

No. 681,790.

Patented Sept. 3, 1901.

J. W. HICKMAN.
ELEVATOR BRAKE.

(Application filed May 2, 1901.)

(No Model.)

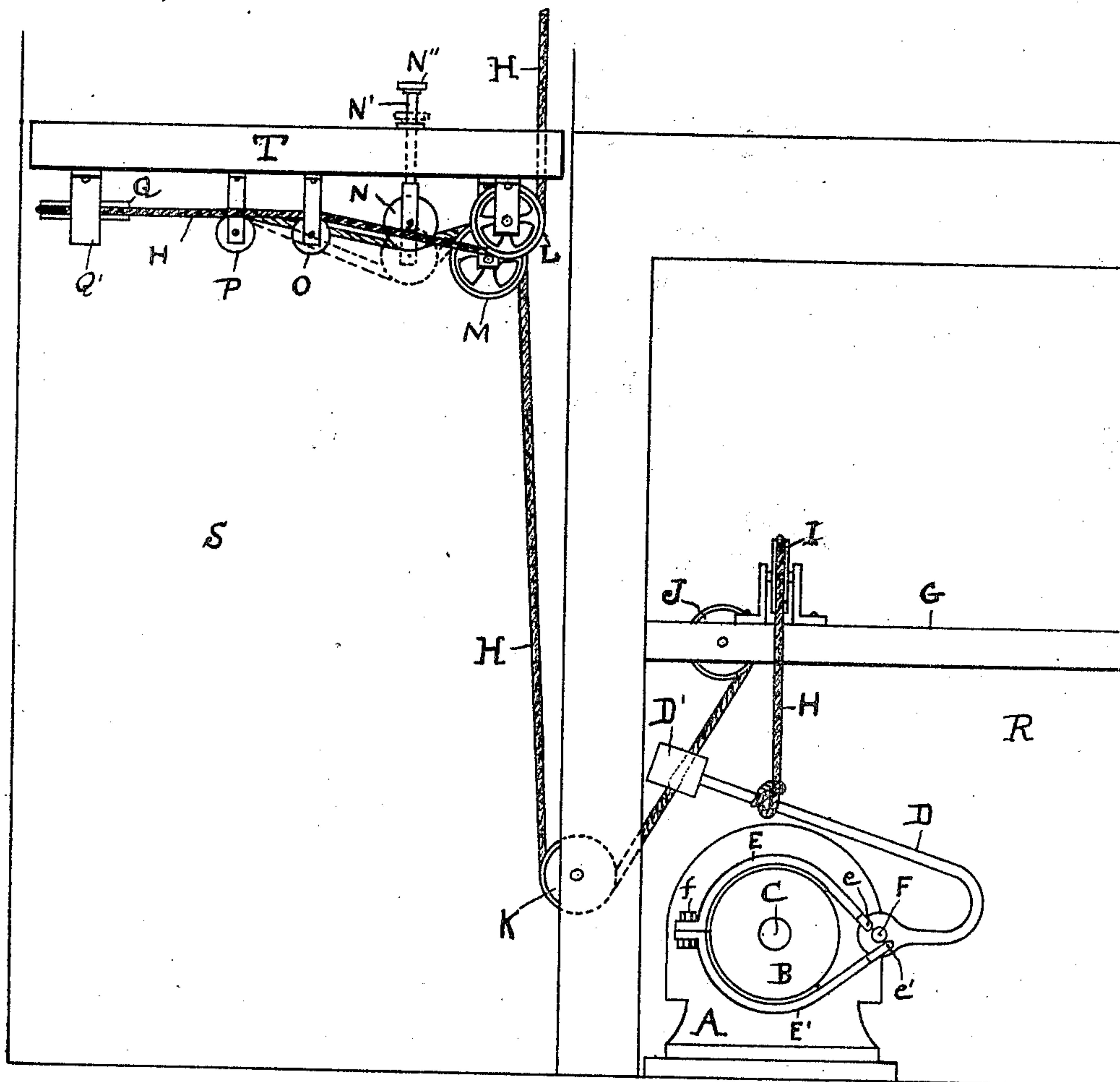


Fig. 1.

