

(No Model.)

C. SPENCER.  
HOSE NOZZLE.

No. 476,966.

Patented June 14, 1892.

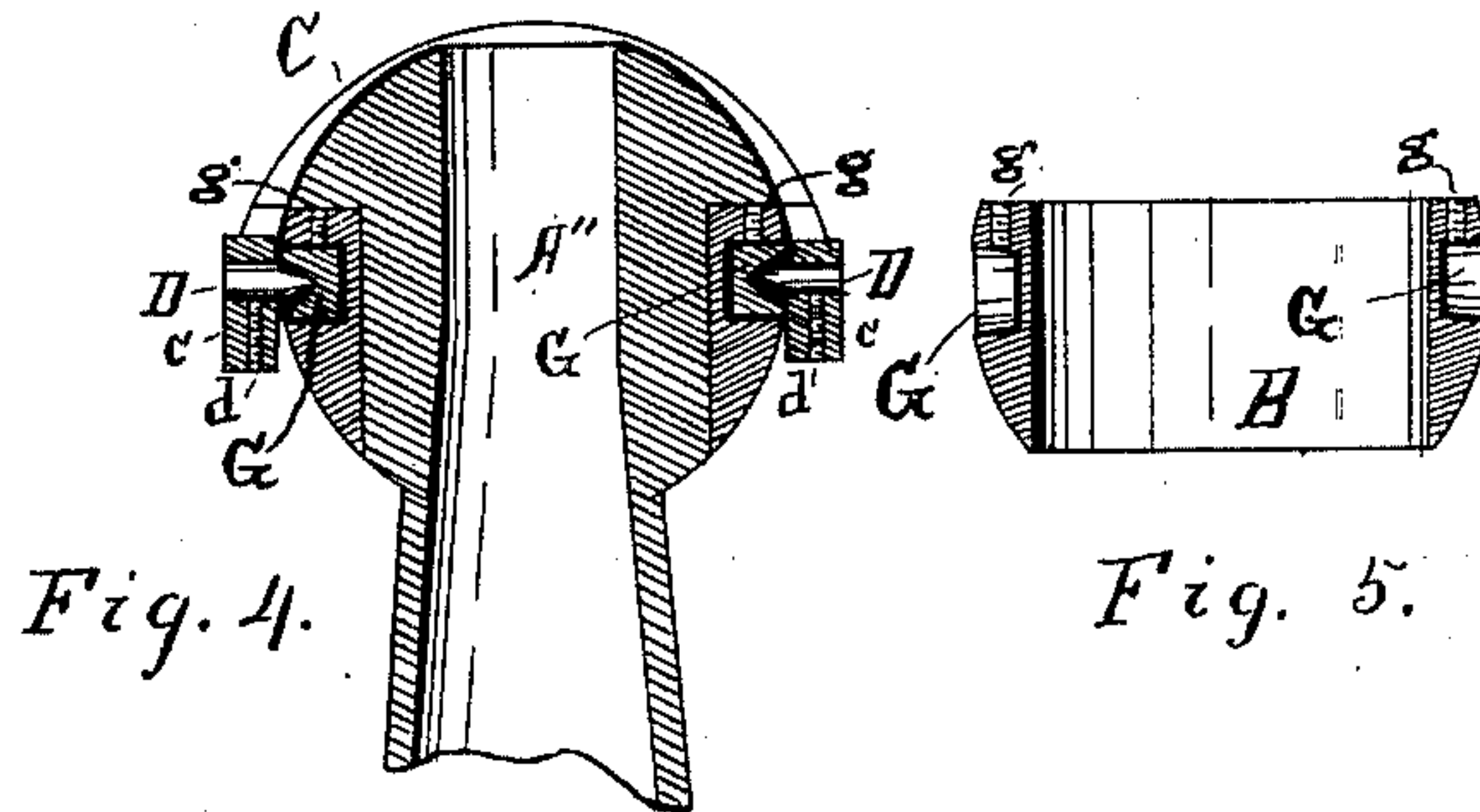
