

J. R. McPHERSON.  
TOWER FOR FIRE EXTINGUISHING APPARATUS.  
APPLICATION FILED FEB. 14, 1908.

934,748.

Patented Sept. 21, 1909.  
3 SHEETS—SHEET 1.

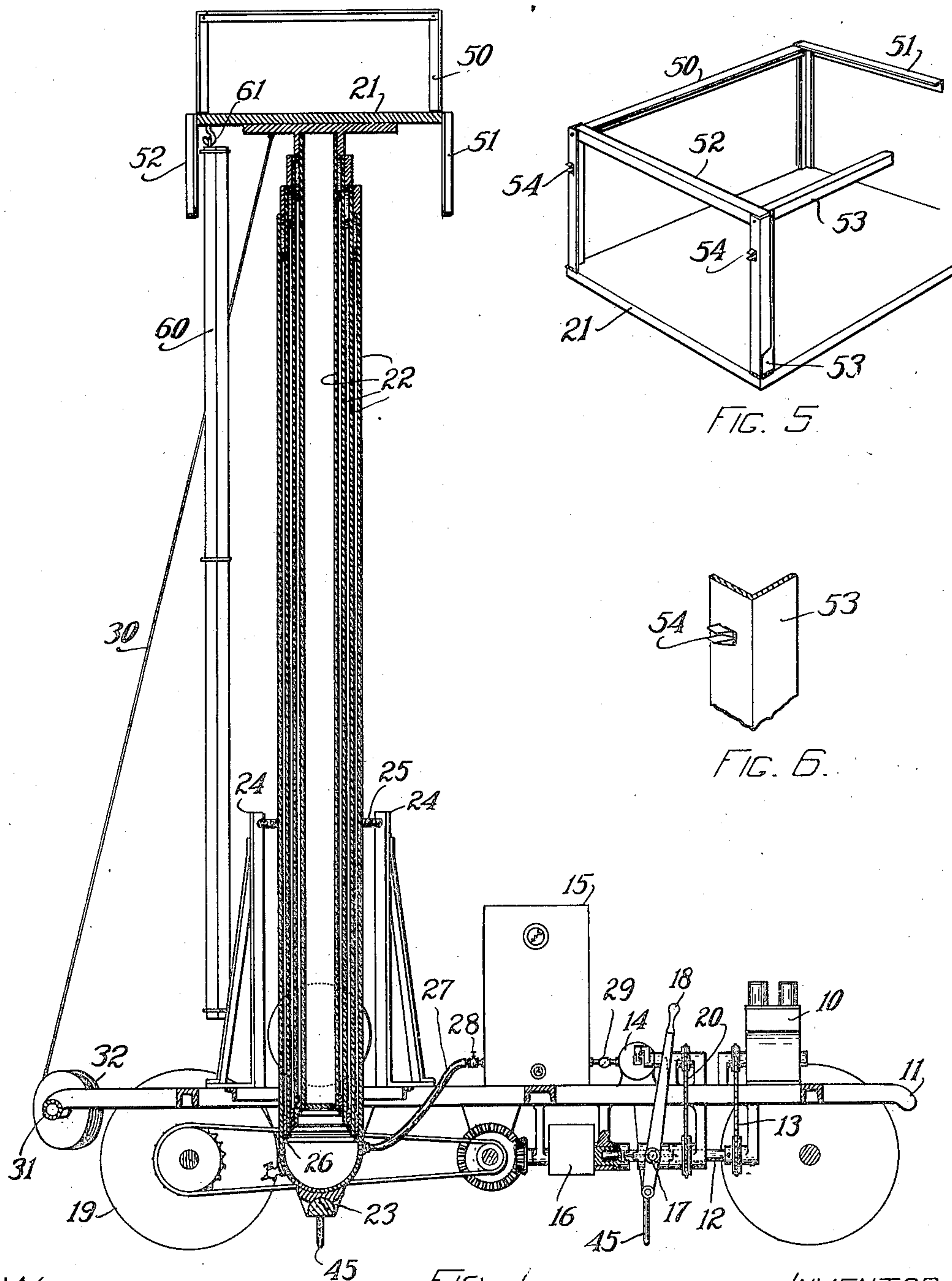


FIG. 1.

FIG. 5.

FIG. 6.

