

(No Model.)

2 Sheets—Sheet 1.

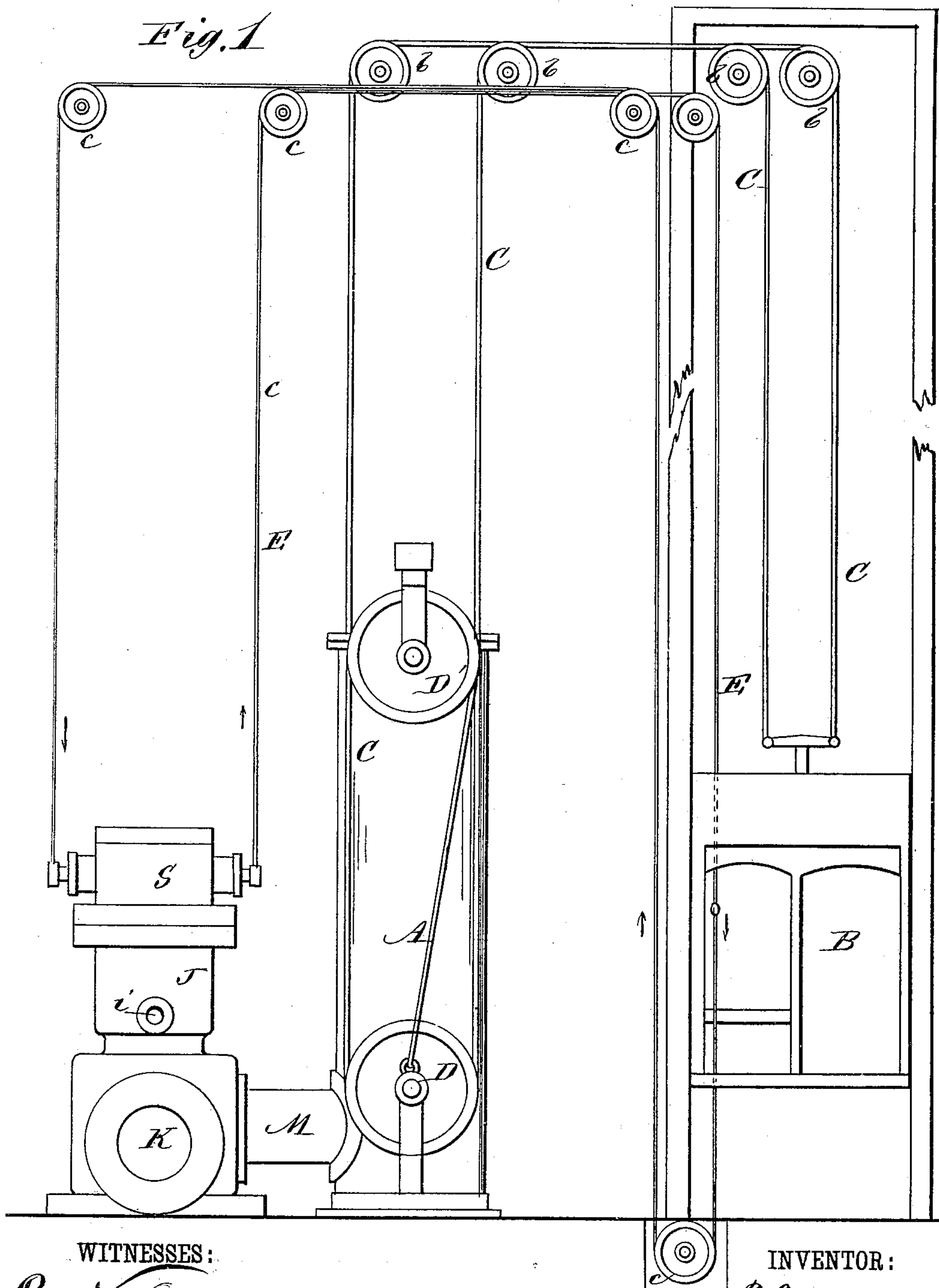
P. F. MOREY.

VALVE FOR HYDRAULIC ELEVATORS.

No. 354,020.

Patented Dec. 7, 1886.

Fig. 1



WITNESSES:

C. Neveu

C. Sedgwick

INVENTOR:

