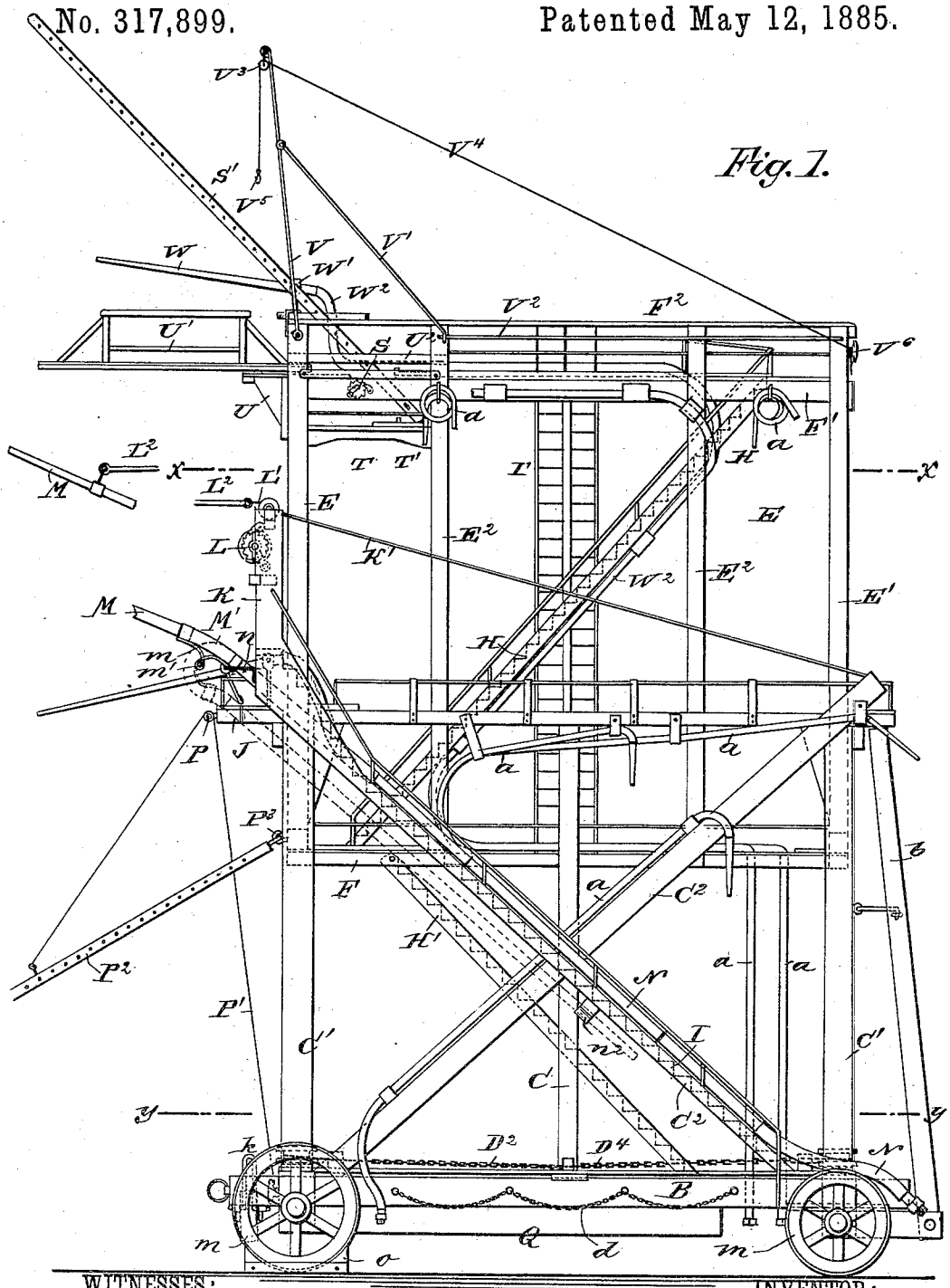
(No Model.) 4 Sheets—Sheet 1.

