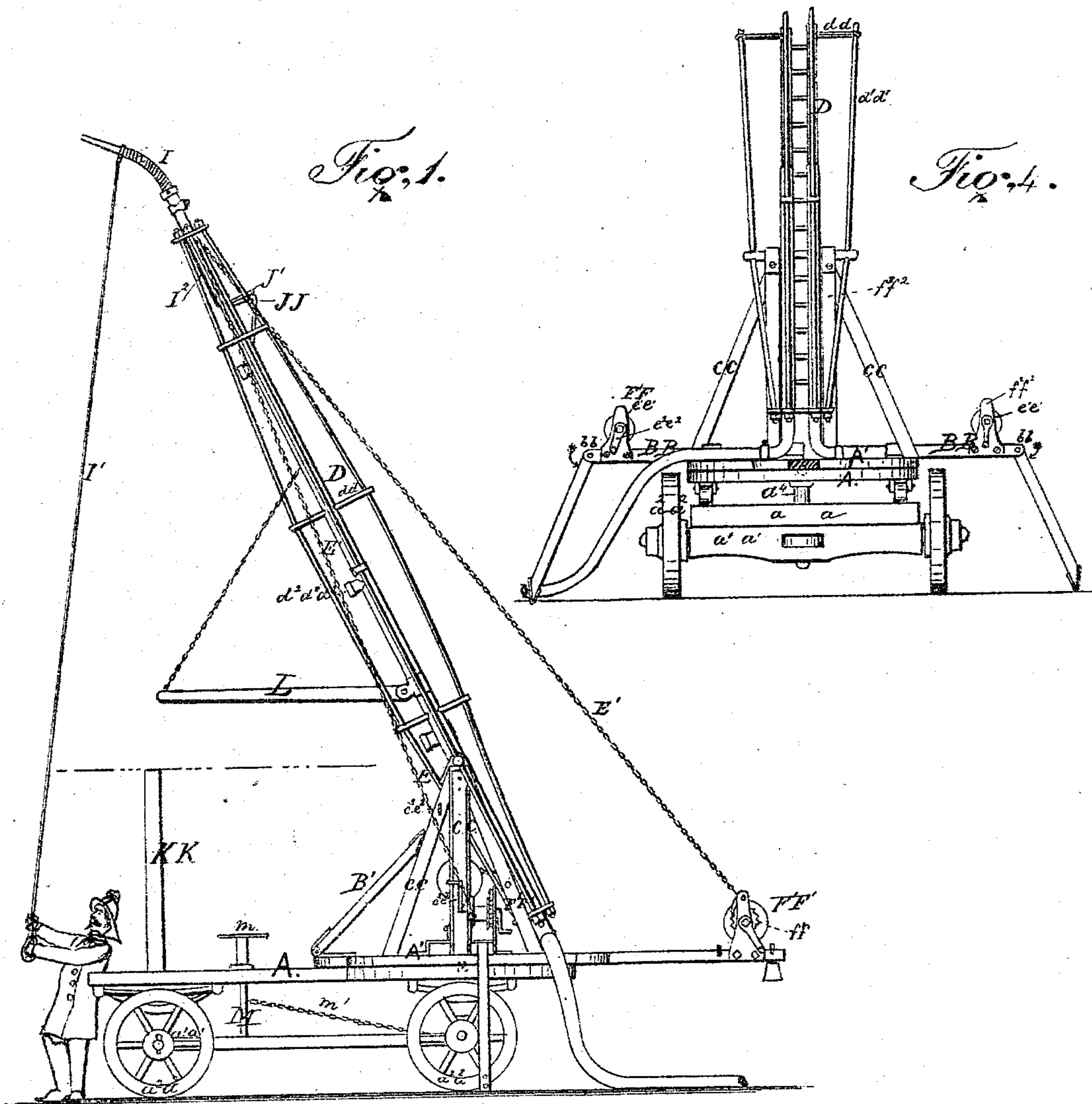


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Fire-Escape Ladders.

No. 136,844.

Patented March 18, 1873.



