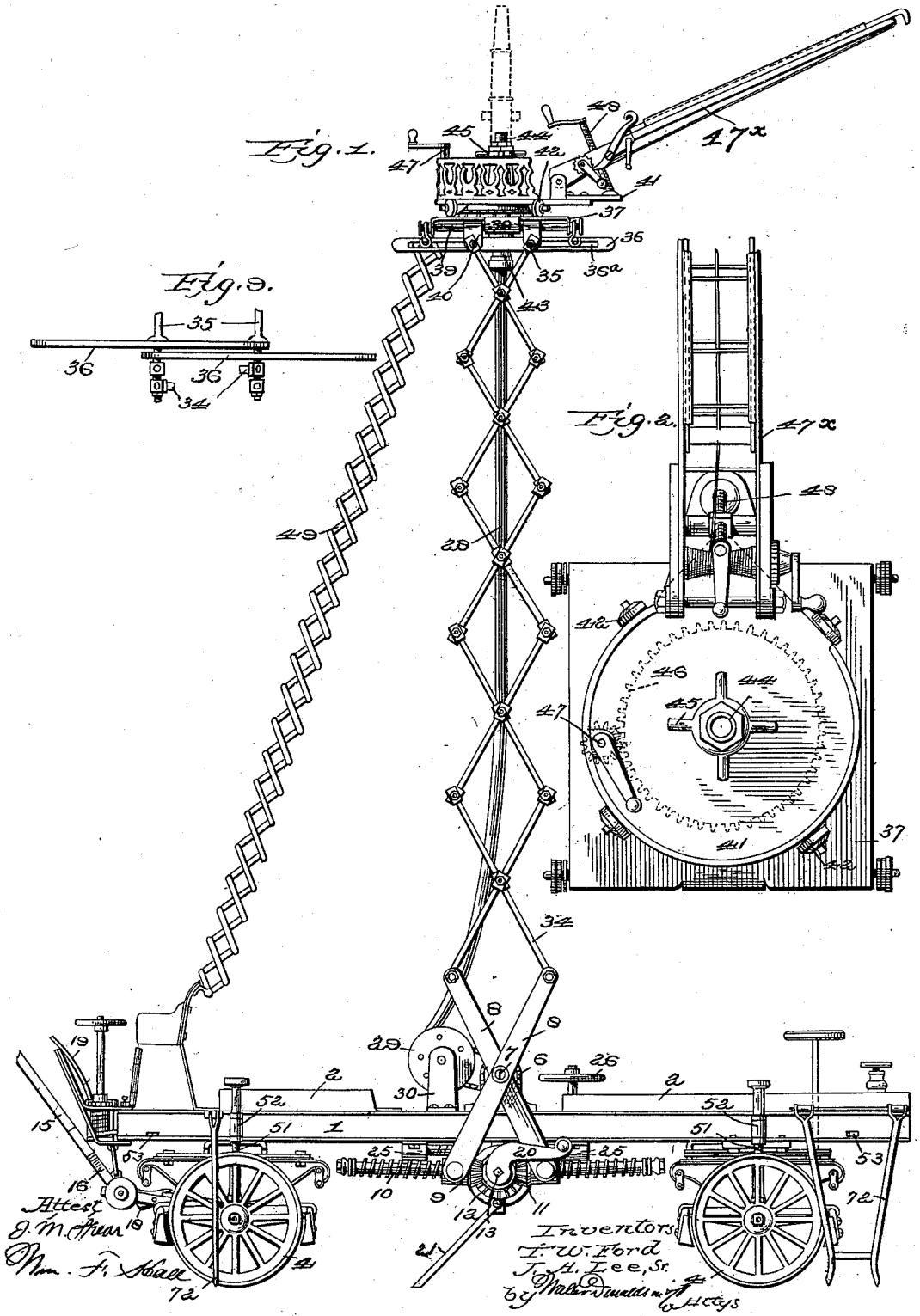
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T. W. FORD & J. A. LEE, Sr.

COMBINATION HOOK AND LADDER TRUCK, &c., AND FIRE ESCAPE.

No. 596,676. Patented Jan. 4, 1898.



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Fig. 3.