# W. M. WARD.

## HOSE TOWER AND FIRE ESCAPE.

No. 317,899. Patented May 12, 1885.

Fig. 1.



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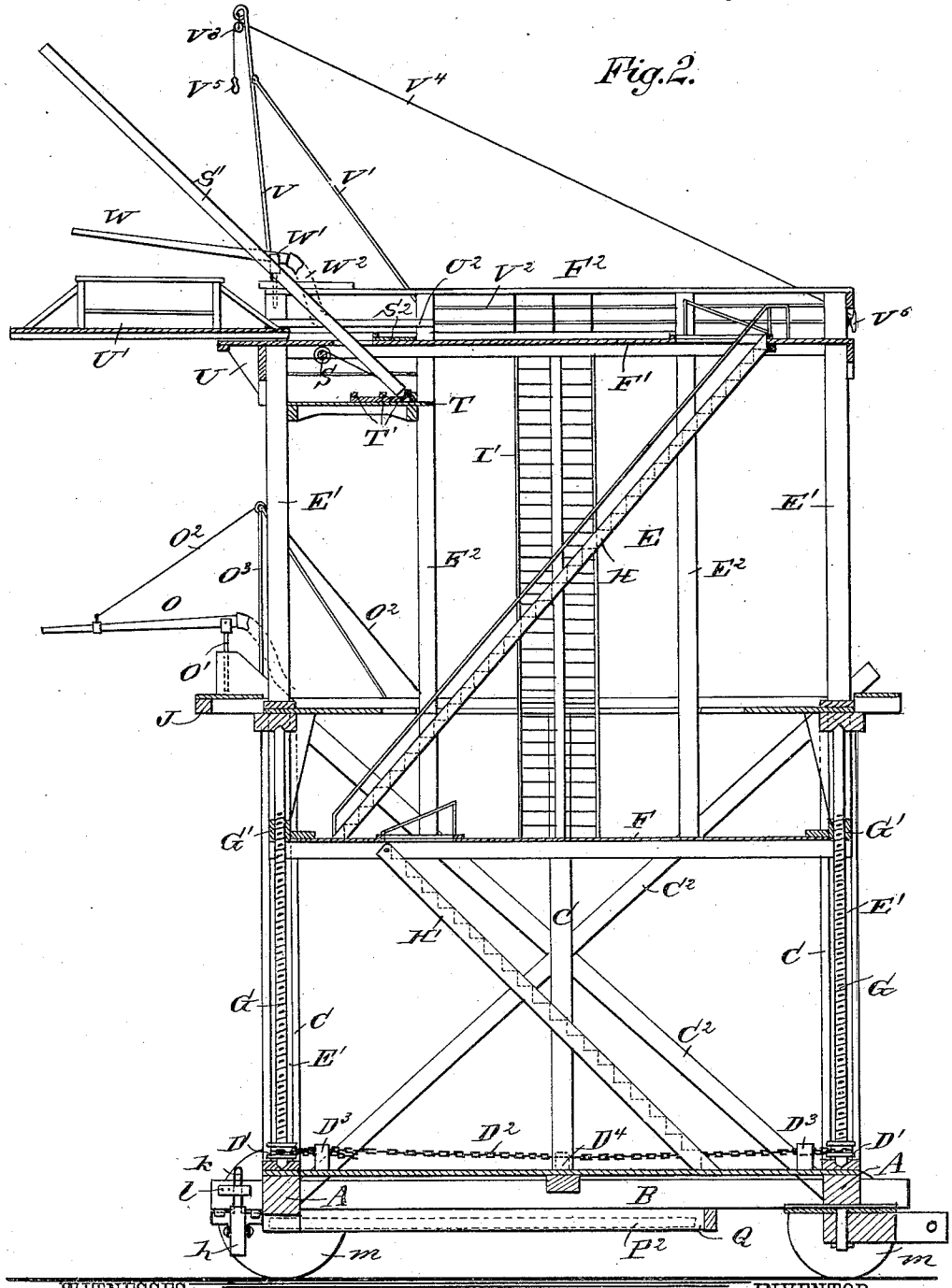
(No Model.) 4 Sheets—Sheet 2.

