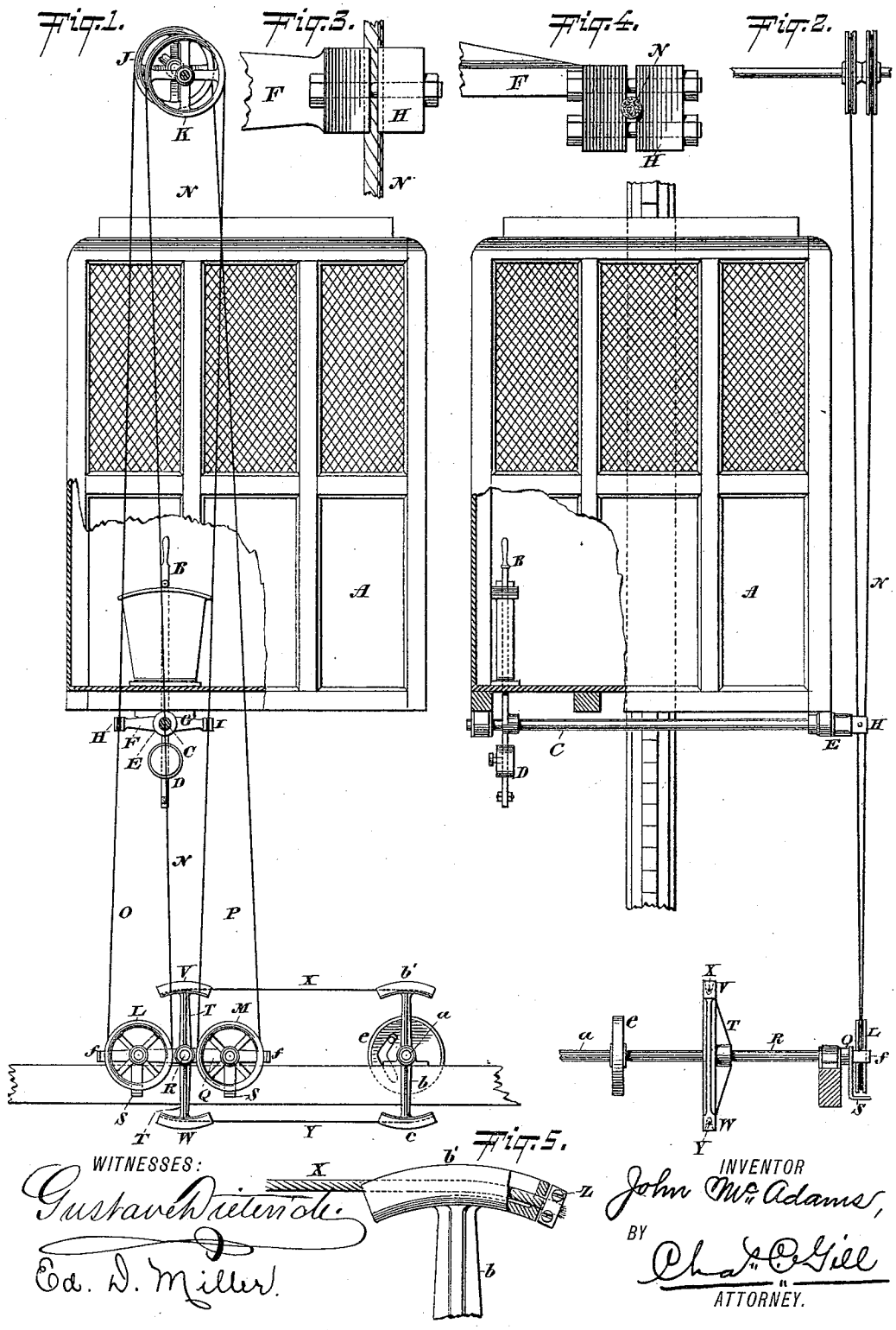
(No Model.)

J. McADAMS.

CONTROLLING DEVICE FOR ELEVATORS.

No. 460,675. Patented Oct. 6, 1891.