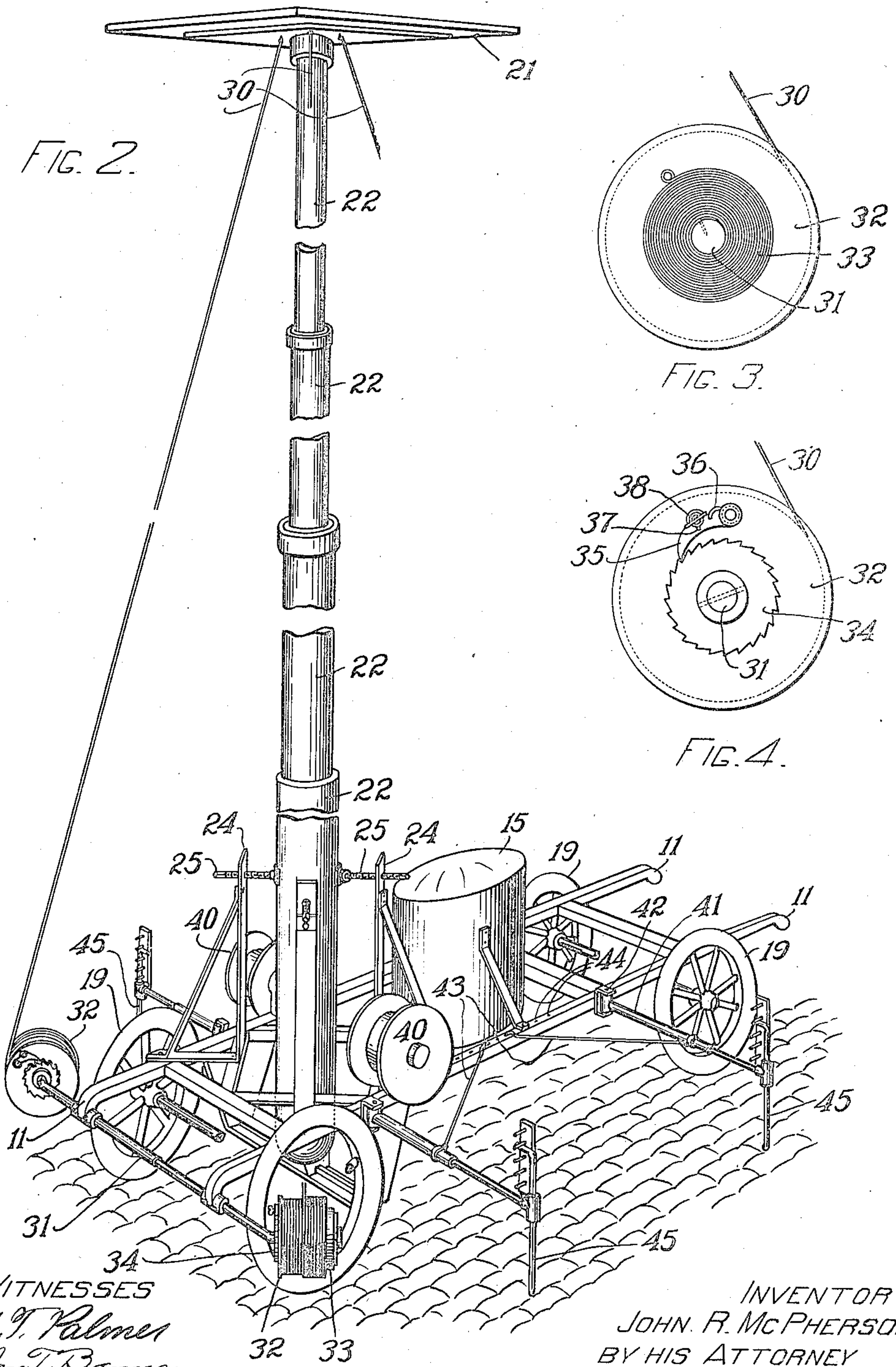
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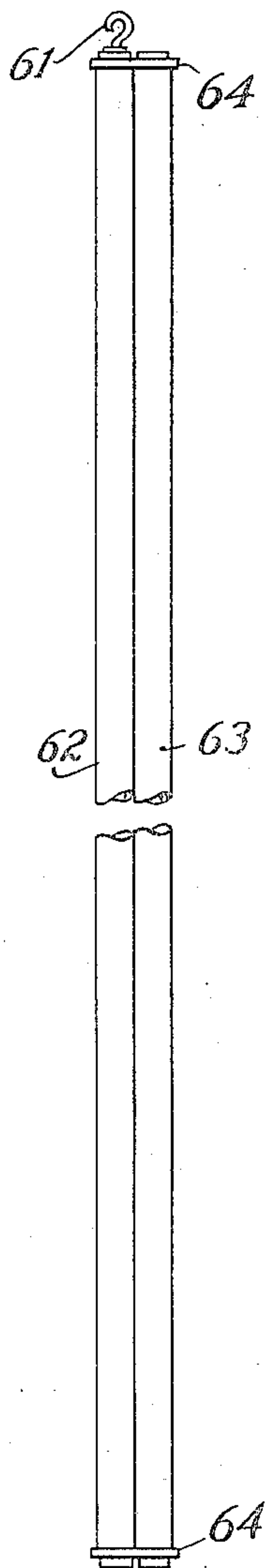


