

(No Model.)

J. P. RUNKEL.

AUTOMATIC DOOR FOR ELEVATOR WELLS.

No. 384,083.

Patented June 5, 1888.

Fig. 1.

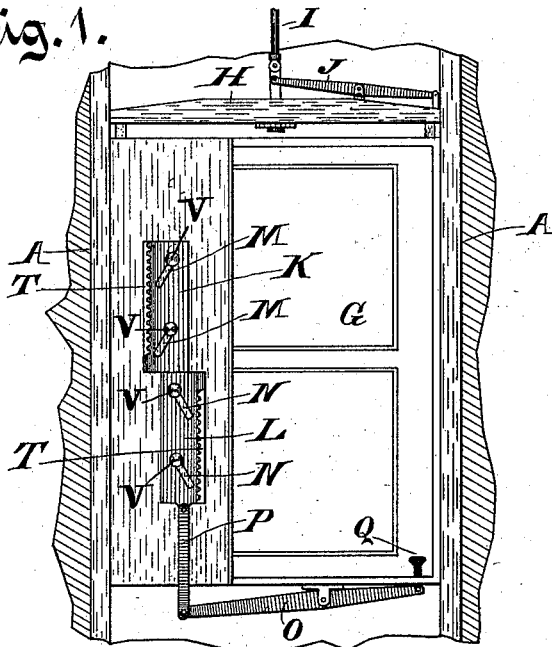


Fig. 2.

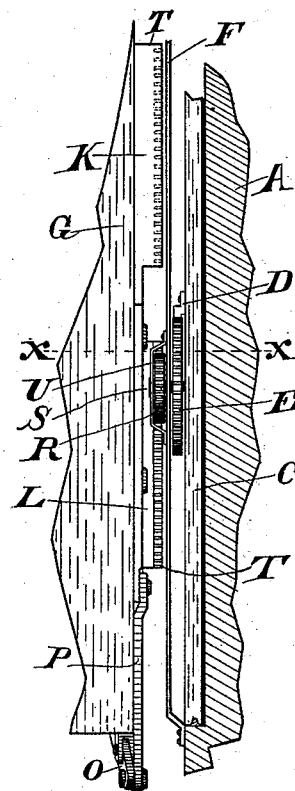


Fig. 3.

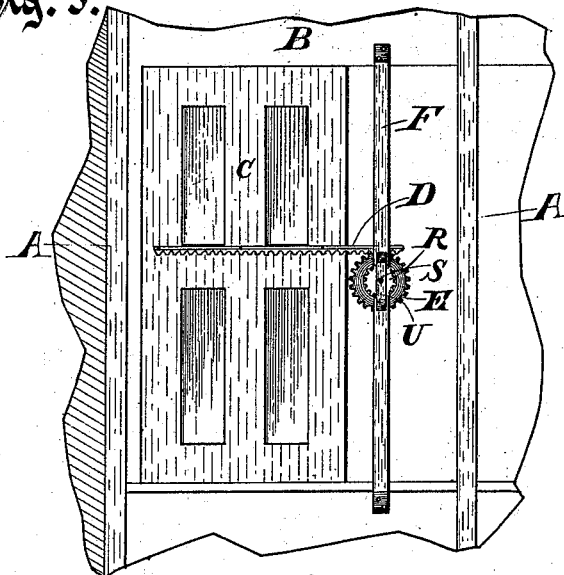


Fig. 4.

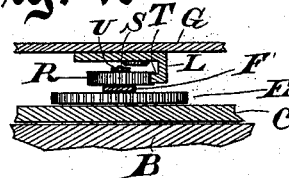
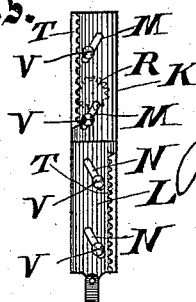


Fig. 5.



Witnesses.

*C. H. Kunkel,*

*Anna Padet*

Inventor.

*John P. Runkel.*

*By Erwin Benedict*  
Attorneys.

# UNITED STATES PATENT OFFICE.

JOHN PH. RUNKEL, OF MILWAUKEE, WISCONSIN.

## AUTOMATIC DOOR FOR ELEVATOR-WELLS.

SPECIFICATION forming part of Letters Patent No. 384,083, dated June 5, 1888.

Application filed September 27, 1887. Serial No. 250,792. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN PH. RUNKEL, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented new and useful Improvements in Automatic Doors for Elevator-Wells; and I do hereby declare the following to be a full, clear, and exact description of said invention, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide means whereby, by the passage of the elevator-car up and down, the doors in the different stories of the building opening into the elevator-well can be opened and closed, if desired, and in which such opening and closing of the doors is under the control of the operator; and my invention consists in certain new mechanical devices, to be hereinafter distinctly described and claimed.

In the drawings, Figure 1 is a sectional view of a portion of the sides of the elevator-well and of the car therein. Fig. 2 is a vertical section of my improved mechanism as attached and combined with the elevator-car and with the sides of the elevator-well. Fig. 3 is a view of a side of the elevator-well, showing the door thereof in connection therewith. Fig. 4 is a horizontal section of portions of my improved mechanism on line *xx* of Fig. 2. Fig. 5 is a detail of the mechanism.

