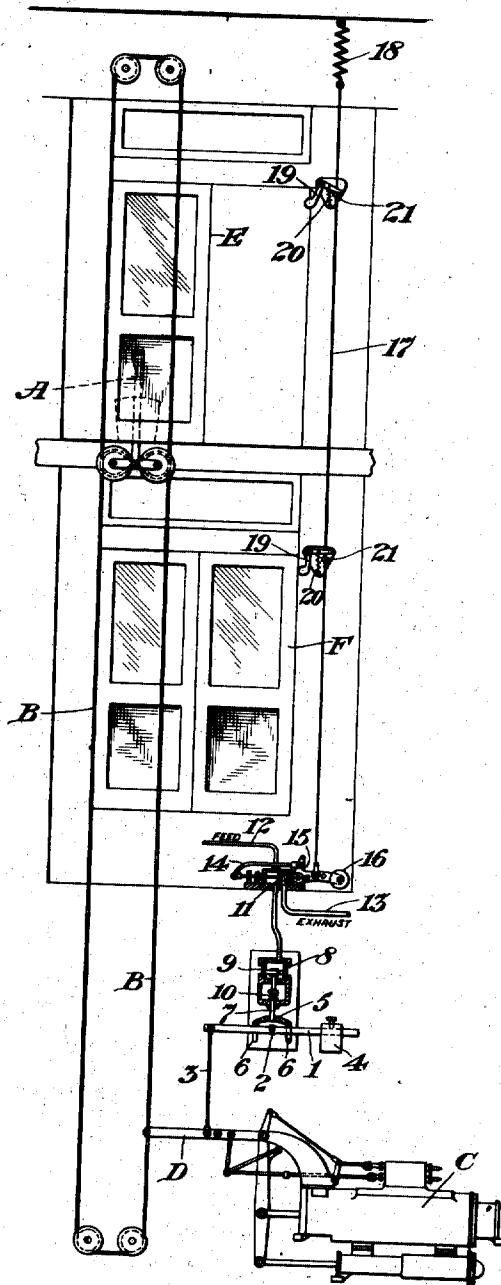


H. ROWNTREE.
CAR LOCKING MECHANISM.
APPLICATION FILED MAY 13, 1907.

1,001,987.

Patented Aug. 29, 1911.



Witnesses:
Chas. Clagett
Joseph Klein

Inventor
Harold Rowntree
By his Attorney
Samuel E. Parby

UNITED STATES PATENT OFFICE.

HAROLD ROWNTREE, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO
NATIONAL PNEUMATIC COMPANY, A CORPORATION OF WEST VIRGINIA.

CAR-LOCKING MECHANISM.

1,001,987.

Specification of Letters Patent.

Patented Aug. 29, 1911.

Application filed May 13, 1907. Serial No. 373,369.

To all whom it may concern:

Be it known that I, HAROLD ROWNTREE, a citizen of the United States, residing at Chicago, county of Cook, and State of Illinois, have made a certain new and useful Invention in Car-Locking Mechanism, of which the following is a specification.

This invention relates to car locking mechanism.

10 The object of the invention is to provide means which are simple and efficient for positively forcing the hoisting motor controller to position to stop the motor whenever an elevator door is open, and to positively lock such controller in this position as long as the door remains open.

15 A further object is to provide a centering mechanism for the hoisting motor controller and means rendered operative by the opening of a door for operating such centering mechanism, whereby the car hoisting motor is rendered inoperative as long as the door remains open.

20 A further object is to provide means for positively forcing the valve which controls the motion of an elevator car to centered or cut off relation whenever a door is opened.

25 Other objects of the invention will appear more fully hereinafter.

30 The invention consists substantially in the construction, combination, location and relative arrangement of parts all as will be more fully hereinafter set forth, as shown in the accompanying drawing and finally pointed out in the appended claims.

35 The single view of the drawing shows the application of a construction of car locking mechanism embodying the principles of my invention to a hoisting motor controller of the hydraulic pilot valve type, and in association with two elevator doors, one of the doors being shown open and one closed.

40 In the operation of elevators it is desirable to provide means whereby the hoisting motor controller is positively forced to centered position, that is, to position to arrest the motor, whenever a door of the elevator hatchway or of the car is opened, and the controller is positively locked in such position as long as the door remains open.