# W. M. WARD.

## HOSE TOWER AND FIRE ESCAPE.

No. 317,899. Patented May 12, 1885.

Fig. 2.

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(No Model.) 4 Sheets—Sheet 3.

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## HOSE TOWER AND FIRE ESCAPE.

No. 317,899. Patented May 12, 1885.

Fig. 1.

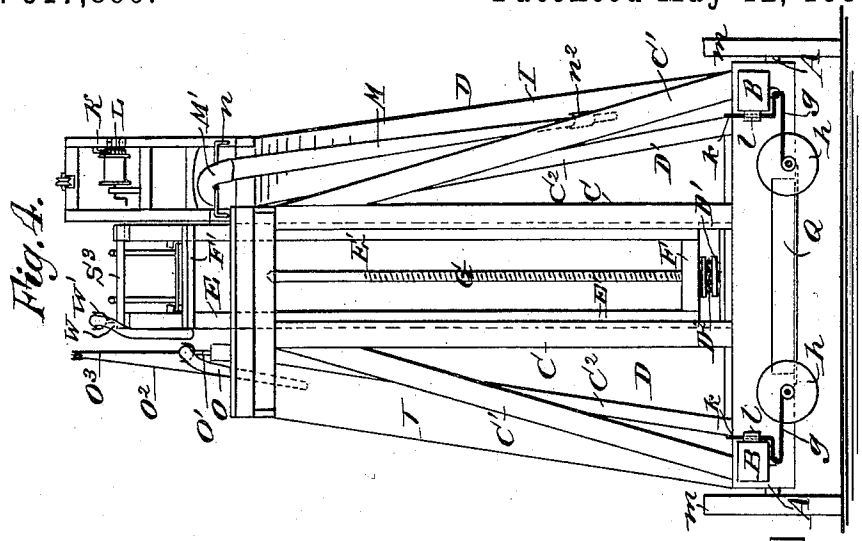
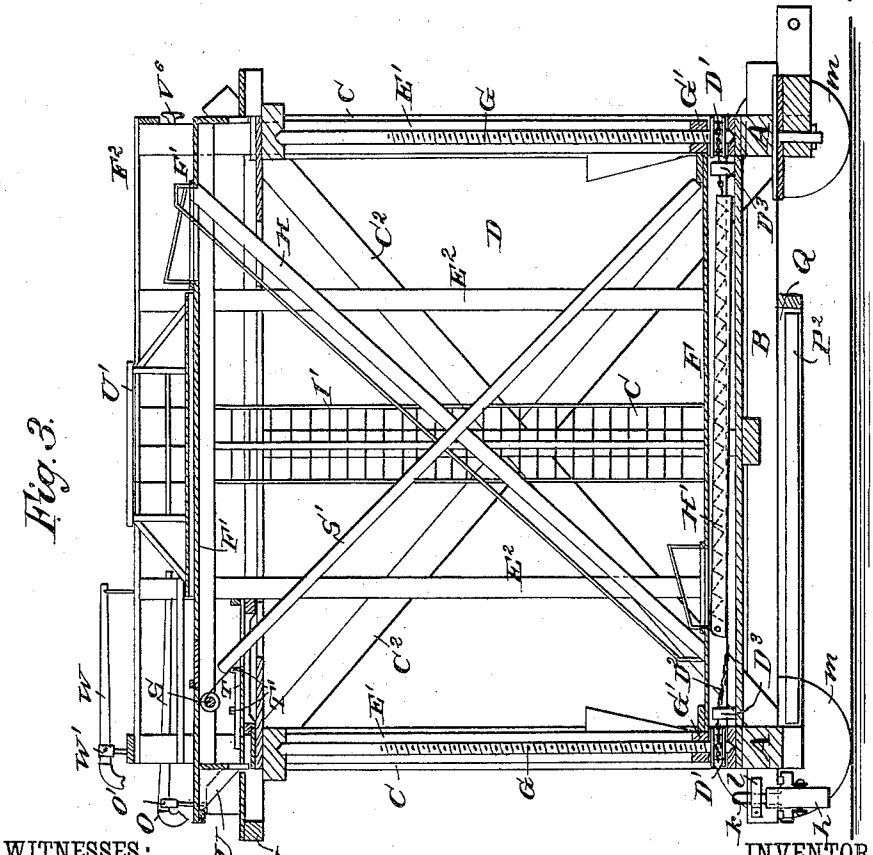


Fig. 2.



