

(No Model.)

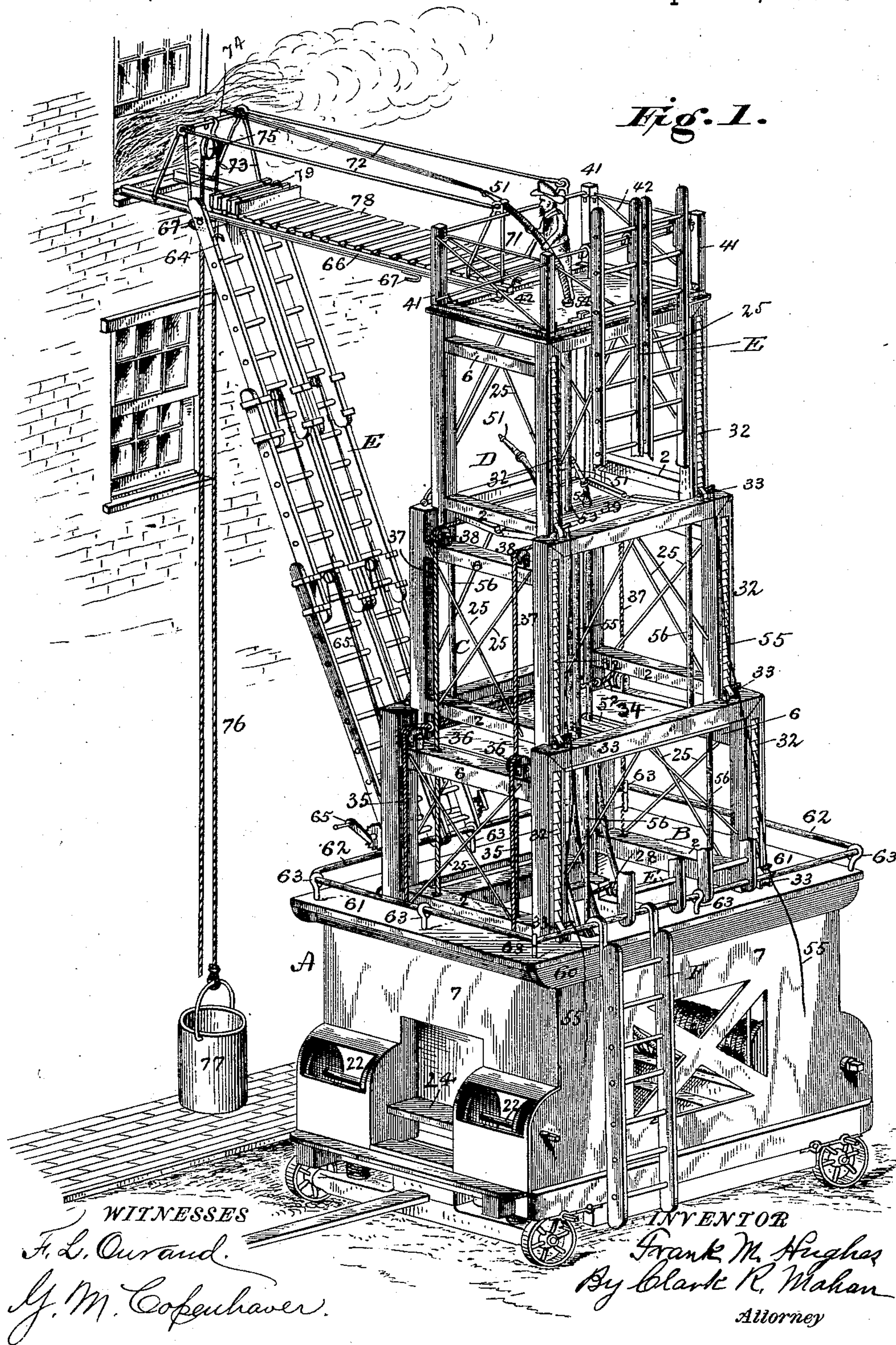
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F. M. HUGHES.

COMBINED WATER TOWER AND FIRE ESCAPE.

No. 483,001.

Patented Sept. 20, 1892.





