

No. 735,404.

PATENTED AUG. 4, 1903.

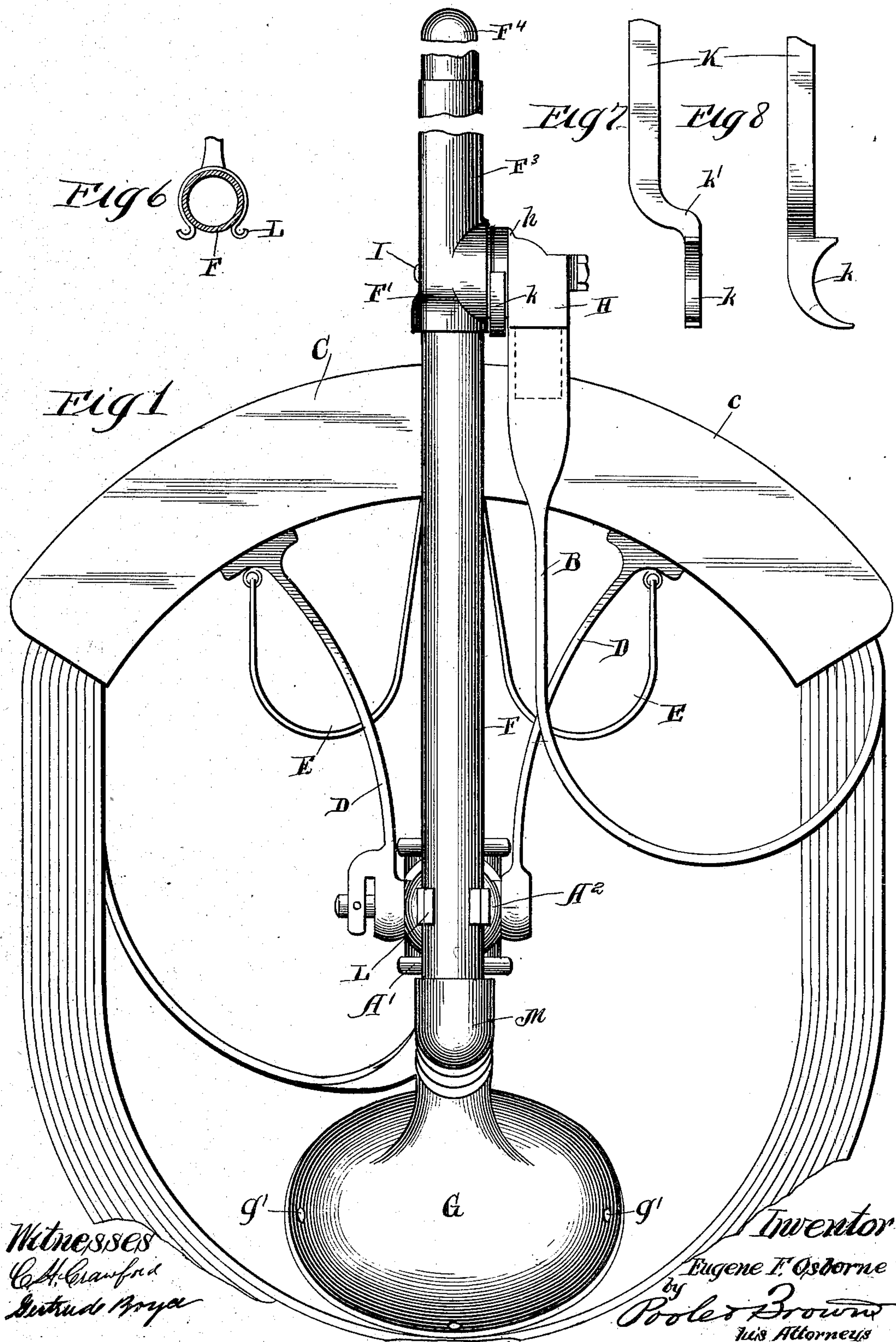
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APPLICATION FILED OCT. 26, 1899.