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(No Model.) 4 Sheets—Sheet 4.

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## HOSE TOWER AND FIRE ESCAPE.

No. 317,899. Patented May 12, 1885.

*Fig. 5.*

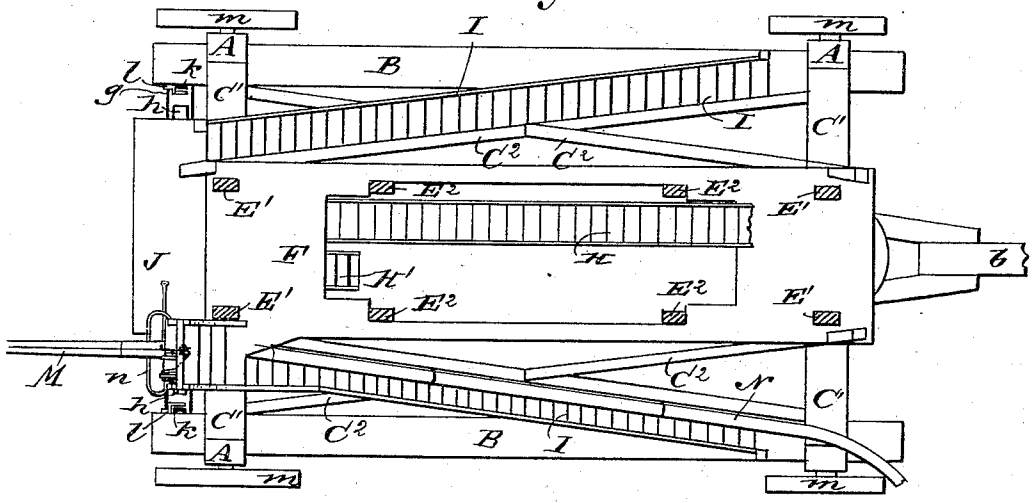
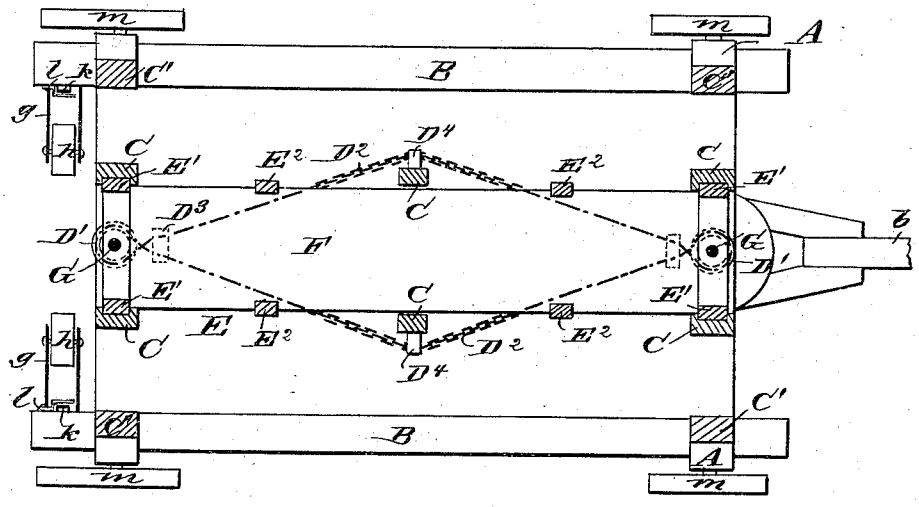



*Fig. 6.*

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# UNITED STATES PATENT OFFICE.

WILLIAM M. WARD, OF HARBOR GRACE, NEWFOUNDLAND.

