

A. E. GRANT.

FIRE EXTINGUISHING APPARATUS.

No. 394,687.

Patented Dec. 18, 1888.

Fig. 1.

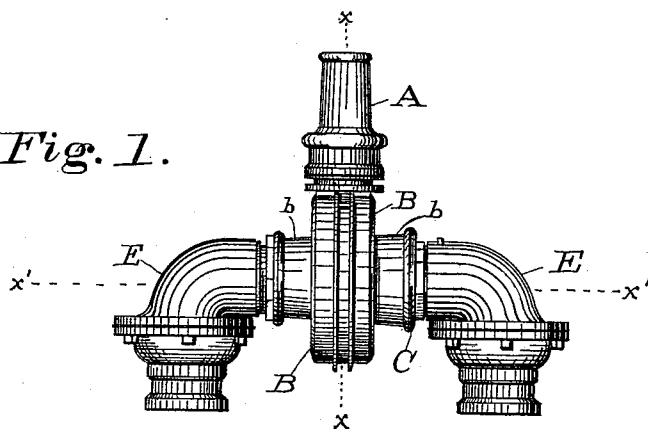


Fig. 2.

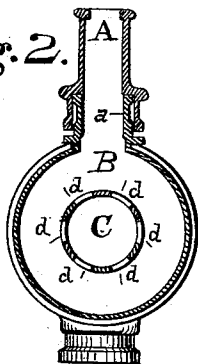


Fig. 3.

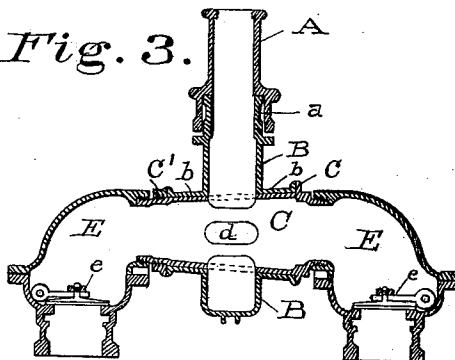
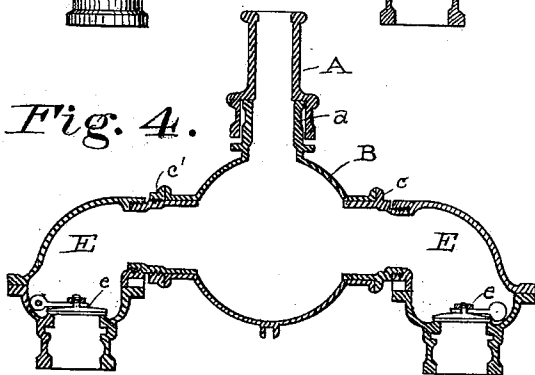


Fig. 4.



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per Frederick W. Cameron
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Fig. 6.

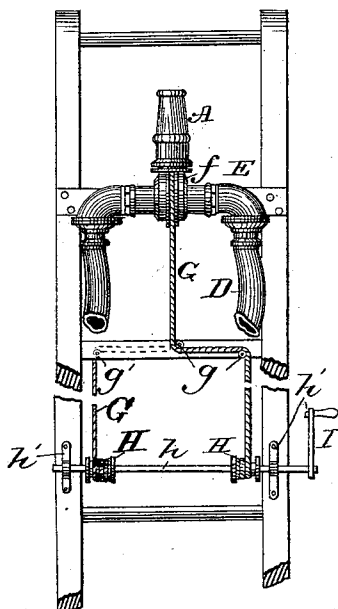
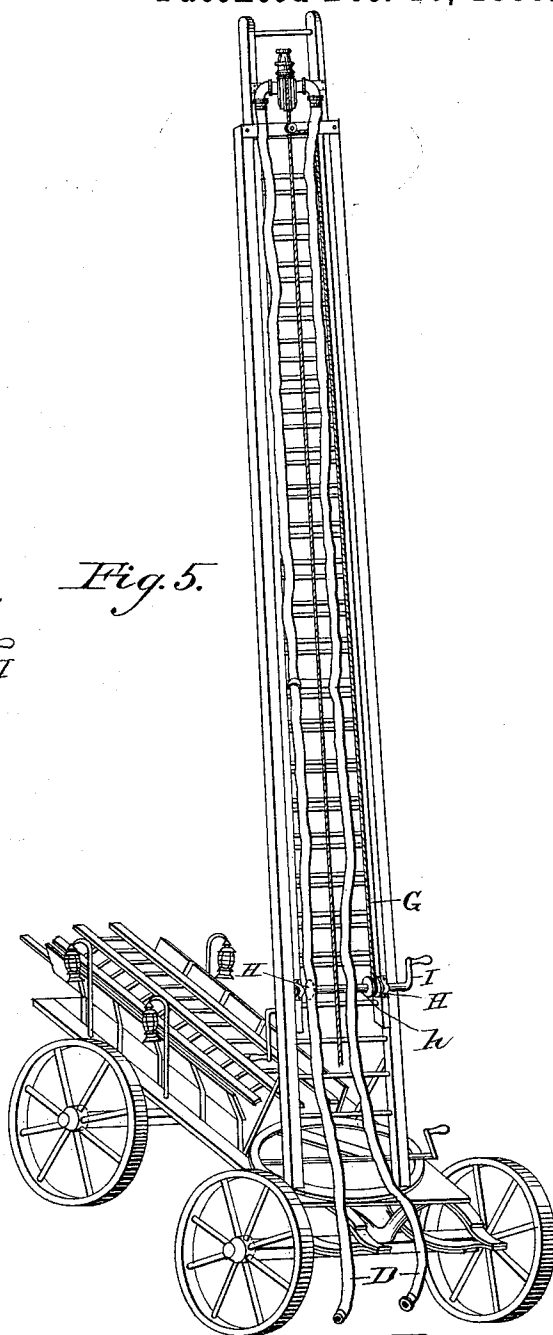