P. J. Morey

BY

Munn Co

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

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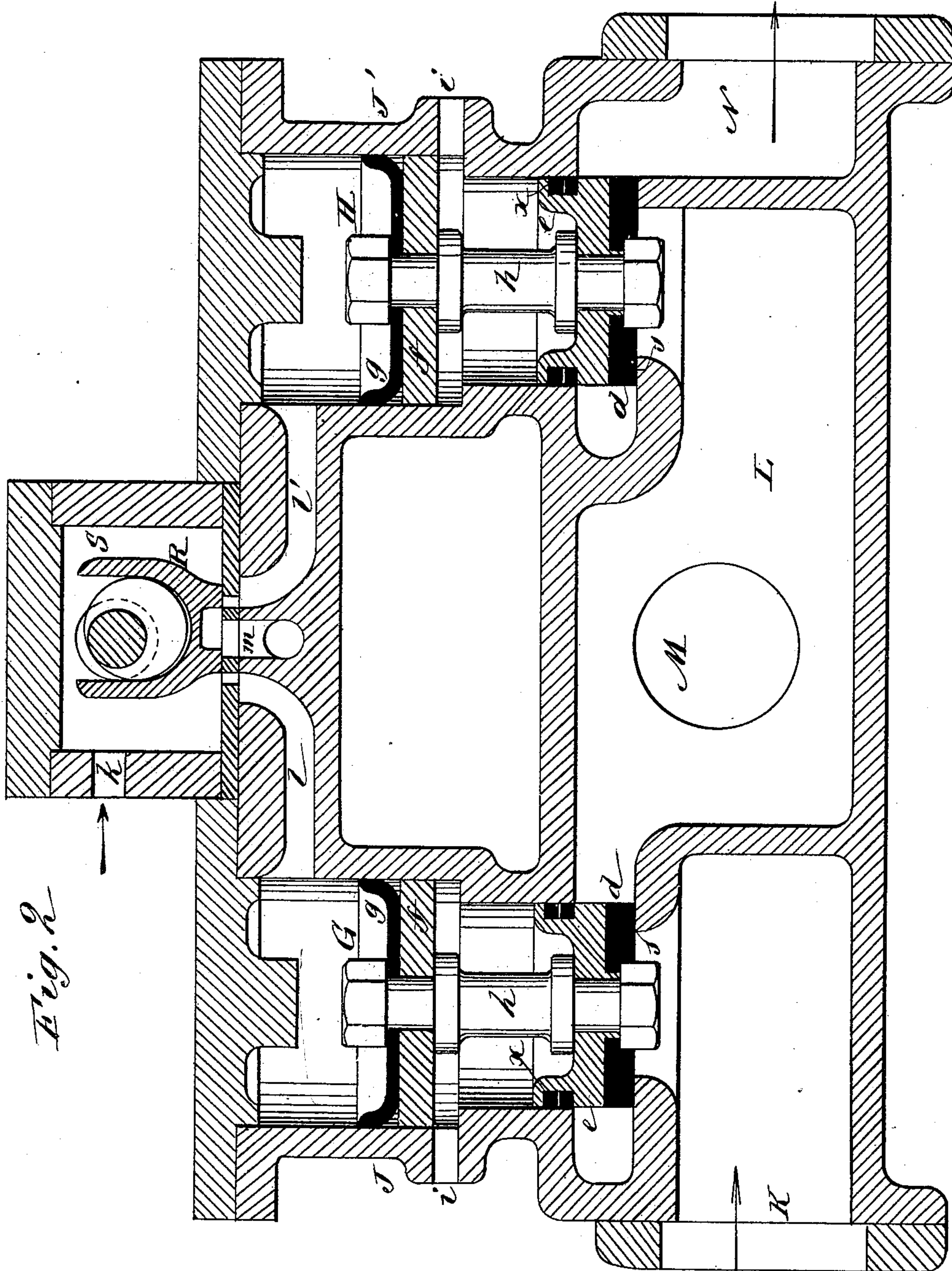


Fig. 2

WITNESSES:

C. Neveux
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UNITED STATES PATENT OFFICE.

PARKER FARNSWORTH MOREY, OF PORTLAND, OREGON.

VALVE FOR HYDRAULIC ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 354,020, dated December 7, 1886.

Application filed September 9, 1886. Serial No. 213,116. (No model.)

To all whom it may concern:

Be it known that I, PARKER FARNSWORTH MOREY, of Portland, in the county of Multnomah and State of Oregon, have invented a new and useful Improvement in Valves for Hydraulic Elevators, of which the following is a full, clear, and exact description.

This invention relates to the valves and valve-connections used for controlling the supply and discharge of water to and from the rams of hydraulic elevators or other similar apparatus.

It has mainly for its object the prevention of the excessive wear of the valves, which is so common in hydraulic elevators, especially when the water carries sand or grit along with it; and it furthermore has for its object simplicity in the construction of the valves with facility of access and capacity of being readily repaired.

The invention comprises a system of differential valves controlled by an auxiliary valve and controlling in their turn through one and the same duct both the admission of water to and escape of water from the ram of the elevator, with provision for arresting the motion of the ram as required to stop the elevator at any desired point, substantially as hereinafter described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in both figures.

Figure 1 represents a side elevation of a hydraulic elevator having my invention applied; and Fig. 2, a sectional elevation upon a larger scale, of the several valves, chambers, ports, and passages controlling the passage of the water to and from the ram of the elevator, and for regulating the motion and stoppage of the elevator as required.

Fig. 1 shows the invention applied to a hydraulic elevator of ordinary or, it may be, of any other suitable, construction. Thus A is the working-cylinder of the ram, B the elevator platform car or cab; and C, the hoisting and lowering rope or ropes connected with the car or cab and passing over suitable guide-pulleys, b, and over or round the usual multiplying sheaves D D' on each side of the ram-cylinder, the ones, D, of which have fixed positions,

while the others, D', are carried by the ram. E is the hand-rope passing through the car and over guide-pulleys c to the valve for starting, stopping, and reversing the motion of the car as required. About such construction so far nothing here is claimed as new.