## HOSE-TOWER AND FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 317,899, dated May 12, 1885.

Application filed March 3, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM M. WARD, of Harbor Grace, Newfoundland, have invented a new and Improved Hose-Tower and Fire-Escape, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved hose-tower and fire-escape, whereby a large volume of water may be thrown down from a height on the burning element, instead of from the ground, thereby giving the firemen greater command from their own tower, which hose-tower and fire-escape can be erected to a considerable height, can be connected with buildings to permit persons to pass from the buildings to the said tower, and which carries numerous hose and other water-conductors provided with nozzles, from which the water can be thrown down upon the fire.

The invention consists in the combination, with an upright frame mounted on wheels, of a vertically-sliding frame in the upright frame, the said vertically-sliding frame being adapted to be moved vertically by means of upright screw-spindles.

The invention further consists in the combination, with the upright frame and the vertically-sliding frame, of hose-nozzles arranged to swing vertically and laterally on the said frame, and connected with conducting pipes or hose extending to the ground.

The invention further consists in the combination, with the vertically-sliding frame, of a staircase on the bottom of the same, and of staircases arranged on the side of the bottom frame.

The invention also consists in various other parts and details and combinations of the same, as will be fully described and set forth hereinafter.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a side view of my improved hose-tower, the same being erected and parts being broken out. Fig. 2 is a longitudinal sectional elevation of the same erected. Fig. 3 is a longitudinal sectional elevation of the same folded. Fig. 4 is a rear end view of the same. Fig. 5 is a sectional plan view on the line *x x*, Fig. 1. Fig. 6 is a sectional plan view on the line *y y*, Fig. 1.

Two heavy axles, A, are united by heavy side pieces, B, forming the base of the tower, and on the said base-frame six uprights, C, are erected, two at each end, and two at the middle, and are braced by heavy braces C′, extending from near the upper ends of the standards to the sides of the frame. The frame is also stiffened by cross-diagonals $C^2$ on the sides of the frame.

Between each two end standards of the bottom frame, D, a vertical screw-spindle, G, is arranged, which is journaled at the top, and which is provided at the bottom with a grooved pulley or hub, D′, and around the said grooved pulleys or hubs, on the spindles at the front and rear of the frame, a heavy chain, $D^2$, is passed, which is passed through guides $D^3$ at each pulley, and then crossed so as to turn both screw-spindles the same way. The said chain is also passed through guides $D^4$, on the middle standards C. The chain rests upon the bottom platform of the bottom frame.

The inner sides of the corner standards C are grooved, and in the said grooves the uprights E′ of a vertically-sliding frame, E, slide, the standards E′ being united by a bottom platform, F, and a top platform, F′, which are connected by a series of intermediate uprights, $E^2$.

A railing, $F^2$, is formed around the top platform, F′, of the upper or vertically-sliding frame E. The heights of the frames D and E in relation to each other are such that when the bottom of the upper frame, E, rests upon the bottom of the bottom frame, D, the top of the upper frame, E, will be slightly above the top of the bottom frame, D.

The screw-spindles G pass through nuts G′ on the end pieces of the bottom platform of the upper or vertically-sliding frame, so that by turning the screw-spindles the upper frame, E, can be raised or lowered, as may be desired.

A staircase, H, extends from the rear of the bottom platform of the upper frame, E, to the front part of the top platform, and is provided with a suitable railing.

A staircase, H′, is hinged to the under side of the bottom platform of the vertically-sliding frame E, and when the said frame E is

raised the staircase is inclined upward from the front to the rear. The lower end of the staircase H′ rests loosely upon the bottom platform of the bottom frame, D.

On the side of each diagonal $C^2$, extending from the front upward to the rear, a staircase, I, is formed. Single or double vertical ladders I′ connect the top and bottom platforms of the upper frame, E.

At the rear end of the top platform of the bottom frame a balcony or projection, J, is formed, upon which the staircases I I lead. At one side of the said balcony or bracket a short tower, K, is erected at the upper end of one staircase, and slightly in front of the vertical line of the bottom frame. A brace-rod, K′, braces the said tower K from the front end of the machine.

