

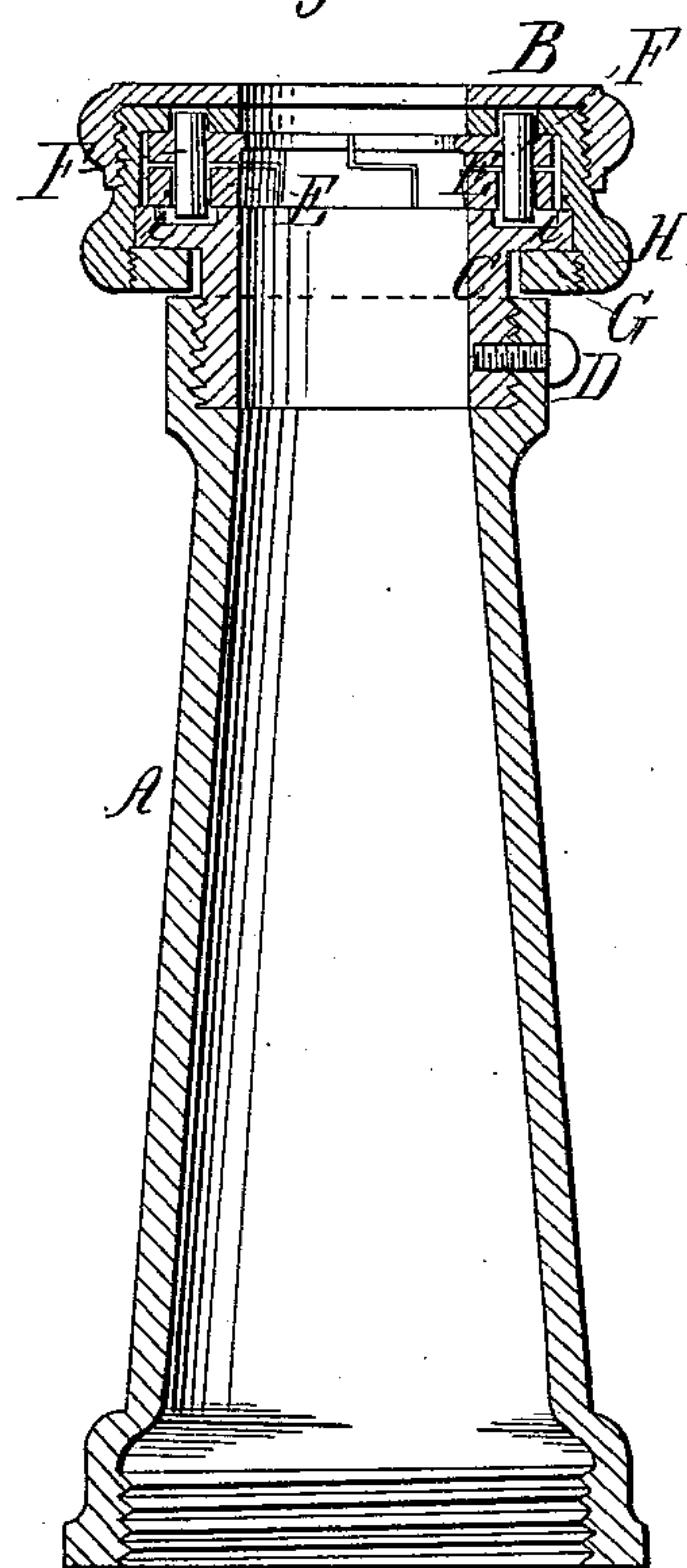
*J. A. Cushman,*

*Nozzle,*

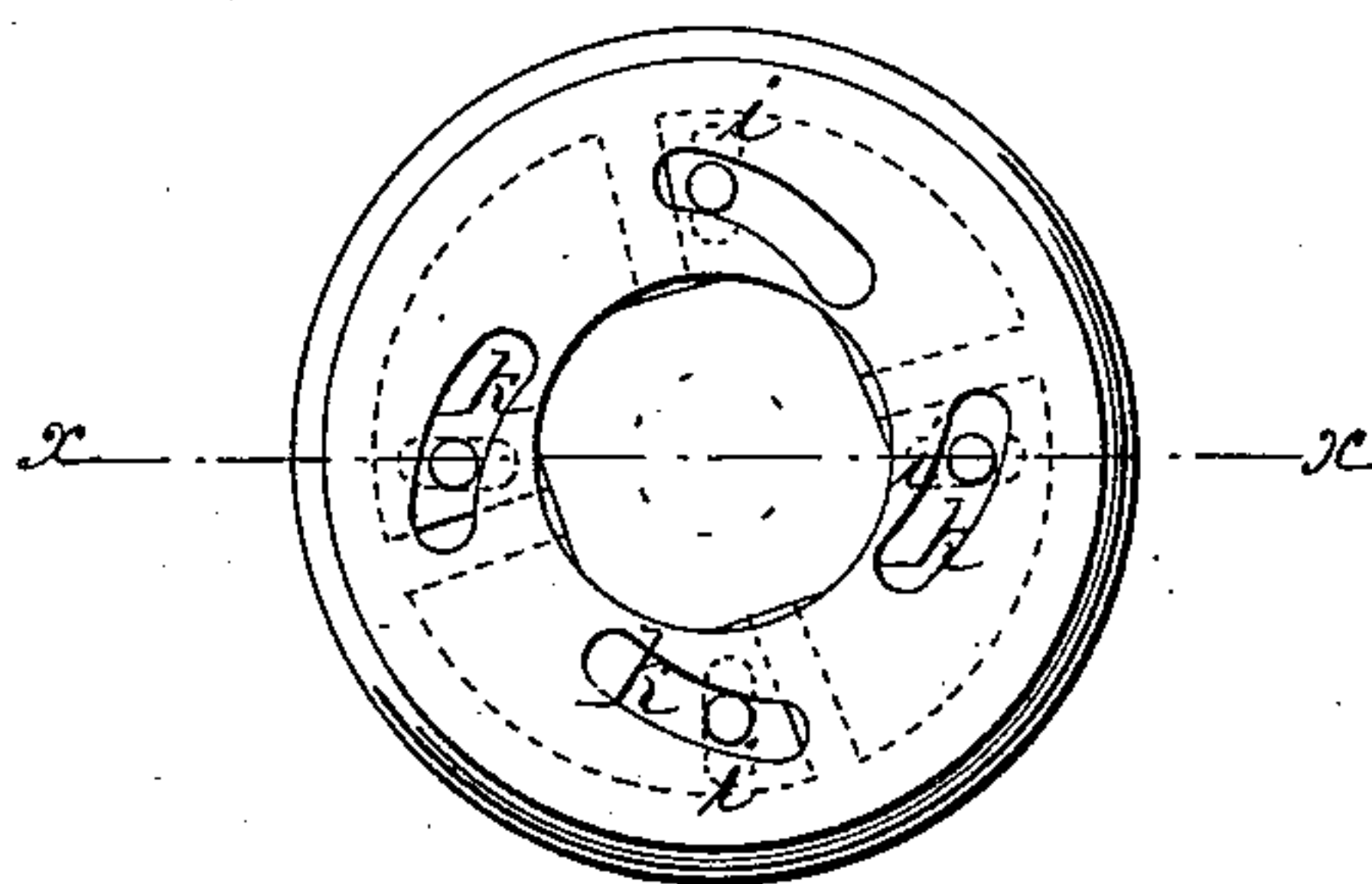
*N<sup>o</sup> 81,257.*

*Patented Aug. 18, 1868.*

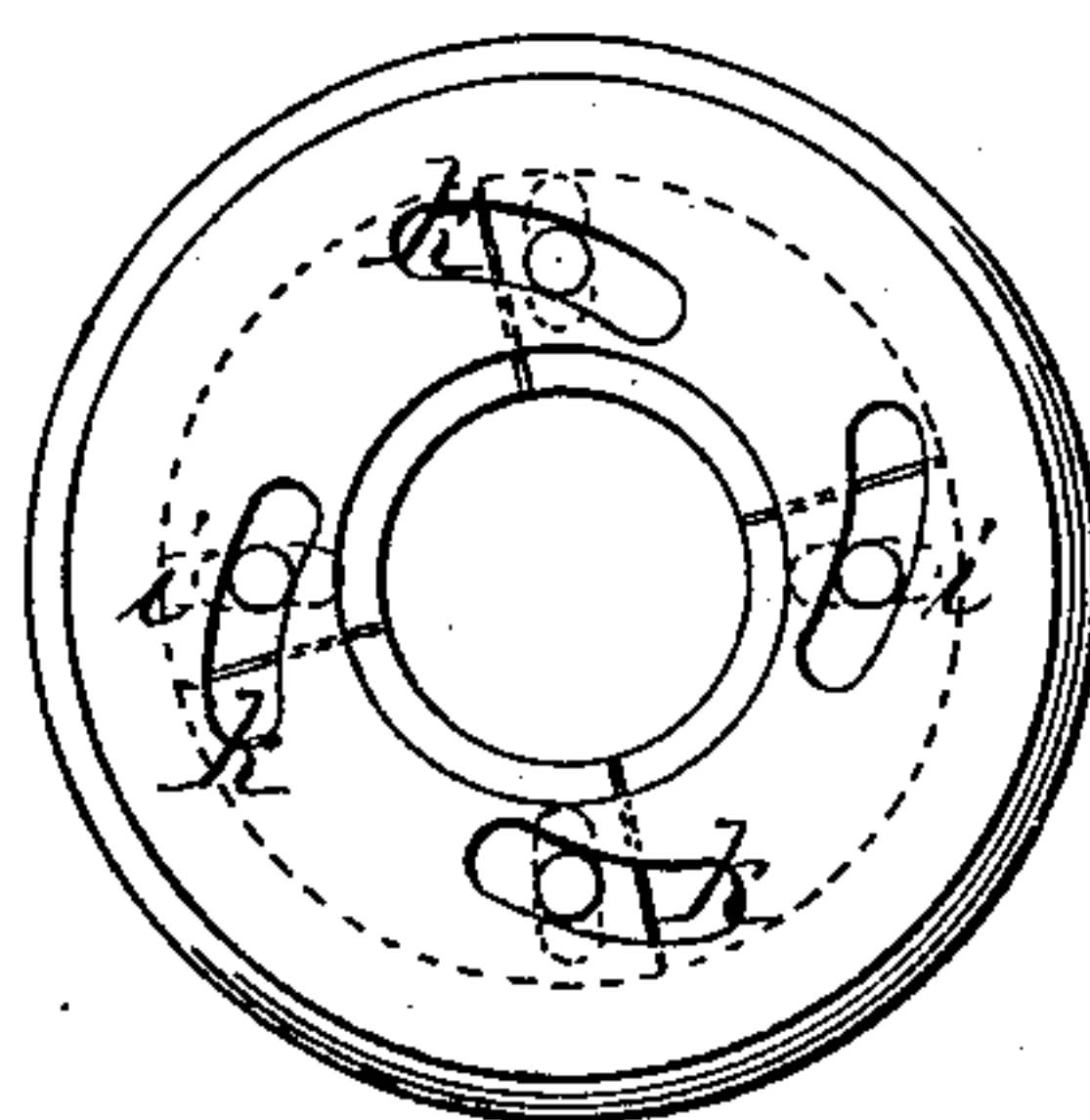
*Fig. 1*



*Fig. 2*



*Fig. 3*



*Witnesses*  
*H. C. Ashkettle*  
*Wm. A. Morgan*

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# United States Patent Office.

JAMES A. CUSHMAN, OF SENECA FALLS, NEW YORK.

*Letters Patent No. 81,257, dated August 18, 1868.*

## IMPROVEMENT IN HOSE-PIPE NOZZLES.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, JAMES A. CUSHMAN, of Seneca Falls, in the county of Seneca, and State of New York have invented a new and improved Variable Nozzle; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to the discharging-end of a fire-engine-hose pipe, and especially to the nozzle which is attached thereto, the same being applicable to other purposes.

And the invention consists in so constructing the nozzle that the stream of water discharged therefrom may be raised at will by a simple movement of the hand of the operator, as will be hereinafter described.

Figure 1 represents a longitudinal section of a nozzle, constructed according to my invention, showing the parts of which it is composed in their proper positions, the section being through the line *x x* of fig. 2.

Figure 2 is a view of the end of the nozzle with the cap off, and the nozzle open or expanded.

