

No. 733,334.

PATENTED JULY 7, 1903.

D. J. SEAMAN.
 SPRAYING NOZZLE.
 APPLICATION FILED MAR. 27, 1903.

NO MODEL.

Fig. 1.

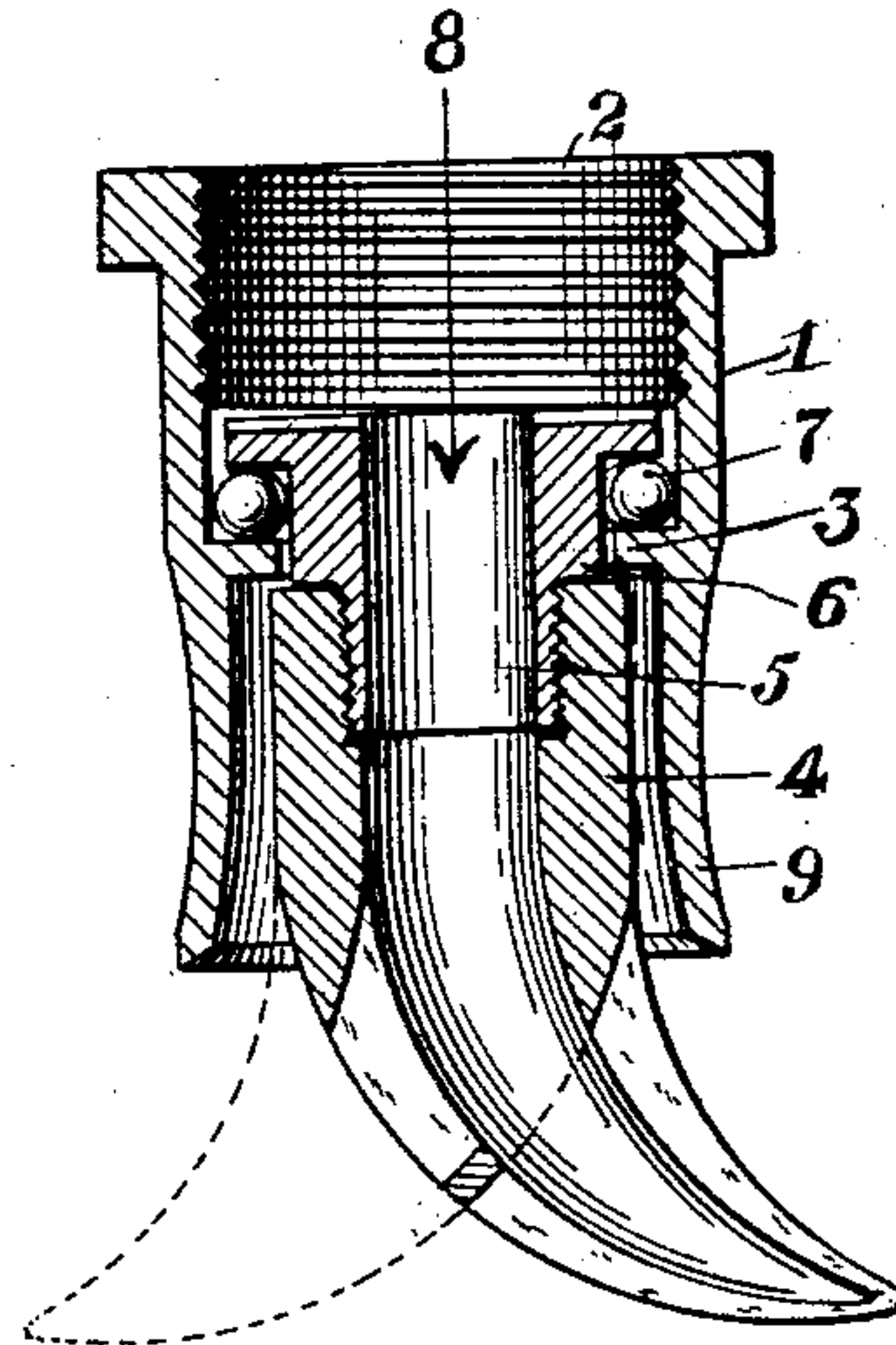


Fig. 2.

