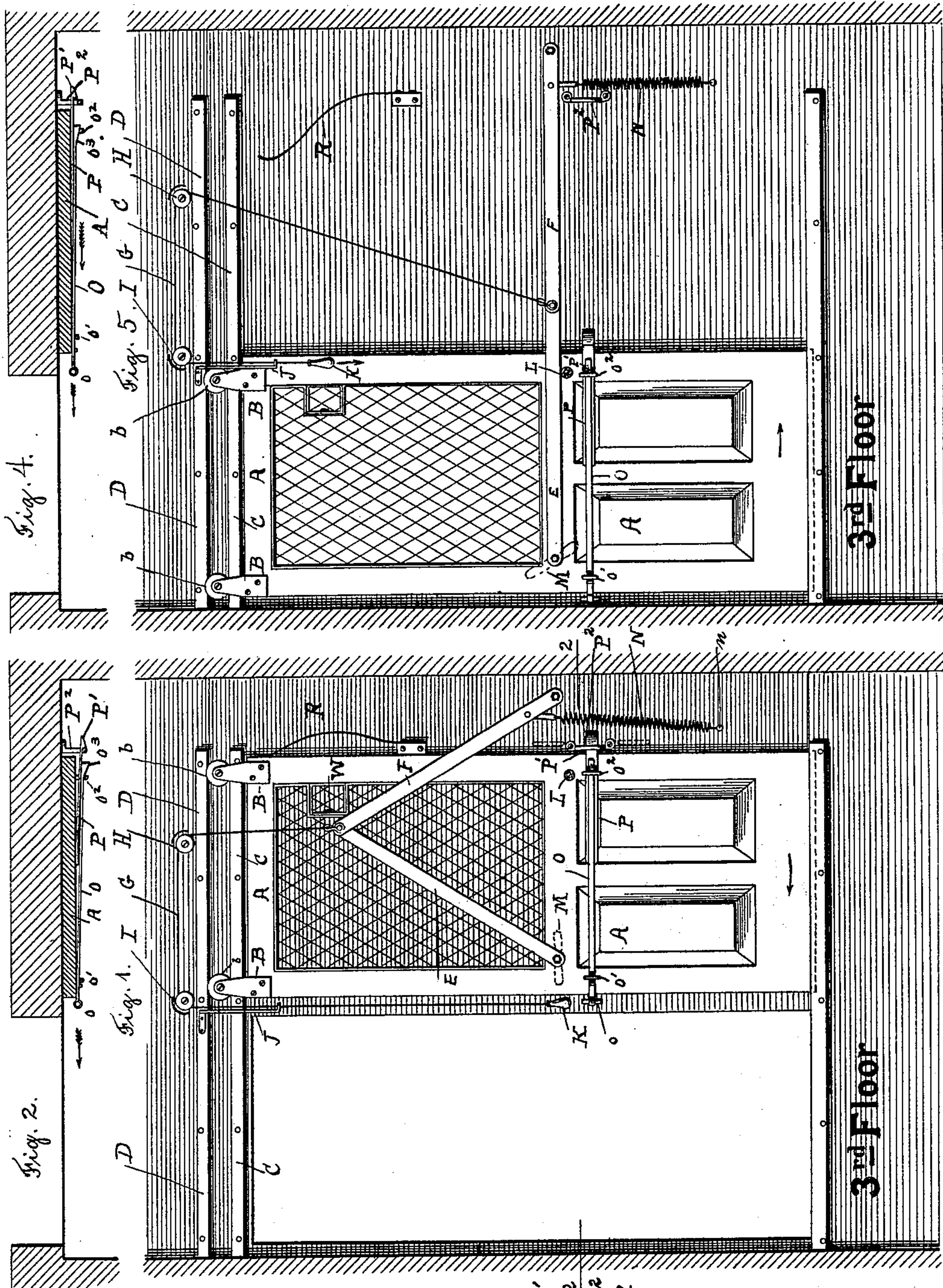


(No Model.)

E. C. JENKINS.  
ELEVATOR DOOR OPERATING MECHANISM.

No. 518,408.

Patented Apr. 17, 1894.