FIG. 7.

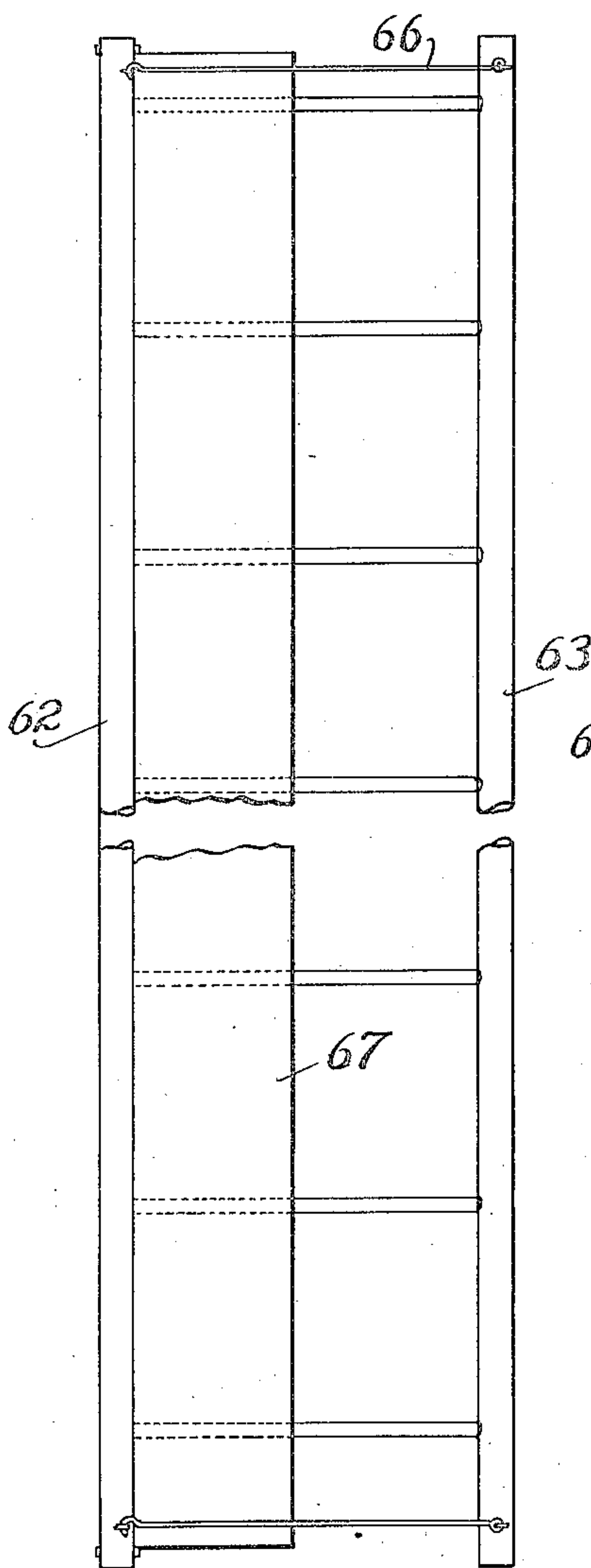


FIG. 8.