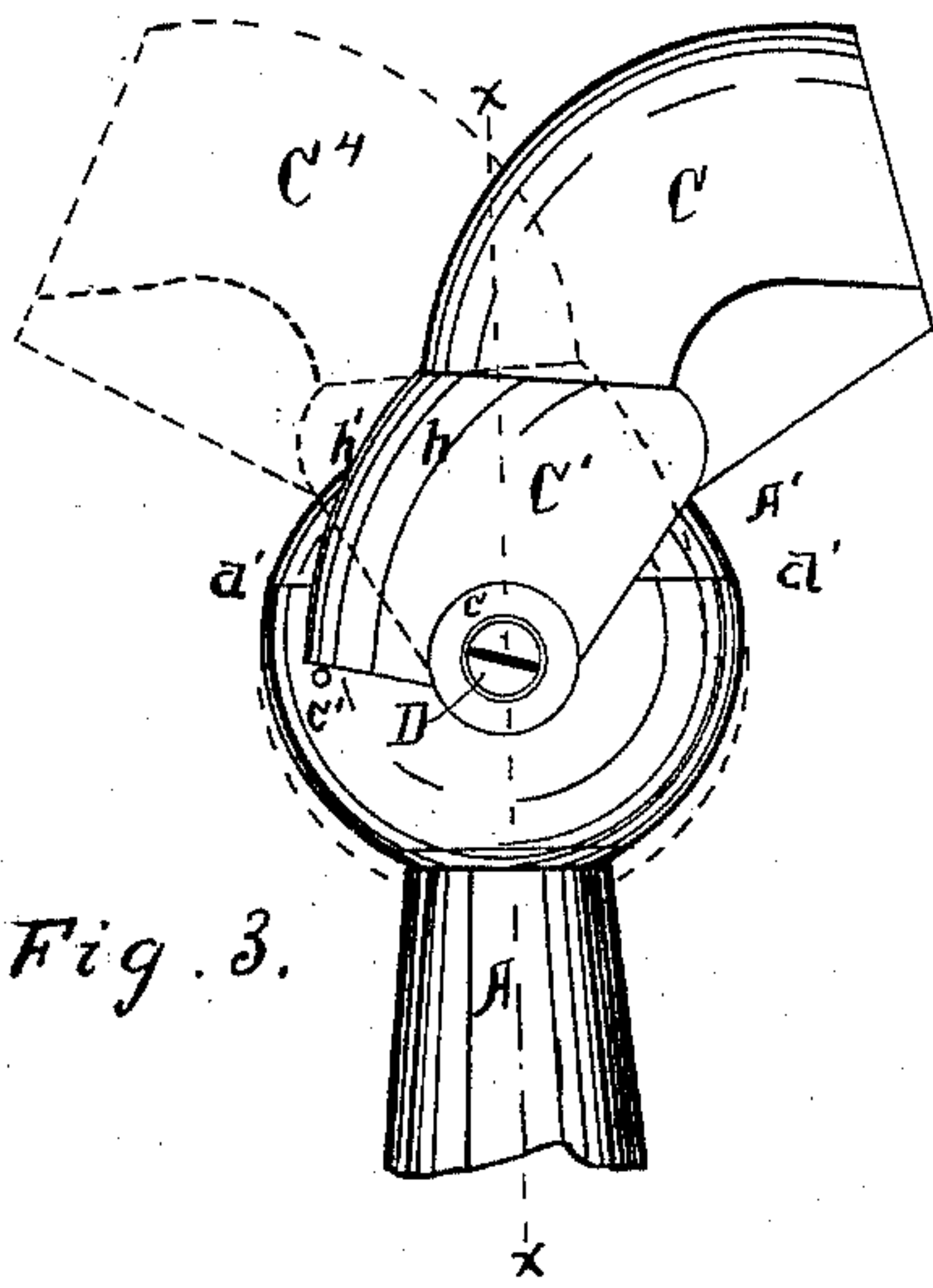
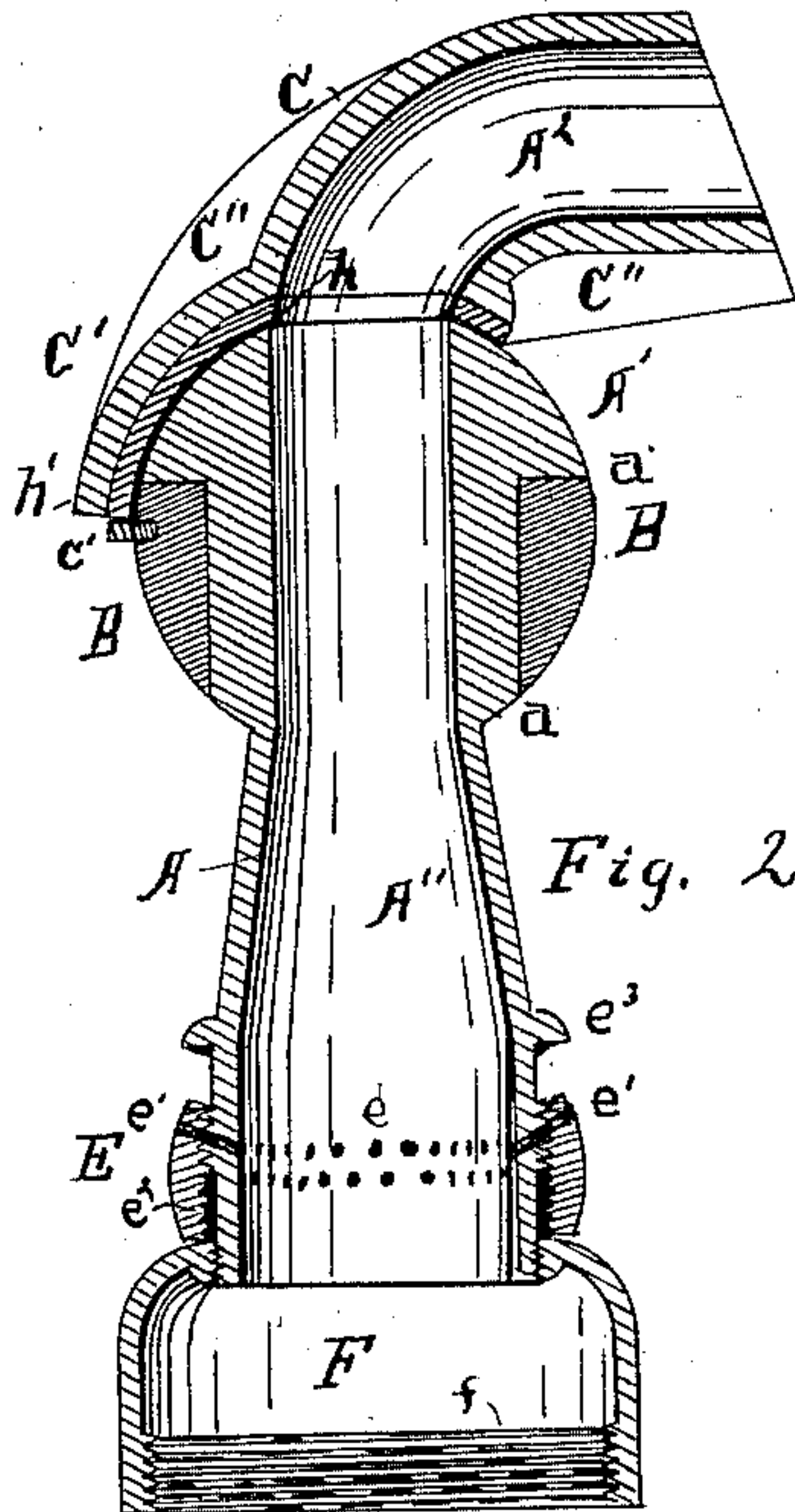