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

ALBERT E. GRANT, OF TROY, NEW YORK, ASSIGNOR OF TWO-THIRDS TO
EDWARD R. WALES AND WILLIAM BAILEY, BOTH OF SAME PLACE.

FIRE-EXTINGUISHING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 394,687, dated December 18, 1888.

Application filed September 4, 1886. Serial No. 212,762. (No model.)

To all whom it may concern:

Be it known that I, ALBERT E. GRANT, a citizen of the United States, residing at Troy, in the county of Rensselaer and State of New York, have invented a new and useful Fire-Extinguishing Apparatus, of which the following is a specification.

My invention relates to improvements in apparatus for extinguishing fires; and the objects of my invention are, first, to furnish a nozzle having its tuyere movable in a vertical plane which may be attached to one or more pipes of hose and operated by a person standing at a distance from the nozzle; second, to furnish an apparatus for extinguishing fires by means of which a stream of water can be poured into a burning building at a distance from the ground without the necessity of pipemen to hold the pipe at the nozzle and obviating the necessity of exposing the lives of men at a high window from which dense smoke is issuing and into which a stream is desired to be thrown; third, to furnish a fire-extinguishing apparatus which may be attached to various parts of buildings, to be ready for use in case of a conflagration. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

30 Figure 1 represents my nozzle in elevation, showing the manner of coupling to two hose-pipes. Fig. 2 is a cross vertical section along the line *x x* of Fig. 1. Fig. 3 is a vertical section along the line *x' x'* of Fig. 1. Fig. 4 is a vertical section, similar to Fig. 3, showing the pipe C broken and composed of two pieces. Fig. 5 is a perspective view of a ladder extended from a fire-ladder truck with the pipes and nozzle on ready for use. Fig. 6 is a detail view of Fig. 5, and shows the manner of operating my nozzle.

Similar letters refer to similar parts throughout the several views.

45 A is the tuyere, which is attached in a suitable manner to the mouth of the movable cylinder B at *a*. The movable cylinder B is provided with the sleeves *b b*, which fit onto the pipe C C. The thrust of the sleeves *b b* on the pipe C C is regulated by means of the lug *c* and nut *c'*, or in any suitable manner. The cylinder B carrying the tuyere A is thus

movable about the pipe C C in a vertical plane. The pipe C C is provided with apertures *d d d*, which open into the cylinder B, as shown in Figs. 2 and 3, or the pipe C C is composed of two pieces, and instead of passing through the cylinder B and being perforated pours the water from each side into the cylinder B, Fig. 4. The pipe C C is attached to the hose-pipes D D by suitable couplings, E E, provided with the ordinary valves *e e*.

The operation of my nozzle is extremely simple. The water from the hose-pipes enters the valved couplings E E and passes into the pipe C C, and rushes either immediately into the cylinder B or passes through the perforations of the pipe C in the cylinder, according to which arrangement of pipe is used. From the cylinder B the water escapes through the tuyere onto the fire.

