C. Burchardt,

Nozzle,

No. 53,109. Patented Mar. 13, 1866.

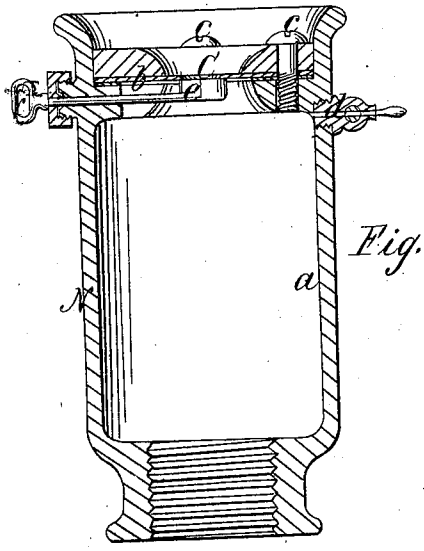


Fig. 1

Fig. 2

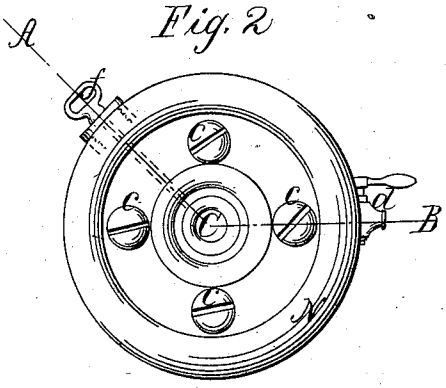


Fig. 3

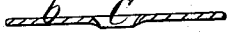


Fig. 4

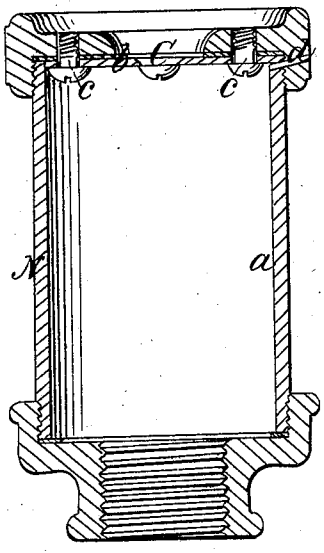
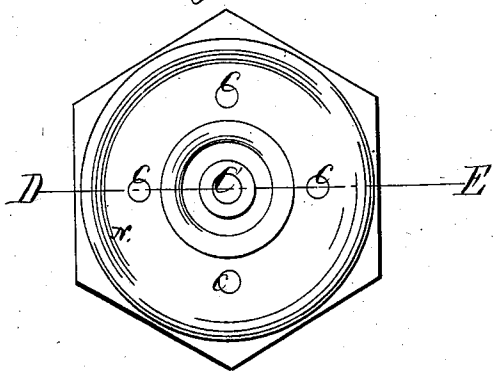


Fig. 5



Witnesses
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CARL BURCHARDT, OF NEW YORK, N, Y.

IMPROVEMENT IN NOZZLES FOR FIRE-ENGINES.

Specification forming part of Letters Patent No. **53,109**, dated March 13, 1866.

To all whom it may concern:

Be it known that I, CARL BURCHARDT, of the city, county, and State of New York, have invented a new and Improved Nozzle for Fire-Engines; 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, making part of this specification.

This invention relates to a nozzle for fire-engines, the discharge-opening or mouth of which is formed by an aperture in a thin plate which is secured transversely in the nozzle. The diameter of said aperture is much smaller than the inner diameter of the nozzle, so that the friction of the stream of water passing through said nozzle is considerably reduced and the inner edge of the discharge-opening is made sharp, whereby the contraction of the stream issuing from the same is diminished. The air which is inclosed in the nozzle below the thin plate at the beginning of the operation of throwing water, or which accumulates in said space during the process of expelling the water, is removed by means of a vent or air-valve applied to the side of the nozzle, and a slide or other mechanical device serves to close the discharge-opening at the beginning of the operation, such a device being desirable and indispensable for nozzles with large discharge-openings where it is impossible to close said openings with the thumb.

This invention is represented in the accompanying drawings, in which Figure 1 shows a vertical central section of the same, the line A B, Fig. 2, indicating the plane of section. Fig. 2 is a front view of the same. Fig. 3 is a detached section of the thin plate, showing the discharge-opening in a modified form. Fig. 4 is a central section, and Fig. 5 a front view of a modification thereof, the line D E in this latter figure indicating the plane of section of Fig. 4.

Similar letters of reference in all the figures indicate corresponding parts.

N represents a nozzle for a fire-engine, the shape of which is entirely different from that of the nozzles generally used in fire-engines, as will be readily seen by inspecting Fig. 1 of the drawings. Instead of contracting the nozzle gradually toward its mouth, my nozzle is enlarged above its connection with the hose, and it forms a cylindrical water-chamber, *a*, from which the water is allowed to discharge through an aperture, C, in a thin plate, *b*, of metal or other suitable material, which is secured in the mouth-piece of the nozzle by screws *c*, or any other suitable means.

The inner edge of the aperture or discharge-opening C is made sharp, and it may be flush with the inner surface of the plate *b*, as shown in Fig. 1, or it may be slightly depressed, as shown in Fig. 3.

The water on passing from the hose into the nozzle fills the chamber *a*, and the stream passing from the hose to the discharge-opening does not come in contact with the inner surface of the nozzle, but it passes simply through the water contained in the chamber *a*, and the friction of the stream in discharging is thereby considerably diminished. Furthermore, by the sharp-edged discharge-opening in a thin plate the contraction of the stream issuing from the nozzle is reduced to its minimum and a solid stream is obtained, which can be thrown to a great height or distance.

The air which accumulates in the chamber *a* is removed by the vent or air-valve *d*, which can be made in the form of a cock, or in any other suitable form or shape, and by means of this vent the spluttering of the nozzle can be avoided.

A slide, *e*, which is operated by a handle, *f*, on the exterior of the nozzle, serves to close the discharge-opening until all the air is driven out of the nozzle and the requisite pressure is obtained to throw the stream to the desired distance. Instead of this slide other mechanical devices could be employed, and I do not wish to confine myself to the precise form or shape or construction of this part of my nozzle. Usually the discharge-opening of the nozzle is closed by pressing the thumb on it; but when the diameter of the discharge-opening reaches an inch or an inch and a half, (and such nozzles I propose to make,) it is impossible to close the same with the thumb, and a slide or other mechanical device is indispensable.

If the discharge-opening is small, and where cheapness is the main object, the slide can be dispensed with, and the nozzle can be constructed in the form shown in Figs. 4 and 5,

The vent in this case is formed by a simple opening, and the whole nozzle is made of an iron pipe with cast-iron caps at each end, one to screw on the hose and the other to receive the thin plate.

What I claim as new, and desire to secure by Letters Patent, is—

1. The application of a thin plate, *b*, to the nozzle of a fire-engine, said thin plate being provided with a discharge-opening, C, substantially in the manner and for the purpose described.

2. The chamber *a*, between the opening leading from the hose to the nozzle and the discharge-opening C in the thin plate *b*, substantially as and for the purpose set forth.

3. The vent *d*, in combination with the nozzle N, constructed and operating substantially as and for the purpose specified.

4. The slide *e*, or its mechanical equivalent, applied in combination with the discharge-opening of the nozzle of a fire-engine, substantially as and for the purpose set forth.

C. BURCHARDT.

Witnesses:
H. HART,
OTTO TAEGE.