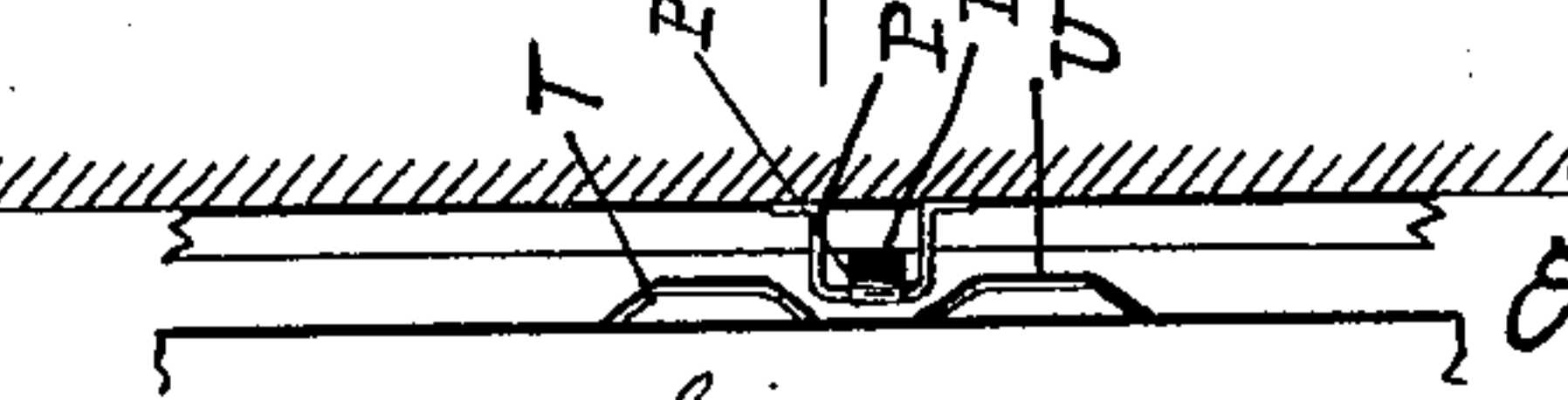


Witnesses

Chas. F. Schuch

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Fig. 3.



Inventor

E. C. Jenkins

By his Attorney

Louis W. Southgate



# UNITED STATES PATENT OFFICE.

EBENEZER CURTIS JENKINS, OF SHREWSBURY, MASSACHUSETTS.

## ELEVATOR-DOOR-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 518,408, dated April 17, 1894.

Application filed April 30, 1892. Serial No. 431,321. (No model.)

*To all whom it may concern:*

Be it known that I, EBENEZER CURTIS JENKINS, a citizen of the United States, residing at Shrewsbury, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in Elevator-Door-Operating Mechanisms, of which the following is a specification.

The aim of this invention is to provide a new and improved means for operating the doors in elevator wells in an expeditious, safe, and convenient manner.

To this end the invention consists of the device described and claimed in this specification, and illustrated in the accompanying drawings, in which—

Figure 1 is a view inside of an elevator door, with my improvements applied thereto. Fig. 2 is a sectional plan taken on line 2—2 of Fig. 1. Fig. 3 is a fragmentary view of the car showing the cams carried thereby. Fig. 4 is a view similar to Fig. 2 with the latch mechanism pulled to release the door. Fig. 5 is a view similar to Fig. 1 showing the door closed.

Referring to the drawings and in detail, A represents an elevator door which is hung in any usual and convenient manner from brackets B, and rollers or trolleys *b* on ways C and D. Secured to the forward edge of the door A is one arm of a toggle E, the other arm F of which is secured to the wall, as shown. To the joint between the toggles E and F is fastened or attached a cord G, which runs around suitable pulleys H and I, which have guards, as shown to keep the cord on the same, through a suitable guide J, and has a handle K on the end thereof. A stop L which may be covered with rubber so as to form a buffer is secured to the door, as shown, so that the arm E of the toggle will strike the same, and thus, the stop L will act to limit the downward motion of the toggle. A handle as M is secured to the end of the toggle-arm E on the outside of the door, so that by turning the handle M, the arm E can be slightly raised for a purpose hereinafter described. A spring N is secured to the arm F and to the wall, as shown, and the tendency of this spring is to pull the arm down, or to pull the toggle against the stop L. An arm O is secured in suitable brackets *o'* and *o''*, and on the end of

this arm is secured a handle *o*. On the other end of the arm O is fastened or secured a cam *o''* which is adapted to bear against the bracket *o''*. An arm P is also secured to the door under the arm O and on the end of this arm P is formed a catch P' that is adapted to engage a hook P<sup>2</sup> that is secured to the inside of the wall as shown, and thus holds the door in its open position. A buffer-spring as R is mounted so as to receive the impact of the door, when the same is opened, and also to store energy to start the door back quickly when the hook and catch are released.