The valves used for controlling the motion of the ram consists of a differential inlet-valve, G, a differential exhaust-valve, H, and an auxiliary valve, R, which controls the differential valves G H.

The valves G and H are of similar construction, and are fitted to work within cylinders or chambers J J' of differential diameters corresponding to the different diameters of the piston-like heads of the valves, the piston-like head of largest area of each of said valves here being shown uppermost, and their smaller heads as resting when down upon a valve-seat, s. The smaller head of the one valve, G, controls the admission of water under pressure from a main supply-inlet, K, to a chamber, L, from which is the passage or duct M, that passes the water to and from the ram-cylinder of the elevator, while the smaller head of the other valve, H, controls the discharge of water from the ram through the same duct M and chamber L to a main exhaust-outlet, N. Each of said valves G H may be constructed as follows, to wit: A lower rubber disk, d, which when the valve is closed rests upon the seat s, a brass head or disk, e, having an annular packing, x, which parts constitute the smaller piston-head of the valve, an upper brass disk or head, f, and leather top cup-packing, g, which parts constitute the larger piston-head of the valve, and a stud, h, connecting the two piston-heads. An outlet, i, is made in each differential cylindered chamber J J' for the escape of any leaking water between the larger and smaller piston-heads of each valve G H to prevent any interference with their action. The valve cylinders or chambers J J' are closed on top by lids, upon taking off which the valves G H may readily be removed for repair.

R is the auxiliary valve, controllable from the elevator-car, and serving in its turn to control the differential valves G H to start, stop, and reverse the elevator, as required.

This valve R may be an ordinary slide, one of D-form, and is arranged within a valve-case, S, to which water is freely admitted, as by an inlet, *k*. This valve R controls side ports, *l l'*, leading to the portions of the cylinders J J' of greater area over the valves G H and an exhaust port or passage, *m*. The ports or passages *l l'* are both exhaust and inlets from and to the differential valves G H, and the passage *m* a main exhaust or outlet to the auxiliary valve R.

The following will serve to describe the operation of the invention: The water under pressure from the main entering the inlet K is always, it should be remembered, in communication with the bottom or smaller end of the differential inlet-valve G, and water is always freely supplied to the valve-case S. Now, supposing the ram to be at rest and the elevator platform or car B to be at the lower floor of the building and it be desired to ascend, the auxiliary valve R is moved, say, to the left, so as to put the exhaust-outlet *m* in communication with the port or passage *l*. This relieves pressure from the upper or larger end of the differential valve G, which then rises by the pressure to which it is exposed on its smaller end and admits water from the main into the chamber L and duct or passage M, leading to the ram. The valve R is kept in this position until the car has reached its required height, when a sufficient reverse motion—that is to the right—is given to said valve to uncover the port *l'*, which will admit water from the chamber S over the larger end of the differential valve G and cause the latter again to be closed and the supply to the ram to be shut off. This will leave the ram and car again at rest. These operations of opening the port *l* alternately to the exhaust-outlet *m* and to the water-space in the chamber S may be repeated any number of times, according to the number of intermittent and successive ascents the car is required to make, the differential exhaust-valve H keeping closed. Whenever, however, it is required to lower the ram and car, then the valve R is shifted still farther to the right, so as to bring the exhaust-outlet *m* in communication with the port or

passage *l'* and to relieve the larger end of the differential valve H of pressure, when the pressure of the water contained in the ram-cylinder and chamber L will cause the differential exhaust-valve H to rise or open and pass off the water from the ram through the main exhaust-outlet N, the inlet differential valve G then keeping closed. So soon, however, as the valve R is shifted again to the left in the chamber S, the exhaust differential valve H will be closed by the pressure of the water on its larger end.

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

1. In a hydraulic elevator and other like apparatus actuated by fluid or water pressure, the combination of separate differential inlet and exhaust valves adapted to control the supply and discharge of the fluid, and an auxiliary valve adapted to control the operations of said differential valves, substantially as specified.

2. In a hydraulic elevator and other like apparatus (using a ram) actuated by fluid or water pressure, the combination, with one and the same duct or branch which conveys the fluid to and from the motor, of a differential inlet-valve adapted to supply the fluid to said duct, a differential exhaust-valve adapted to discharge the fluid therefrom, and an auxiliary valve adapted to control the operations of said differential valves, essentially as described.

3. In a hydraulic elevator and other like apparatus using a ram actuated by fluid or water pressure, the combination of the differential inlet-valve G, the differential exhaust-valve H, the valve-cylinders J J' of differential diameters, the water-chamber L, the main inlet K, main outlet N, and ram duct or branch M, the passages *l l'*, the auxiliary valve R, the exhaust duct or passage *m*, and the valve-chamber S, having a water-inlet, *k*, substantially as and for the purposes herein set forth.

PARKER FARNSWORTH MOREY.

Witnesses:

J. P. MARSHALL,
W. S. CHARLESTON.