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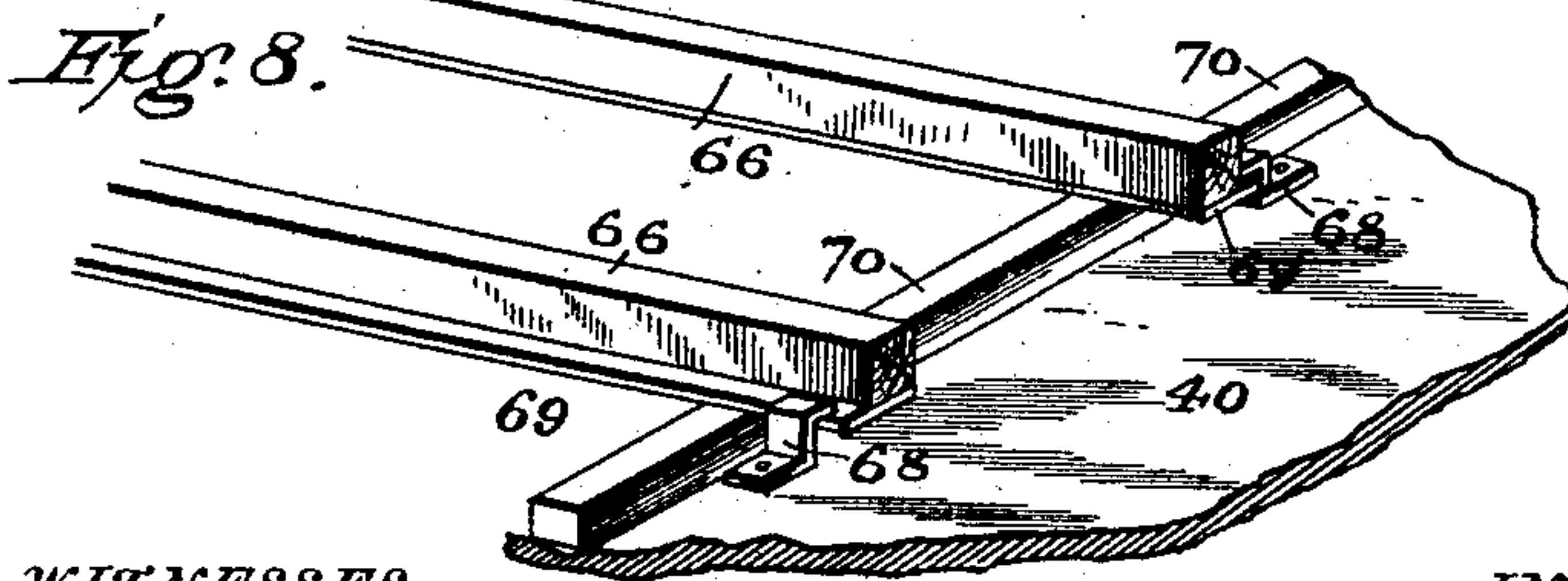
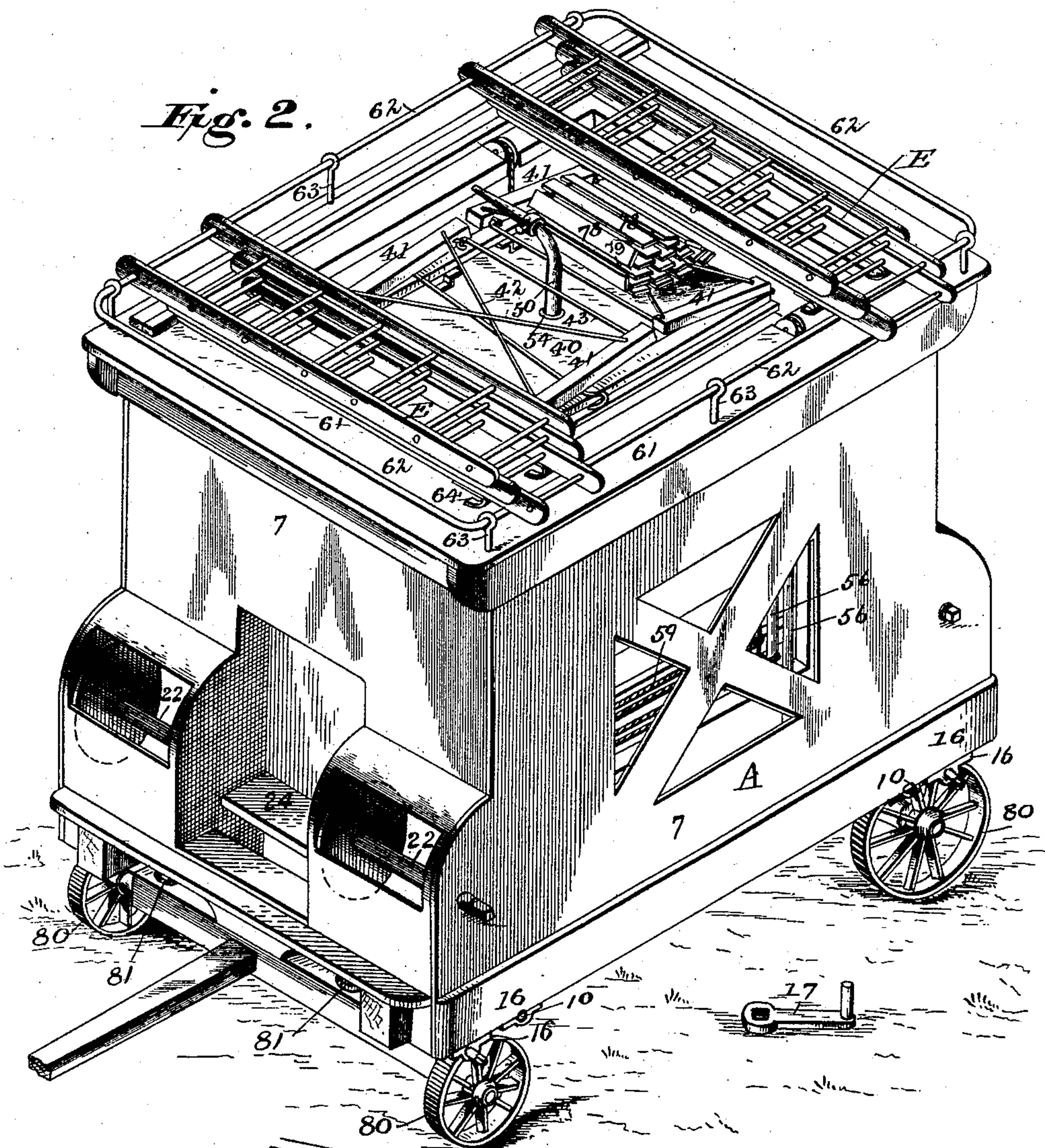
