

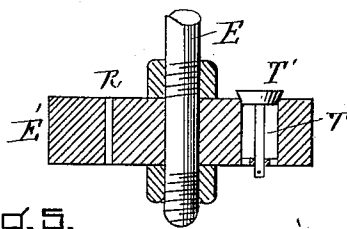
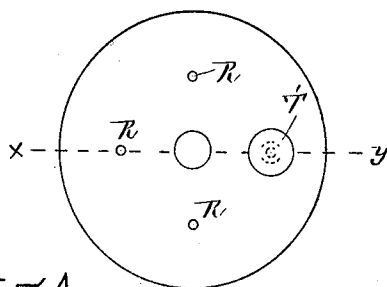
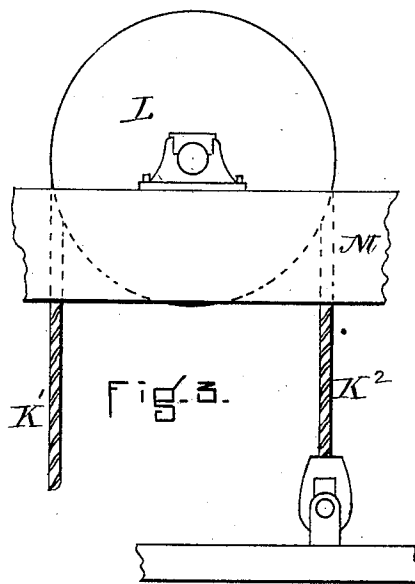
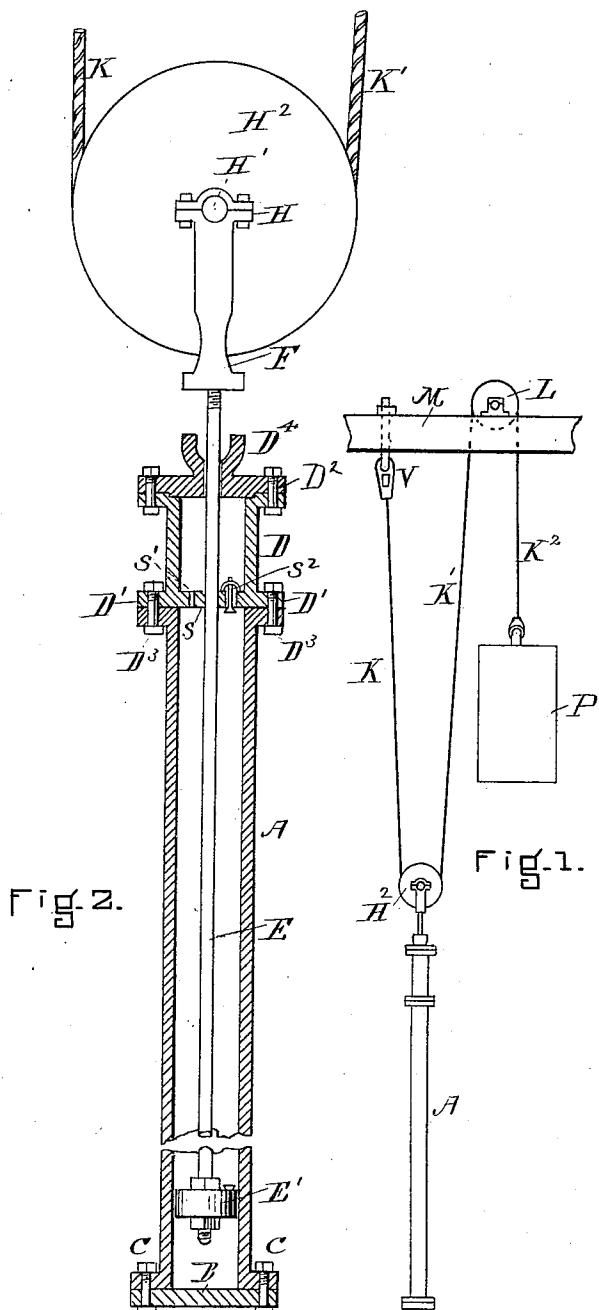
(No Model.)

W. E. NICKERSON.

ELEVATOR.

No. 390,797.