The elevator car is represented in outline at S, Fig. 3 and on the car are mounted two cam-plates T and U, and these cam-plates are adapted to strike the catch P' when the door is open. The catch P' is so arranged as to be between the cam-plates T and U when the car is at the landing.

The operation of my device is as follows:—When the door is closed, the toggle is straight, or a little below a horizontal position, and the same rests against the stop L. The door is thus securely locked, and the same cannot be opened by pushing on the same. When it is desired to open the door, the operator in the car can do so by pulling on the handle K which will raise the toggle, and thus draw the door open. A toggle is admirably adapted for this purpose as the same starts to pull on the door with a heavy force to overcome the inertia of the same. As the door is opened, the catch P' will engage hook P<sup>2</sup> and thus will lock or hold the door in its open position. The buffer-spring R aids the easy engagement of the latch and hook, and also stores energy to overcome the inertia of the door when the same is started in the reverse direction. Now, when it is desired to close the door, the operator can pull on the handle *o* in the direction of the arrow shown in Fig. 2. This will draw the cam *o''* into the bracket *o''* and will move the catch P' out of engagement with hook P<sup>2</sup>, and thus will release the catch, when the spring N pulling on the toggle will cause the door to close, but in the usual operation of the device, it is not intended that the operator shall close the door, as the door is arranged to be automatically closed by the car as it moves away from the landing. Thus, as shown in Fig. 3 the car is



at the landing, the door open, and the latch P' between the cams T and U. If now the car is started either up or down, either the cam T or U will engage or strike the catch P' and force the same out of engagement with hook P<sup>2</sup>, thus releasing the door and allowing the same to close. This action will also take place if the car should pass by an open door. It also will be seen that the cams T and U will not strike the catch P' unless the door is open, and thereby a great deal of friction of the parts is saved, as the cams only act when it is necessary. If it is desired to open the door from the outside, the same may be done by turning the handle M to slightly raise the toggle from the straight position when the door can be pushed in and opened by hand. Of course, instead of a handle M, a key or similar device could be used. A wicket as W could also be provided in the door, so that by opening the same, the handle K could be grasped from the outside, and the toggle lifted out of its locked position. Thus it will be seen that I have invented a device which is extremely efficient for the purpose intended, and one by which the door will be automatically closed as the car leaves the landing without any care on the part of the attendant. Also, it will be seen that the operator can partly open the door to let in another passenger, without locking the door in its open position, and the door may be as quickly closed. The way this is done, is to pull the door partly open by handle K, and then to release the handle. Also it will be seen that when the elevator is operated from a landing that the door above or below, as the case may be will be closed automatically. Also it will be seen that if a person stands in the car so as to be in the way of a landing, or if a person stands at a landing so as to be struck by the car, that the automatic closing of the door as the car approaches or leaves the landing, will give such persons warning, and thus the device will act as a safety device.

The device herein shown and described may be greatly varied by a skilled mechanic with-

out departing from the scope of my invention, as expressed in the claims.

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

1. The combination of a sliding door and toggle-arms for operating the same, the end of one arm being pivoted to the door, and the end of the other arm being pivoted to a fixed point, the pivots of said arms being in a line parallel to the movement of the door, and a stop adapted to limit the movement of the toggle-arms in one direction when the same are substantially in line with each other, whereby said toggle-arms will form a lock for the door, and means for moving said toggle arms to open and close the door, substantially as described.

2. The combination of sliding door A, toggle arms E and F for moving the same, cord G connected to the point where said arms E and F are connected, and spring N adapted to move the toggle in one direction, substantially as described.

3. The combination of sliding door A, arm P having catch P' secured to the same, stationary hook P<sup>2</sup>, of arm O bearing on said arm P, said arm O having cam o<sup>3</sup> and bracket o<sup>2</sup> with which said cam is adapted to engage, whereby as said arm is pulled, the catch P' will be disengaged from the hook P<sup>2</sup>, substantially as described.

4. The combination of a sliding door A, toggle arms E and F for moving the same, cord G secured to the point where said arms E and F are connected, the spring N adapted to move the toggle in one direction and the buffer spring R adapted to receive the impact when the door is opened and to store energy to start the door on its return movement, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

EBENEZER CURTIS JENKINS.

Witnesses:

LOUIS W. SOUTHGATE,  
E. M. HEALY.