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WITNESSES  
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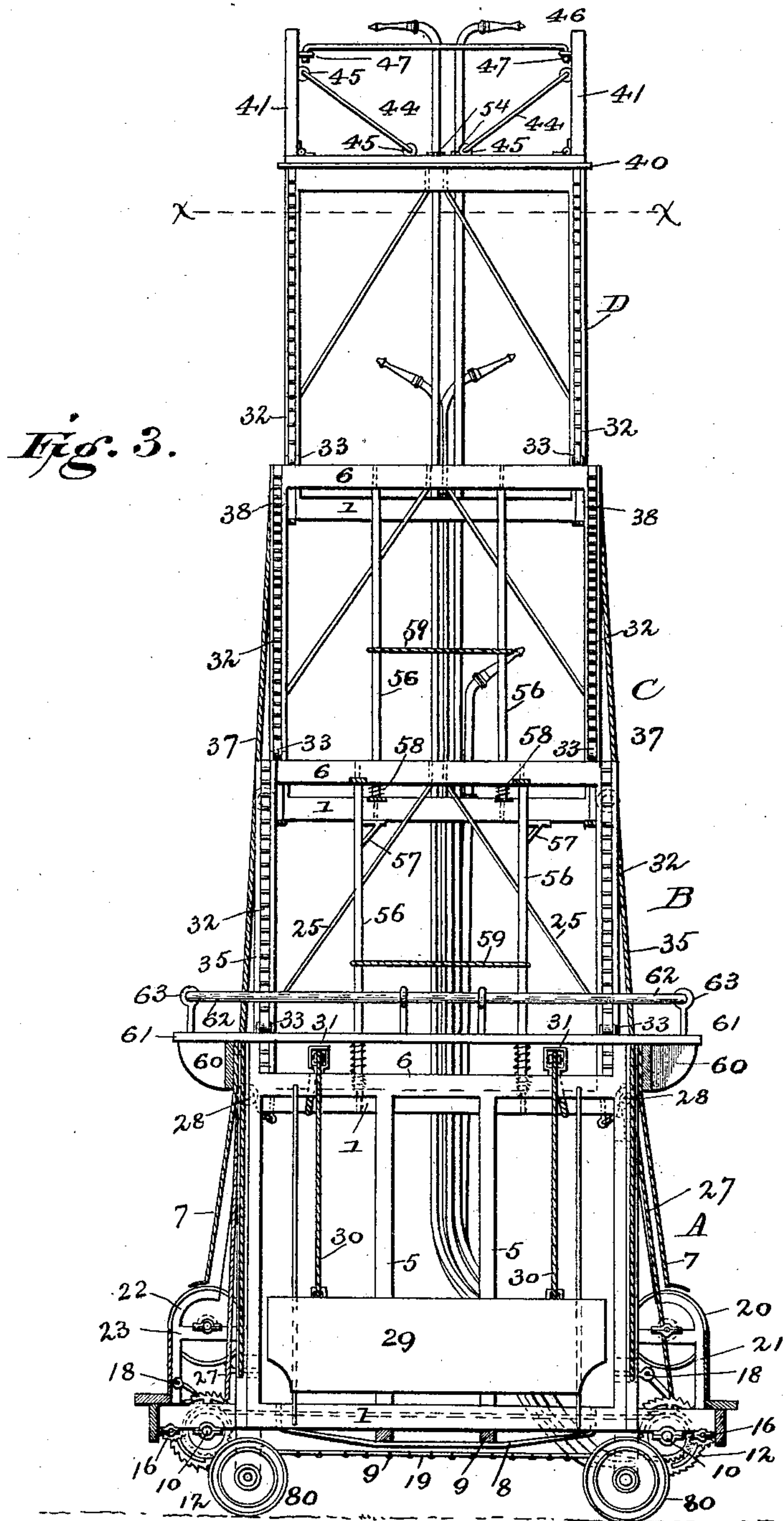
Attorney



