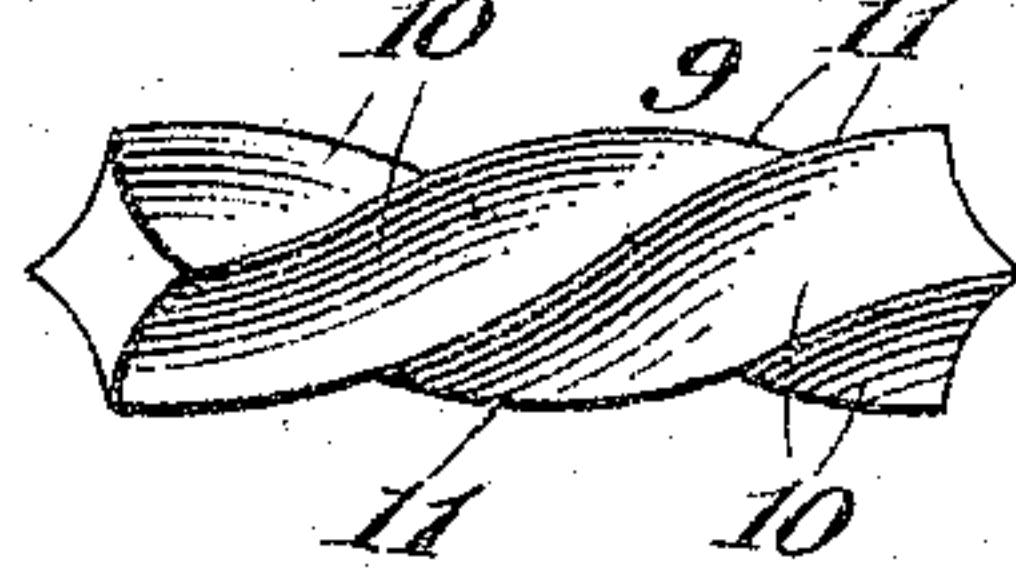


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

JAMES G. MASTIN, OF CHICAGO, ILLINOIS.

LIQUID-NOZZLE.

932,800.

Specification of Letters Patent.

Patented Aug. 31, 1909.

Application filed September 28, 1908. Serial No. 455,020.

To all whom it may concern:

Be it known that I, JAMES G. MASTIN, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Liquid-Nozzles, of which the following is a specification.

My invention relates to nozzles and more specifically to that class of the same designed for the ejection of liquids.

The object of my invention is to provide a device of the character mentioned which will be adapted to be attached to the shank of a suitable stop-cock, and one which will eject the liquid passed through it into a thin, mist-like spray.

A further object of my invention is to provide a nozzle which will be so constructed as to be of the highest possible efficiency in serving a purpose as stated, and one which will be extremely simple of construction, hence of low cost to manufacture.

Other objects will appear hereinafter.

With these objects in view my invention consists generally in a nozzle characterized as above mentioned, and in certain details of construction and arrangements of parts all as will be hereinafter fully described and particularly pointed out in the claim.

My invention will be more readily understood by reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a side elevation of an ordinary stop-cock, the same being provided with the preferred form of my device, Fig. 2 is an enlarged longitudinal section through my device detached, Fig. 3 is an end elevation thereof, Fig. 4 is a transverse section taken on the line $x-x$ of Fig. 2, and Fig. 5 is an enlarged detail perspective of the interior helically grooved member embodied in my invention.

Referring now to the drawings, 1 indicates a preferably cylindrical member, the same being constructed of any suitable metal, but preferably brass. Said member is provided with a centrally positioned, longitudinally extending circular perforation 2, the same extending from the rearward extremity 3 thereof where it is of the greatest diameter to the forward extremity 4 forming a mouth or orifice 5, said orifice being of a less diameter than the remaining extent of said perforation. The diameter of said perforation is substantially constant to with-

in a short distance, say about $1/16$ th of an inch from the forward extremity thereof, at which point it tapers rather abruptly say at an angle of approximately 60 degrees to the mouth or orifice 5. It is understood however, that the dimensions above quoted are given merely to make the construction of the device clearer, hence, I do not wish to be limited thereto. The outside surface of the forward end portion 4 of said member 1 is also provided with a conical depression or recess 6 leading to the orifice 5 thereof, thereby forming said orifice knife-edged as clearly shown in Fig. 2 of the accompanying drawings for a purpose hereinafter stated. Adapted to be fixed within said member 1 the forward extremity of the same preferably abutting the shoulder 7 provided in said member 1 in order that a chamber 8 shall be formed at the forward extremity thereof and the inside surface of the tapering wall of the member 1, is a member 9. Said member 9 is provided upon its circumference with helically extending grooves 10 preferably four in number, said member being adapted to be held in position within the member 1 by frictional contact of the edges 11 of the member 9 with the inside surface of the member 1 as clearly shown in Figs. 2 and 4. The rearward end portion of the member 1 is internally threaded as at 12, adapting said member to be threaded, hence fixed, upon the shank 13 of a stop-cock of suitable construction, indicated in the drawing by 14, in such a manner that a chamber 15 shall be formed between the adjacent extremities of the stop-cock shank and the member 9.

In operation the liquid is admitted through the stop-cock and discharged into the chamber 15, from which chamber it enters the helical grooves 10 in the member 9, and thence into the chamber 8, whence it is ejected through the orifice 5. By the provision of a plurality of helical grooves 10, as shown in the drawings four in number, it is obvious that the liquid upon entering the nozzle is broken up, and at the same time in passing through said grooves is given a rotary motion, causing the broken up liquid discharged into the chamber 8 to move in a rotary path, and from which chamber the liquid is discharged through the orifice 5 into a spherical, mist-like spray, because of the knife-edged construction of the same.

While I have shown what I deem to be the

preferable form of my device, I do not wish to be limited thereto, as there might be many changes made in the arrangement of parts and details of construction without departing from the spirit of my invention.

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

In a device of the class described, a cylindrical member provided with a circular longitudinal bore extending the entire length thereof and threaded at one end, the diameter of said perforation being constant to a point within a short distance from the forward extremity of said member, at which point it tapers abruptly to a minute orifice

and then outwardly tapered forming said orifice with a knife edge, and a helically grooved member fixed in said bore and held in position by frictional contact therewith, said grooved member being positioned centrally of said bore forming a chamber at each extremity thereof, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JAMES G. MASTIN.

Witnesses:

ANNA L. EKVALL,
JANET E. HOGAN.