Figure 3 is a view of the end with the cap off and the nozzle closed or contracted.

The two positions show the amount of variation.

Similar letters of reference indicate corresponding parts.

A represents the nozzle-tube, which is tapering in form, and attached to the hose in the ordinary manner.

B is the cap, the orifice through which corresponds with the greatest diameter of the nozzle.

C is a longitudinal section of a flanged tube, which screws into the tube A, as seen in the drawing.

D is a guard-screw, which secures the two together, or prevents the piece C from unscrewing from A.

E represents the expanding and contracting segments, of which there are four, each provided with a stud, F, which are firmly fastened thereto.

The segments E are lapped together, so that they form a continuous metallic ring, whether contracted or expanded.

G is a collar, which is connected to the section marked H.

The section H has a rim or broad flange, J, projecting inward, through which are formed angular slots, *k*, as seen in figs. 2 and 3.

One end of each of the studs F passes through these slots.

The other ends of the studs enter recesses in the top of the piece C, as seen at *i* in fig. 1, and which are more plainly shown in dotted lines in figs. 2 and 3.

These recesses *i*, as seen in the drawing, are placed at right angles or radially from the centre, so that the ends of the studs can move freely therein.

This movement of the studs F and the segments E towards and from the centre of the nozzle is given by partially revolving or turning the section H with the angular or eccentrically-placed slots K therein.

These slots form curved inclined planes, the sides of which control the position of the studs and the segments as the section H is turned either way, while the length of the recesses *i* determines the amount of expansion and contraction in the nozzle in connection therewith.

The cap B screws on to the section H.

The peripheries of both the cap B and the section H are milled for convenience in turning them.

The advantages to be derived from varying the diameter of the nozzle, and quantity of water thrown at a fire, must be obvious to all, as by contracting the orifice the stream can be thrown to a much greater distance than when it is expanded, and as this variation is effected instantly by the operation, by simply turning the cap with the section H, the usefulness and value of the improvement will at once be understood and appreciated.

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

The overlapping segments E, operated through the medium of the pins F, fixed radial slots *i* in the parts C, and the curved movable slots K in the section H, whereby, as the nozzle is contracted and expanded, the overlapping segments form a continuous metallic ring, as herein shown and described, for the purpose specified.

JAS. A. CUSHMAN.

Witnesses:

ALEX. M. DEAN,

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