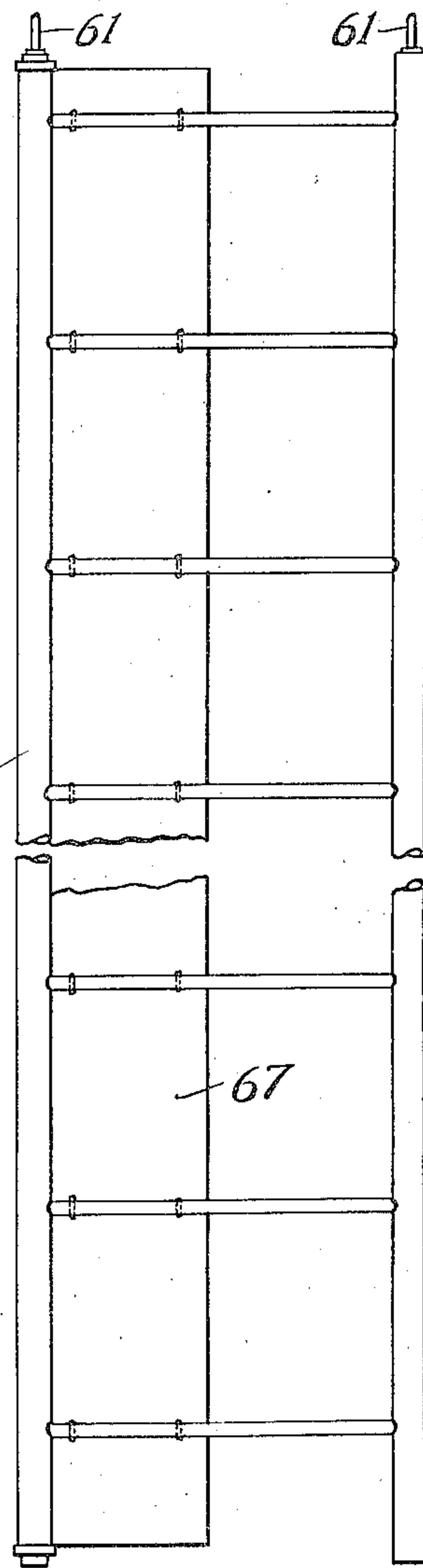


FIG. 9.