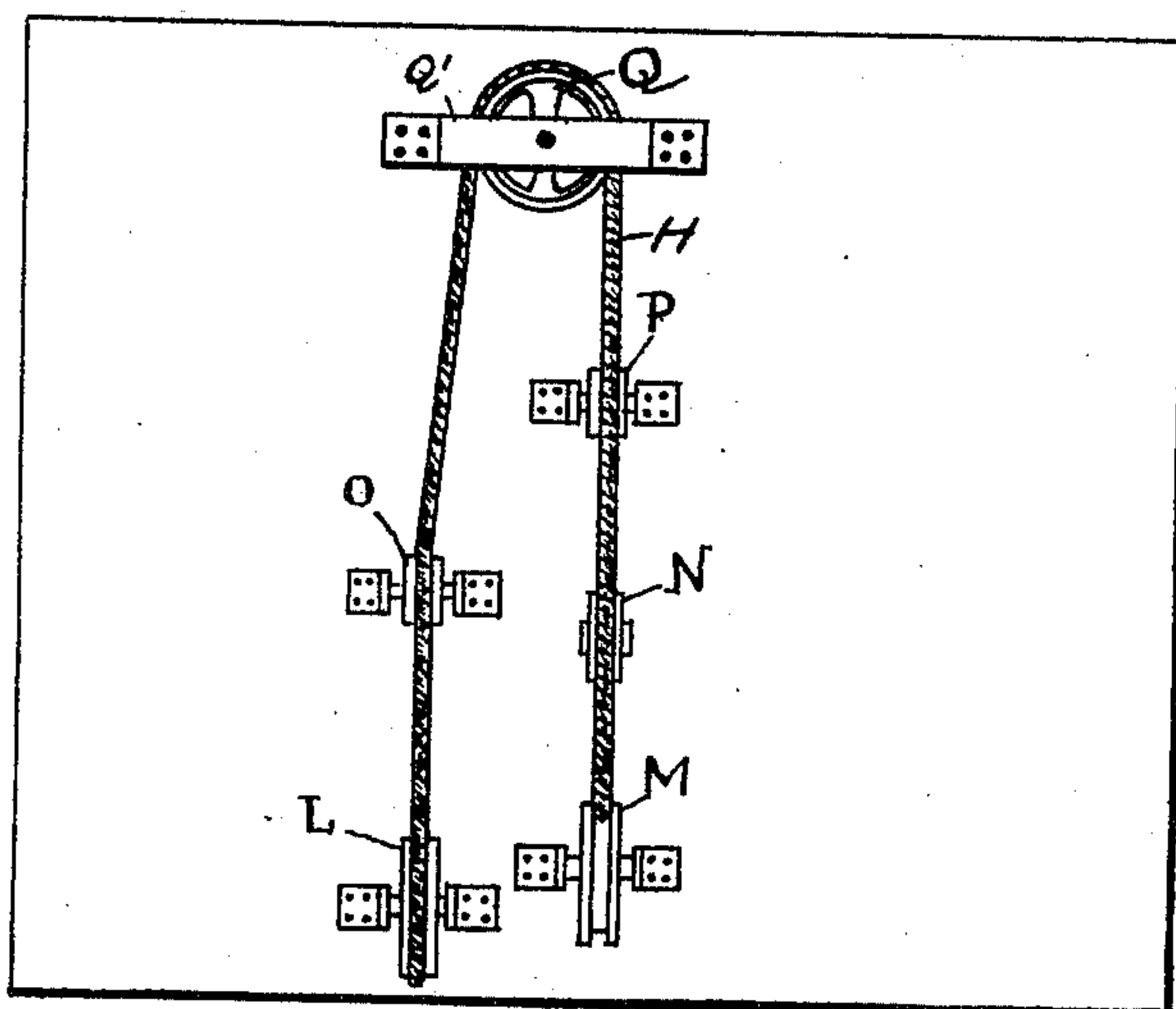


Fig. 2.

WITNESSES.
Matthew Sibley
Cm. Theobald.

J. W. Hickman.
INVENTOR
By R. J. M. Carty
ATTORNEY

UNITED STATES PATENT OFFICE.

JOSEPH W. HICKMAN, OF DAYTON, OHIO.

ELEVATOR-BRAKE.

SPECIFICATION forming part of Letters Patent No. 681,790, dated September 3, 1901.

Application filed May 2, 1901. Serial No. 58,404. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH W. HICKMAN, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Elevator-Brakes; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

15 This invention comprises brake-operating mechanism for elevators such as are run by electromotive force.

The object of the invention is to provide means whereby any consumption of the electric current is avoided at such times when it is not required for running the elevator-car—such, for example, as when the elevator is descending. The consumption of current not being necessary in the downward movement of the car, the brake is manually released by means of my invention and any waste of current for holding up the brake-lever is avoided.

25 Preceding a detail description of my invention, reference is made to the accompanying drawings, of which—

30 Figure 1 is an elevation of the lower portion of the elevator-shaft, the floor of the elevator-car, and the electric motor, showing my invention applied. Fig. 2 is a view of the under side of the elevator-car, showing my invention.

R designates a space in the basement of a building in which the electric motor A is placed.