On the top of the tower K a windlass-shaft, L, is journaled, which is provided with a crank-handle for turning it, and a suitable ratchet and pawl for locking it in place, and on the windlass drum or shaft a rope, L′, is wound, which is connected with a rod, $L^2$, connected with the free end of a long nozzle, M, secured to the upper end of a large water-conducting pipe or hose, N, carried up on one diagonal brace $C^2$, adjacent to that staircase I at the upper end of which the tower K is formed. The hose N and the nozzle M are connected by a heavy joint-piece, M′, provided on its under side with two braces, *m*, united by a hinge, *m*′. The inner end of the lower hinged piece is arranged to slide on a grooved guard, *n*, projecting from the rear of the tower K, thus permitting of moving the nozzle toward either side. By means of the windlass L the free end of the nozzle can be raised or lowered. When the nozzle is not in use, it is folded against the under side of the diagonal brace $C^2$, against which it is held by a hook, $n^2$.

A hose or conducting-pipe extending along the diagonal brace $C^2$, on the other side of the bottom frame, D, is connected with a nozzle, O, pivoted on a swivel-standard, O′, the free end of the nozzle O being secured to a rope, $O^2$, passed over a pulley on a brace-standard, $O^3$, on the top platform of the bottom frame. By means of the rope $O^2$ the nozzle O can be raised more or less, and as it is swiveled it can be swung in either direction.

From the front of the balcony J two eyes or hooks, P, project, through which an endless rope, P′, is passed, which is connected with a ladder, $P^2$, having eyes on the inner ends of its side bars, through which eyes hooks $P^3$, on the end of the bottom platform of the upper frame, E, are passed. The ladder $P^2$ is thus held to swing on the end of the bottom platform of the upper frame, and it can be held at any desired inclination by means of the rope P′, which is held on a cleat on the end of the bottom of the lower platform. A pocket, Q, is provided on the under side of the bottom platform of the lower frame for receiving the ladder $P^2$ when the same is not in use, as shown in dotted lines in Fig. 2.

Below the rear part of the top platform, F′, of the upper frame, E, a transverse windlass-shaft, S, is journaled, on which a rope is wound, the lower end of which is secured to the lower end of a ladder, S′, which when lowered extends from the top platform, F′, to the bottom platform, F, of the frame E, and crosses the staircase H diagonally. A trap-door, $S^2$, in the platform F′, closes an opening through which the ladder can be raised. By winding the rope on the windlass S the ladder S′ is raised up through the opening in the platform F′ and is held at the desired inclination by being rested against the hinged or swinging cross-piece $S^3$, uniting the rails $F^2$ at the rear end, the lower end of the ladder S′ resting against one of a series of transverse cleats, T′, on a horizontal platform, T, directly below the opening in the top platform, F′, of the upper frame, E. The cleats T′ are not secured directly to the platform T, but to a sliding trap-door which covers the opening in the platform T, through which the ladder is passed when the said ladder rests against the cleats. To lower the ladder it must first be raised slightly from the sliding part of the platform and the said part pushed toward the rear of the apparatus so as to permit the ladder to pass down.

At the rear end of the top platform, F′, a balcony or projection, U, is provided, and on the front part of the top platform, F′, a bridge, U′, having double side rails, is arranged to slide between the platform F′ and guides $U^2$ on the inner surface of the side rails, $F^2$. The said bridge U′ must be of such length that it can extend from the end of the upper frame, E, to the windows of the house.

A derrick-pole, V, is hinged on the outer side of each front corner standard of the upper frame, E, above the top platform, and to the said pole a brace, V′, is pivoted, the lower end of which is provided with an eye and is arranged to slide on the longitudinal rod $V^2$ on the side of the top railing. A pulley, $V^3$, is held on the top of each derrick-pole, and over the same a rope, $V^4$, passes, on one end of which a snap-hook, $V^5$, is secured, the other end of the rope being adapted to be secured to a cleat, $V^6$, on the front of the railing of the top platform. By means of the derrick-poles V and the ropes $V^4$ the ladder S′ is brought into the desired position. A hose-nozzle, W, is pivoted in a fork, W′, swiveled in the upper end of one corner standard E′ of the upper frame, E, said nozzle being connected with a hose-tube, $W^2$, which extends along the top platform under the staircase H and to the ground.

