No. 852,213. PATENTED APR. 30, 1907.

F. A. BALLIN.

WATER TOWER.

APPLICATION FILED DEC. 6, 1904.

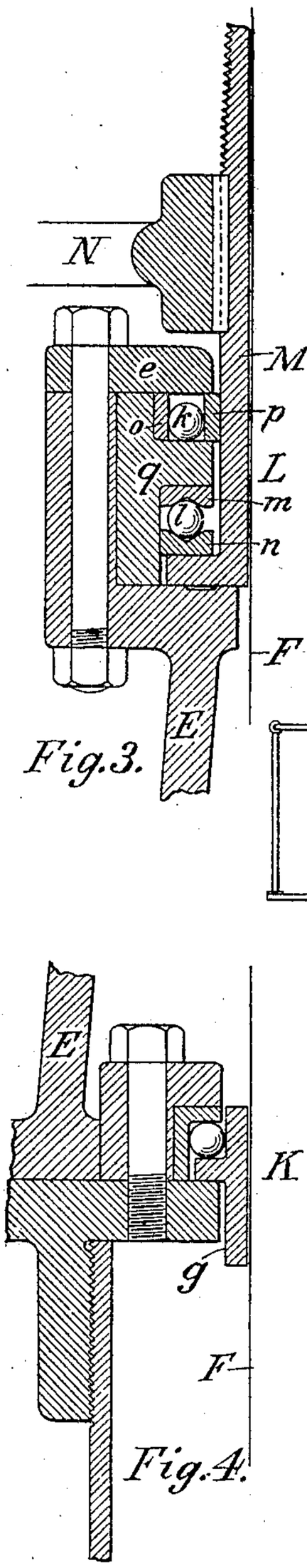

Fig. 3.

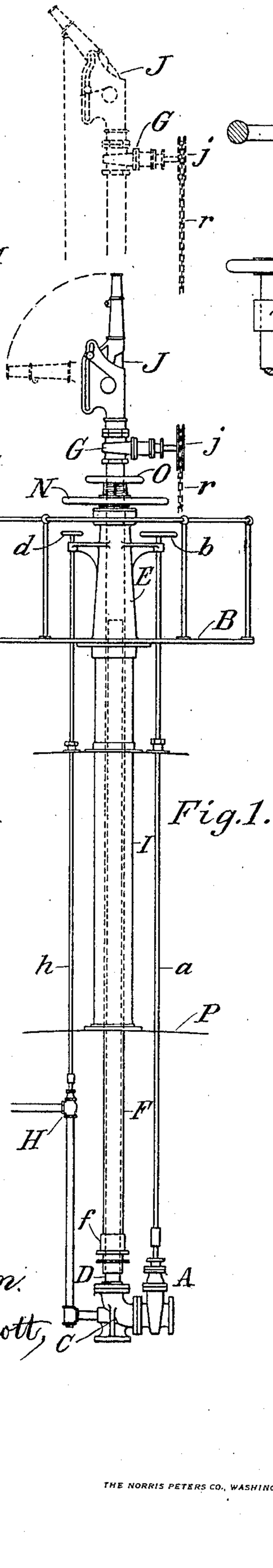

Fig. 1.