Patented Oct. 9, 1888.



WITNESSES.

Matthew M. Blunt,
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WILLIAM E. NICKERSON, OF CAMBRIDGE, MASSACHUSETTS.

ELEVATOR.

SPECIFICATION forming part of Letters Patent No. 390,797, dated October 9, 1888.

Application filed December 27, 1887. Serial No. 259,182. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. NICKERSON, of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Elevators, of which the following, taken in connection with the accompanying drawings, is a specification.

The object of my invention is to construct an apparatus which, by a direct and simple action, shall regulate and control the velocity of the descent of an elevator. This object I attain by the mechanism shown in the accompanying drawings, in which—

Figure 1 shows in elevation, on a small scale, an elevator and my velocity-controlling device attached. Fig. 2 shows in elevation a cylinder with its valves and piston and connected parts, which constitute my velocity-controlling device. Fig. 3 shows in elevation a simple device for transmitting the motion allowed by the velocity-controlling device to the elevator-carriage. Fig. 4 is an enlarged plan of a detail, and Fig. 5 is a section taken on line X Y of Fig. 4.

My velocity-controlling device is based upon the retardation, in a cylinder full of fluid, of a piston through or by which the said fluid may pass more or less rapidly as it (the piston) moves in the cylinder.

In the drawings, A, Figs. 1 and 2, represents a cylinder having an air-tight base, B, secured to its lower end by bolts C and C, and at its upper end a shorter overflow-cylinder, D. These two cylinders may be attached to each other by flanges D' D' and bolts D² D². The upper end of the overflow-cylinder D has a cap, D², and a waste-cup, D⁴.

Within the cylinder A, I have a piston, E', connected by a piston-rod, E, to a forked housing-piece, F, to the upper end of which I have boxes H, which serve for bearings for the journal H' of the pulley H².

K, Figs. 1 and 2, is a rope, one end of which is made fast to the beam M, Fig. 1, as shown at V. This rope K passes around the pulley H², then upward, as indicated at K', around the pulley L, thence downward, as indicated at K², to the elevator P. By this arrangement

of the rope K K' K² and the pulleys H² and L, I am enabled to have the elevator move a distance which is about twice the distance that the piston E' moves. By inserting another pulley and making the proper rope connections the motion of the elevator may be four times that of the piston E', as is well known to mechanics.

I will now describe more particularly the action of the piston E', referring to Figs. 4 and 5. This piston is made to work comparatively tight in the cylinder A, and is provided with a series of openings, R R, through which the fluid in the cylinder A may pass as the piston traverses the cylinder.

T is a large orifice made in the piston, and is provided with a check-valve, T', so that during the upward movement, which corresponds to the downward movement of the elevator-carriage, no fluid can pass through the orifice T, the only passage being through the openings R; but in the downward passage of the piston corresponding to the upward passage of the elevator-carriage the valve T' opens and admits the free passage of the fluid through the piston—that is, the piston E' offers no resistance to the upward passage of the elevator.

I will now explain the use of the overflow-cylinder D. If we suppose the cylinder A to be completely filled with fluid, when the piston E' is at its highest point—that is, near the disk S—it will be evident that when it is at its lowest point, as shown in Fig. 2, then a great part of the length of the piston-rod E is also within this cylinder A, and to allow for the space now occupied by the piston-rod E some of the fluid within the cylinder A must escape. To provide for this escape, I have an opening, S', made in the disk S, Fig. 2, so that as the rod E descends and occupies the space within the cylinder A the fluid may escape into the overflow-cylinder D, and there remain until a counter-movement of the rod E takes place. To allow the oil in the overflow-cylinder D to freely pass back into the cylinder A during the upward stroke of the piston, I make a downwardly-opening valve, S².

The weight of the wheel H², the parts F and

H, the piston-rod E, and the piston E' combined constitute together a counter-weight for the elevator.

I claim—

- 5 In an elevator-regulating device, the combination of the piston rod E, piston E', having an upwardly-opening valve, T', its orifice T, the free passage R, and the cylinder D and

disk S, having a free passage, S', the downwardly-opening valve S², and its passage, all substantially as described, and for the purpose set forth.

WILLIAM E. NICKERSON.

Witnesses:

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