45 In safety devices and mechanism of the class to which my invention relates, which have heretofore been employed it has been 50 endeavored to lock the car in its guides in

the hatchway or else lock the control valve when in its centered position. Such devices are open to the objection of loss of time in their application, and frequently a failure, through leakage or otherwise, in attaining 60 the locking position of the parts.

It is among the special purposes of my present invention to provide means, independent of the hoisting motor control lever on the car, and which is automatically operated when an elevator or hatchway door is opened, for positively moving or forcing 65 the hoisting motor control mechanism to center position as long as the door remains open.

70 Many specifically different constructions may be devised for accomplishing the desired result and while, therefore, I have shown and will now describe one form of mechanism which is well adapted for carrying my invention into practical operation I 75 desire it to be understood that in its broadest contemplation as defined in the claims my invention is not to be confined or limited to the exact form of construction shown in the 80 drawing.

Referring to the drawing reference sign A, designates the hoisting motor control device on the car, which, in this instance, is in the form of a hand lever, B the control connection associated with the control device on the car and which, in the form shown, is a cable, 85 and C is the hoisting motor controller through which the operation of the hoisting motor is controlled. In the particular form shown, a pilot valve for a hydraulic elevator is disclosed which may be of the usual or any suitable or desirable type or construction for controlling the direction or speed of the hoisting motor and connected for operation 90 by the lever through the control device connection B which is attached to a rocking arm D, through the rocking of which the valve is operated.

Reference signs E, F, designate doors of 100 the elevator well or shaft one of which, as E, is shown in open position and the other, F, is shown closed. These doors may be of any suitable or convenient construction and arrangement such as is ordinarily employed 105 in elevator or similar constructions, and the control device on the car, the motor controller and the intermediate connections may, similarly, be of any suitable, convenient, or well known construction and arrangement, 110

and in the specific details of such construction and arrangement form no part of my present invention.

In accordance with the principles of my invention I propose to provide means which are rendered automatically operative when any door is opened to positively force the motor controller to center or cut off position, whatever may be its previous position and independently of the control device on the car, and which will maintain the motor controller in such position as long as the door remains open but which will be released when all the doors are closed thereby enabling the ordinary control of the controller from the control device in the car to be effected. In the accomplishment of this result in the form of embodiment of my invention shown in the drawing to illustrate the principles involved, but to which my invention as defined in the claims is not to be limited or restricted, I provide a rock lever 1, pivotally mounted as at 2, at a point intermediate its ends and connected at one end by a rod 3, to the rocking arm D. At its other end the lever 1, carries an adjustable counterweight 4, to counterbalance the rod connection 3. The arrangement is such that when lever 1, is rocked to horizontal position, in the case illustrated in the drawing, the motor controller C is positively moved or forced to center position, or to position to arrest the motor, independently of the control device on the car, and is held in such position as long as the said lever 1, is maintained in its horizontal position. In order to bring lever 1 to horizontal position, or to such position as will accomplish the positive centering of the motor controller I provide a forked yoke 5, the arms 6 of which straddle the lever 1, on opposite sides of its pivot 2. The yoke 5, is connected to the stem 7, of a piston 8, operating in a cylinder 9, to one end of which a pressure or other operating medium is admitted. A spring or other resisting medium, indicated at 10, is arranged to oppose the power medium operating on the piston 8, and normally exerts its tension upon the stem 7, in a direction to raise the yoke 5, thereby freeing or releasing the lever 1, and hence restoring control of the motor controller to the control device on the car. This release is effected whenever the power medium is cut off from the cylinder 9, and said cylinder is opened to the exhaust.

The supply and exhaust of the power medium to and from the cylinder 9, may be controlled in many specifically different ways. In accordance with the principles of my invention I propose to control such power medium by the movement of the doors of the elevator, well or shaft in such manner that when any one of the doors is opened pressure medium is supplied to the cylinder 9, thereby moving the piston 8, therein in a