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## COMBINED WATER TOWER AND FIRE ESCAPE.

Patented Sept. 20, 1892.



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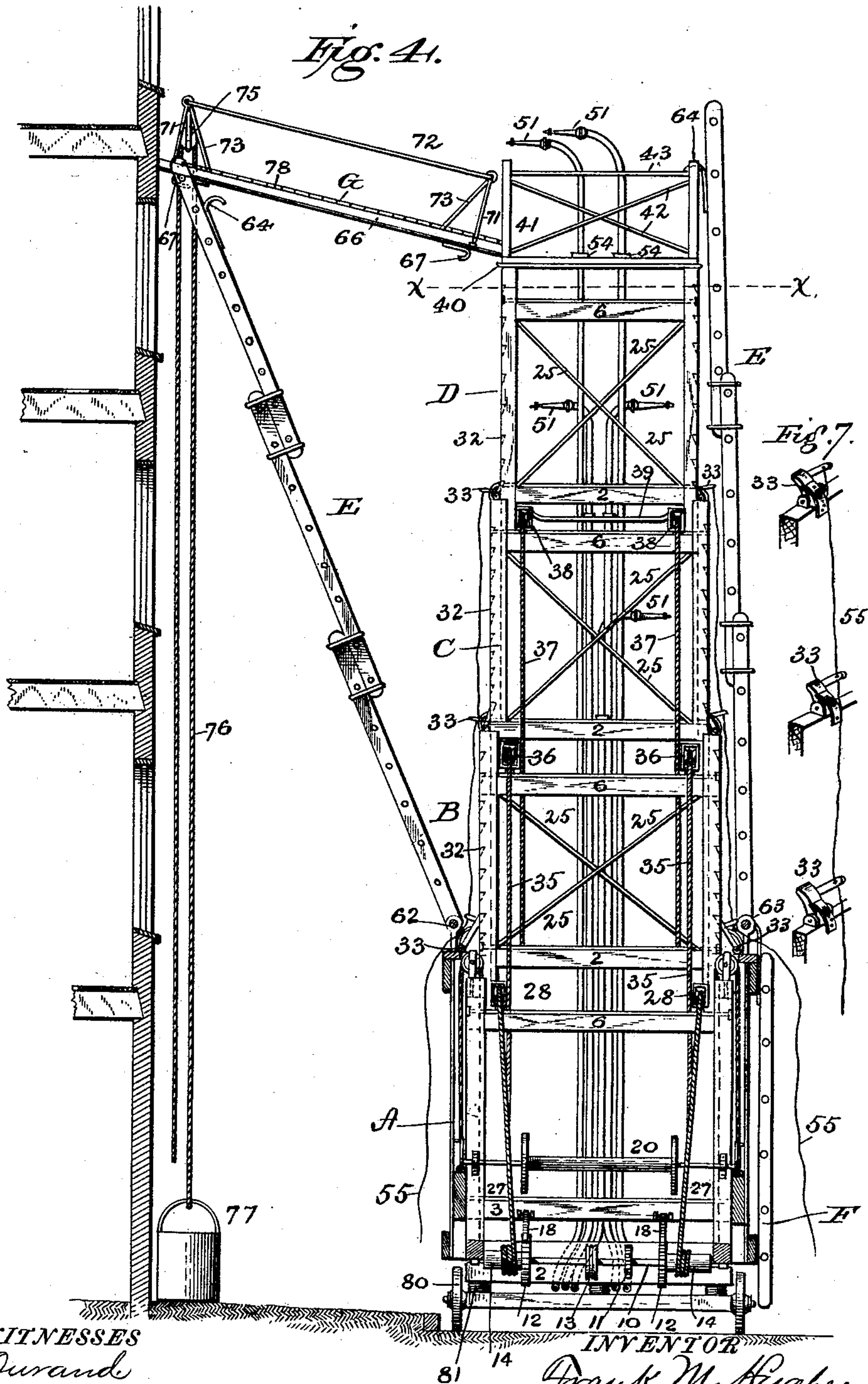
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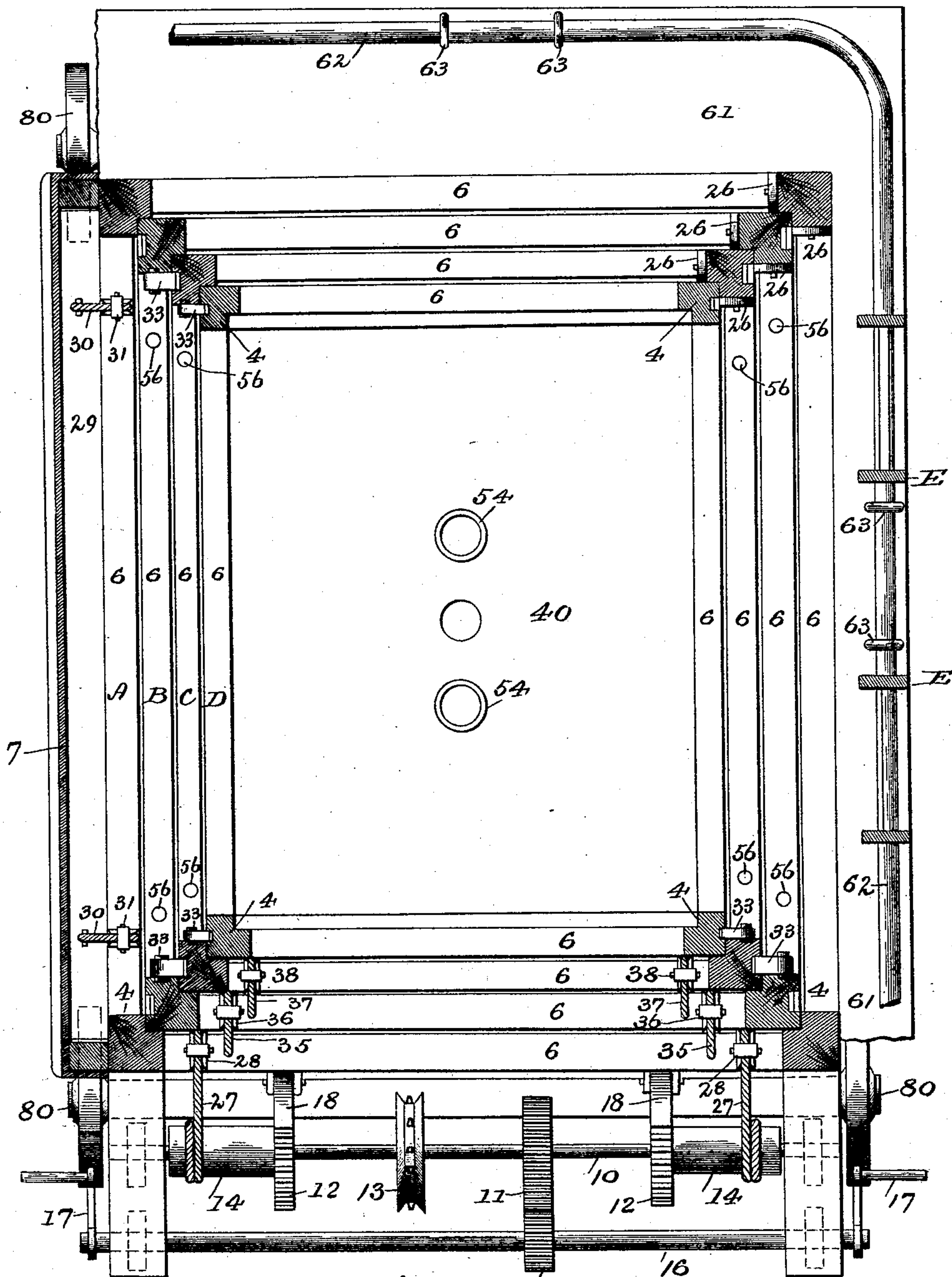