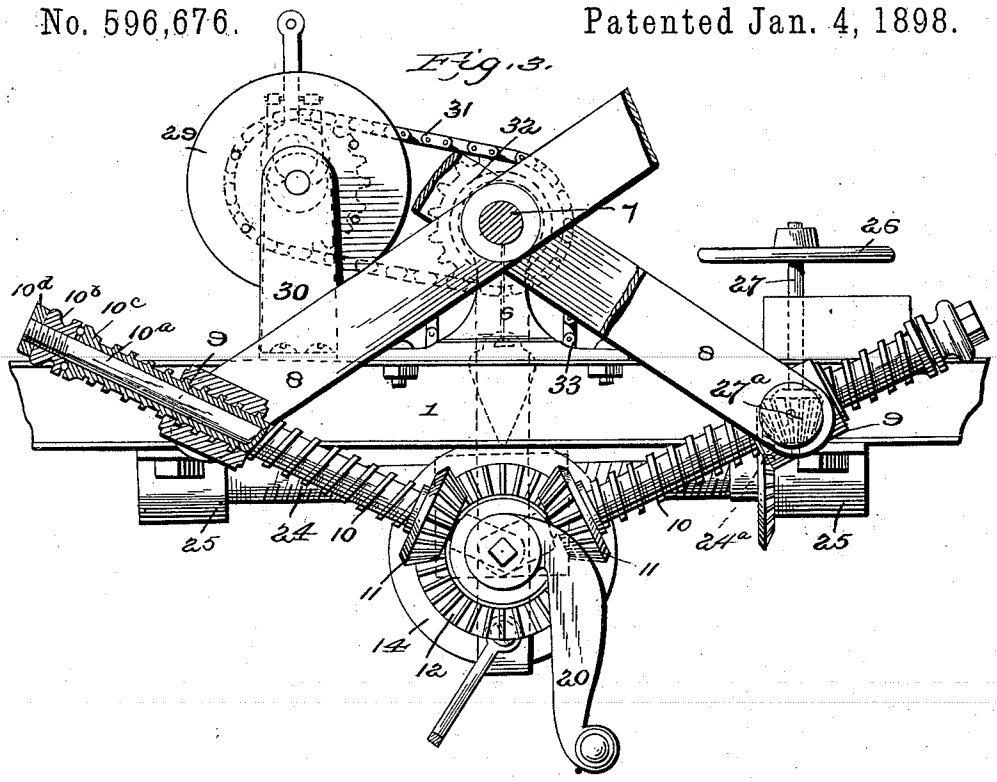
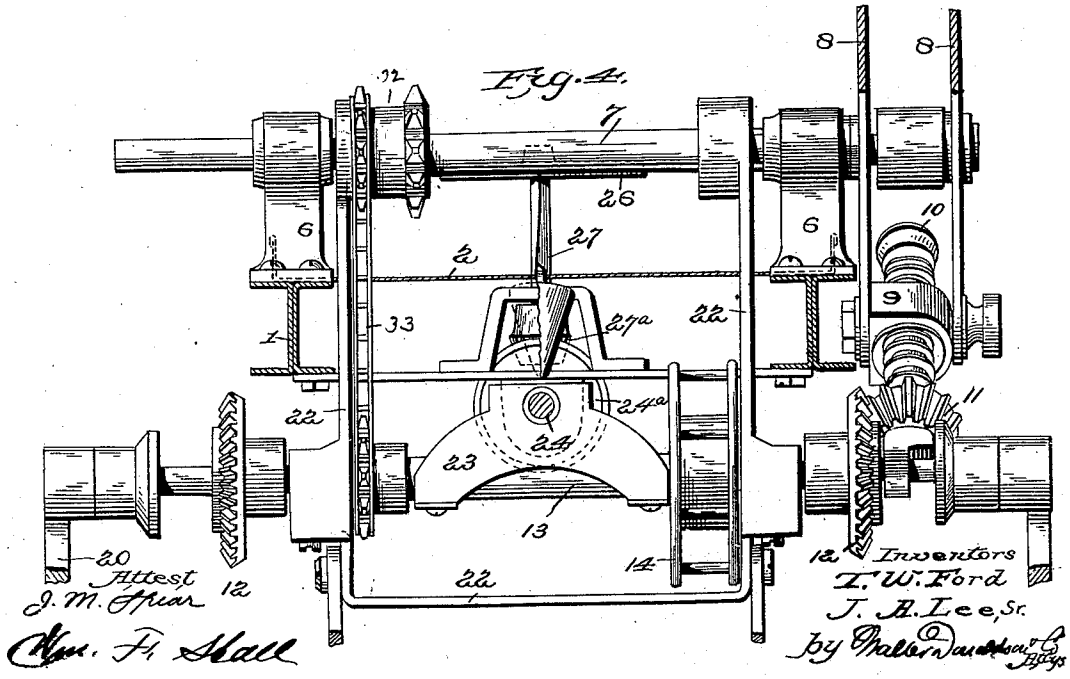


Fig. 4.