NO MODEL.

2 SHEETS—SHEET 1.



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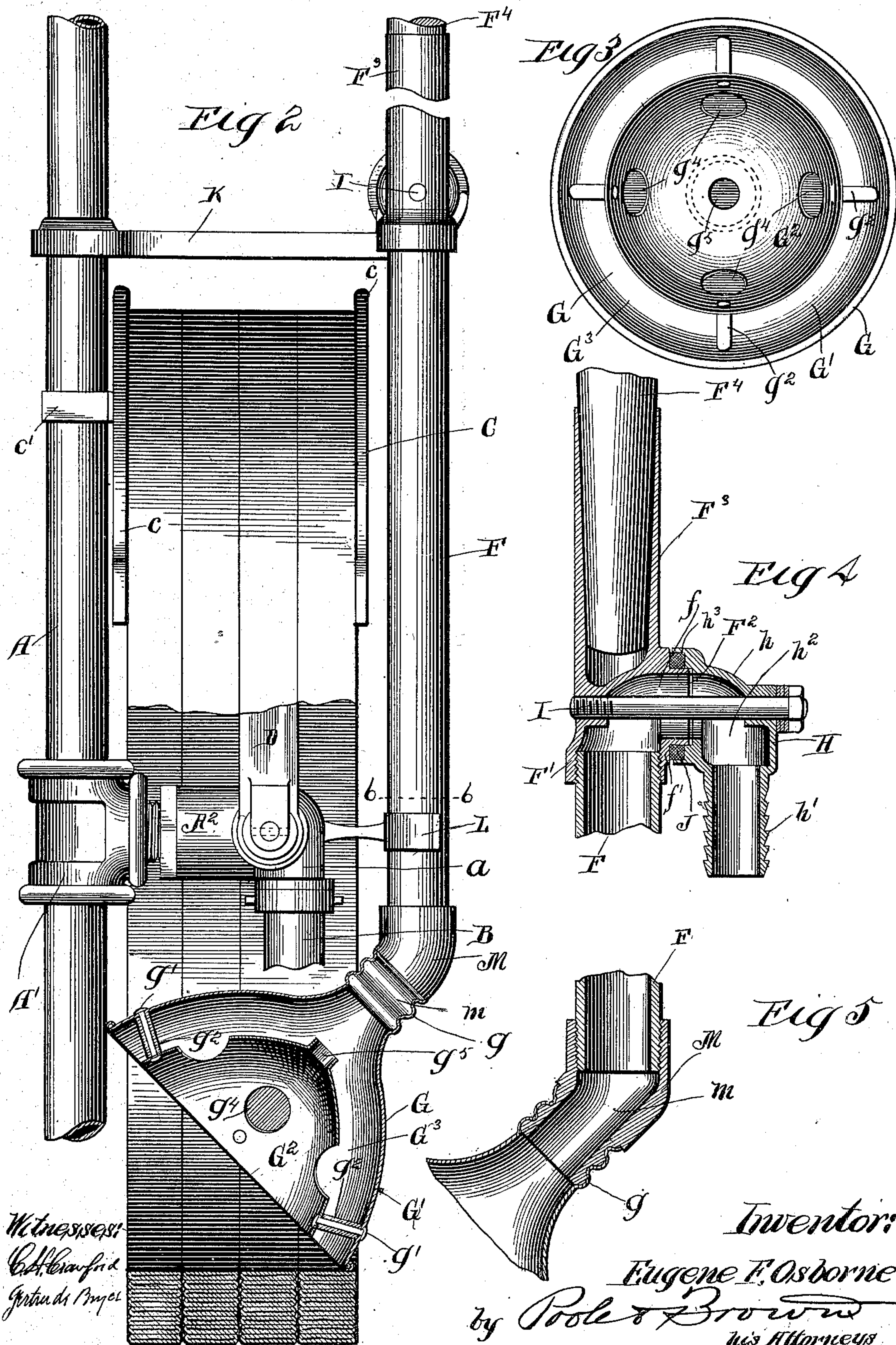
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2 SHEETS—SHEET 2.