Additional hose-tubes, *a*, provided with nozzles, are arranged on different parts of the upper and lower frame, the lower ends of the said hose-tubes extending to the bottom of the lower platform, so that they can easily be coupled with steam-engines, hydrants, &c.

A wagon-pole, *b*, is pivoted on one end of the bottom frame. Chains *d* are secured on the sides of the bottom frame, which chains

are grasped by men to assist in propelling or shifting the apparatus.

On the inner side of each bottom beam of the bottom platform a fork, *g*, is pivoted, in each of which forks a roller, *h*, is pivoted, and each fork is provided with an upwardly-projecting arm or lever, *k*, which can be locked to the side of the beam by means of a latch, *l*. When the rear end of the vehicle is to be shifted, the levers *k* are unlocked and swung down, whereby the rollers *h* are brought in contact with the ground, and if the levers *k* are forced downward sufficiently the rear end of the apparatus is raised sufficiently to lift the rear side wheels, *m*, from the ground, thus permitting of shifting the rear end of the frame laterally, the said rear end running on the rollers *h*. After the apparatus has been adjusted and is in the proper position, shoes *o* are placed under the rear side wheels, and the levers *k* are swung up against the sides of the beams to which they are pivoted, whereby the wheels *h* are raised and the rear end of the apparatus descends, the rear wheels, *m*, resting on the shoes *o* and thus preventing shifting of the apparatus.

The operation is as follows: The apparatus is drawn to the place where it is required and is then turned so that the rear end faces the building that is on fire, or an adjacent building, as the case may be. If the stories on fire are not very high above the ground, the upper section need not be raised, and the water is delivered from the nozzles M and O and one or more of the additional hose-pipes into or down upon the burning building. A person in the hose-tower K can easily regulate and adjust the main nozzle M to the hose-tube N of which one, two, or more steam fire-engines or hydrants are coupled. If the building on fire is a high one, the firemen pull the chains $D^2$ in such a manner as to turn the screws S and raise the upper section more or less, as may be desired, and then the streams of water can also be ejected upon the fire from the top of the upper section. If the firemen need to reach a very high point, or persons are to be saved from the upper stories of a high building, the ladder S′ is raised by winding its rope on the windlass-drum S, and it is held at the desired inclination by means of the ropes $V^4$ passing over the pulleys $V^3$ on the derrick-poles V. If the firemen are to reach the building direct from the upper frame or section, the bridge U′ is pushed from the end of the top platform to a window, balcony, &c., of the building, and this bridge can also be used by persons escaping from the burning building. Persons who reach the top platform by means of the ladder S′ or the bridge U′, or in any other manner, can easily descend by means of the staircases H and H′ or the side staircases, I. The vertical side ladders, I′, are to be used mainly by the firemen.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. A hose-tower provided with a bottom frame, a vertically-sliding frame in the bottom frame, and screw-spindles for adjusting the vertically-sliding frame, substantially as herein shown and described.

2. A hose-tower provided with an upright bottom frame having inclined staircases on the sides, and a vertically-sliding frame within the bottom frame, and screw-spindles for moving the vertically-sliding frame, substantially as herein shown and described.

3. In a hose-tower, the combination, with a bottom frame, of a vertically-sliding frame in the same, devices for moving the vertically-sliding frame, and a staircase hinged to the bottom of the vertically-sliding frame, substantially as herein shown and described.

4. In a hose-tower, the combination, with a bottom frame, of a vertically-sliding frame in the same, a staircase hinged to the bottom of the vertically-sliding frame, and an inclined staircase leading from the bottom of the vertically-sliding frame to the top of the same, substantially as herein shown and described.

5. In a hose-tower, the combination, with a bottom frame, of hinged and swiveled nozzles on the top of the same, and of conducting-tubes or hose secured on the sides of the bottom frame and connected with the nozzles, substantially as herein shown and described.