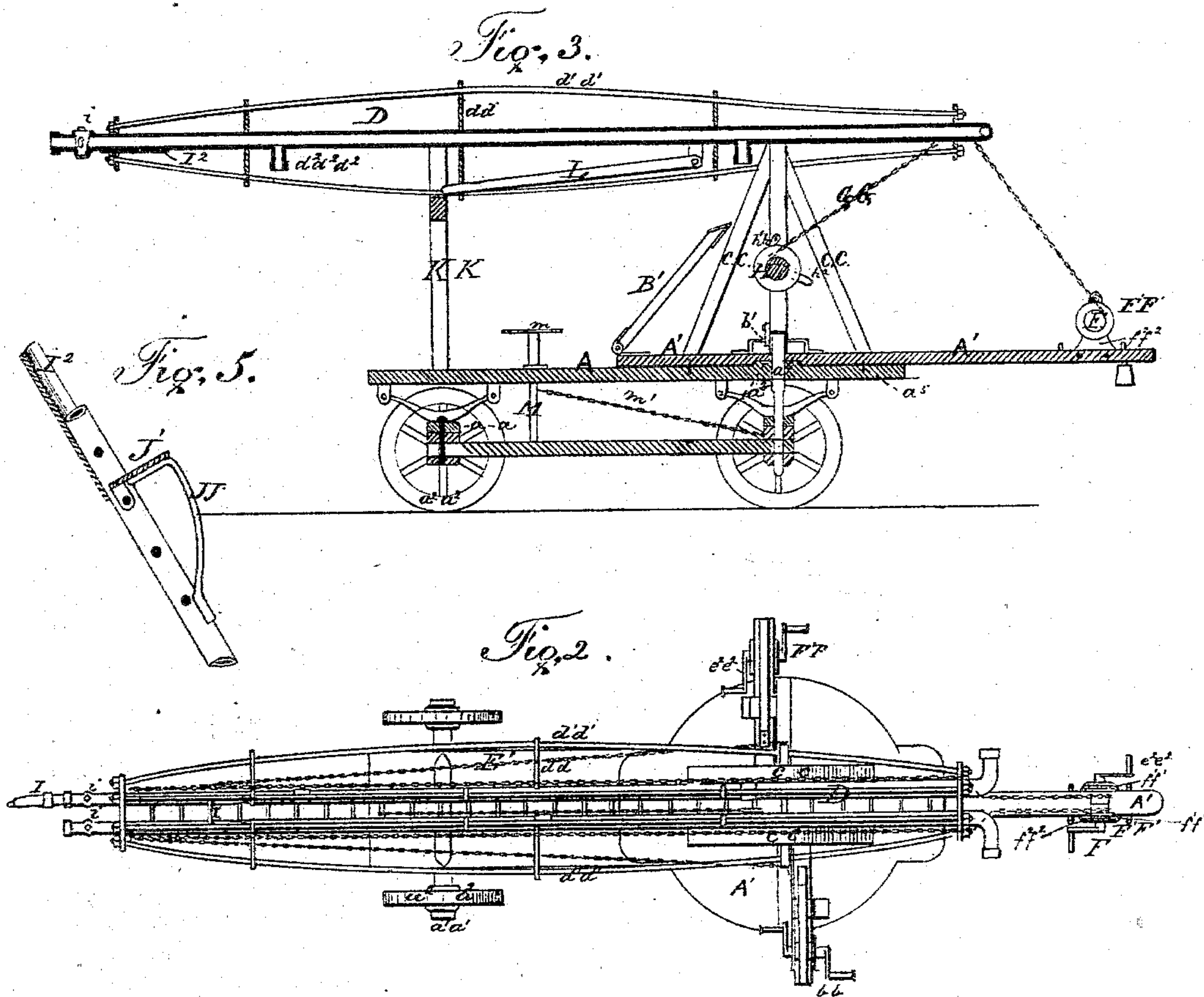
Inventor.
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Benjamin C. Pole
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UNITED STATES PATENT OFFICE.

HENRY LYLES, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN FIRE-ESCAPE LADDERS.

Specification forming part of Letters Patent No. 136,844, dated March 18, 1873.