40 S designates the lower terminal of an elevator-shaft.

C designates the shaft of the motor, upon which is mounted a pulley B, which has a smooth periphery.

45 E E' designate two parts of a strap or friction clutch which surround the pulley B and are connected by a bolt f.

D designates an angular lever which is fulcrumed on a shaft F. The ends of the straps E E' are connected to the head of the lever D on opposite sides of the fulcrum F, as indicated by e e', so that when the lever D is moved

on its fulcrum F in one direction—for example, when it is lowered—it will tighten both of the straps E E' upon the wheel B, and when moved in the other direction it will release the connection between said straps and pulley. 55

D' designates a weight on the free end of the lever D, which normally presses said lever downwardly to tighten the straps E E' around the wheel B. 60

H designates a rope or cable, one end of which is connected to the lever D and the other end of which is secured in any suitable manner at the top of the elevator-shaft—for example, on a cross-beam. (Not shown.) The lower portion of this rope passes around guide-pulleys I and J, which are placed at right angles to each other and are mounted on a cross-beam G at a suitable point above the motor. 65 The said rope thence passes around a lower guide-pulley K, which brings said rope to a point below the elevator-car. Above the pulley K there are two pulleys L and M, mounted on the lower side of the floor T of the elevator-car, one of said pulleys being projected somewhat below the other. By means of these two pulleys L and M the rope H is enabled to enter the connections on the lower side of the floor of the car and leave said connections approximately in a line with the pulley K, where said rope enters the elevator-shaft, so that the draft upon the rope which actuates the lever D will be in a straight or vertical direction. 70 The rope after leaving the pulley K passes over the upper periphery of pulley M, and thence horizontally beneath the lower periphery of a plunger-pulley N, over guide-pulley P, and thence around a terminal pulley Q, which is mounted in a hanger Q', with the face thereof parallel with the floor of the elevator-car. The rope after leaving pulley Q passes over the guide-pulley O and thence around pulley L, up through the elevator to the top of the shaft, where it is secured in a manner hereinbefore specified. 75 80 85 90 95

The means for starting and stopping the elevator are well known by those familiar with the subject. Therefore it has been deemed unnecessary to illustrate or describe them. They consist of the usual hand operating-lever, by which the current is thrown off and on. 100

Inasmuch as it does not require any current to propel the car in its downward move-

ment after being started, the amount of current heretofore wasted in holding up the brake-lever D during such downward movement is prevented from being wasted by the application of my invention as follows: The plunger-pulley N is connected to a foot-plunger N', which is projected through a suitable opening in the floor of the elevator-car and is provided with a head or foot portion N".

When the elevator-car is to descend, the conductor places his foot on the plunger and presses it downwardly to the limit, as shown in the dotted position. This applies tension to the rope H and elevates the lever D on its fulcrum F, which results in a loosening of the straps E E' and permits the pulley B to run idle during the downward travel of the car. When the conductor applies pressure to the plunger N', he immediately turns on or applies the current and then throws said current off, thus giving the car the necessary start in going down. In stopping the elevator-car at any point during the downward travel thereof the foot is released from engagement with the plunger. This permits of the binding of the straps E E' on the wheel B, thus applying the brake, which stops the car. In starting the elevator-car each time in descending the current is applied and cut off, as hereinbefore described. When the elevator begins to descend, the current may be cut off in the usual manner and the elevator-car continues moving until it reaches any stopping-point. The weight D' on the lever D, it will be understood, normally tends to apply the brake. By means of the rope and guide-pulleys when the operator places his foot upon the plunger N" the brake is released, which will permit the car to be started

in either direction; but when for any reason the operator's foot is removed from the plunger the brake will be free to engage the pulley B.

While I have shown and described means for manually operating the brake for economizing the use of electric currents, I do not wish to limit or confine myself to such manually-operative means, as the brake mechanism may be operated by electricity without departing from the spirit of my invention.

Having described my invention, I claim—

In means for economizing in the use of electric currents in operating elevators, the combination with brake mechanism controlling the motor-shaft, of a rope, a lever to which said rope is connected after passing upwardly over suitable guide-pulleys, a series of guide-pulleys secured to the floor of the elevator-car whereby said rope is directed in a position parallel with the floor of the car, and whereby the said rope is enabled to pass upwardly to a permanent connection at the top of the elevator-shaft, the point of entrance and departure of said rope at the floor of the elevator-car being approximately in a vertical line, and a plunger arranged in the floor of the elevator-car and engaging with said rope, whereby tension may be applied to said rope at predetermined times to actuate the brake mechanism and thereby avoid the unnecessary use of current, substantially as and for the purposes specified.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH W. HICKMAN.

Witnesses:

R. J. MCCARTY,

JOHN W. KALBFUS.