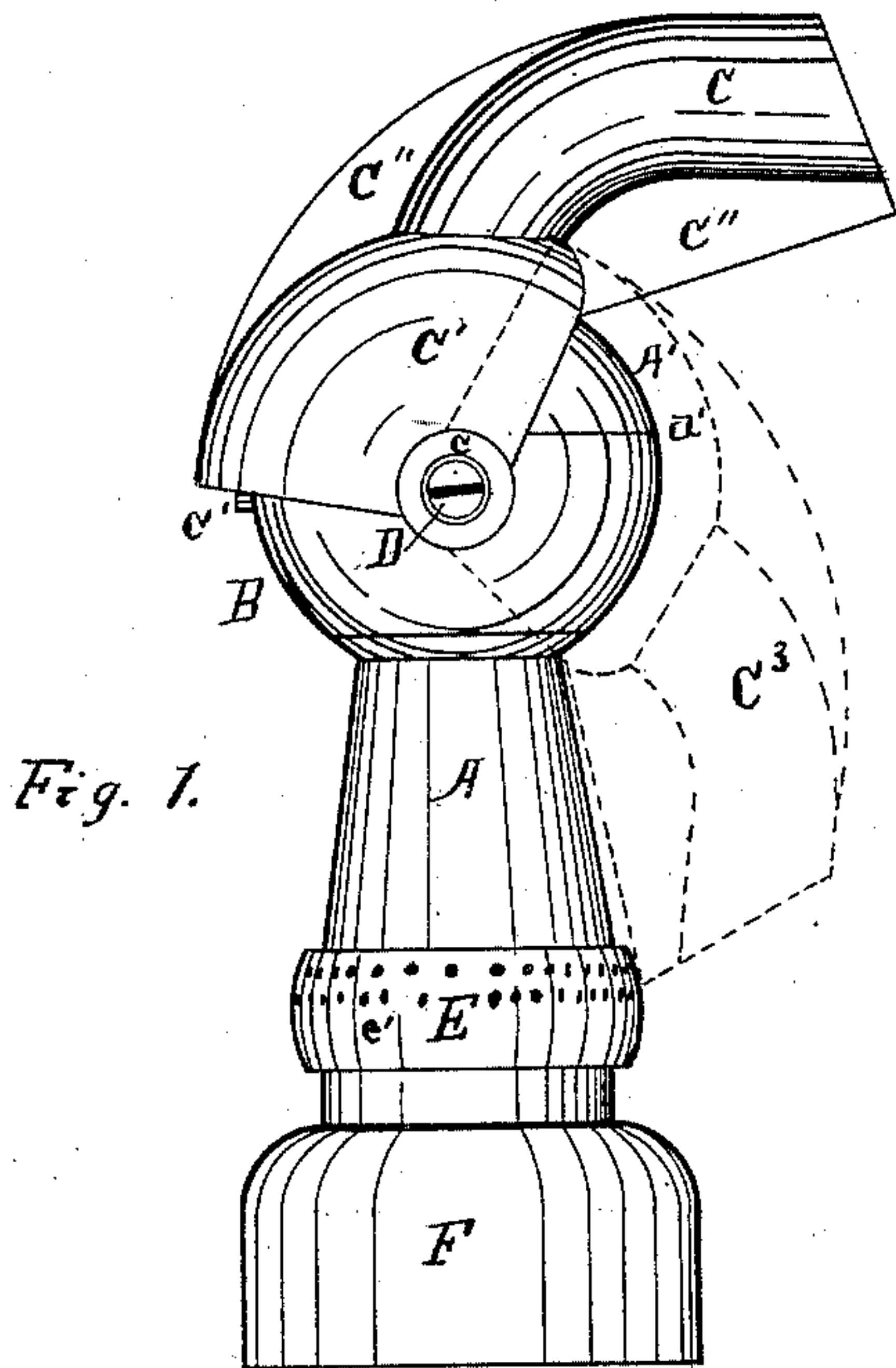