Fig. 5.

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6 Sheets—Sheet 6.

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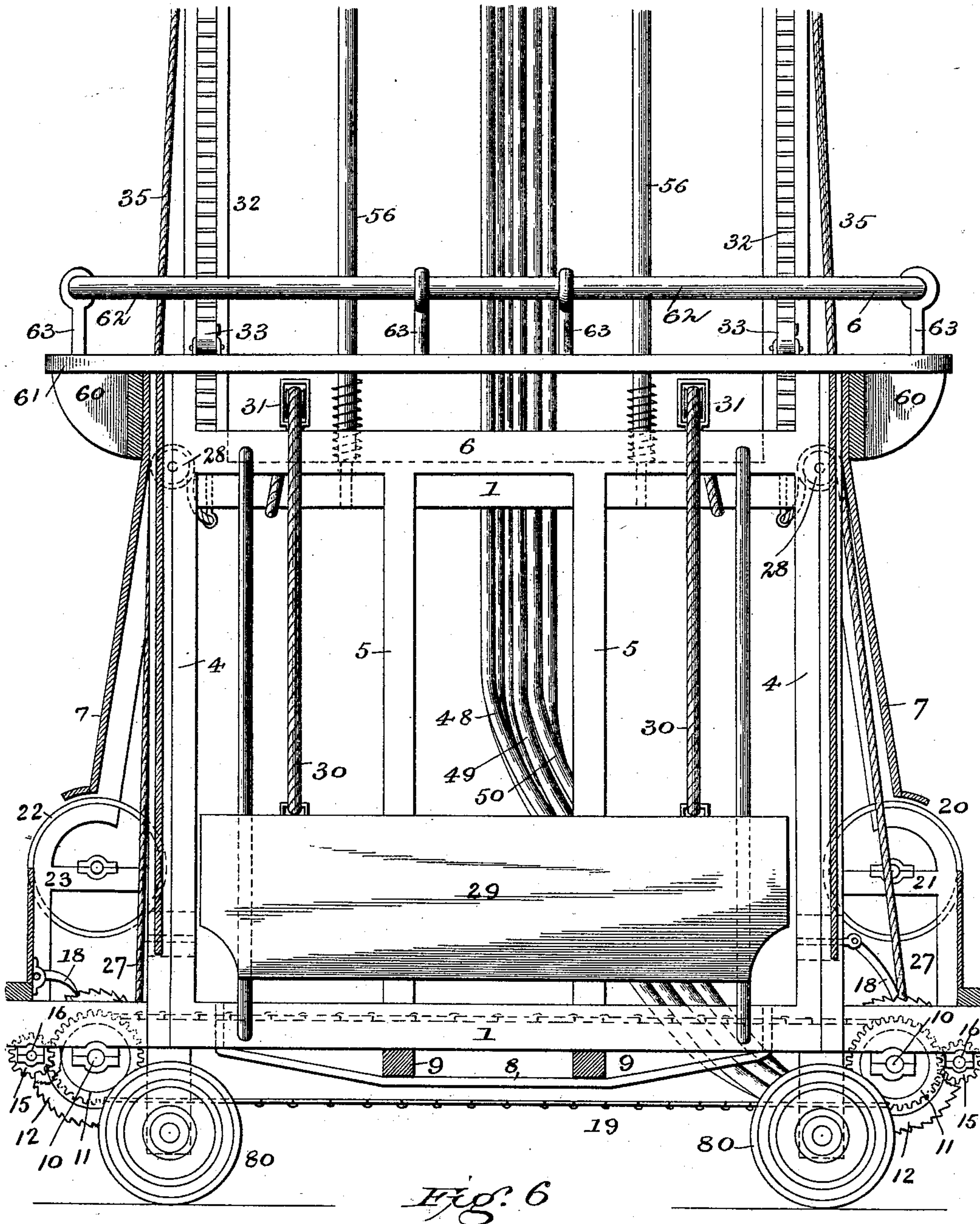


Fig. 6

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# UNITED STATES PATENT OFFICE.

FRANK M. HUGHES, OF MILFORD, MASSACHUSETTS.

## COMBINED WATER-TOWER AND FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 483,001, dated September 20, 1892.

Application filed May 14, 1892. Serial No. 432,995. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK M. HUGHES, a citizen of the United States of America, residing at Milford, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in a Combined Water-Tower and Fire-Escape, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to a combined water-tower and fire-escape.

The main object of my invention is the production of a portable apparatus which is adapted to be extended in the vicinity of a burning building, so as to form a tower from which streams of water may be thrown onto the building and by means of which the inmates of the building may escape.

Another object of my invention is to provide means whereby firemen are enabled to easily and conveniently pass from the tower into any desired story of a building and also have ready at hand a hose provided with a nozzle at whatever elevation of the tower they may desire to work from, thus enabling them to throw water into several stories of a building at the same time.

The invention will first be described in connection with the accompanying drawings and then pointed out in the claims.

Figure 1 is a perspective view of my invention in operation, with a portion of one set of ladders broken away. Fig. 2 is a perspective view of the apparatus, showing it closed for the purpose of transportation and with the ladders on one side removed. Fig. 3 is a side elevation of the apparatus extended, with the ladders and the outside casing of the base-section removed. Fig. 4 is an end elevation of the apparatus extended, with the outside casing of the lower section removed. Fig. 5 is a horizontal sectional view taken on the line  $x x$ , Figs. 3 and 4. Fig. 6 is a side elevation of the base-section and a portion of the second section, with the outside casing of the base-section removed. Fig. 7 is a detail perspective view of one set of the pawls with the mechanism for operating them. Fig. 8 is a detail perspective view of the means for holding the inner ends of the bridge-girders.

In the drawings, A is a base-section consisting of a rectangular framework comprising side sills 1, cross-sills 2, cross-braces 3, corner-posts 4, side posts 5, and plates 6, all inclosed in a casing 7. The side sills 1 are trussed by rods 8, passing over the ends of joists or stringers 9, as shown in Fig. 6. In the front and rear ends of the side sills are journaled shafts 10, the sills being extended beyond the framework proper for that purpose. On these shafts are fixed gear-wheels 11, ratchet-wheels 12, sprocket-wheels 13, and winding-drums 14. Meshing with gear-wheels 11 are gear-pinions 15, fixed on shafts 16, also journaled in the extensions of the side sills 1, each end of shafts 16 being squared to receive hand-cranks 17. To the framework are pivoted pawls 18, adapted to engage with the ratchet-wheels 12. To insure unison of movement in the winding-drums 14, sprocket-wheels 13 on shafts 10 are connected by a sprocket-chain 19.