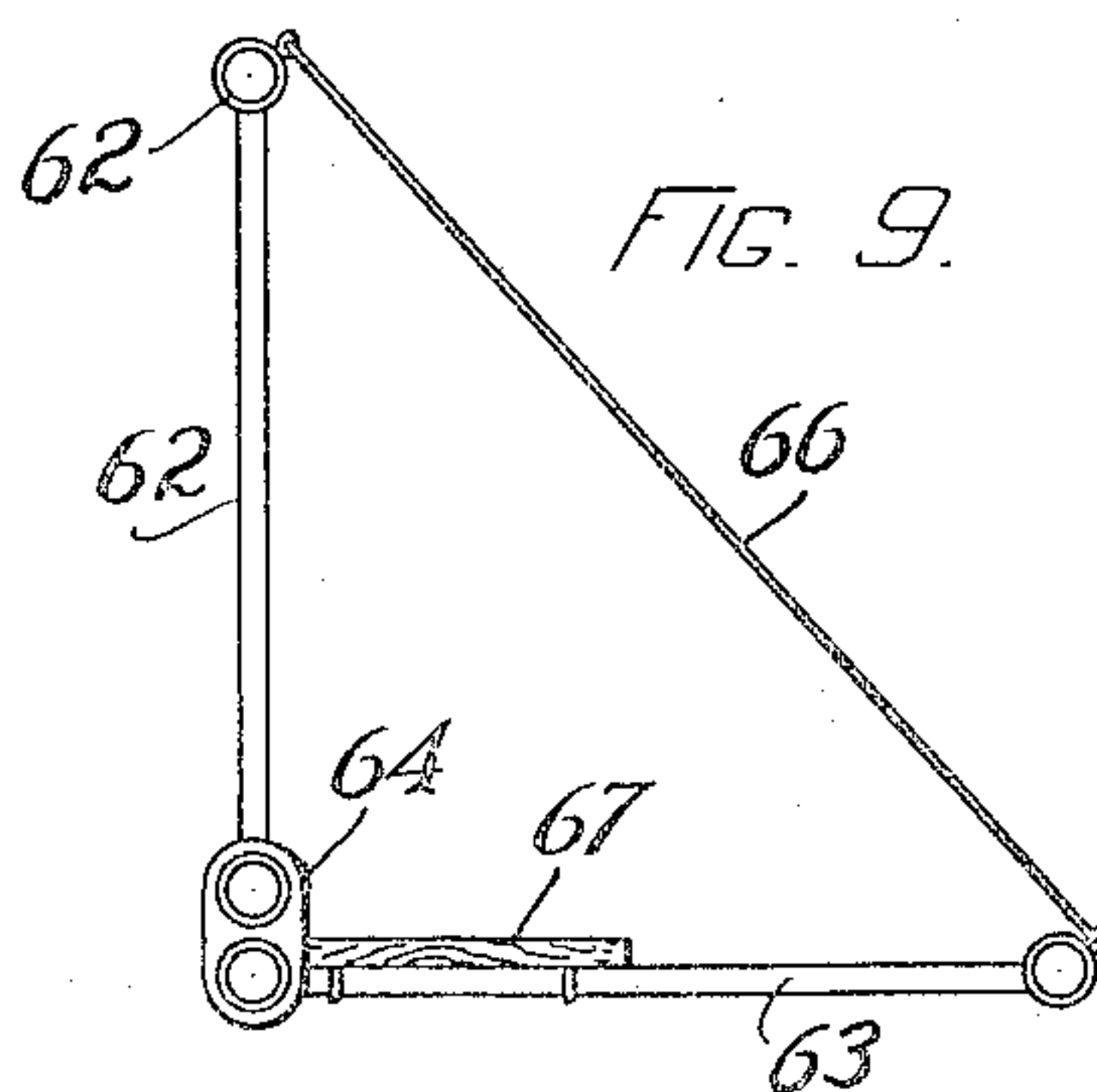


FIG. 10.

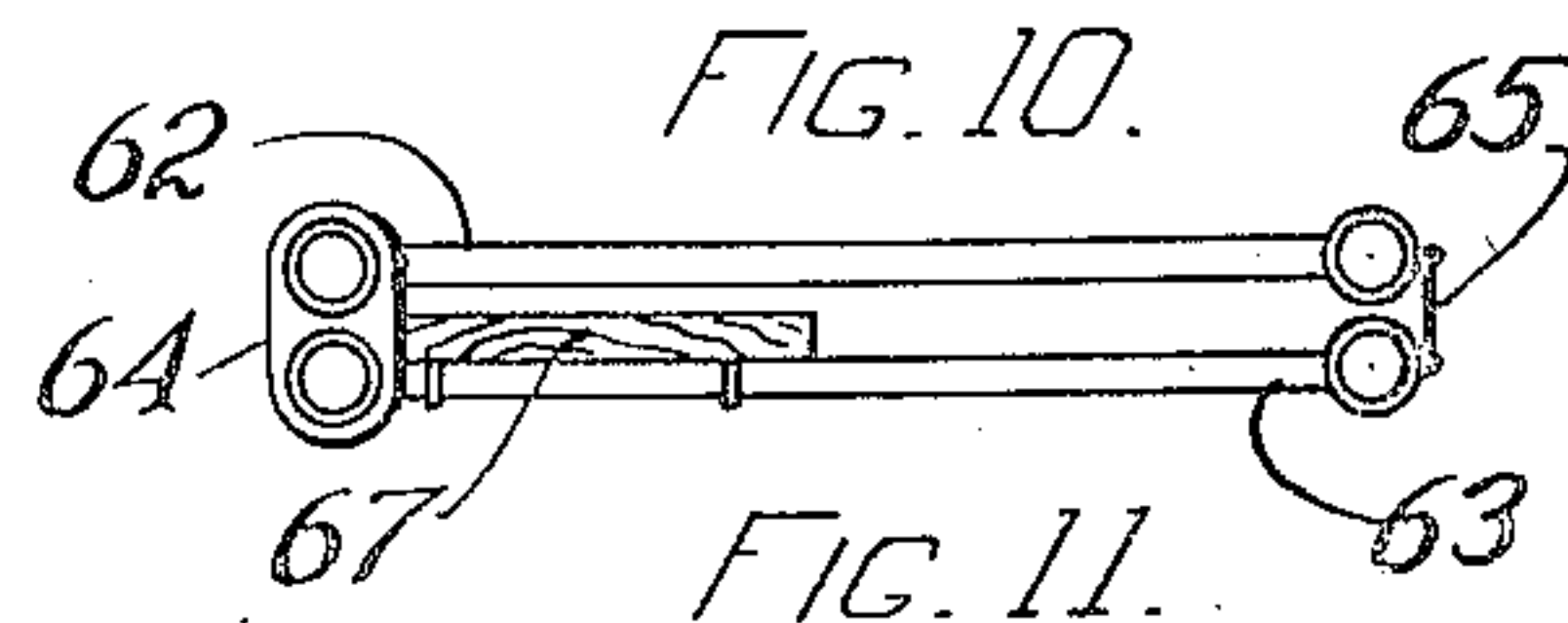


FIG. 11.

