

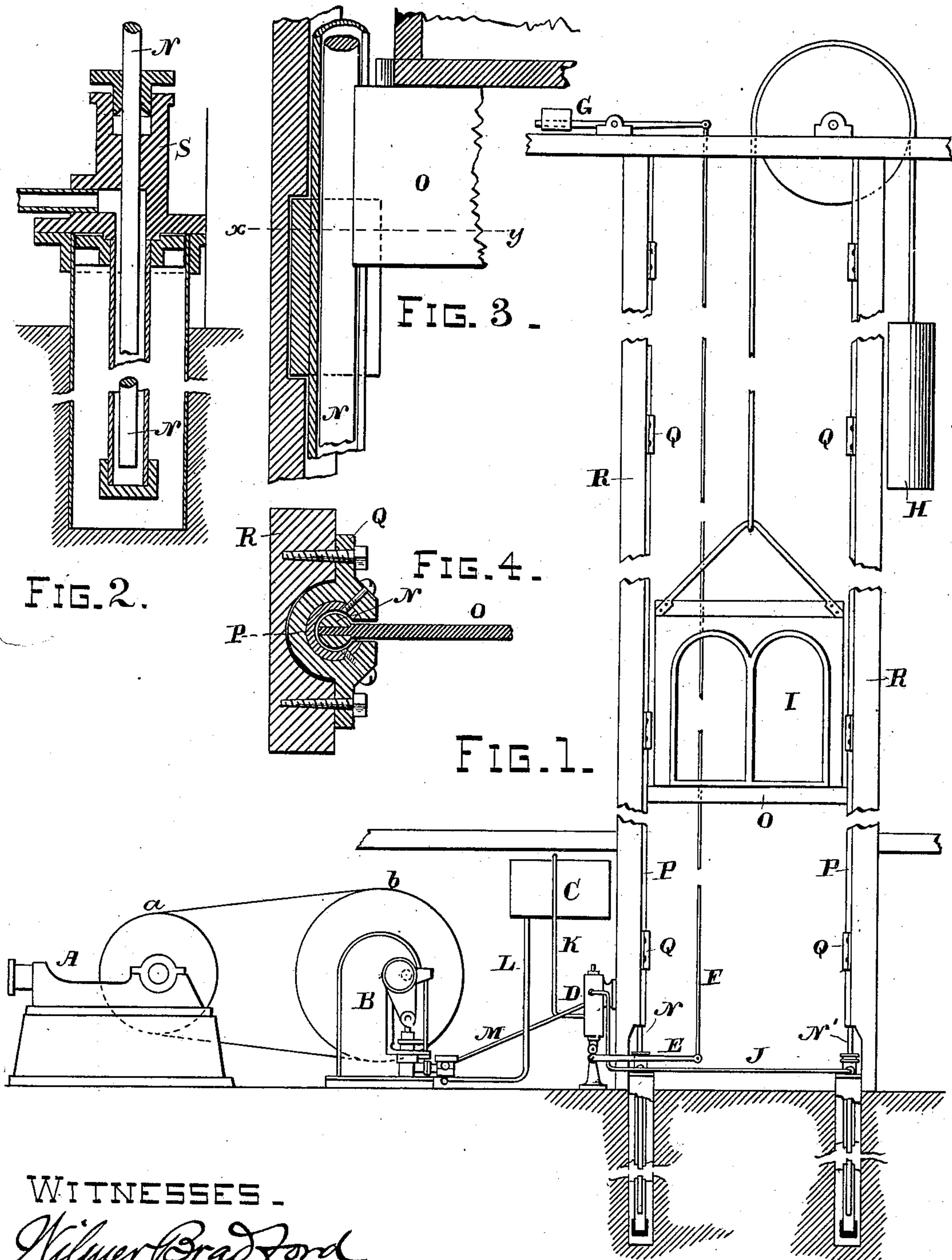
(No Model.)

J. MOORE.

HYDRAULIC RAM ELEVATOR.

No. 322,957.

Patented July 28, 1885.



WITNESSES.

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JOSEPH MOORE, OF SAN FRANCISCO, CALIFORNIA.

HYDRAULIC-RAM ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 322,957, dated July 28, 1885.