WITNESSES:

Gustave Dieterle.

Ed. D. Miller.

INVENTOR

John McAdams,

BY

Chas. E. Gill

ATTORNEY.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHN McADAMS, OF NEW YORK, N. Y.

CONTROLLING DEVICE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 460,675, dated October 6, 1891.

Application filed May 13, 1891. Serial No. 392,573. (No model.)

To all whom it may concern:

Be it known that I, JOHN MCADAMS, a subject of Her Majesty the Queen of Great Britain, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Hydraulic Elevators, of which the following is a specification.

The invention relates to improvements in hydraulic elevators; and it consists in the novel means hereinafter described and claimed, whereby the attendant in the carriage may conveniently and with reliability operate the pilot-valve, which admits water to the main valve of the hydraulic engine.

Referring to the accompanying drawings, Figure 1 is a side elevation, partly broken away, of an elevator-carriage with connecting mechanism constructed and arranged in accordance with the invention made the subject of this application. Fig. 2 is a like view of same, but looking at another face of the elevator-carriage. Fig. 3 is a detached elevation of one of the clamps for connection with the operating-cable. Fig. 4 is a detached top view of same; and Fig. 5 is a detached side elevation, partly in section, of a segment forming one of the details of the mechanism constituting the invention.

In the drawings, A designates the cab or carriage, provided at a suitable point with the lever B, which is normally vertical and adapted to be moved on its axis to either side of its vertical center. The lever B is secured on the rock-shaft C, which is mounted in bearings fastened to the lower surface of the carriage A, and said lever is provided with the counter-balance D, suspended below the carriage.

Upon the end of the rock-shaft C opposite to the lever B is mounted the frame E, consisting of the transverse arms F G, having upon their ends the clamps H I for positive attachment to the continuous cable N, passing over the pulleys J K at the top of the elevator-shaft, and the pulleys L M at the base of said shaft.

The cable N, while continuous, is divided practically into two sections, (lettered O P, respectively,) the former passing over the pulley L and thence upward to the pulleys J K, while the section P passes over the pulley M, and thence extends upward to the pulleys J K. The section O of the cable N is firmly secured to the arm F by means of the clamp H, and the section P is likewise secured to the arm G by means of the clamp I, and hence with the rocking of the shaft C through the working of the lever B the sections O P of the cable will be affected, as hereinafter described.

The pulleys L M are mounted upon the ends of the horizontal frame Q, secured upon the end of the rock-shaft R and having the arms S, whose lower extremities are in close proximity to the pulleys L M and prevent the cable N from slipping from said pulleys. The extremities of the frame Q also form fingers *f f*, which aid in preventing the cable from slipping from the pulleys L M. The frame Q is rigid on the shaft R, and upon said shaft there is also rigidly mounted the vertical frame T, provided at its upper and lower ends with the segments V W, which are grooved to receive the cables X Y, the latter at one end resting in said grooved segments and being there secured by means of clamps, such as the one lettered Z in Fig. 5. Adjacent to the shaft R there is suitably mounted in bearings the rock-shaft *a*, carrying the frame *b*, corresponding with the frame T, above described, and provided with the grooved segments *b c*, in which the other end of said cables X Y are secured. The cables X Y thus extend from the segments V W to the segments *b' c*, and may be kept taut by means of clamps Z.

Upon the shaft *a* there is also mounted the cam-wheel *e* or other medium for imparting motion from the shaft *a* to the pilot-valve, (not shown,) by which water is admitted to the main valve of the hydraulic engine; and it is the purpose of the invention to produce adequate means between the lever B in the carriage and the shaft *a* whereby, through the medium of the cam *e* or other instrumentality, the attendant in the carriage may have full control of the said pilot-valve.