Witnesses:
C. A. Crawford
Gertrude Meyer

Inventor:
Eugene F. Osborne
by Poole & Brown
his Attorneys

UNITED STATES PATENT OFFICE.

EUGENE F. OSBORNE, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO SAID OSBORNE AND J. MOTTE MARTIN, TRUSTEES, OF CHICAGO, ILLINOIS.

NOZZLE AND NOZZLE DEVICE FOR FIRE-HOSE.

SPECIFICATION forming part of Letters Patent No. 735,404, dated August 4, 1903.

Application filed October 26, 1899. Serial No. 734,861. (No model.)

To all whom it may concern:

Be it known that I, EUGENE F. OSBORNE, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Nozzles and Nozzle Devices for Fire-Hose; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in hose-nozzles and hose-nozzle devices for use in connection with fire-extinguishing apparatus.

The invention herein shown as embodied in an automatic device is so constructed that the taking down of the hose from its support operates to open the valve which connects the hose with the source of supply of the extinguishing medium, and thereby put the system in condition for operation through the hose-nozzle; but said invention may be used with other forms of hose-support.

The invention consists in the matters hereinafter set forth, and more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a front elevation of a hose-reel, showing the hose attached thereto and my nozzle connected therewith. Fig. 2 is a side elevation of the same. Fig. 3 is an end elevation of the hose-nozzle. Fig. 4 is an axial section of one end of the nozzle-pipe and the adjacent end of the fitting by which it is connected with the hose, showing also the socket by which it (the handle) is connected with said nozzle-pipe. Fig. 5 is an axial section of the opposite end of the nozzle-pipe and the adjacent end of the nozzle. Fig. 6 is a cross-section on line 6 6 of Fig. 2. Figs. 7 and 8 are fragmentary detail views of the nozzle-supporting arm.

As shown in the drawings, the invention is embodied in an automatic hose device made like that described and claimed in my prior application for United States Letters Patent filed March 4, 1899, Serial No. 707,746, and such parts of the device as have no relation to the invention will only be generally described.

A represents a section of a stand-pipe having a T-coupling A', to the outer branch of which is attached a valve A², and to the induction-pipe *a* of said valve is attached one end of a hose B. To the opposite end of the said hose is attached my improved nozzle, which will hereinafter be specifically described.

C designates a hose-reel made of segmental form and supported upon and above the valve A². Said reel is provided with side flanges *c* to hold the hose in place in superposed layers arranged side by side, as shown in Fig. 2. Spring-clips *c'* extend from the face of said reel and engage the opposite sides of the stand-pipe to hold the same laterally in place with respect to said pipe.

D D designate pivot-arms which are secured at their outer ends to the reel and at their lower ends are connected with the valve A² in such manner that when the reel is thrown downwardly to remove the hose therefrom it will operate the valve, as set forth in my prior application. Flexible straps or chains E E, attached to the hose-reel at one end and at their other ends to the stand-pipe, serve to hold the hose-reel in its horizontal position.

Referring now to the features which constitute my invention, F designates a nozzle-pipe which is adapted for communication with the hose B and is provided at its opposite end with a discharging-nozzle G. Said nozzle-pipe is provided at its end adjacent to the hose with a fitting F', which has screw-threaded engagement therewith and is provided with a laterally-directed part F², which is adapted for connection with a laterally-directed part *h* of a fitting H, which is connected directly with the hose B. Said fitting H is provided with a tubular shank *h'*, which is fitted into the end of the hose. The part of the shank which engages the hose is exteriorly roughened to insure an effective attachment. The fitting F' is provided with a passage *f*, and the fitting H is provided with a similar passage *h*², connected therewith, which passages constitute the connection between the hose and the nozzle-pipe. The fittings F' and H are connected together by a connection of the nature