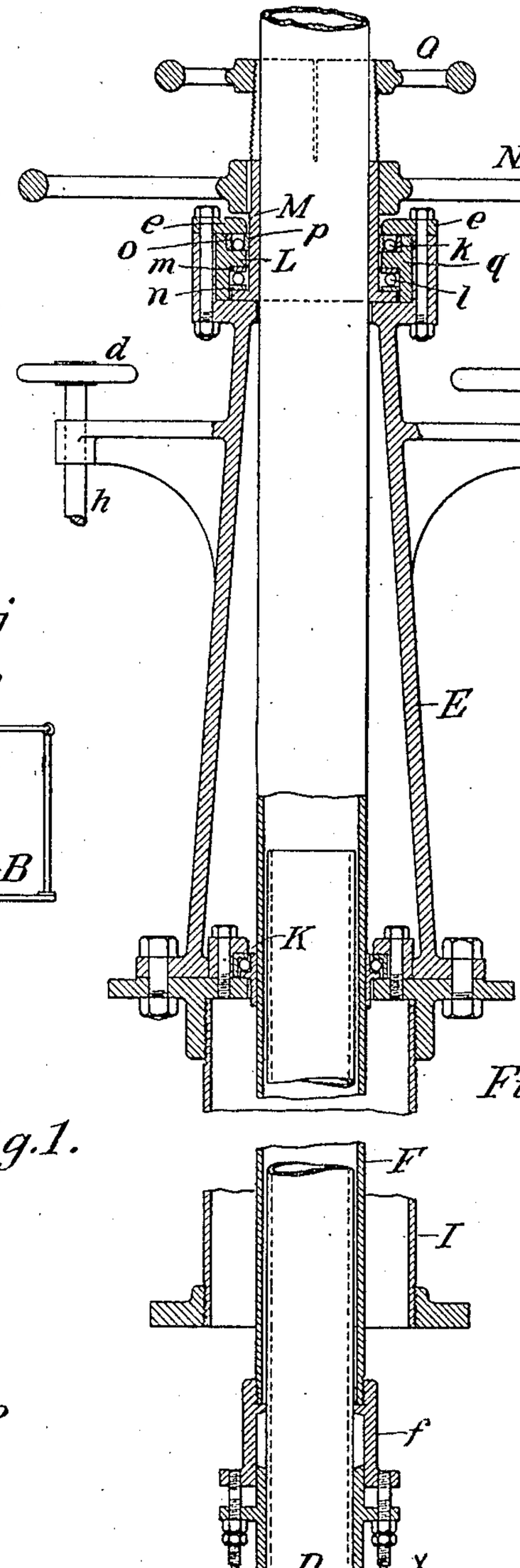

Fig. 2.

Fig. 4.

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WATER-TOWER.

No. 852,213. Specification of Letters Patent. Patented April 30, 1907.

Application filed December 6, 1904. Serial No. 235,676.

To all whom it may concern:

Be it known that I, FREDERICK A. BALLIN, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Water-Tower, of which the following is a specification.

My invention relates to an improvement in fire apparatus, to be used on board of a fire-boat and consists of a water tower, which can be raised to a considerable elevation above the vessel, and being fitted with a suitable flexible nozzle at the top, can be directed over any obstruction near the water front into fires back of such obstructions, or in case of a low stage of the water, can be directed to a burning building on the dock, without obliging the fire-boat to stand off from the dock.

The construction of the apparatus permits of raising, lowering and locking of the tower at any desired height, between lowest and highest position, and of describing a complete circle around its axis.

The construction further permits the apparatus to be controlled by one person standing on an elevated platform on the deck of the vessel.

The power for raising and throwing water is derived from the same source and is controlled by valves.

The construction of the apparatus is such that it occupies a very small space in the vessel, making its installation possible in a boat already built.

The vertical and lateral strains due to the internal pressure and the reaction at the nozzle are borne and resisted by ball or roller bearings whenever the tower is locked, in which condition the tower and nozzle can be revolved by hand around its vertical axis.

I obtain these qualities and features by the mechanism illustrated in the accompanying drawing, in which

Figure 1 is a general elevation of the entire tower, the dotted line drawing showing nozzle in partially raised position. Fig. 2 is a section in which the piping is broken in order to show details on a larger scale. Fig. 3 shows ball bearing support at top of stand. Fig. 4 shows ball bearing at bottom of stand.

Similar letters refer to similar parts throughout the views.

The valve A admits or shuts off the supply of water from the fire pumps; and its stem *a* is extended to the platform B and fitted with hand-wheel *b*. After passing through the valve A the water passes through the elbow C into the brass pipe D; the elbow C rests on the keelson or other suitable support, as low down as possible. The pipe D extends up into the stand E as shown and is open on top. The steel pipe F telescopes over pipe D and is fitted at its lower end with a stuffing box *f* and closed on top with the valve G, on top of which the nozzle J is fitted. The gland of stuffing-box *f* has an outside extension *x* to protect the gland studs from striking when down. The elbow C has a side opening, piped to the waste valve H, which has its stem *h* also extended to the platform and there fitted with the hand-wheel *d*. The pipe F is guided on the outside in two bearings K and L as shown.

The stand E is supported by the pipe I or any other suitable support on the vessel, preferably extended down to the main deck P and properly braced in all directions to withstand lateral and vertical strains. To the top flange of pipe I is bolted the antifriction bearing K (Fig. 4) having a loose inside ring *g*, fitting loosely around the pipe F, projecting below flange in order to engage with the boss of the stuffing box *f*, when the pipe F is raised to its extreme height before the locking gear is applied as hereafter described. In operating the tower with proper care, the pipe F should be stopped just before reaching the extreme extension and the ring *g* is projected below flange simply as a safeguard to protect the boss of the stuffing box in coming in direct contact with the flange, which would cause undue friction. As designed in case of a slip of the pipe F to its extreme extension, the internal upward pressure is borne by the ball bearing K.

To the top of stand E is fitted the double ball bearing L, resting on the flange of the composition sleeve M and held in place by the flat ring *e* as shown. This ball bearing consists of two sets of casing rings of hardened steel, inclosing two sets of balls as shown in Fig. 3. The balls *k* and *l* are held between the casing rings in such manner that the rings *m* and *n* will resist the vertical strains and the rings *o* and *p* the lateral strain, when the sleeve M is locked to the pipe F. This is obtained by allowing between the rings *m* and *n* and the sleeve M a lateral play and the balls *k* a vertical play.