To all whom it may concern:

Be it known that I, HENRY LYLES, of Washington city, District of Columbia, have invented certain new and useful Improvements in Self-Supporting Water-Elevator and Fire-Escape Ladder; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawing which forms part of this specification.

This invention consists of the adjustment, upon any suitable transporting medium, of a ladder or ladders in such a manner as to be susceptible of manipulation, both vertically, horizontally, and without removal from the said medium or support; also, in the adjustment of a manipulator to be operated either by a person upon the ground or one at an elevated position. A manipulator for giving direction to a stream of water by the action of an elastic nozzle adjusted at the end of a ladder supposed to be elevated, for the purpose of more readily controlling a stream of water to be thrown upon a building, as the upper end of the ladder so elevated will be exposed to various heats; it is so arranged that the person driven from the platform at the elevated end of the ladder, will nevertheless have control of the stream of water. The tendency of water in rapid motion is to run in a direct line; therefore the elastic hose will straighten up in the direction of the ladder when no power is applied to the manipulator. Thus it will be seen that when power is applied to the manipulator on the ground or upon the platform the stream of water will be directed in the direction necessary.

In the drawing, Figure 1 represents a side elevation of my device, the main ladder being elevated. Fig. 2 represents a plan view of the same, and Fig. 3 a vertical section thereof. Fig. 4 is a rear elevation, and Fig. 5 a section, of a part of the ladder with shelf.

Corresponding parts in the several figures are designated by like letters of reference.

A refers to a board or the floor of the transporting medium, which is mounted upon springs of any approved form, and fastened to bolsters a attached in the usual way to the axles a^1 supplied with the wheels a^2 . The rear end

of this floor is enlarged in the shape of a disk and provided with a circular elevation, a^3 , which fits up into a corresponding concavity made in the lower side of the disk-like support A' . Through this arrangement the ladder is permitted to be revolved horizontally so as that it can be adjusted with reference to the building without regard to the position of the wagon supporting it, and without removing it therefrom. To diminish friction between the floor A and the support A' frictional rollers a^5 are supplied to the former. These parts are connected together by the king-bolt a^4 . B B refer to stays, each consisting of two parts, which are jointed together, the part confined to the support or table A' , by suitable staples b , being serrated to receive a pawl, b^1 , by which the stays may be rigidly held at any desired point. The free ends of the stays B B are pointed so as that they may have a firm hold upon the ground when stuck into the same, and thereby enable the support or table A' to be held firmly in place when the ladder is being used. By this arrangement of the confined portions of the stays they are permitted to be elongated and contracted, whereby the apparatus may be stayed when brought in juxtaposition with the building or when isolated therefrom. These stays are arranged one upon each side of the frame-work or trestle supporting the ladder, and at opposite portions of the table A' . A third stay, B' , is also attached to the table A' , but unlike the ones just referred to in that it is simply hinged to the table, and at a point at a right angle to the plane of the said stays, so as that, when the overhanging end of the ladder is thrown out of line with the wagon, its weight will be caught by it, and thus take the place of the wagon. A number of uprights, C C, rigidly fastened to the table A' , and so arranged as to brace the two perpendicular ones thereof in place, constitute a strong frame-work, which form bearings for the axis of the ladder. D refers to the ladder, hung, at a point near its lower or forward end, upon the uprights C C, as already stated, and retained thereon by suitable means, as shown in the drawing. This ladder has its side pieces constructed of tubes or pipes, terminating at their lower ends into lateral tubes suitably threaded to receive the couplings which couple the hose thereto for sending or conducting the