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# UNITED STATES PATENT OFFICE.

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## TOWER FOR FIRE-EXTINGUISHING APPARATUS.

934,748.

Specification of Letters Patent. Patented Sept. 21, 1909.

Application filed February 14, 1908. Serial No. 415,802.

*To all whom it may concern:*

Be it known that I, JOHN R. McPHERSON, a citizen of the United States, and resident of Jamaica Plain, Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Towers for Fire-Extinguishing Apparatus, of which the following is a specification.

This invention relates to apparatus for providing an elevated platform and auxiliary means for use in extinguishing fires.

The object of the invention is to provide a self-propelled vehicle by which the apparatus may be quickly conveyed to the place where needed and upon arrival, the power of the engine be utilized to raise a platform to an elevation and maintain it in position there.

The invention comprises auxiliary apparatus for holding the platform steady when raised, for resisting the backward throw of fire hose when in action, and means in the form of a combined ladder and gangway for reaching the elevated platform and for passing therefrom to an adjoining building.

The invention also comprises other features of novelty found in the embodiment of the invention herein described.

The objects of the invention are accomplished by the apparatus illustrated in the accompanying drawings in which,

Figure 1 represents a vertical, longitudinal section through apparatus embodying the invention; Fig. 2 represents the same apparatus in perspective; Figs. 3 and 4 are elevations on a larger scale showing details of parts in Fig. 2; Figs. 5 and 6 are representations in perspective of other parts enlarged; Fig. 7 is an edge elevation of a detail, being a ladder which forms part of the invention; Fig. 8 is a side elevation of the same, opened; Fig. 9 is a bottom view of this detail when arranged in the form shown in Fig. 8; Fig. 10 is a side elevation of the same detail closed; and Fig. 11 is a plan of the same arranged as in Fig. 10 with the hooks at the top removed.

The drawings are more or less diagrammatic particularly Figs. 1 and 2 which show the arrangement of parts and character of construction; but various parts of the completed apparatus are omitted from the drawing for the sake of clearness, and the parts are in some respects arranged differently

from the arrangement which would ordinarily be adopted in constructing the apparatus, as this shows the invention more clearly, and as these parts are not limited to any particular form of arrangement, but may be arranged as is most convenient or customary. Thus in Fig. 1 the motive power is indicated diagrammatically by an engine marked 10 mounted on a chassis 11 and driving the shaft 12 by a sprocket chain 13; and the auxiliary parts of the engine and fuel supply, the driver's seat, etc. are omitted. The chassis also supports a pump 14, preferably an air pump, a receiver or storage chamber 15 and power transmission mechanism 16. These parts may be of any suitable construction. A clutch 17 operated by lever 18 enables the main driving shaft 12 to be thrown into engagement with either the transmission mechanism 16, for transmitting power to the driving wheels 19 of the vehicle or with the pump 14, to which it is represented in Fig. 1 as being connected through sprocket chain 20. With the handle 18 as represented, the clutch is not in engagement with the transmission for driving the vehicle, but by throwing the handle 18 backward to the left the main driving shaft and the transmission will be thrown into engagement and the vehicle will be propelled forward. While engaged with the pump, the motive power of the vehicle acts to force air or whatever other fluid is supplied to the pump into chamber 15. Any other form of engine, pump, clutch or transmission may be employed without departing from the scope of this portion of the invention, the main feature of which is the employment of a motor which may be connected either to propel the vehicle or to force fluid into the chamber; and it is contemplated that it will be used for these purposes successively but not as a rule, simultaneously. Thus, the engine will be used for propelling the apparatus rapidly to a fire and when the vehicle has been placed, the engine, continuing in operation, will exert its power to maintain the platform hereinafter described at the desired elevation.