6. In a hose-tower, the combination, with a bottom frame, of inclined staircases, a water-tower, K, arranged at the upper end of one staircase, a vertically and laterally swinging hose-nozzle at the said water-tower, and a water-conducting tube or hose connected with the said nozzle and arranged along one inclined staircase, substantially as herein shown and described.

7. In a hose-tower, the combination, with an upright frame, of the tower K on the said frame, the vertically and laterally swinging nozzle M, and the rod $L^2$, connected with a rope secured on a windlass in the tower K, substantially as herein shown and described.

8. In a hose-tower, the combination, with an upright frame, of an inclined staircase on the side of the same, the laterally and vertically swinging nozzle M at the upper end of the staircase, a hook, $n^2$, for holding the free end of the nozzle to the staircase when the said nozzle is not in use, and a water-conducting tube or hose connected with the nozzle and extending down along the staircase, substantially as herein shown and described.

9. In a hose-tower, the combination, with an upright frame, of the pocket Q, formed on the under side of the bottom of the platform of the same, and adapted to receive the ladder $P^2$, substantially as herein shown and described.

10. In a hose-tower, the combination, with an upright frame having a balcony or bracket, J, of the ladder $P^2$, the hooks $P^3$ on the upright frame, the eyes P on the end of the balcony or bracket J, and the ropes P′, secured to

the ladder, passed through the eyes P, and secured to the bottom of the frame, substantially as herein shown and described.

11. In a hose-tower, the combination, with an upright frame, of a balcony or bracket, J, formed on the top of the same at one end, and of a staircase leading from the bottom of the said frame to the balcony or bracket, substantially as herein shown and described.

12. In a hose-tower, the combination, with an upright frame, of a pivoted or swiveled nozzle on the same, a tube leading from the bottom of the frame to the said nozzle, and a derrick-pole and rope for lifting the said nozzle, substantially as herein shown and described.

13. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, upright screw-spindles for moving the sliding frame vertically, hubs formed on the lower ends of the spindles, and chains passing around the said hubs, substantially as herein shown and described.

14. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, vertical screw-spindles for moving the vertically-movable frame, hubs on the screw-spindles, the endless chain $D^2$, passed around the hubs on the spindles, and of the guides $D^3$ and $D^4$, over which the chain passes, substantially as herein shown and described.

15. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, and a horizontally-sliding bridge on the top of the vertically-sliding frame, substantially as herein shown and described.

16. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, a bracket or balcony formed on one end of the top of the vertically-movable frame, and a horizontally-sliding bridge on the top of the vertically-movable frame, substantially as herein shown and described.

17. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, the ladder S′, and a rope secured to the lower end of the ladder and to a windlass-drum, substantially as herein shown and described.

18. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, the ladder S′, a rope secured to the lower end of the ladder and to a windlass-drum, the sliding trap-door $S^2$, the platform T, and a sliding door on the same provided with cleats T′, substantially as herein shown and described.

19. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, the ladder S′, the windlass-drum S, a rope secured to the said ladder and windlass-drum, and derrick poles and ropes for holding the ladder S′ in place, substantially as herein shown and described.

20. In a hose-tower, the combination, with an upright frame, of a vertically-sliding frame in the same, the derrick-poles V, pivoted on the top of the vertically-sliding frame, the braces V′, pivoted to the frame E and sliding on the horizontal bars $V^2$ on the top of the vertically-sliding frame, and of ropes passed over the pulleys on the derrick-poles, substantially as herein shown and described.

21. In a hose-tower, the combination, with an upright frame provided with side wheels, of the rollers *h*, pivoted in angular frames pivoted to the side pieces of the bottom frame at one end of the same, substantially as herein shown and described.

22. In a hose tower, the combination, with an upright frame provided with side wheels, of the rollers *h*, pivoted in angular frames pivoted to the side pieces of the bottom frame at one end, and of the latches *l*, for locking the angular frames in place when swung down so that the wheels *h* rest on the ground, substantially as herein shown and described.

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