stream of water up the pipes of the ladder. The upper extremities of the pipes of the ladder are also threaded so as to permit of the attachment of hose also. These pipes are made tapering toward their upper ends; or, in other words, their size below their axis is sufficient to produce enough weight to counterbalance that above their axis when the ladder has been thrown up to its highest pitch, and thereby relieve it of strain to a great extent. Soldered or otherwise fastened to the side pieces or pipes of the ladder are lateral bars $d d$, located, a pair, at or about the middle, and upon the front and back sides of the said pipes or pieces, a pair, similarly arranged, both above and below these center ones and suitable distances therefrom; and a pair, of same arrangement, at each extremity of the said pipes. Those bars, both above and below the center ones, gradually diminish in length, so as that the rods $d' d'$, which pass through eyes made in each of the bars and to which they are fastened by nuts, shall be bowed to give strength and stability to the ladder. A like arrangement or disposition of similar bars $d d$ are fastened to the sides of the pipes of the ladder, and have corresponding rods $d' d'$ passing through them, fastened in like manner as the above, and aid in further strengthening the ladder. To manipulate the ladder vertically, chains or ropes $E E'$, fastened to the upper end of the same and connected to drums or windlasses $F F'$, are provided. The drum F , around which pass the chains E , is supplied with a ratchet-wheel and pawl, $f f^1$, and journaled upon and between up-rights $f^2 f^2$, secured in place upon a tongue or bar, F' , fastened to the table A' . A suitable crank or handle for operating the windlass or drum F is furnished thereto. The drums F' , of which there are two, and around which pass the chains E' , are located one upon standards or up-rights $e e$, fastened to the confined or horizontal part of one of the stays B , and the other upon like standards $e e$, attached to the horizontal arm of the other stay B . These drums are also supplied with ratchet-wheels and pawls $e^1 e^1$ and cranks $e^2 e^2$. The chains E' are confined within eyes $e^3 e^3$ fastened to two of the up-rights $C C$, and which act as guides in keeping them nearly in a line with the ladder. To further assist the vertical manipulation of the ladder, chains $G G$, fastened to its foot, and passing around a drum, H , provided with ratchet and pawl $h h^1$ and crank h^2 , are provided. The drum H is journaled upon and between the two vertical standards of the frame-work $C C$. The ladder itself has its side pieces or pipes perforated and supplied with short lateral tubes or nozzles $d^2 d^2$ at various points, for the purpose of enabling sections of hose being attached thereto, whereby the stream or streams of water passing up through the ladder-pipes may be di-

rected through the window or windows of any story of the inflamed building or be thrown thereon. I is an adjustable section of hose, embraced and stiffened by the metallic helix i , and susceptible of manipulation from the ground by the rope or wire I' . This section of hose is adjusted upon the upper end of one of the ladder-pipes by the ordinary coupling. A stop-cock, i , cuts off the water from this point. A similar section may be adjusted upon the other ladder-pipe when required. A bracket or brackets, $J J$, bent in the shape of knees, and fastened in any known way to the arms or sides of the ladder, furnish supports for a shelf or platform, J' , which is pivoted to the said brackets, and form a standing place for the fireman in manipulating the hose-section I from the ladder. I^2 is a shield for protection from heat. A stand or frame, $K K$, is erected upon the front part of the wagon or carriage, to support the forward part of the ladder when out of use. L refers to a second ladder, which is of ordinary construction, and hinged to the main ladder D , and suspended by a rope or chain, l , in the desired position—a horizontal one. This ladder constitutes the fire-escape portion of the apparatus, as through it communication with the building may be had by throwing it down so as to abut against the latter or rest in the window. A winding-staff, M , with a hand-wheel, m , is inserted through the floor of the carriage or wagon, and supplied with a chain, m' , connected to the rear axle. This device is for the purpose of governing the rear wheels when turning a curve.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination with the ladder D , constructed with tubular arms, the section of hose I with a helix, i , and supplied with the manipulator I' , substantially as and for the purpose set forth.

2. The combination of the ladder D , brackets J , and shelf or platform J' guarded by the shield I^2 , substantially as and for the purpose specified.

3. The construction and arrangement with relation to the ladder D , having both of its sides or arms tubular and braced on three sides, as shown, and mounted on wheels, of the elevating and adjustable supporting device, the shelf or platform J' , shield I^2 , helix i , hose-section I , and manipulator I' , when arranged and operating as shown, and for the purpose specified.

In testimony that I claim the foregoing I have hereunto set my hand this 3d day of January, 1873.

HENRY LYLES.

Witnesses:

EDM. F. BROWN,
ISAAC D. SAILER.