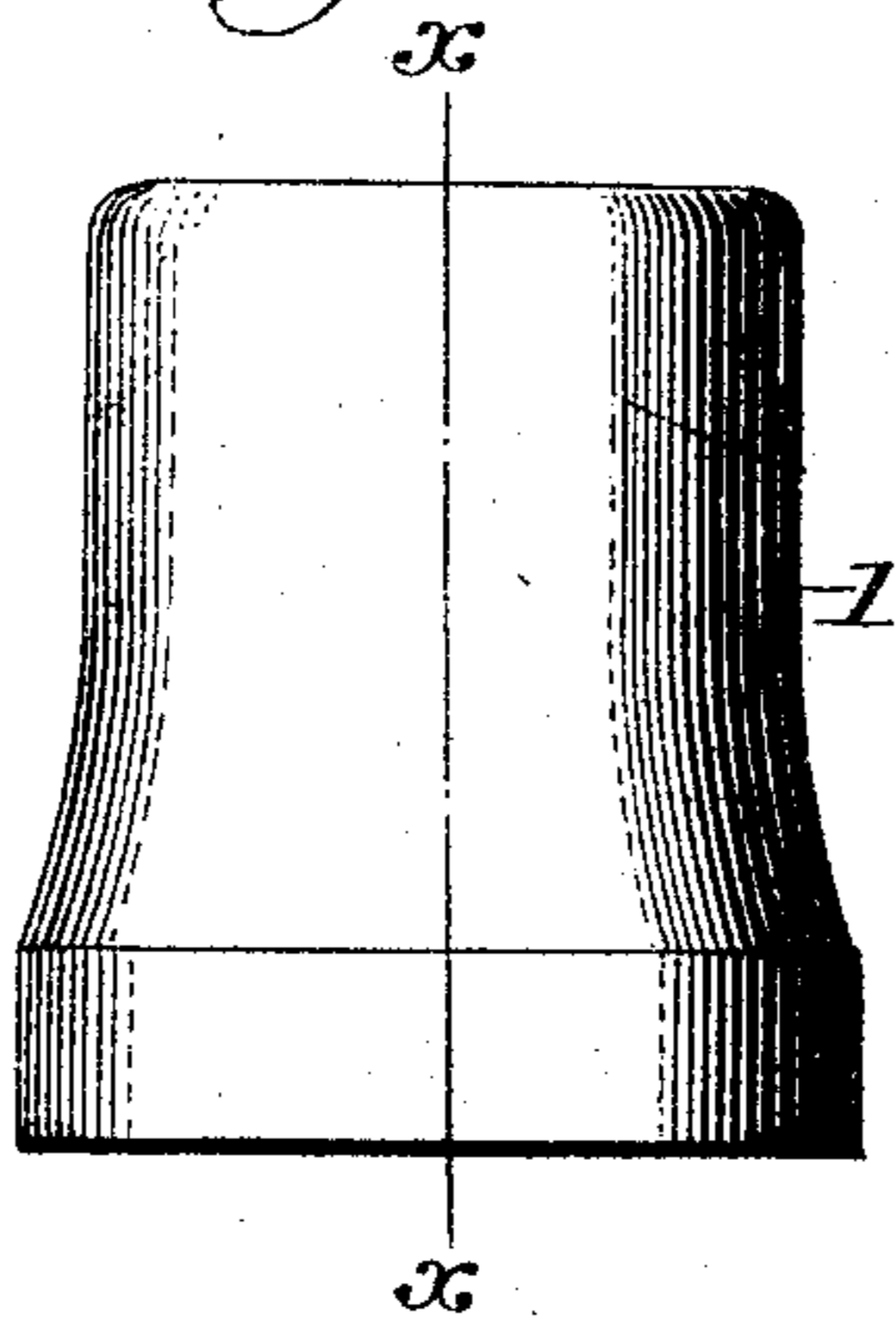


J. FORD,  
HOSE NOZZLE.  