direction to move the yoke 5, to positively force the hoisting motor controller to center. Whenever all the doors are closed the cylinder is opened to exhaust thereby enabling the spring 10, to raise the yoke 5, and releasing the motor controller. Many specifically different constructions and arrangements may be devised for accomplishing this result. I do not desire, therefore, to be limited or restricted in the combinations recited in the claims to the exact construction and arrangement shown, wherein a valve 11, controls the supply and exhaust connections 12, 13, of the cylinder 9. A rod 14, connects the stem of this valve with one arm of a bell crank lever 15. The other arm of this bell crank lever carries a weight 16, constantly tending to rock said lever in a direction to move the valve into position to close the exhaust connection from and to open the supply connection to the cylinder 9. Wire, cord, or other connection 17, extends throughout the elevator well or shaft and is connected at one end to the bell crank lever 15. A tension device is connected to the connection 17, and is arranged to oppose the action of the weight or other retracting device 16. This tension device may be of any suitable or convenient construction. In the particular form shown in the drawing, to which, however, my invention as defined in the claims is not to be limited or restricted, I employ a spring 18, connected at one end to a stationary part and connected at its other end to the connection 17. The tension device 18, and the weight 16, are so relatively adjusted that the weight is slightly overbalanced by the tension device whereby the bell crank lever is normally maintained in such relation as to hold the valve 11 in position to close the supply, and to open the cylinder 9 to exhaust.

In order to shift the valve 11 so as to close the exhaust connection 13, of cylinder 9, and to open said cylinder to supply connection 12, whenever a door is opened, I provide means rendered operative by the opening of any door for imposing an additional tension upon connection 17 in opposition to tension device 18, and of sufficient power, together with the tension or pull exerted by weight 16, to overcome the tension device 18, thereby enabling the weight 16, to rock the bell crank lever 15, to shift the valve 11, to position to close the exhaust 13, and to open the cylinder 9 to its source of pressure supply. Many specifically different constructions for accomplishing the desired result may be devised without departure from the spirit or scope of my invention as defined in the claims. In the particular form shown to which, however, my invention is not to be limited or restricted, I pivotally mount adjacent each door a bell crank lever 19, in position to be engaged by the door or some part moving therewith when

the door is closed, whereby such bell crank is rocked against the action of a retracting device 20, the tension of which is exerted on the bell crank lever tending to rock it in the opposite direction. One arm of each bell crank lever is arranged to cooperate with a stop 21, on the connection 17, in such manner that when a door is open, as indicated at E, the bell crank lever 19, adjacent thereto or cooperating therewith is rocked in a direction for the arm thereof to engage the cooperating stop 21, whereby the tension of retracting device 20, is exerted upon the connection 17, in a direction to augment that of weight 16; the combined tensions of retracting device 20, and weight 16, overcoming the tension device 18, and hence actuating the bell crank 15, and shifting valve 11, to position to close exhaust connection 13, and to open cylinder 9, to its power medium supply and hence moving piston 8, and consequently causing the lever 1, to rock into position to positively force the hoisting motor controller to center or cut off position. The parts are maintained in this position as long as any door remains open. It will be observed that this operation takes place automatically whenever any door is opened, and is wholly independent of the operation of the control device on the car. Whenever the door is closed again the adjacent or cooperating bell crank lever 19, is rocked, thereby, against the action of spring 20, and in a direction to relieve the connection 17, of the tension of said spring 20, and when all the doors are closed, but not until then, the overbalancing relation of tension device 18, with reference to weight 16, is again established and the bell crank lever 15, is rocked to shift the valve 11, into position to cut off the supply connection 12, and to open cylinder 9 to exhaust, thereby effecting the release of the hoisting motor controller, and restoring control thereof to the controlling device on the car.

From the foregoing description it will be seen that I provide an exceedingly simple and efficient construction whereby the hoist-

ing motor controller is positively forced to center or cut-off position, or to position to cause the arrest of the hoisting motor, whenever a door is open. It will also be seen that this action takes place automatically and independently of the motor control device on the car, and that the motor controller is positively maintained in its center position as long as any door remains open, and is released, and the control thereof restored, to the control device on the car whenever all doors are closed.

Having now set forth the object and nature of my invention and a construction embodying the principles thereof, and having explained such construction, its purpose, function and mode of operation, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent is:—

1. The combination with a motor controller, and means for operating the same, of a pivoted lever weighted at one end, connections between the other end of said lever and the controller, a yoke engaging said lever, means for operating the yoke, a door and means operated by the opening of the door for controlling said yoke operating means.

2. The combination with a motor controller and means connected thereto for operating the same, of a pivoted lever, weighted at one end and having connection at its opposite end with the motor controller, a yoke having forks arranged to straddle said lever on opposite sides of its pivot, power mechanism for moving said yoke, and means operated by the opening or closing of a door for controlling said power mechanism.

In testimony whereof I have hereunto set my hand in the presence of the subscribing witnesses, on this 29th day of April A. D. 1907.

HAROLD ROWNTREE.

Witnesses:

S. E. DARBY,
JOSEPH KLEIN.