of a swivel, so that the said parts may have relative angular movement about an axis perpendicular to the axis of the pipes. As herein shown, the attachments consist of a bolt I, which passes through said fitting from side to side and forms the axis upon which the said parts rotate with respect to each other. In order to provide a fluid-tight joint between the same, the fitting F' is provided at its outer end with an external annular rabbet f' , and the fitting H is provided at its adjacent end with an internal annular rabbet h^3 , which is opposite to the rabbet f' , and within said annular rabbets is located an annular packing-ring J, which is made of yielding material and serves when the parts are brought together by means of the bolt or screw I to be clamped between the meeting ends of said fittings and form a tight joint between the same.

K designates the nozzle-supporting arm, which is attached to the stand-pipe E above the reel and projects radially therefrom and from the outer end of which the nozzle is supported. The said arm is provided at its outer end with an upwardly-opening recess or socket k , which is adapted to receive the horizontal part of the nozzle device. Conveniently and as herein shown the part of the nozzle device engaging the socket k may be the part thereof which is located between the nozzle-pipe and the shank h' of the fitting H. As a means of preventing the nozzle-pipe A from being accidentally moved laterally, which would tend to disengage the same from its supporting device, I preferably provide a spring-clip L, which projects forwardly from the valve-casing A² and is adapted for engagement with the nozzle-pipe attached to the nozzle G, as clearly shown in Figs. 1 and 2. Said spring-clip L engages the nozzle-pipe with considerable clamping pressure and prevents the same from being accidentally moved upward under ordinary conditions and disengaged from the supporting-arm K. The outer end of said arm is provided with a deflected portion k' , thereby bringing the part k laterally to one side of the central axis of the stand-pipe, so that the nozzle-pipe F may be disposed directly in front of and parallel with said pipe.

The fitting F', connected with the inner end of the nozzle-pipe F, is provided on the side thereof opposite said nozzle-pipe with a socket F³, which extends in axial prolongation of said nozzle-pipe and is adapted for the reception of a handle F⁴, which may be made of any length desired and by which the nozzle device may be manipulated.

The nozzle G is of novel form and is made as follows: G' designates a flaring or bell-shaped casing having its larger end directed outwardly and attached at its smaller or contracted end to the outer end of the nozzle-pipe F. The said smaller end of the casing G' terminates in a neck g , which is screw-threaded and adapted for engagement with

a screw-threaded coupling-sleeve M, connected with a pipe.

G² designates a second flaring or bell-shaped casing which is located within the casing G' and centrally thereof and symmetrically with respect thereto. The margin of the larger end of said casing G² is flush, or nearly so, with the margin of the casing G'. The inner or smaller end of said casing G² terminates outside of the neck portions g of the casing G'. The said inner casing G² is held centrally in position in the casing G' by means of rivets g' , which pass through the margins of said inner and outer casings. Distance-tubes g^2 , through which said rivets pass, engage at their opposite ends the inner and outer surfaces, respectively, of the casings G' and G² and hold the same a proper distance apart. The construction described provided between the inner and outer casing an annular space G³, which constitutes the discharge-orifice, which is in open communication at its inner part with the nozzle-pipe F through the passage m of the coupling-sleeve. Desirably the said inner casing is provided inside of its outer margin with an annular series of openings g^4 , which afford communication between the annular space G³ and the space inclosed by said inner casing G². Also the extreme inner end of the casing G² may be provided with an opening g^5 . Said nozzle is arranged with its central axis at an angle to the axis of the nozzle-pipe F. As herein shown, the inclination of the axis of the nozzle to that of the nozzle-pipe is in the neighborhood of forty-five degrees. This inclination may, however, be varied as found most convenient; but I have found such inclination to be a desirable one, both by reason of its more effective use and also by the fact that it may be protected from accidental injury by the hose when out of use and in the position shown in Figs. 1 and 2.