APPLICATION FILED DEC. 31, 1904.

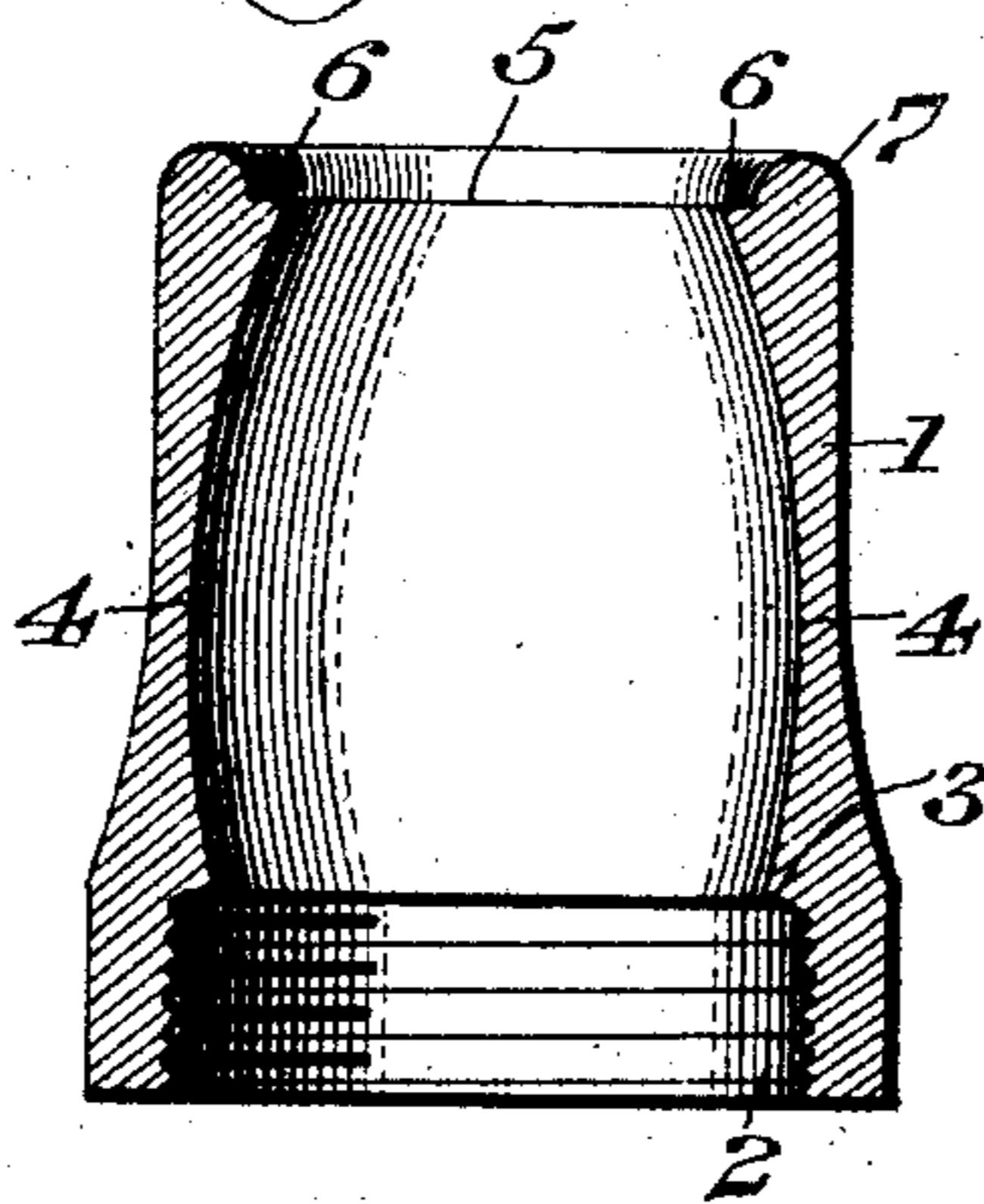
907,025.