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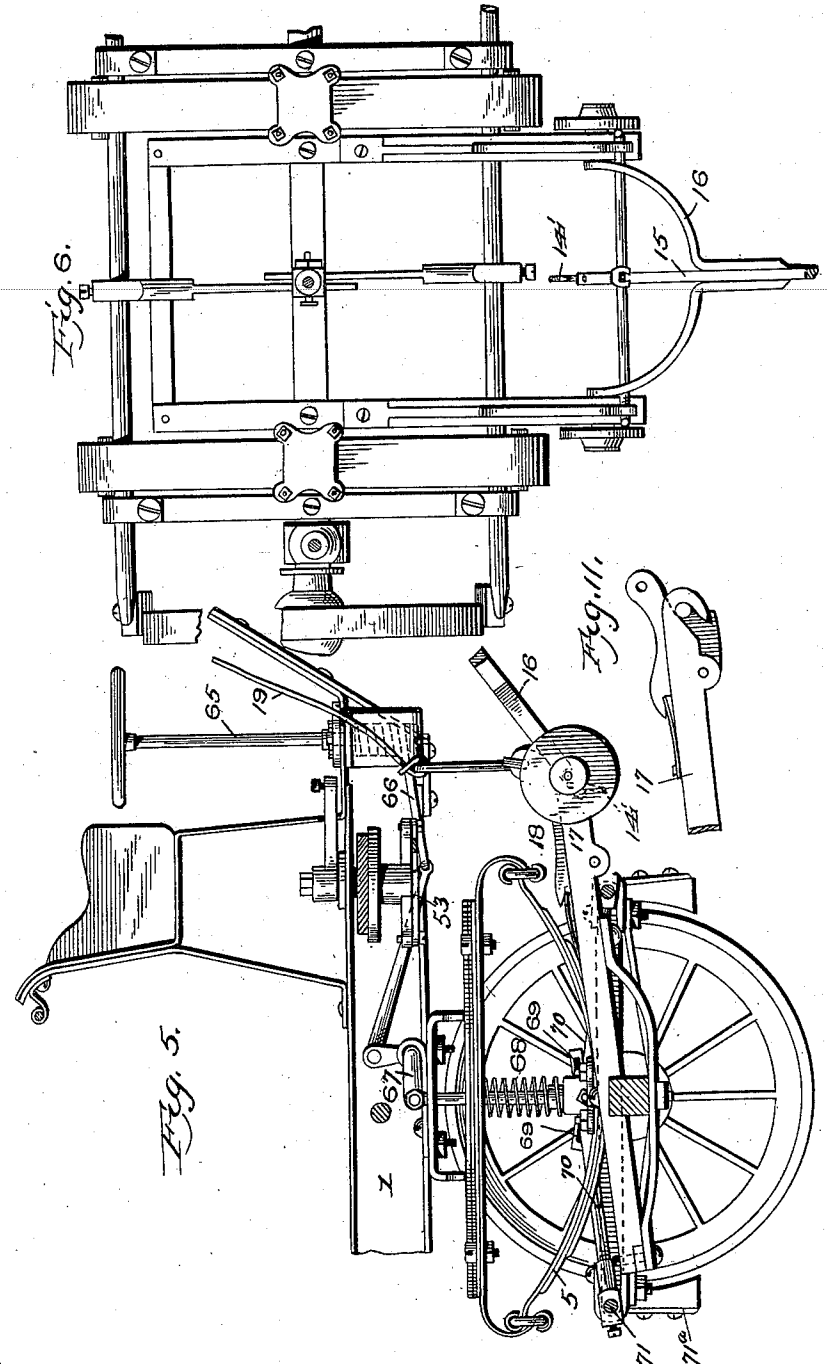
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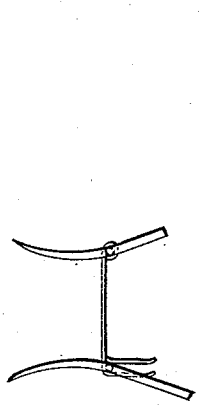


Fig. 8.