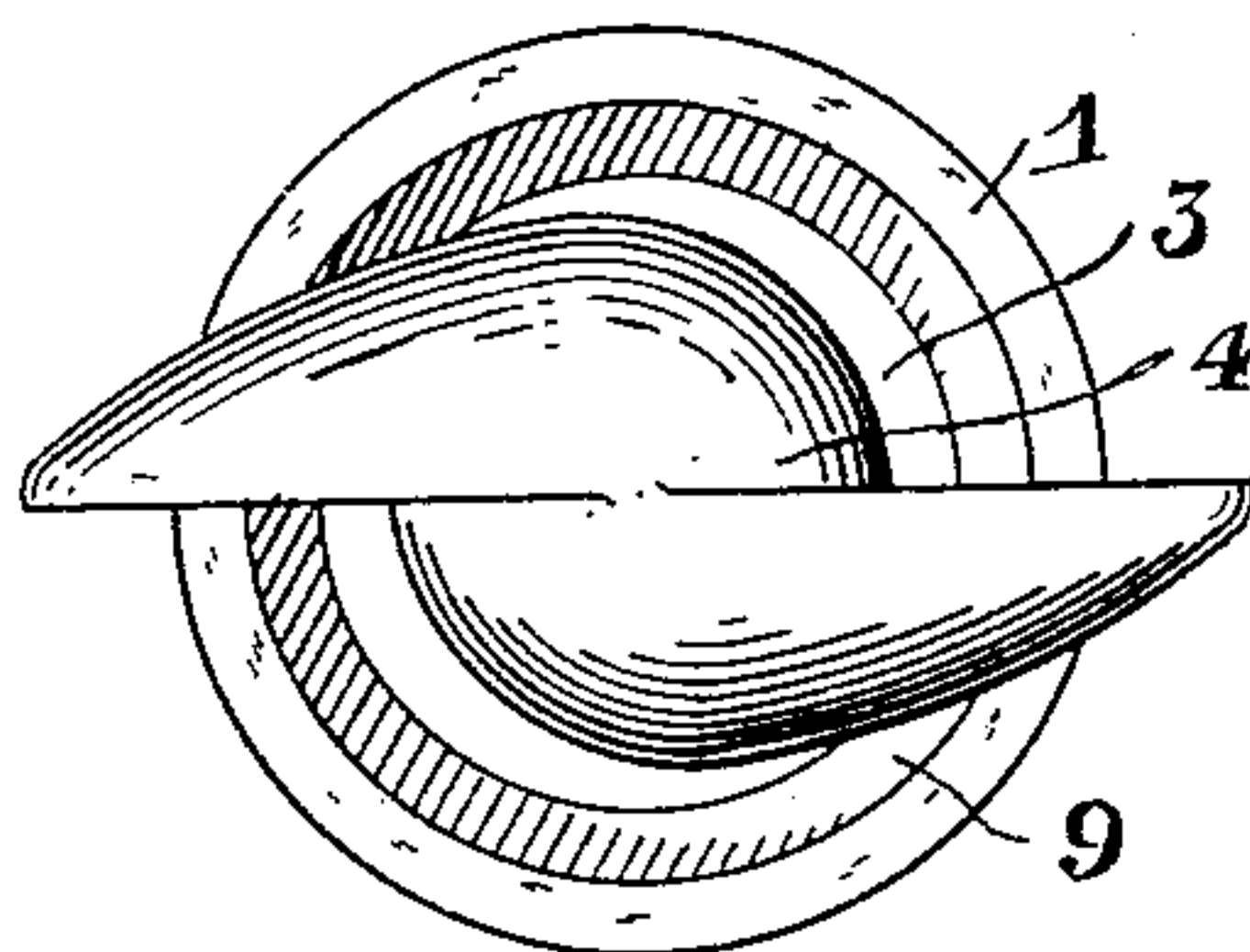


Fig. 5.