In the operation of the invention it may be understood that the carriage A will be at rest when the lever B is in its normal or vertical position, and that when said lever B is turned

to the right (referring to Fig. 1) the carriage will be ascending, while when said lever is turned to the left the carriage will be descending, and when said lever is again returned to its normal position the carriage will come to a stop. When the lever B is turned to the right, the frame E will move with it, the arm F thereof moving upward and the arm G downward, the effect of this movement being that the arm F will draw the section of the cable N to which it is attached upward and the arm G will draw the section of said cable to which it is attached downward, thereby tilting the frame Q at an angle corresponding with that of the arms F G and turning the shaft R and frame T a definite distance toward the shaft *a*. The turning of the shaft R and frame T toward the shaft *a* operates, through the cables X Y and frame *b*, to rotate the shaft *a* a distance corresponding with the rotation of the shaft R, and thereby to move the cam *e* for the purpose of actuating the pilot-valve. (Not shown.) It will thus be seen that when the lever B is turned to the right its movement will be communicated to the shaft *a* and cam *e*, and that thereby the pilot-valve will be moved a definite distance corresponding with the movement of the lever B. When it is desired that the elevator-carriage will travel in the opposite direction, the lever B will be moved to the left, (see Fig. 1,) whereby the arm F, with its section of the cable N, will be depressed and the arm G, with its section of the cable N, elevated, thereby rotating, through the frame Q, the shaft R in a direction opposite to that in which it was before moved when the lever B was turned to the right. The rotation of the shaft R under the action of the lever B when turned to the left operates, through the frame T, frame *b*, and cables X Y, to cause the shaft *a* and cam *e* to have a movement in the same direction as and corresponding with the shaft R. Thus the cam *e*, when the lever B is turned to the left, will have a movement opposite to that imparted to it when said lever B was turned to the right, and the effect will be to actuate the pilot-valve, (not shown,) and thereby control the flow of the water and the operation of the main valve of the hydraulic engine.

It will be understood from the foregoing description that when the lever B is in the position illustrated in Fig. 1 the elevator-carriage will be at rest; that when said lever is moved to the right the cam *e* will be actuated and will operate the pilot-valve to permit the movement of the carriage A in one direction, and that when said lever B is moved to the left the cam *e* and pilot-valve will be actuated to permit the movement of the elevator-carriage in the opposite direction. The pilot-valve is thus placed under the control of the attendant in the carriage and its operation is both convenient and reliable.

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

1. The lever to be operated by the attendant in the elevator-carriage, combined with the frame E, the continuous cable N, secured to said frame and passing over pulleys at the upper and lower ends of the elevator-shaft, the frame Q, carrying said pulleys at the lower end of the elevator-shaft and mounted upon a rock-shaft, the frame T, mounted upon said shaft, the rock-shaft *a*, carrying the frame *b* and connected with the frame T, and mechanism for imparting the motion of the shaft *a* to the pilot-valve, substantially as set forth.

2. The continuous cable N and the lever in the carriage connected therewith, said cable passing over pulleys J K at the top of the elevator-shaft, combined with the tilting frame Q, the pulleys L M, carried by said frame and receiving the cable N, the tilting frame T, connections X Y, tilting frame *b*, and mechanism, substantially as described, intermediate the frame *b* and the pilot-valve, substantially as set forth.

3. The pulleys J K at the top of the elevator-shaft, the frame Q, mounted on a rock-shaft at the base of said elevator-shaft, the pulleys L M, mounted on the opposite arms of said frame, and mechanism for communicating the motion of said frame to the pilot-valve, combined with the tilting frame E, carried by the carriage, and the continuous cable N, composed of sections O P, connected, respectively, with the opposite arms of said frame E, the section O passing over the pulley L and to both pulleys J K and the section P passing over the pulley M and to both pulleys J K, substantially as and for the purposes set forth.

4. The rock-shafts R *a*, the frames T *b* on said shafts, the segments on the ends of said frames, and the cables X Y, connecting said segments, combined with the frame Q on the shaft R, the pulleys L M on said frame Q, the cable N, the frame E, connected with said cable, and means for operating the frame E from the elevator-carriage, substantially as set forth.

Signed at New York, in the county of New York and State of New York, this 9th day of May, A. D. 1891.

JOHN McADAMS.

Witnesses:
CHAS. C. GILL,
ED. D. MILLER.