Fig. 5.

witnesses  
E. McWhinney.  
[Signature]

inventor  
Charles Spencer  
By John J. Gilley  
Attorney



# UNITED STATES PATENT OFFICE.

CHARLES SPENCER, OF GRAND RAPIDS, MICHIGAN.

## HOSE-NOZZLE.

SPECIFICATION forming part of Letters Patent No. 476,966, dated June 14, 1892.

Application filed October 10, 1891. Serial No. 408,369. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES SPENCER, a citizen of the United States, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented a new and useful Improvement in Hose-Nozzles, of which the following is a specification.

My invention relates to improvements in hose-nozzles for use by fire departments for extinguishing fires; and its objects are, first, to provide a nozzle with which a stream of water may be thrown at an angle from the direction of the body of the hose, so that it may be easily thrown through a window or other opening upon a fire parallel with and close to the inner wall; second, to provide a nozzle with which the stream of water may be readily shifted to be thrown at an angle to the right or left, up or down, or in any direction from the general course of the hose, and, third, to provide a nozzle that may be used for throwing a direct stream, a diverging stream, or may be made to entirely close and shut off the flow of water at pleasure. I attain these results by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is an elevation of my nozzle. Fig. 2 is a transverse vertical section of the same. Fig. 3 shows the outer end of the nozzle with the adjustable nozzle fitted for use on a steam fire-engine or force-pump. Fig. 4 is a vertical section of the same on the line  $xx$  with the adjustable nozzle thrown back, and Fig. 5 is a sectional view of the adjustable collar that supports the adjustable nozzle.

Similar letters refer to similar parts throughout the several views.

The rear or lower end of my nozzle is provided with a base  $F$ , having a screw-thread  $f$  upon its inner surface, by means of which it is coupled to the hose. Attached to this base is the body  $A$ , which has a flue  $A''$  for the passage of water. The outer end of this body is turned to form the segment  $A'$  of a circle having the pivot  $D$  for a center, and is provided with a shoulder  $a$   $a'$  for the reception of the adjustable collar  $B$ , which is fitted to work closely but freely thereon, and may be provided with a tempered-steel center  $G$  upon opposite sides for the reception of the

trunnions or centers  $D$ , upon which the adjustable nozzle  $C$  is pivoted, and they may be held in place by means of set-screws  $g$  in the collar, if desired. This collar is turned to form the back portion of the ball  $A$   $B$  at the end of the nozzle, but upon a smaller circle from the line of division at  $a'$ , so that when the adjustable nozzle  $C$  is thrown down to the position indicated by the dotted line  $C^3$ , Fig. 1, it will pass over the collar freely. This collar is so adjusted that it may be turned around upon the shoulder  $a$   $a'$ , so that the adjustable nozzle may be made to point in any radial direction from the central nozzle-flue  $A''$ , as indicated by the positions represented at  $C$   $C^4$  in Fig. 3, and the collar is provided with a stop  $c'$  to stop and hold the nozzle in proper position when thrown out, as in Figs. 1, 2, and 3.