In the rear of base-section A is placed a large hose-reel 20, journaled in supporting-frames 21, attached to the main frame, as will be plainly seen in Fig. 6. In the front of base-section A are placed two hose-reels 22, journaled in supporting-frames 23, attached to the main frame in a manner similar to frames 21, and between these two front hose-reels is a seat 24 for the driver.

Corner-posts 4 are rabbeted on their interior corners, as plainly shown in Fig. 5, to form slideways, in which slides vertically a second section B. This second section is a rectangular framework composed of side sills, cross-sills, corner-posts, and plates, similar to the framework of the base-section, and strengthened by brace-rods 25, as shown. I prefer to use antifriction-rollers in each corner-post of sections A, B, and C for the section above each to slide on. One set of these rollers 26 is shown in Fig. 5. Section B is raised and lowered within the base-section by means of cables 27, the upper ends of which are secured to the bottoms of the corner-posts of section B, passing over pulleys 28, and attached to winding-drums 14. To reduce the manual power necessary to raise section B and all the sections above it, counterpoise-weights 29 are hung on cables 30, passing over pulleys 31 on



the plates of the base-section and secured to the sidesills 1 of section B. In each exterior side of the corner-posts of section B are placed ratchets 32, which are engaged by spring-actuated pawls 33, pivoted to the plates 6 of the base-section. These ratchets serve to hold the section B from accidentally falling back into section A and also to take the strain off the hoisting-cables while the apparatus is in use.

Within section B slides a third section C, similar in construction to the former, but carrying a deck or floor 34 at its lower end. This section is raised by means of cables 35, secured to its lower end and passing over pulleys 36, mounted on top of section B. The lower ends of cables 35 pass through holes in plates 6 of base-section A and are secured to cross-braces 3 of said section. The raising of section B by means of winding-drums 14 and cables 27 automatically raises or extends section C.

Within section C is a fourth section D, similar in construction to section C. It is raised automatically by means of cables 37, attached to its lower end, passing over pulleys 38, and secured to cross-sills 2 of section B. It is also provided with two decks or floors, one 39 at its bottom and one 40 at its top. The deck or floor 39 is made trough-shaped, as clearly shown in Fig. 1, in order that it may carry off the water falling on it when the apparatus is in use.

Around the top deck 40 is placed a folding railing consisting of corner-posts 41, hinged to the deck 40 and connected in pairs by permanent braces 42 and rails 43, forming panels. These panels fold toward each other and down onto the floor or deck. When raised, they are held rigid by movable brace-rods 44, whose ends are bent and pass through eyebolts 45 in the corner-posts 41 and floor 40. To assist in holding these corner-posts and also to serve as a railing, rails 46 extend from one post of each panel to its opposite post in the other panel, being removably secured to said posts by having their ends bent and passed through eyebolts 47 in the said corner-posts.

Referring to Fig. 1 of the drawings, 48, 49, and 50 represent fire-hose extending upward from the bottom of the base-section. These hose, which are each provided with a nozzle 51, pass through slots 52 in the floor 34 of section C, and also through circular openings 53 in the lower floor 39 of section D, where hose 48 and 49 terminate, hose 50 extending upward and passing through the upper floor 40 of section D, where it terminates, each of the said hose being provided with a collar 54 to prevent it from slipping downward through the openings. It will thus be seen that the fireman will always have a hose at his ready command when it is desired to throw water from either one or both of these parts of the tower. However, the number of hose employed and their locations may be varied without departing from my invention, as shown

in Figs. 3 and 4, wherein five hose are illustrated, one nozzle being located in section C, two above the lower floor of section D, and two above the upper floor of section D. All the hose are of such relative lengths that when the tower is fully extended their lower ends will be even with each other, so that they can be conveniently coupled to hose connected with fire-engines, hydrants, or any other source of water-supply.

Sections C and D are each provided with ratchets 32 and spring-pawls 33, as heretofore described in relation to section B, and these pawls are connected in four vertical sets by cords or ropes 55, by means of which the pawls may be disengaged from the ratchets simultaneously by the firemen on the ground.

To assist the pawls in sustaining the sections when they are fully extended, posts 56 are journaled in the side sills and plates of sections B and C. Near the tops of these posts are brackets 57, adapted to be moved in under the sills of the section above by the turning of said posts. These bracket-posts are actuated by springs 58 at their lower ends, which tend to retain them in position with the brackets under the sections. They are turned so as to swing the brackets out by means of ropes 59, as shown.

The top of base-section A is extended by brackets 60, decked over to form a platform 61 all around the top of the base-section. On this platform is a ladder-supporting rail 62, mounted in eyebolts 63, fixed in the platform. On this rail, at each side of the machine, are mounted two ordinary extension-ladders E, having hooks 64, which hook over the rails 46 on the top section D, whereby when the tower is elevated the ladders are extended with it. To retain the ladders in this position and also for the purpose of controlling them independent of the tower, an ordinary extension-tackle 65 is employed.