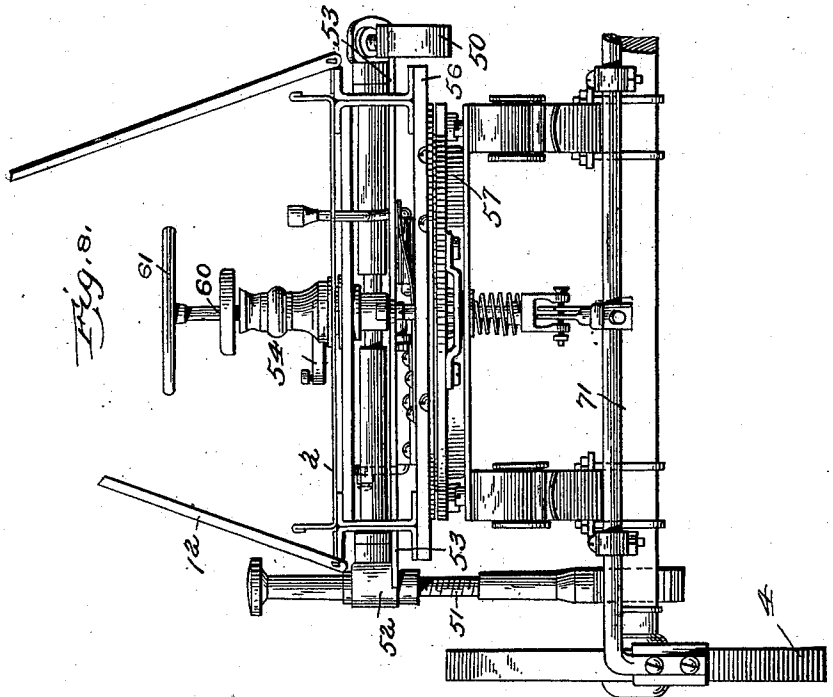


Fig. 10.

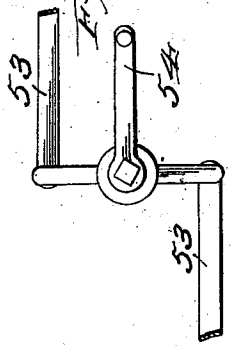
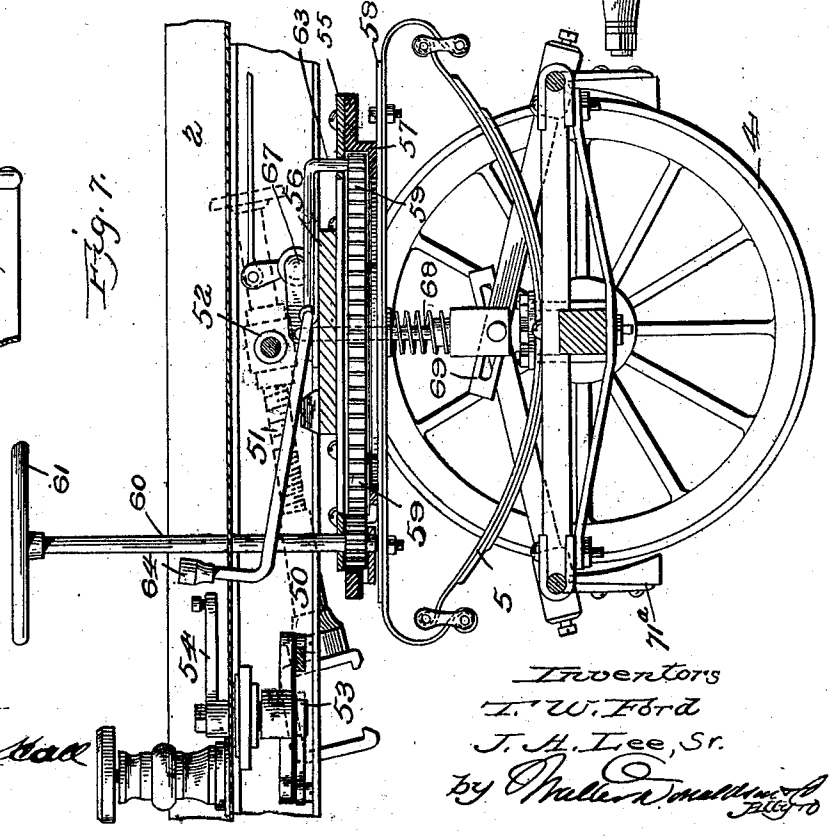


Fig. 7.



