

(No Model.)

J. L. PETERS.

AUTOMATIC HATCHWAY DOOR OPERATOR.

No. 255.663.

Patented Mar. 28, 1882.

Fig. 1.

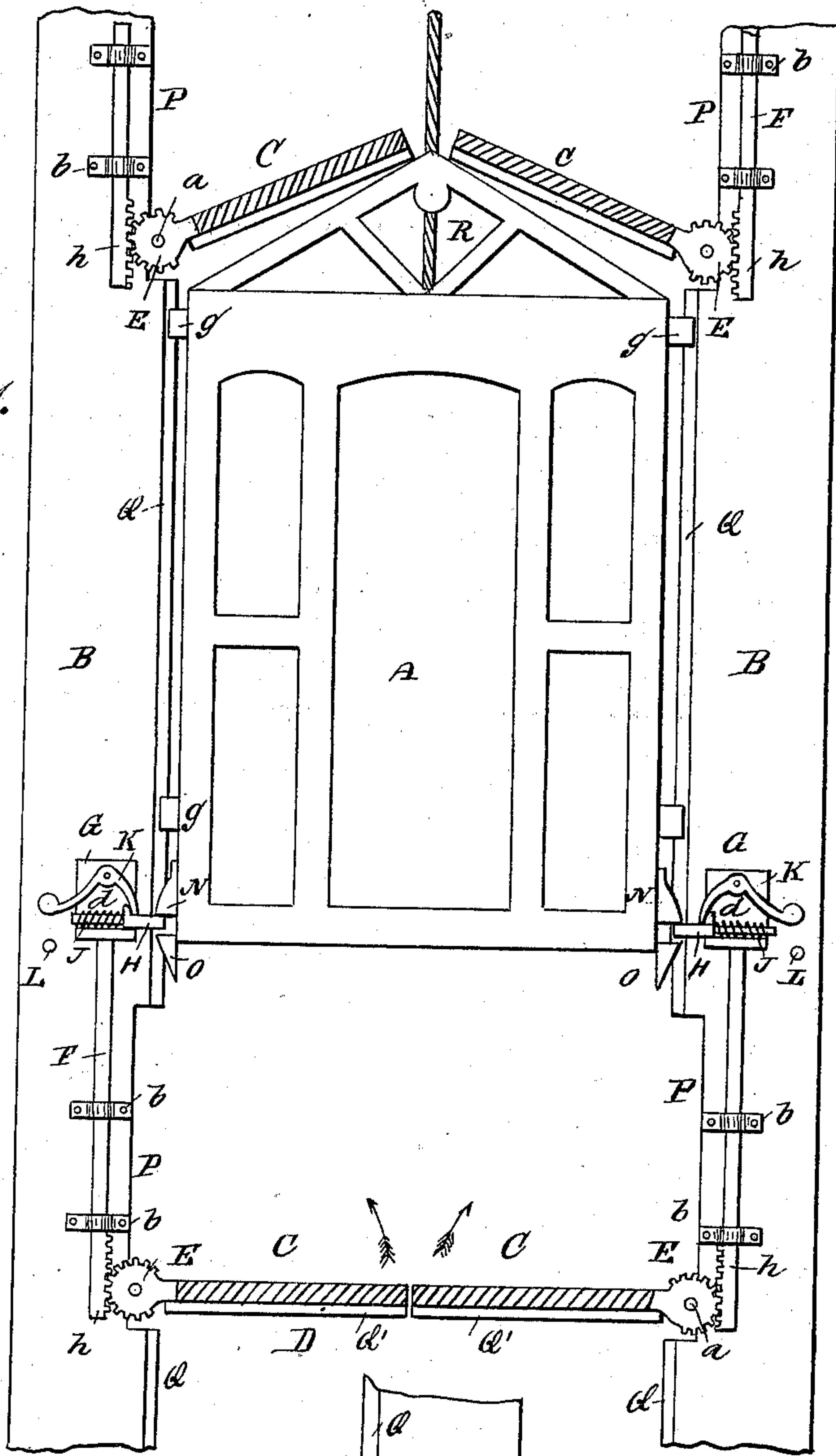


Fig. 2.