The apparatus also comprises a platform 21 and means for raising it to a high elevation and maintaining it there. Said means for raising and maintaining it consists of telescopic tubes, as many as desired, which in the drawing are marked 22, extensible up-



ward. These are supported on a base 23 on the chassis and are preferably mounted thereon on a hemispherical surface so that the upright tubes 22 may be adjusted till they are plumb; and the chassis carries standards 24 having screws 25 bearing against the outer tube for making these adjustments and for maintaining the tubes plumb. This is important to make correction for unevenness or inclination of the surface of the road where the apparatus may stand. These tubes fit within one another, having packing rings 26 between them to prevent the escape of the fluid which enters from chamber 15 through supply pipe 27. When pressure is admitted to the interior of the tubes by opening valve 28 the tubes are forced upward, extending telescopically to any desired elevation where they may be maintained by closing valve 28 provided there is no leakage or by leaving valve 28 open and maintaining the pump in operation to supply for the leakage, if the fluid be water. If the fluid be air, closing the valve 28 will probably not be sufficient and it will be necessary to maintain a constant supply and an excess of upward pressure.

Attached to the tube of the telescopic elevator are guy ropes 30, preferably four in number on all sides of the tower and connected at the bottom to cross bars 31 mounted on the chassis. These reels 32 have springs 33 (Fig. 3) arranged with the inner end of the spring fast to the arbor and the outer end fast to the reel, and arranged so that the spring is wound when the guy rope is unwound from the reel. The reel also is provided with means whereby its further unwinding is prevented at the will of the operator. The specific form of means for accomplishing this represented in the drawings consists of a ratchet 34 and a pawl 35 which a spring 36 normally presses toward the ratchet. The ratchet is fast on the arbor 31, and the pawl rotates with the reel 32. By a pin-and-slot arrangement 37, the pawl may be raised from the ratchet and fastened in its raised position by a screw clamp 38, which is the arrangement when the tower is to be raised. When it has reached its desired height, the screw clamp 38 is loosened, whereby the pawl immediately is sprung into engagement with the ratchet and prevents further unwinding of the reel. This furnishes a support to maintain the platform at the top steady notwithstanding wind, excess upward pressure and the movements of persons upon it, and it also furnishes ample support to resist the reactive force of the hose when a stream of water is issuing from the nozzle. In Figs. 1 and 2 only two of the reels 32 are shown; but it is contemplated that two others similarly mounted will be placed on the other side of the tower but they are omitted from the drawings for the sake

of clearness. The arbors 31 on which these reels are mounted telescope within each other so that when in use the reels are extended and afford a wide base, but when not in use they may be pushed inward within the normal width of the vehicle; and for this purpose, in order to clear the adjacent wheels, if the apparatus be constructed as indicated in Fig. 2, the arbors may be turned 180 degrees while the guys are relaxed and this will enable the reels to slide by the wheels to their inmost positions.

Carriers for hose are provided in the form of reels 40 at each side of the tower. These reels may have rewinding springs like those of the reels 32 or any other suitable form of carrier for hose may be provided, in place of the reels 40.

The invention also comprises means for enlarging the base of the tower for better steadying the apparatus when the tower stands at a high elevation. This consists of arms 41 extensible sidewise from the chassis, having feet adapted to bear upon the pavement. These are represented as being pivotally mounted on the chassis on vertical pivots 42 upon which they may swing inward to within the normal width of the vehicle and upon which they may swing outward to the position shown in Fig. 2 to increase the base of the vehicle. Rods 43 are provided to hold them out, which rods may be hooked into any of several holes 44 in the side frame of the vehicle. These rods 41 are themselves extensible telescopically as indicated, and have, at their ends, legs 45 adjustable to varying elevations, according to the level of the pavement, as shown or in any equivalent manner.

At the top of the tower is a platform having a railing which forms another feature of the invention, being composed of separate sections 50, 51, 52 and 53, each of which occupies the whole of one side of the platform and is hinged thereto and fastened to its neighboring section which stands at right angles to itself. Thus each section is braced by its neighbors; yet all can be let down, reducing the minimum height of the structure when necessary. A convenient catch fastening for these is represented in Figs. 5 and 6 consisting of two barbed prongs 54 of spring metal normally standing apart as shown in Fig. 6, and projecting somewhat from the upright of one of the rails, for example 53; and when the adjoining part 52 is swung upward into place, these prongs pass through a square hole therein and snap apart engaging by their prongs, which act as latches, the upright of 52. They may be loosened by simply pinching the prongs together by the fingers.