Patented Dec. 15, 1908.

*Fig. 1.*



*Fig. 2.*



Witnesses

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# UNITED STATES PATENT OFFICE.

JOHN FORD, OF PHILADELPHIA, PENNSYLVANIA.

## HOSE-NOZZLE.

No. 907,025.

Specification of Letters Patent.

Patented Dec. 15, 1908.

Application filed December 31, 1904. Serial No. 239,149.

*To all whom it may concern:*

Be it known that I, JOHN FORD, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Hose-  
5 Nozzle, of which the following is a specification.

The purpose of my invention is to secure effective solid stream delivery of high pressure water from a nozzle.  
10

A further purpose of my invention is to produce a focusing nozzle.

A further purpose of my invention is to protect the edges of the aperture of my nozzle from mechanical injury.  
15

Further objects of my invention will appear in the description and claims.

Figure 1 is a side elevation of a nozzle embodying my invention. Fig. 2 is a section  
20 upon line  $x-x$  Fig. 1.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings. 1 designates a nozzle having screw threaded means 2 of attachment to the hose. Any other desired form of attachment may evidently be used which is suitable for the high water pressure for which my nozzle is intended. Beginning at a point 3 adjoining the attaching means the interior of my nozzle swells toward the front along a gentle curve reaching a maximum inside diameter at a point 4 and preferably nearer to point 3 than is the delivery aperture 5. It is well known that the tendency  
35 of a column of water discharging from a pipe under very high pressure is to break up and depart from a solid stream. This effect is not by any means efficiently prevented in the nozzles in ordinary use and which are particularly ineffectual where such a high pressure is used as in the present day fire fighting apparatus. In the nozzle herein disclosed the initial curve serves to allow a partial expansion of the column of water as it enters the  
45 nozzle and as the particles strike this portion of the surface they are deflected toward the center of the stream again and in view of the high velocity tend to maintain the solidity of the same. From point 4 to this aperture 5 the inner diameter is contracted along gently curved lines reaching on account of the greater distance a smaller diameter at 5 than exists at 3. It has been found in practice  
55 that the point at which this contraction begins should be at a greater distance from the

outlet of the nozzle than the inlet thereof, since the deflecting effect of the curved portion reaches a minimum between the points 3 and 4 and the greater length of the curved portion 4 to 5 gives an increased acceleration  
60 at the discharge opening.

The diameter is abruptly enlarged just beyond the point 5 forming wall 6 to provide a sharp edge for the delivery aperture. Upon the outer edge of the wall 6 is located a forwardly extending annular rim or flange 7  
65 which forms a guard and protects the edge of aperture 5 from mechanical injury and preserves the sharpness thereof.

The external surface of my nozzle may be formed of any suitable shape with or without means for engagement with a wrench or to assist in holding the nozzle.  
70

My nozzle has been found most advantageous in practice especially where high pressure service is employed, as it holds the water together and carries it much farther than with ordinary nozzles.  
75

It will be evident that various changes may be made by those skilled in the art which may come within the scope of my invention and I do not therefore desire to be limited in every instance to the exact construction herein shown and described.  
80

Having thus described my invention what I claim as new and desire to secure by Letters Patent, is:—  
85

1. A nozzle having a curved inner surface in longitudinal section, the greatest internal diameter of which nozzle is intermediate the curve and said curve surface being of less diameter at the outer than at the inner end thereof.  
90

2. A nozzle having a curved inner surface in longitudinal section, said curved surface terminating in parallel circles, that at the delivery end being of less diameter than that in the rear thereof, and the diameter intermediate the circles being greater than either of them.  
95 100

3. A nozzle having a bore curved in longitudinal section of greatest diameter intermediate the ends of the curve and of less diameter at the delivery end than in the rear thereof, in combination with a protecting flange.  
105

JOHN FORD.

Witnesses:

JOHN A. WIEDERSHEIM,  
S. R. CARR.