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UNITED STATES PATENT OFFICE.

THOMAS WALLER FORD AND JOHN ANDERSON LEE, SR., OF CHATTANOOGA, TENNESSEE.

COMBINATION HOOK-AND-LADDER TRUCK, &c., AND FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 596,676, dated January 4, 1898.

Application filed November 30, 1895. Serial No. 570,696. (No model.)

To all whom it may concern:

Be it known that we, THOMAS WALLER FORD and JOHN ANDERSON LEE, Sr., citizens of the United States, residing at Chattanooga, in the county of Hamilton and State of Tennessee, have invented certain new and useful Improvements in a Combined Hook-and-Ladder Truck, Water-Tower, and Fire-Escape, of which the following is a specification.

The object of the invention is to provide a device of the character described which shall be capable of being easily conveyed to the scene of a fire and which may be easily and quickly operated for the purpose of extinguishing the fires in tall buildings and for rescuing the occupants.

The invention consists in the arrangement of parts and in the construction thereof hereinafter described, and particularly pointed out in the claims.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a truck constructed in accordance with our invention, showing the tower elevated. Fig. 2 is a plan view of the platform. Fig. 3 is an enlarged side view of the screws and gearing for operating the lazy-tongs, parts being shown in section. Fig. 4 is a detail cross-sectional view of the mechanism shown in Fig. 3. Fig. 5 is a sectional elevation of the front portion of the truck. Fig. 6 is a plan view of the same with parts removed. Fig. 7 is a sectional elevation of the rear portion of the truck, and Fig. 8 is a rear elevation of the truck with parts removed. Fig. 9 is a detail view of a portion of the truck. Fig. 10 is a detail plan view of the slides for supporting the yokes and the operating means. Fig. 11 is a detail view of the tongue holding and releasing mechanism.

Referring to the figures, 1 represents the side rails of angle-iron forming the frame of the truck, to which is secured the bed 2 by bolts connecting it with the top flanges of the angle-irons, the body or frame being carried upon the wheels 4 through the interposed springs 5. Brackets or standards 6 are supported upon the rails 1, approximately centrally thereof, through which passes a shaft or rod 7, forming a pivotal support for the lower members 8 of the lazy-tongs, upon which the tower or turret is supported. These lower members 8 are double, and between the members of each pair is swiveled a screw-block 9, through which passes a screw 10. These screws carry bevel-gears 11, which are operated to rotate the screws and thus draw the lower ends of the members 8 together to extend the lazy-tongs by bevel-gears 12, carried upon the driving-shaft 13. The driving-shaft carries a drum 14, upon which a rope or cable may be wound and thence carried forward to a hook 14′ in the end of the tongue 15. (See Fig. 6 and dotted lines in Fig. 5.)

Arms 16, carried by the tongue, are provided with lateral extensions which engage slots in the members 17 of the running-gear, in which they are movably held by spring-pressed locking-pawls 18. By means of a cord 19, extending into convenient reach of the driver, the pawls may be raised when the scene of the fire is reached to allow the pins or extensions to drop from the slots to disengage the tongue, and the truck being held against movement by dropping the pointed braces 21 into contact with the ground the forward movement of the horses will, through the unwinding of the rope from the drum 14, rotate said drum, and with it the driving-shaft, causing the screws to be rotated and the lazy-tongs quickly extended or elevated. Cranks 20 are also provided, by means of which the driving-shaft may be rotated by hand, if desired.

The screws 10 are hollow and are journaled upon shafts 10^a, which are pivotally connected at their inner ends to the driving-shaft, and in order to reduce the friction as much as possible antifriction bearing members 10^b and 10^c are provided with interposed antifriction-balls, the parts being removably and adjustably secured in place through a nut 10^d, threaded upon the end of the shaft 10^a.