F is a common ladder with hooks at its upper end, whereby it may be hooked to the ladder-supporting rail, its lower end resting on the ground.

G is a portable bridge adapted to be run out from the top of the tower to a burning building, being supported at its outer end by the ladders E on the side of the machine nearest the building, by means of which the firemen may gain entrance to the building and inmates of the building may escape to the tower. This bridge consists of two girders 66, secured to the ladders by hooks 67 on their lower edges engaging the top rounds of the ladders. The inner ends of the girders 66 are secured to the deck of the tower by clips 68, bolted to the deck, engaging flanges 69 on the girders. 70 is a bearing-rail over which the girders pass, as plainly shown by Fig. 8. To each end of each girder is fastened an upright rail-post 71, supporting hand-rails 72. Each post is braced by a rod 73, and at the outer end of the bridge a cross-brace 74 connects the two outer posts by hooking over the hand-rails



where the latter join the posts. This cross-brace serves, also, as a support on which can be hooked, when desired, a block 75, through which is rove a rope 76, carrying a bucket 77 of sufficient size to hold one or more persons, who may be thus lowered to the ground when unable to descend the ladders of the apparatus.

On top of the girders 66 is placed a folding floor composed of narrow planks 78, reaching from one girder to the other and connected with one another by being interwoven between ropes 79, so as to permit the floor to be rolled up into a bundle when not in use. It is shown in this condition in Fig. 2.

To protect the apparatus and to shelter the firemen, asbestos fire-curtains may be hung on spring-rollers secured to the tops of the plates of the sections, whereby the curtains can be rolled up or lowered, and, if desired, these curtains may be provided with openings through which the hose-nozzles may be projected.

The whole apparatus is mounted on trucks 80, provided with rubber car-springs 81, as shown, the purpose of which will be apparent.

My combined water-tower and fire-escape is operated as follows: The apparatus is drawn alongside the burning building and is then extended by turning the winding-drums 14, which carry the cables 27, attached to section B. The winding of these cables acts directly to elevate section B, and as it is being elevated sections C and D are also extended automatically. The ladders E are extended by the elevation of the tower and those on the side of the machine toward the building are swung out toward it, the bridge-girders put in place, and the floor laid. The hose at the bottom being then connected to any source of water-supply the apparatus is ready for use.

To close the apparatus, the above operations are reversed, it being first necessary to withdraw the pawls from the ratchets by drawing on the pawl-operating ropes or cords 55, and also to swing the bracket-posts and brackets from underneath the sections. As the sections are lowered the hose is reeled up by hand on the reels at the front and rear ends of the machine.

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

1. In a telescopic tower composed of sections having sills and plates, as described, spring-actuated bracket-carrying posts revolvably mounted in the sills and plates of the sections intermediate the base and upper sec-

tions, whereby the brackets in one section are made to aid in the support of the section next above, substantially as described.

2. In a telescopic water-tower, a series of fire-hose extending up through the floors of the movable sections, each hose being provided with a fixed collar which rests on the floor of the section in which it is desired the hose shall terminate, whereby the hose will be elevated in the elevation of the tower, and a hose-reel journaled in the base-section, substantially as described.

3. The combination, with a telescopic tower, of a series of fire-hose suspended from the movable sections of the tower and extension-ladders pivoted at their lower ends to the base-section and carrying hooks at their upper ends which engage with the upper section of the tower, whereby as the tower is elevated the hose will be elevated and the ladders extended.

4. The combination, with the portable tower, of two or more ladders pivoted to said tower and a movable bridge supported at one end by the tower and at the other end by the ladder.

5. The combination, with the telescopic tower, of fire-hose suspended from the movable sections of the tower, extension-ladders pivoted to opposite sides of the tower, and a movable bridge supported at one end by the tower and at the other end by one set of ladders, substantially as described, and for the purposes stated.

6. The combination, with the telescopic tower, of extension-ladders pivoted to said tower and a movable bridge supported at one end by the tower and at the other end by the ladders, said bridge consisting of longitudinal beams provided with means for engaging with the ladders and a folding floor.

7. The combination, with a telescopic tower and a hose-reel journaled in the base-section thereof, of a series of fire-hose suspended from the movable sections of the tower and adapted to be wound on the reel, extension-ladders pivoted to the base-section of the tower on opposite sides, a knockdown bridge supported at one end by the tower and at the other end by the ladders on one side of the tower, a bucket or like receptacle, a rope attached thereto, and a sheave attached to the bridge, over which the rope is passed, substantially as described, and for the purposes set forth.

In testimony whereof I affix my signature in presence of two witnesses.

FRANK M. HUGHES.

Witnesses:

LEWIS HAYDEN,  
DANIEL BERGIN.