The follower *q* must be fitted tightly into place.

The sleeve M is extended above the stand and fitted with a large hand wheel N and above this wheel turned on the outside to a taper and threaded as shown. The threaded part is split and fitted with another hand wheel O, which works on the tapered thread and when turned down will close the split section of the sleeve against the pipe F and result in clamping them tightly together. A split band with tightening screw or any other suitable device may be substituted to clamp the sleeve to the pipe F.

To the top of pipe F is fitted the gate valve G having a chain wheel *j* fastened to its stem, over which an endless chain *r* is fitted, permitting the valve to be operated from the platform, when raised beyond reach. To the top of this valve is fitted the flexible nozzle J of the same construction as made for water towers used on land. Its tip is raised or lowered by means of a hand rope attached to the end of nozzle. After the nozzle has been raised and the pipe F has been tightly clamped, the hand rope can be pulled down until the nozzle has the desired angle and then fastened to the turning wheel N, which revolves with the nozzle.

Having thus described the parts constituting the water tower and its mechanism, I will describe its operation:

All valves are locked and nozzle is down. After fire pumps have raised sufficient pressure in the mains, the operator on the platform B opens the inlet valve A by means of the hand wheel *b*, which will cause the pipe F to raise to desired height. The pipe is then locked by the clamping wheel O. The nozzle is then turned by hand wheel N to the desired direction and the valve G opened by means of the endless chain and the tower is ready for work. After valves G and A are again closed, the opening of the waste valve H by means of hand wheel *d* will cause the pipe F to telescope down again by gravity.

I claim as my invention:

1. A water tower having a vertical stationary stand pipe, a movable pipe telescoping thereover, a nozzle on said movable pipe, a stationary stand for guiding said movable pipe which is entirely apart from the water passage and locking devices therefor, substantially as shown and described.

2. A water tower having in combination with a telescopic pipe section, the valves and clamping devices for controlling the height and direction of the nozzle, and a stationary platform arranged above the valves, and means connecting said valves with said platform to permit manipulation of the valves and the clamping devices from the platform, substantially as shown and described.

3. A water tower having an outside telescopic pipe, antifriction bearings in which said pipe is guided, a locking device and a stand including means for relieving vertical and lateral strains on the pipes, substantially as shown and described.

4. A water tower having a fixed stand pipe, a movable pipe telescoping thereover, a stationary platform surrounding said pipe, said movable pipe being arranged to be lowered by hydraulic means under control from said platform and means for locking said movable pipe from movement at times, substantially as shown and described.

5. A water tower comprising a vertical stationary stand pipe, a movable pipe rotatably telescoped there-over, a nozzle carried by said movable pipe, a stationary platform surrounding said stand pipe, means for guiding said movable pipe, hydraulic means for elevating said movable pipe, means for locking said pipe to its various positions, said locking means, said guiding and said hydraulic means controllable from said platform, substantially as shown and described.

6. A water tower comprising a fixed section and a movable section telescopically arranged thereover, anti-friction bearings for said movable section, a platform through which said movable section passes, means for supporting said platform, and means for raising and lowering said movable section.

7. A water tower comprising a fixed section and a movable section telescopically arranged thereover, a discharge nozzle for said movable section, a control valve for said nozzle, means for forcing water into the fixed section to raise the movable section, a control valve for controlling the admission of water to the fixed section, a waste pipe connected with the fixed section, a valve inside said waste pipe for controlling the exit of water through the waste pipe, and a platform surrounding said movable pipe, means connecting all of said valve mechanisms with said platform to be operable therefrom, all being arranged substantially as shown and described.

8. A water tower comprising a vertical stationary stand pipe, a movable pipe, a nozzle carried by said movable pipe, means for guiding said movable pipe, hydraulic means for elevating said movable pipe, a stationary platform, means for controlling said elevating means from said stationary platform, means controllable from said stationary platform for locking said pipe to its various positions, substantially as shown and described.

9. A water tower having an outside and inside telescoping pipe, anti-friction bearings in which said pipe is guided, a locking device and a stand including means for relieving vertical and lateral strains on the pipes, a stationary platform on said stand, means controllable from said platform for raising and lowering said telescoping pipe, substantially as shown and described.

10. A water tower having a fixed stationary pipe, a movable pipe telescoping thereover, a stationary platform surrounding said pipe, said movable pipe being arranged to be moved by hydraulic means, means for controlling said hydraulic means from said platform, means controllable from the platform for locking said movable pipe from movement at times, substantially as shown and described.

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Witnesses:
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