When the hose is to be used, the nozzle will be grasped and pulled outwardly to release the same from the spring-clasp L and afterward lifted out of engagement with the supporting-arm K. The reel will thereafter be pulled away from the stand-pipe to its horizontal position, when the hose will drop therefrom and the valve will open, so as to permit the passage of the fluid therethrough. The nozzle will be manipulated by the handle F³, and as it extends in a direction opposite the nozzle-pipe permits the operator to remain a safe distance from the fire.

The form of nozzle herein shown is of great importance, as it distributes the extinguishing fluid over a much larger area than would a nozzle having a direct or straight discharge-orifice as distinguished from a flaring one, as has been common to use heretofore. Moreover, the plurality of discharge-orifices possess an advantage over the single-discharge nozzle in common use with fire-hose, as the jet of fluid discharged from such single-discharge

nozzle induces an air-current which tends to increase the flame at a point not directly subjected to the discharge and to this extent has an action in the nature of a blowpipe or a bellows. Moreover, the area to which such a single or direct discharge-nozzle may distribute the extinguishing fluid is very limited and much more time is required in extinguishing a fire than in the use of a nozzle herein under consideration. In the use of the nozzle herein shown the extinguishing fluid is discharged therefrom in a flaring shape, and therefore covers a large area, which is increased according to the distance from which the discharge-nozzle is removed from the point of application of the extinguishing fluid. Moreover, the form of the discharge serves to completely inclose the space within the same and cuts off the supply of oxygen therefrom, so that the fire would soon die out even without the presence of the annular series of openings g^4 and the central openings g^5 , through which intermediate jets of the fluid are directed to the fire in the space surrounded by said annular or tubular jet. The provisions of said openings g^4 g^5 , therefore, in connection with the annular orifice, effect a much more rapid extinguishment of the flame than if the annular discharge-orifice were used alone. The inclination of the axis of the nozzle to the axis to the nozzle-pipe, as before stated, is of considerable importance, as it permits the fluid to be discharged upon the fire when located upon the floor or upon a wall without the necessity of placing the nozzle directly over the fire or in a direct line therewith. The handle F^3 may be made of any length required, and it will not be necessary, therefore, for the user of the device to approach near the fire. The swivel connection between the fittings F' and H is of considerable importance, as it permits the free use of the nozzle in any position in which it may be required to use it without reference to the position of the hose B .

I claim as my invention—

1. A hose-nozzle comprising an outside flaring casing, and an inner casing of like form located within the larger end of the outer cas-

ing, and forming between the same a practically continuous discharge-orifice surrounding the inner casing, said inner case being provided near its margin with a plurality of orifices communicating with said discharge-orifice.

2. A hose-nozzle comprising a flaring casing of circular cross-sectional form, and a similar casing located within the larger end thereof and forming therewith an annular discharge-orifice, said inner casing being provided centrally with an opening communicating with the annular discharge-orifice and with a circular series of openings connecting also with said orifice.

3. The combination with a relatively long rigid nozzle-pipe, of a nozzle comprising an outside flaring casing and an inner casing of like form located within the larger end of the outer casing, and forming between the same a practically continuous discharge-orifice surrounding the inner casing, said inner casing being provided in its margin with a plurality of orifices communicating with said discharge-orifice, and the nozzle being connected with the pipe with its central axis inclined substantially forty-five degrees from the central axis of the nozzle-pipe.

4. The combination with a relatively long rigid nozzle-pipe provided at its discharge end with an annular flaring discharge-orifice, and within said annular discharge-orifice a plurality of smaller independent discharge-orifices, said nozzle-pipe being connected at its other end with a swivel-fitting embracing a tubular shank formed on a part of the fitting which is movable relatively to the part engaged by said nozzle-pipe, and a long handle rigid with the fitting and extending oppositely from the nozzle-pipe.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 19th day of October, A. D. 1899.

EUGENE F. OSBORNE.

Witnesses:

WILLIAM L. HALL,
GERTRUDE BRYCE.