In order to provide means for causing the lazy-tongs to be elevated in a perpendicular position irrespective of the inclination of the ground upon which the truck rests, the driving-shaft is journaled in a swinging hanger 22, pivotally supported from the shaft 7, as shown in Figs. 3 and 4. A boxing 23 surrounds the driving-shaft, through the upper

portion of which passes a screw-shaft 24, extending longitudinally beneath the bed-frame of the machine and journaled in hangers or boxes 25. This shaft is rotated by a hand-wheel 26, mounted upon a vertical shaft 27, carrying a bevel gear-wheel 27^a at its lower end, engaging a corresponding gear 24^a on the shaft 24. It will thus be observed that should one end of the truck stand on higher ground than the other end the rotation of the screw-shaft 24 in the proper direction will cause the driving-shaft to be swung to one side or the other, carrying with it the screws 10 and lower ends of the members 8, and thus bringing the lazy-tongs to the proper position.

In order to enable the apparatus to serve as a water-tower, a hose 28 is connected to the turret in a manner hereinafter to be explained, this hose being automatically unwound and wound as the tower is elevated and lowered upon a drum 29, journaled in standards 30, supported on the bars 1. This drum is operated by a sprocket-chain 31, passing over a sprocket-wheel fixed upon the shaft of the drum and over a double idler-wheel 32 on the shaft 7. From this double idler-wheel a second chain 33 passes down to a sprocket-wheel fixed upon the main driving-shaft, so that as the driving-shaft is rotated to raise or lower the lazy-tongs the drum will be correspondingly operated to unwind or wind up the hose.

The lazy-tongs comprise a series of rods or tubes 34, pivoted together as shown, the lower members having their lower ends pivoted between the members 8. The members of the lazy-tongs are preferably made slightly decreasing in length from the bottom to the top. At the upper ends of the lazy-tongs we provide transverse rods 35, which connect opposite members of the lazy-tongs, as shown in detail in Fig. 9. To the opposite end of each rod 35 is connected one end of a bar 36, provided with an elongated slot 36^a, in which the opposite rod 35 slides.

A platform 37, upon which the turret revolves, is provided with downwardly-extending portions 38 at its corners, which carry rods 39. Boxes 40, connected to the rods 35 and sliding upon the rods 39, support the platform 37 above the bars 36, as shown in Figs. 1 and 9. The turret 41 is rotatably mounted upon the platform upon wheels 42, so as to rotate freely thereon, its pivot being formed by a pipe 43, passing up through the platform and turret. The pipe carries a coupling-sleeve at its lower end for the attachment of the hose 28, and at its upper end also terminates in a suitable nozzle or nozzles 44 for the attachment of a hose or delivery-pipe. The pipe 43 is threaded and provided with a hand-nut 45, by means of which the turret is held in position upon its pivot.

The turret may be rotated when desired by a vertical spindle 47, journaled in the turret, carrying upon its lower end a gear-wheel meshing with a stationary rack 46, carried by the platform. An extension-ladder $47^\times$ is pivotally connected with the platform, and the inclination thereof may be varied by a screw 48, engaging a screw-block carried by the ladder, means being also provided for extending the ladder, as shown.

In order to provide means for ascending to and descending from the turret when elevated, a lazy-tongs ladder 49 is provided extending from the platform to the back of the driver's seat.

The truck has been referred to as mounted upon springs 5. In order to hold the truck-body against swinging sidewise under the weight of the tower, yokes are provided, which are journaled upon the ends of screw-rods 51, passing through the swivel-blocks 52, connected to the body of the truck. These yokes are normally supported out of contact with the axles by slides 53, which are adapted to be withdrawn by the movement of the foot-lever 54 to permit the yokes to drop into engagement with the axle. When so engaged, the screws may be adjusted to hold the body securely against side movement or to tilt it slightly should the truck stand on uneven ground. The rear axle of the truck is rotatably connected to the truck-body to permit of short turning of the truck. This is accomplished by providing a spur-gear 59, bolted to the rear truck. This gear is guided between the circular plates 55 and 57, and is locked against turning when desired by an angular extension on the arm 63, passing through an opening in the plate 55 and an opening in the spur-gear, the arm 63 being operated by foot-lever 64.

A brake mechanism is also provided for the truck, comprising a brake-staff 65 at the front of the truck, which is adapted, through a chain 66, to draw upon a bell-crank lever 67, which in its turn draws upward upon the spring-pressed rod 68. The lower end of this rod engages the slots 69 in two levers 70, which are connected to the brake-beam 71, and through it operates the brake-shoes 71^a. As an additional brace or stay to the truck brace-arms 72 may be provided, as shown in Figs. 1 and 8.