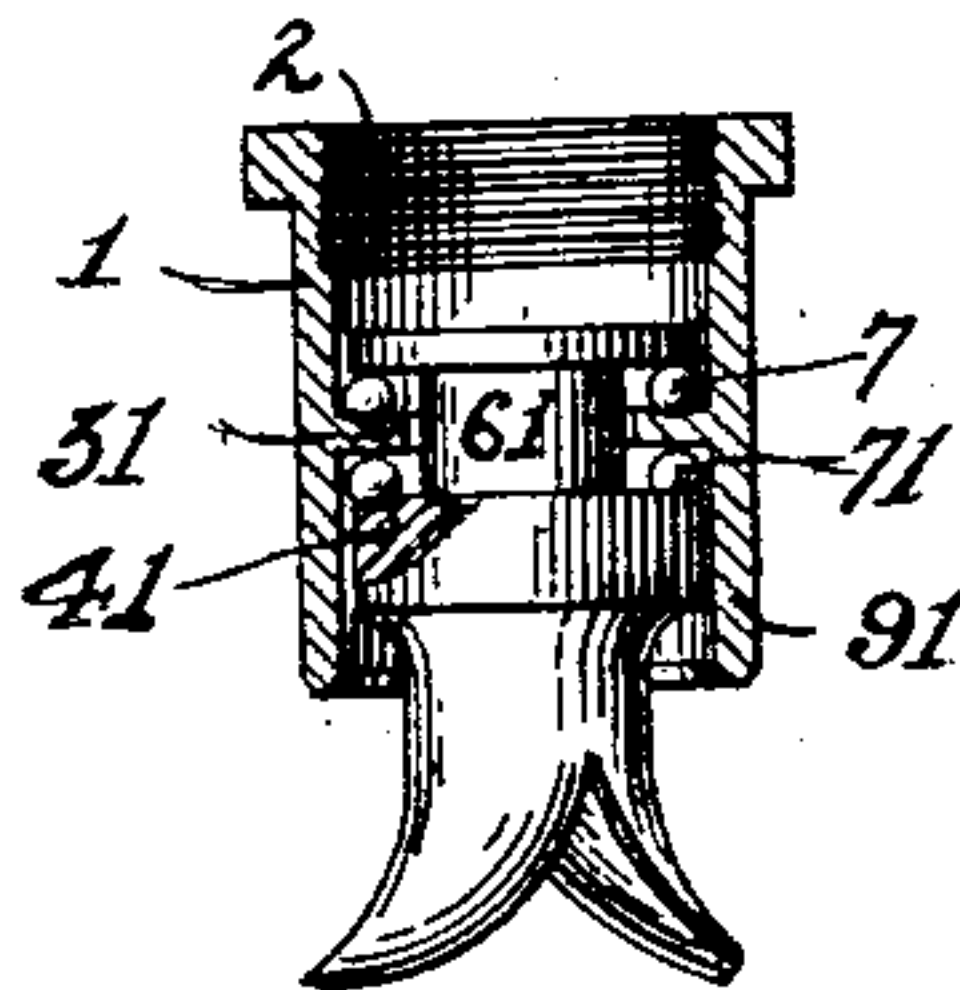


Fig. 3.

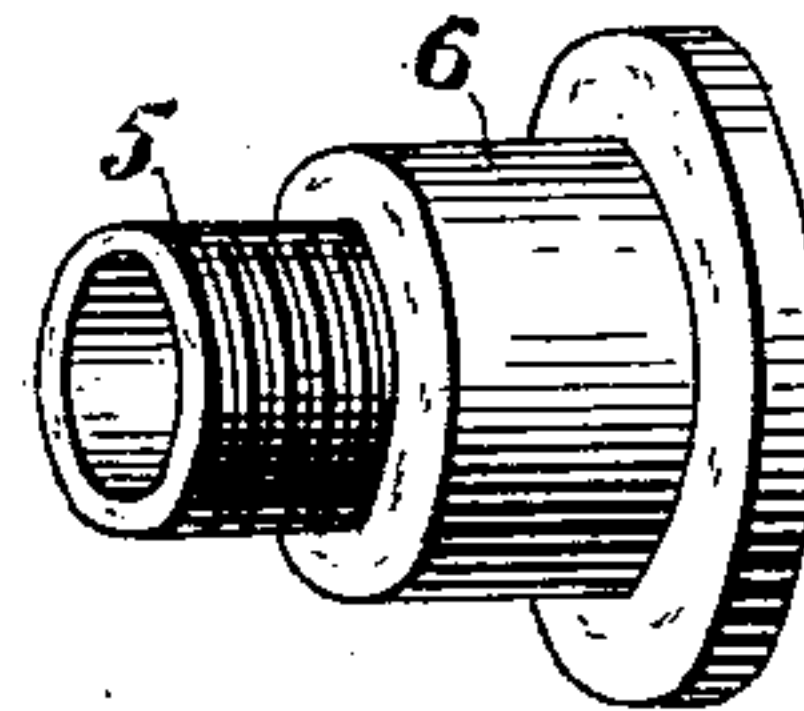
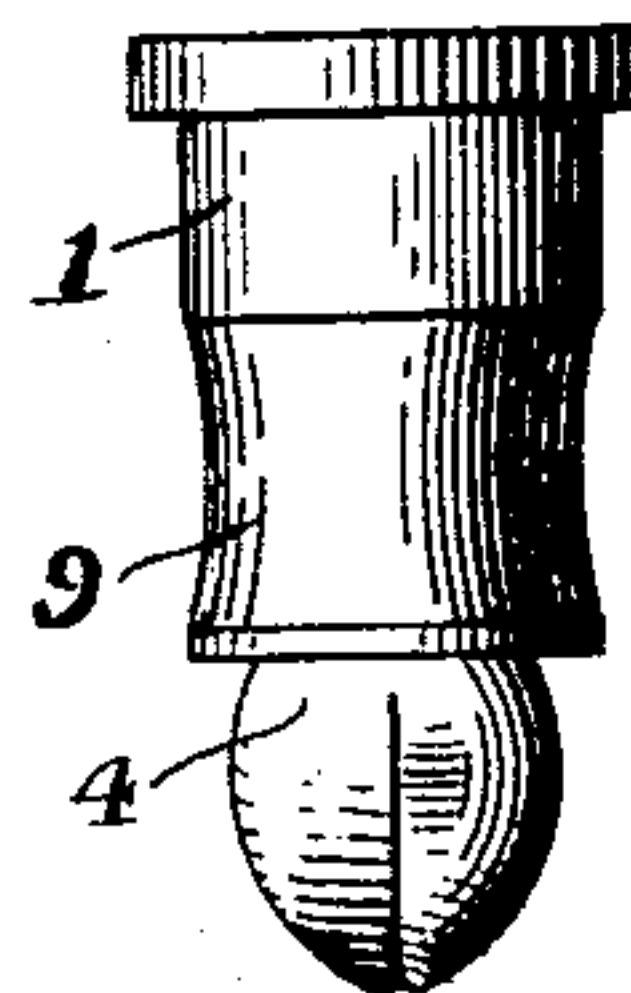