Application filed December 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MOORE, of San Francisco, State of California, have invented a new and useful Improvement in Hydraulic-Ram Elevators, of which the following is a specification.

My invention relates to what are known as "ram-elevators," used for freight and passengers, which are operated by rams set vertically, and upon which the cabs of the elevators rest, to rise and fall as water under pressure is forced in or is permitted to escape from the cylinders in which the rams are inclosed, these cylinders being generally sunken in the ground.

The invention consists in an arrangement of parts by which the single rams ordinarily used are replaced by sets of two, placed at the sides instead of the center of the cab, of such small areas that the machinery connected with them may be made lighter and less expensive, while the water-pressure is largely increased and less of it used, while safety and general effectiveness are maintained.

In the accompanying drawings, forming part of this specification, Figure 1 is a front elevation in broken parts, partly in section. Fig. 2 is a broken vertical section of one of the wells, with ram and cylinder within it. Fig. 3 is a vertical broken section giving a view of the ram, the cab, and the ram-guide, related one to the other. Fig. 4 is a sectional plan taken through line *x y* of Fig. 3.

In all the figures like letters of reference represent like parts.

In Fig. 1, A is a steam-engine of common design. It drives the pumps B by a belt connecting the driving-wheel of the engine with the driven wheel of the pumps. These pumps (of which there may be three in a row, driven by eccentrics on the driving-shaft above) are ordinary force-pumps. Nothing is new about them, so that a detailed description is unnecessary.

C is a tank holding water enough and to spare to fill both ram-cylinders. From this tank the pumps take their supply, and into it the water is emptied from the ram-cylinders when the cab is lowered.

D is the valve-chamber in which the valves

are moved to start or stop the elevator. No detailed description of this is needed, for any suitable three-way cock will do.

E is the ordinary lever with the operator's rod or rope F and counter-balance G.

H is the counter-balance for the cab I, to which it is connected by a rope, as clearly shown.

J is the inlet and outlet pipe of both ram-cylinders, which operate simultaneously.

K is the discharge-pipe, delivering water from ram-cylinders to tank C.

L is the suction-pipe from tank C to pumps B.

M is the pressure-pipe through which water is forced from pumps to ram-cylinders.

In the foregoing parts nothing is new. The new part consists in the rams and their guides, which I will now describe.

In Fig. 1, I show two rams, N N', one at each side of the cage. They are secured to the cross-bar O in the manner hereinafter described. The rams are much smaller than heretofore, and are inclosed in guides P from top to bottom of the lift, by which they are prevented from buckling by the load resting on them. The guides are simply lengths of wrought-iron pipe held in brackets Q, which are fastened to the posts R. They are slotted from top to bottom to allow the bar O to freely pass up and down, (see Fig. 4,) where the relation of ram, guide, bracket, and cross-bar is best illustrated. The guides are held by tap-bolts passing through the brackets Q and into the guides.

The manner of securing the rams to the cross-bar O may be varied. I show in the drawings that the cross-bar is simply inserted in a slot cut in the solid ram; but if the ram be made of piping the cross-bar should simply rest upon it, having a boss on the end to match the diameter of the ram. Then a bolt, with screw-nut on top and slot and key at bottom, should be passed down through the boss and into the ram-pipe below it, when, if the key of the bolt be passed through slots in both bolt and ram, the nut on top of cross-bar may be screwed up tightly and the parts will be held firmly together. This is merely suggestive. Any suitable fastening may be used.

The ram-cylinders are like those in use, except they are much smaller in diameter. They

are made of wrought-iron pipes, with cast-iron heads S, in which a stuffing-box and gland are accommodated.

5 In Fig. 2 the well, ram, and cylinder are plainly shown.

The operation is as in other elevators of this class, except that higher water-pressure is used, and the massive unguided central ram is dispensed with. The machinery is general-
10 ly lighter, less expensive, and requiring less power to operate.

What I claim as my invention, and desire to secure by Letters Patent, is as follows:

In hydraulic-ram elevators, the combination of the rams N N', the cylinders inclosing the 15 rams, and the cylindrical guides P, secured to the sides of the elevator-shaft, constructed and operating substantially as and for the purpose described.

JOSEPH MOORE.

Witnesses:

GEO. PARDY,
RALPH MOORE.