Having thus described our invention, what we claim is—

1. In combination the truck, the supporting-shaft thereon, the lazy-tongs, the lower arms of said lazy-tongs comprising double bars 8 pivoted centrally upon the supporting-shaft, the screw-blocks carried between the lower ends of each of the double arms 8, the screws engaging said blocks, and means for rotating the screws, substantially as described.

2. In combination, the truck, the lazy-tongs, the platform carried thereby, the lower members of the lazy-tongs comprising centrally-pivoted double bars, the screw-blocks located between said double bars, the mandrels, the tubular screws journaled upon the mandrels,

and means for rotating said screws, substantially as described.

3. In combination, the lazy-tongs, the platform carried thereby, the lower members of said tongs comprising centrally-pivoted bars, screw-blocks carried by the lower ends of said bars, inclined mandrels, screws journaled on the mandrels and engaging the blocks, the driving-shaft carrying beveled gears, the beveled gears on the ends of the screws engaging the driving-gears, and the antifriction thrust-bearings for the opposite ends of the screws, substantially as described.

4. In combination, the truck, the transverse shaft, the lazy-tongs having their lower members pivoted centrally upon said shaft, the pivoted hangers depending from said shaft, the driving-shaft journaled in the hangers, the screw-blocks carried by the lower arms of the lazy-tongs, the mandrels having their inner ends supported from the driving-shaft, the hollow screws journaled on the mandrels and engaging the blocks, means for rotating the screws, and means for rotating the hangers, substantially as described.

5. In combination, the truck, the transverse shaft, the lazy-tongs having their lower members centrally pivoted on said shaft, the screw-blocks on said lower members, the pivoted hangers depending from the shaft, the driving-shaft journaled in the lower ends of said hangers, the screws operated from said driving-shaft, said screws engaging with the screw-blocks of the lazy-tongs, and a drum secured upon the driving-shaft adapted to receive a draft rope or chain, substantially as described.

6. In combination, the truck, the transverse shaft, the lazy-tongs having their lower members pivoted upon said shaft, the depending hangers pivoted to said shaft, the driving-shaft journaled in the hangers with means for operating it, the screws engaging the lower members of the tongs and operated by the driving-shaft, means for swinging the hangers in either direction, the hose-reel and the driving connections from the driving-shaft to said reel, substantially as described.

7. In combination, the truck, the lazy-tongs carried thereby with means for operating them, the platform carried by the lazy-tongs, the pipe extending through the platform and having a hose connection to its lower end, the turret rotating upon said pipe as a center, the hand-nut threaded upon the pipe for clamping the turret, the wheels for supporting the turret upon the platform, the stationary rack carried by the platform, the vertical hand-shaft journaled in the turret and the gear carried by the shaft engaging the rack, substantially as described.

8. In combination the truck, the lazy-tongs mounted thereon, the platform and the automatically-extensible supports for the platform comprising the reversely-arranged bars 28, each bar having one end pivotally connected to the lazy-tongs at one side with its other end connected to the other side of the lazy-tongs by a sliding connection, substantially as described.

9. In a truck for fire-escapes the combination with the body and wheels of the adjustable yokes pivotally connected with the body and adapted to hook over the axles to hold the body against movement, and means for supporting said yokes away from the axles when not in use and for readily releasing them, substantially as described.

10. In a truck for fire-escapes the combination with the body and wheels of the rocking brake-beams carrying brake-shoes adjacent to the wheels, the levers 70 carried thereby having slots, the vertical spring-pressed rods engaging said slots, the bell-crank engaging said rods, the brake-spindle at the front of the truck and connections therefrom to the bell-crank levers, substantially as described.

11. In a truck for fire-escapes the combination with the body, of the guiding-plates rigidly connected thereto, the spur-gear connected to the rear truck and guided between said plates, the staff and gear for engaging and turning said spur-gear, the arm having an angular extension passing through an opening in the upper plate and engaging the rack, and the foot-lever for operating said arm, substantially as described.

12. In a truck for fire-escapes the combination with the body having an extensible tower, and a rotary drum with operating connections for elevating said tower, said drum being adapted to receive a draft rope or cable, of a tongue having detachable connections to said truck and adapted to be connected with the forward end of said draft-rope, and means extending into proximity to the driver's seat for releasing said detachable connections to permit the horses to move forward and rotate the drum to elevate the tower, substantially as described.

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Witnesses:
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