Access to the platform of the tower may be had by a ladder 60 which forms another part of the invention and which normally hangs from the platform by hooks 61; and



access from this platform to a burning building may be had by means of this ladder which also constitutes a bridge. As represented in Figs. 1, and 7 to 11, it will be seen that the ladder is double, being made of any suitable material preferably with tubular side pieces, one of the component ladders being marked 62 and the other 63 and both being hinged together as at 64, which represents a plate having two holes fitting over the adjacent side pieces at one side of the two ladders, the side pieces passing pivotally through said holes. The other two side pieces are hooked close together as shown in Fig. 11 at 65 or are hooked together at such a distance that the two components are at right angles to each other as shown in Fig. 9 where the hook joining them is marked 66. A plate or board 67 fast to one of these ladders close to the hinge preferably occupies about half the width of the ladder so that the other half may be used as a ladder, if desired, when placed upright. When placed horizontally it acts as a bridge, upon swinging the two ladders to the position shown in Figs. 8 and 9, where they are right angles to each other. If Fig. 8 be considered as being a plan and Fig. 9 a front elevation, this use of the ladder will be better understood. A person may walk on the plank 67 and the ladder which is standing on its edge vertically, 62, will prevent the ladder 63, which is then flat horizontally, from buckling under the stress.

In the use of the apparatus above described, the chamber or tank 15 may be always maintained full of air at a very high pressure. When the apparatus has been driven to the scene of operations, the motive power may be applied to the pump instead of to the driving wheels and, at the same time, the fluid under pressure may be admitted from the chamber to the telescopic tower, thereby raising the tower. Before doing this, the side supports 41 may in a very brief period of time be swung outward and fastened and the locks 45 adjusted with their feet firm on the pavement and the reels 32 containing guy ropes extended laterally. When the pressure is admitted, the tower and platform will rise, carrying up guy ropes and hose and also a rope ladder or other contrivances that may be desired but which form no part of this present invention. Upon reaching the desired elevation, the pawls 35 are thrown into engagement, and the tower is then guyed on four sides and is also supported by a wide base on four sides. In practice, the extensible side supports would be made somewhat heavier than those shown in the drawing and other variations would be made according to the established principles of mechanical design and according to the particular dimensions and proportions of all parts desired and strength needed to stand the work expected of the

apparatus. For example, it is well to have a check valve 29 between the pump and the reservoir 15. The latter will be of a size adapted to the capacity of the interior of the tubes 22 and will be provided with a pressure gage and a relief valve. Any suitable material may be used for the various parts, but it is contemplated to use aluminum, so far as feasible, for the top of the tower and for the ladder and for the plate or plank 67 upon it.

I claim:

1. The combination of a vehicle and a tower thereon and means to extend it upward, with auxiliary standards set firmly on the vehicle on various sides of the tower and rising a distance above the vehicle; the base of the tower having a universal joint connection with the vehicle; and the tops of the standards having horizontally extensible elements adapted to bear against the sides of the tower.

2. The combination of a vehicle and a tower thereon and means to extend it upward, with auxiliary standards firmly set on various sides of the tower, comprising uprights rising approximately parallel with the tower, having braces on the vehicle on their sides remote from the tower and having screwed projections toward the tower at their tops; the base of the tower having a universal joint connection with the vehicle.

3. The combination with a vehicle and a tower thereon of an extension comprising two ladders, in which a side bar of one is hinged to a side bar of the other, these two ladders when closed on the hinge forming a single ladder, and there being means to lock the two ladders in an open position, in planes at an angle with each other, whereby each stiffens the other.

4. The combination with a vehicle and a tower thereon of an extension comprising two ladders, in which a side bar of one is hinged to a side bar of the other, these two ladders when closed on the hinge forming a single ladder, and there being means to lock the two ladders in an open position, in planes at an angle with each other, whereby each stiffens the other, and there being a plate on one of said ladders arranged longitudinally therewith covering a portion of the rounds thereof and leaving substantially an equal portion thereof uncovered, whereby a continuous foot path less than the width of the ladder is formed when the extension is near enough level, and rounds are exposed for use as a ladder when near enough upright.

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

JOHN R. McPHERSON.

Witnesses:

EVERETT E. KENT,  
OLIVER R. MITCHELL.