The same letters refer to like parts in all the views.

In the drawings, A A are the two sides of the elevator-well, and B is the third side of the well and has therein an opening closed by the door C, which door is retained in position by grooves or guards at its top and bottom secured to the side B, and in which it is adapted to slide back and forth horizontally.

The door C is provided with a horizontal toothed rack, D, which rack meshes with a cog-wheel, E, located near the rear of the door when closed, as shown in Fig. 3, which cog-wheel is supported on its center pin or shaft, S, which rotates in the standard F and bracket U, which standard at its ends above and below the door C is secured to the side B.

G is the body of the elevator-car, having a supporting-yoke, H, to which the hoisting-cable I and the safety clutch-lever J are se-

cured. On the side of the elevator-car are two movable plates, K and L, these plates being provided with two diagonal slots, M M and N N, by and through which these plates are secured movably to the side of the car by pins V V, passing through the slots and fixed into the side of the car, which pins are provided with heads to retain the plates thereon. The slots M M of the upper plate, K, are inclined outwardly downwardly and the slots N N of the plate L are inclined downwardly inwardly, the two plates being placed in contact one above the other in the position shown in Fig. 1. A lever, O, is pivoted on the under surface to the floor of the car, and at one end is attached by means of the connecting-rod P to the lower end of the plate L, and at the other end the lever is provided with a pedal, Q, projecting up through an aperture in the floor of the car, and is adapted to receive pressure from the foot of the operator. It will be understood that by means of a downward pressure applied to the pedal Q the plate L will be forced upward and outward, and thereby the plate K will be forced upward and inward to the positions shown in Fig. 5. By gravity the plates K and L and the lever O assume the positions shown in Fig. 1.

The plates K and L are located on the side of the car opposite to the wheel E, and the pinion R is secured rigidly to the wheel E by means of the common supporting pin or shaft, S, to which both the pinion R and wheel E are firmly secured. The plates K and L are each provided, the one on its outer and the other on its inner edge, with a flange, T, having teeth along its inner margin constructed and adapted to mesh with the pinion R, and the plates are so located on the car that when it passes the pinion R and the plates K and L are in their normal position (shown in Fig. 1) they will not engage with the pinion R; but when raised into the position shown in Fig. 5 they will engage with the pinion, so that as the car goes up the teeth on the plate K will engage with the pinion R, causing it to rotate, thereby forcing the door C open by and through the rotating wheel E and rack D, and when the car passes on the pinion R will be caught by the teeth on the plate L and will be caused to rotate in the opposite direction, thereby closing the door C. When the car descends,

the teeth on the plate L will engage with the pinion R and force the door open again, and as the door passes along the pinion will engage with the teeth on the plate K, whereby the door will be closed. The rack D is of such length and the wheel E is of such size with reference to each other and with reference to the pinion R and the teeth on each of the flanges T as to cause a complete opening or closing of the door during the time the teeth on the plate K or L are passing their engagement with the pinion R. The plates K and L are also so located on the car that as the car passes up and down in the well the point of junction between the plates K and L will be opposite the pinion R at the same time that the floor of the car is opposite to the bottom of the door, so that the door will be wide open at the moment the car comes to the landing opposite the doorway.

It will be seen that there is a space vertically between the approaching ends of the flanges T T on the plates K and L, respectively, sufficient to allow the pinion R to pass between them horizontally, whereby when the car is at that point the door may be opened or closed by the operator, if desired, entirely independent of my devices for operating the door. The bracket U is secured at its ends to the standard F and passes outside of the pinion R, being adapted and used to support the center pin or shaft, S, which passes through it, as well as through the standard F.

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

1. The combination of two plates, K and L, movably secured to the side of an elevator-car, G, and provided with toothed flanges T, and the lever O, connected at one end to the lower

plate, L, and at the other end provided with the pedal Q, with a horizontally-moving elevator-well door, C, a rack, D, secured thereto, a wheel, E, meshing therewith, and a pinion, R, rigid to wheel E and meshing with the teeth on plates K and L, all substantially as described.

2. In a device for automatically operating elevator-well doors, a horizontally-moving door, C, and a thereto-secured rack, D, in combination with a single wheel, E, having integral therewith a single pinion, R, and two plates, K and L, secured to the side of the car and provided with reversed teeth which mesh on opposite sides with the single pinion R, whereby they are adapted to rotate it alternately in the reverse direction, substantially as and for the purpose described.

3. In devices for operating elevator-well doors, the plates K and L, provided, respectively, with the inclined slots M M and N N, and with the toothed flange T, and the therewith-connected operating-lever O, in combination with gear secured to the side of the well, and a rack secured to the door, whereby the door is opened and closed, substantially as described.

4. In devices for operating elevator-well doors, two reversely-toothed plates, K and L, movably secured to the side of the car, one above and moving with the other, but in reverse direction, in combination with an operating-lever, O, substantially as described.

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

JOHN PH. RUNKEL.

Witnesses:

C. T. BENEDICT,  
C. H. KEENEY.