Fig. 4.



Witnesses
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UNITED STATES PATENT OFFICE.

DAVID J. SEAMAN, OF NEW YORK, N. Y.

SPRAYING-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 733,334, dated July 7, 1903.

Original application filed March 2, 1903, Serial No. 145,640. Divided and this application filed March 27, 1903. Serial No. 149,827. (No model.)

To all whom it may concern:

Be it known that I, DAVID J. SEAMAN, a citizen of the United States, residing at New York, in the county of New York, State of New York, have invented certain new and useful Improvements in Spraying-Nozzles, of which the following is a full, clear, and exact description.

My invention relates to improvements in spraying-nozzles.

The object of my invention is to construct a nozzle by means of which a fluid under pressure may be sprayed with considerable force and over a considerable area.

It consists in providing a relatively stationary body portion which is adapted to be secured to the end of a hose or other liquid-conveying conduit or pipe and a spraying-piece mounted internally of the body portion and provided with bearings therein. To perfect my invention, I have provided a sleeve or extension-collar which surrounds part of the spraying-piece in such a manner as to convey any liquid which escapes through the bearings down to a point such that it will be carried along by the rotation of the spraying-piece and delivered into the main stream passing through the interior of the nozzle. Ball-bearings are provided in the nozzle between the spraying-piece and the body portion to insure that the nozzle may rotate readily and with as little friction as possible.

In the drawings, Figure 1 is a longitudinal cross-section of a nozzle embodying the improvements of my invention. Fig. 2 is an end elevation of the same. Fig. 3 is a detail perspective view of the bearing member of the nozzle. Fig. 4 is a side elevation of the same nozzle on a smaller scale. The structure shown in Figs. 1 to 4, inclusive, is shown in my application, Serial No. 145,640, filed March 2, 1903. Fig. 5 is a longitudinal section and elevation of a form having a double set of ball-bearings.

The body portion 1 is provided on the interior with screw-threads 2, by means of which it may be attached to a hose or other pipe or like construction. The nozzle might, however, be attached in other suitable ways. The body portion of the nozzle is substantially cylindrical in form and provided on the inte-

rior with a collar, ledge, or annular bearing 3 to support the spraying-piece 4. The spraying-piece 4 is preferably made of a single piece of cast metal having oppositely-extending spoon-like arms. The shank of the spraying-piece is screw-threaded on the interior to engage the screw-threaded portion 5 of the bearing member 6. The bearing member 6 is seated tight against the shoulder of the spraying-piece 4, which is of sufficient size, however, to prevent the spraying-piece from passing through the opening in the annular bearing-ledge 3. The top of the member 6 is preferably slotted, so that the parts may be more readily assembled by means of a screw-driver or the like. 7 is one of a series of balls which provide a means for reducing the friction between the body portion of the nozzle and the revolving portion. The fluid is forced through the passage 8 and out through the revolving spraying-piece 4, whence it is distributed with considerable force and over considerable area. The operation of distribution is similar to the operation of the old Scotch turbine, in which the reaction of discharge causes rotation of the extension-arms.