The adjustable nozzle or goose-neck  $C$  is provided with a flue  $A^3$ , corresponding with the flue  $A''$  in the main nozzle, and is bent to form an elbow, so that water escaping therefrom (when in position) will flow at or nearly at a right angle with the stream at  $A''$ . This nozzle or goose-neck is provided with a body  $C'$ , that is fitted to form a water-tight joint around the mouth of the nozzle  $A''$  upon the convex end  $A'$  and is pivoted to the collar  $E$  upon hardened-steel trunnions  $D$  at the exact radial center of the segment  $A'$ , so that when the nozzle is dropped down to a position midway between that indicated at  $C$  and that at  $C^3$  in Fig. 1 it will form a perfectly-close valve over the end of the nozzle and prevent any water from escaping, and it is of a proper size, so that when the nozzle  $C$  is thrown down to the position indicated by the dotted lines  $C^3$ , Fig. 1, the end of the flue  $A''$  will be open and a direct stream of water will flow from it. Thus it will be seen that by the use of the adjustable nozzle  $C$  a stream of water may be made to flow at a right or a lesser angle with the main flow of water in any desired radial direction. It may be made to flow direct from the main nozzle, or the nozzle may be closed and the flow shut off entirely, as desired.

In order to insure a perfect joint between the concave surface  $A'$  and the body  $C'$  of the adjustable nozzle, I insert trunnions  $D$ , so that they will bear upon one side of the bear-



ing in the centers G and leave sufficient space back, so that they can be forced in to take up any wear upon the joint, as indicated in Fig. 4, and to prevent the trunnion-centers from becoming loose I secure them by means of set-screws *d*. The adjustable nozzle thus far described is available for use only where the pressure of water is uniform, as by gravity-pressure.

10 When the pressure is produced by means of a force-pump, as with a fire-engine, where the shutting off of the stream at the end of the nozzle, even for an instant, is likely to increase the pressure upon the hose and burst them, I find it necessary to provide against such accidents by cutting off the body C', as shown in Fig. 3, so that the distance between the point *h* in the flue A<sup>2</sup> and the rear end of the body at *h'* is less than the diameter of the flue, so that the flow of water will at no time be entirely shut off, no matter what position the adjustable nozzle may be made to assume.

For the purpose of keeping back the smoke I provide for a spray of water by means of small apertures *e* through the walls of the main nozzle or body A and corresponding apertures *e'* through the collar E, which is provided with a screw-thread *e''* upon its inner surface arranged to mesh with a corresponding screw-thread on the body A, so that the collar may be screwed up to the position indicated in Fig. 1 (*e*<sup>3</sup>, Fig. 2) and shut off the apertures so that no water can escape therethrough; or it may be screwed down to the position indicated in Fig. 2, so that the apertures will be in line and allow fine sprays of water to escape at an angle of about forty-five to sixty degrees from the course of the outflowing water.

40 The body C' of the adjustable nozzle may be made of solid metal ground to a bearing upon the end A' of the nozzle, or it may be lined with Babbitt or other suitable material

to form a water-tight joint, and is braced with webs C''.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is--

1. The combination, in a hose-nozzle, of a body provided with a convex bearing at the outer end, an adjustable collar, an adjustable nozzle having a crooked or goose neck, and a body fitted to form a water-joint with the convex surface A' and pivoted to the adjustable collar, substantially as specified, and for the purpose set forth.

2. The combination, in a hose-nozzle, of a main nozzle fitted at one end to attach to the hose and at the other end with a convex surface to form a water-joint with the adjustable nozzle, an adjustable collar, a crooked nozzle pivoted to said collar, the body of which is fitted to form a water-tight ball-and-socket joint with the end of the main nozzle, and hardened-steel trunnions and bushings to form the pivot upon which the adjustable nozzle is supported, substantially as specified.

3. The combination, in a hose-nozzle, of a main nozzle fitted at one end to be attached to the hose and at the other end to form a ball-and-socket joint with an adjustable nozzle, an adjustable collar, a crooked adjustable nozzle pivoted thereto, with a series of apertures through the main nozzle, and a collar screwed upon the nozzle over the apertures and provided with corresponding apertures arranged so that the flow of water through them may be shut off at pleasure, substantially as and for the purpose set forth.

Signed at Grand Rapids, Michigan, this 28th day of September, 1891.

CHARLES SPENCER.

In presence of--

ITHIEL J. CILLEY,  
JOHN C. BUCHANAN.