When the hose-pipes D D are attached to the nozzle and the nozzle attached to an extension-ladder of a fire-ladder truck, as shown in Figs. 5 and 6, my apparatus is ready for use. The ladder being capable of being raised to a considerable height and the hose-pipes being readily extended and lengths spliced on when necessary, a stream can be sent by my apparatus to a great height from the ground.

The operating-ropes G G are attached to the nozzle, one in front and one in the rear of the tuyere at *f f*, and extend downward on each side of the cylinder B, and each passes over the sheaves *g g g' g'*, attached to the rounds or sides of the ladder, as shown in Fig. 6. The operating-ropes G G extend downward until they are within easy reach from the foot of the ladder, where they are wound in opposite directions around the drums H H, attached to a spindle, *h*, secured to the uprights of the ladder in suitable bearings, *h' h'*, and to the end of which is attached a crank, I. By turning the crank I, the ropes G G being attached to the drums H H and wound about them in different directions, the tuyere is moved either up or down in a vertical plane and the direction of the stream emitted therefrom is thus regulated.

The ladder, as shown in Fig. 5, to which my apparatus is attached, is mounted on the turntable of a fire-ladder truck, and it is readily

apparent that the movement of the tuyere in a vertical plane by means of the ropes G G, and the movement of the ladder in a horizontal plane on the turn-table of the truck, may be regulated by a man at the foot of the ladder, and that he can direct a stream in any direction whatever. Thus my machine can perform the result desired, and which is sought to be obtained by water-towers, and attains that result without the use of heavy complicated machinery, and in such a simple manner and so easily operated that an unskilled hand can attend to the necessary work of operation.

From the foregoing description it will be seen that I provide a fire-extinguishing apparatus having a delivery-tuyere capable of turning in a vertical plane almost three hundred and sixty degrees, and also one in which the tuyere can be operated with the same ease at any angle, as the reaction of the water is almost entirely in the axial line of the cylinder, the supply being received from opposite directions with equal force into the cylinder, whence it passes into the tuyere.

Another feature of my invention lies in the fact that strength is added to the ladder by reason of the two hose-pipe lines, which, when water is being forced through them, instead of being a burden upon the ladder stiffen it so that it will hold additional weight.

A ladder with my hose and nozzle can be placed near a window of a burning building, where it would be impossible to place men, on account of smoke, blaze, or heat, and throw a steady stream into the building.

My apparatus can be permanently arranged upon a factory or block of houses by suspending it from a track on a cornice or other suitable place, so that the nozzle will hang about even with a row of windows. The nozzle can then be operated from the ground and run along the track in front of any window and the stream of water directed into that window.

I claim—

1. In a nozzle, the combination, with a revolvable cylinder having a delivery-tuyere, of two supply-pipes communicating therewith and having their delivery ends arranged op-

posite to each other and in the axial line of said cylinder, substantially as described.

2. In a nozzle, the combination, with a revolvable cylinder having a delivery-tuyere, of a pipe, C, forming a bearing for said cylinder and opening into the same, and supply-pipes connected, respectively, to opposite ends of the pipes C, substantially as described.

3. In a nozzle, the combination, with a revolvable cylinder having a delivery-tuyere, of two supply-pipes communicating therewith and having their delivery ends arranged opposite to each other and in the axial line of said cylinder, each of said supply-pipes being provided near its delivery end with a valve, substantially as described.

4. In a nozzle, the combination, with a revolvable cylinder having a delivery-tuyere, of a pipe, C, forming a bearing for said cylinder, and provided with a series of equally-spaced peripheral outlet-ports opening into the same, and supply-pipes connected, respectively, to opposite ends of the pipe C, substantially as described.

5. In a nozzle, the combination, with a revolvable cylinder having a delivery-tuyere and sleeves *b b*, of a pipe, C, opening into the cylinder and upon which said sleeves are journaled, and supply-pipes connected, respectively, to opposite ends of pipe C, substantially as described.

6. In a fire-extinguishing apparatus, the combination of a nozzle having a tuyere, A, attached to a movable cylinder, B, the sleeves *b b*, attached to the movable cylinder B, and which fit onto the pipe C C, provided with the apertures *d d d*, opening into the movable cylinder B, the couplings E E, attached to the hose-pipes D D, operating-ropes G G, attached in front and rear of the tuyere to the nozzle, the sheaves *g g g' g'*, attached to a ladder, and the drums H H, around which the ropes G G are wound in opposite directions, all combined substantially as described, and for the purpose set forth.

ALBERT E. GRANT.

Witnesses:

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