I have found this nozzle to be particularly adapted for use in a washing apparatus such as I have described in my former application, in which it is desired that a washing or rinsing solution may be sprayed with considerable force over a considerable area for the purpose of cleansing and rinsing dishes and other articles.

In order that any fluid which may leak out around the bearings of the nozzle may not be lost or drip in an annoying manner, I have provided the sleeve 9, which extends downward beyond the joint between the bearing-member 6 and the spraying-piece 4. Any fluid which passes through these bearings will therefore be forced to follow between the inner surface of the sleeve 9 and the outer surface of the spraying-piece, so as to be caught up by the latter and thrown out and delivered in the main stream. This is advantageous in use with lawn-sprinklers or structures of a similar character, so that all the fluid passing through the nozzle will be delivered in the direction intended and none of it allowed to fall to the ground underneath

the nozzle or be otherwise lost or become annoying to the operator. This sleeve may be extended down to the point shown in Fig. 1 without interfering with the discharge of the water in the spray. If the sleeve is extended much farther down, it will tend to direct the stream in accordance with its own angle of divergence.

The bearings of the nozzle should be constructed of some material which will not be corroded by the fluid passing through the nozzle.

The advantages of this construction will be apparent to one skilled in the art. It is simple in construction and has been found to operate successfully even under a very low pressure to spray fluid efficiently.

In Fig. 5 the bearing member 61 is made sufficiently long to allow for a second set of balls 71 below the annular ledge 31. This ledge 31 and the spraying-piece body 41 are each slightly grooved on the upper surfaces to hold the balls in place, so that the parts may be assembled more readily. The body 41, which is straight, fits the sleeve 91 much closer than in the form shown in Fig. 1. This form with double ball-bearings will run more freely than the single and is particularly adapted for heavy work.

What I claim is—

1. A spraying-nozzle comprising a body portion, a spraying-piece mounted in the interior thereof, having a longitudinal passage therethrough and so constructed as to be revolved by the passage of fluid therethrough, and a sleeve extending from the body portion beyond the joint between the spraying-piece and the body portion and around part of the revolvable spraying-piece for the purpose specified.

2. A spraying-nozzle comprising a body portion, an annular bearing portion, a spraying-piece having a corresponding shouldered bearing-ledge and a set of ball-bearings situated between the shouldered and annular portions and an extension-sleeve beyond the bearings and surrounding a part of the spraying-piece.

3. A spraying-nozzle comprising a body portion, an annular bearing-ledge within the

same, a bearing member, a set of ball-bearings coacting with the annular ledge and the bearing member, a spraying-piece attached to said bearing member and having oppositely-extended arms, a second set of ball-bearings coacting with the said spraying-piece, and a sleeve-like extension beyond the bearings for the purpose specified.

4. A spraying-nozzle comprising a body member having an annular bearing-ledge, an integral bearing member having an annular bearing-ledge corresponding to the bearing-ledge of the body member, one of said members surrounding the other, a set of ball-bearings coacting between the two bearing-ledges and an integral spraying-piece secured to the bearing member and having a spoon-shaped arm extending at one side with a passage therefrom, the outer diameter of a part of said spraying-piece being greater than the inner diameter of the surrounding member, all whereby the passage of water through the spraying-piece will cause it to rotate.

5. A spraying-nozzle comprising a body member having on the interior an annular bearing-ledge, a rotatable bearing member fitting inside of said body member and having an annular bearing-ledge of slightly less diameter than the interior of the body member and a screw-threaded extension on one end, a rotatable spraying-piece secured to the threaded extension of the bearing member and having an annular bearing-ledge of greater diameter than the inner diameter of the bearing-ledge of the body member and a pair of oppositely-extending arms, and a set of ball-bearings situated between the bearing-ledge of the body member and one of the annular bearing-ledges of the rotatable parts, there being a longitudinal passage through the bearing member and the spraying-piece dividing in the latter and extending through the adjacent faces of the arms whereby the flow of fluid therethrough by its reactionary effect shall cause the bearing member and the spraying-piece to revolve.

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