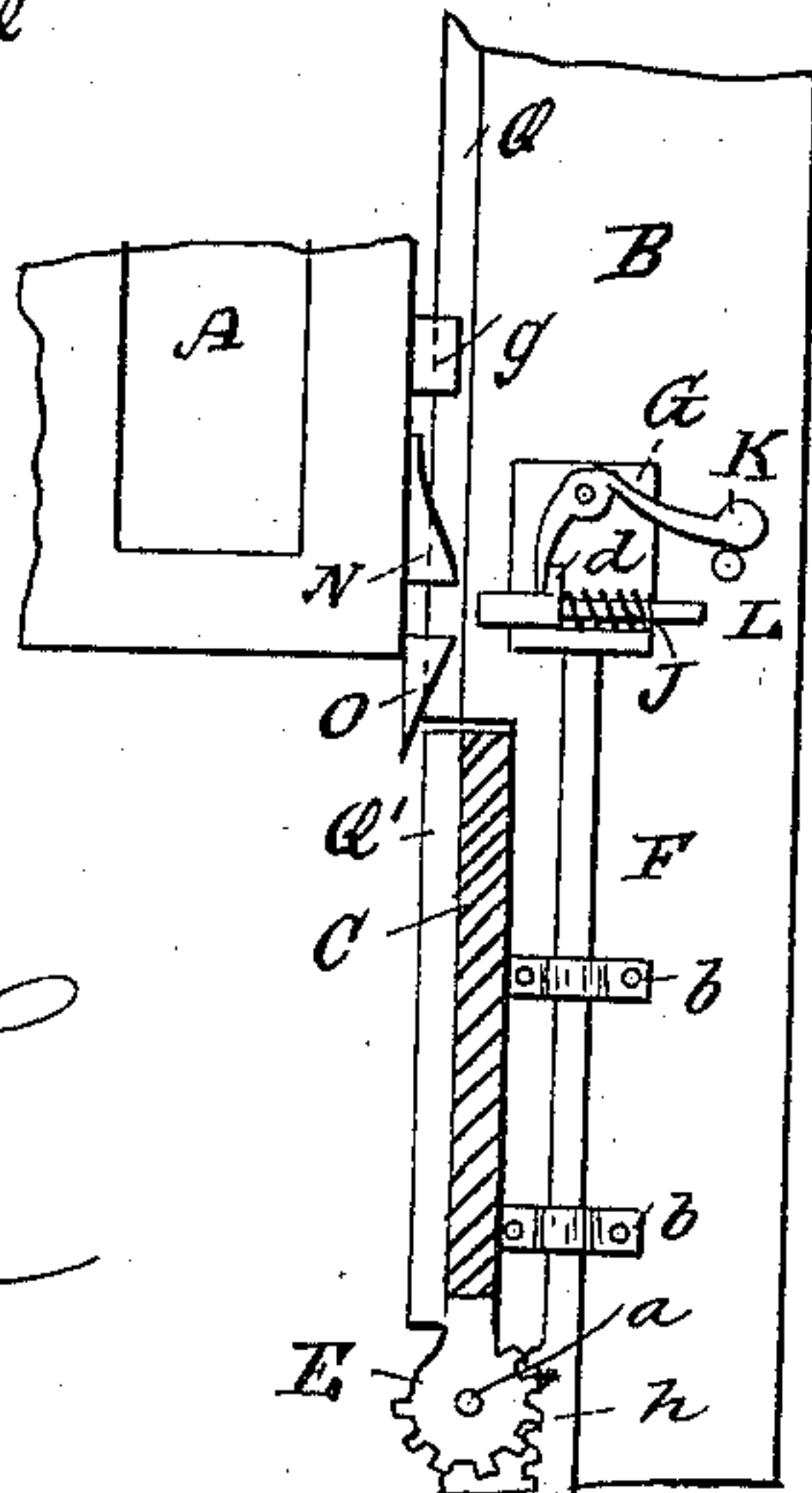
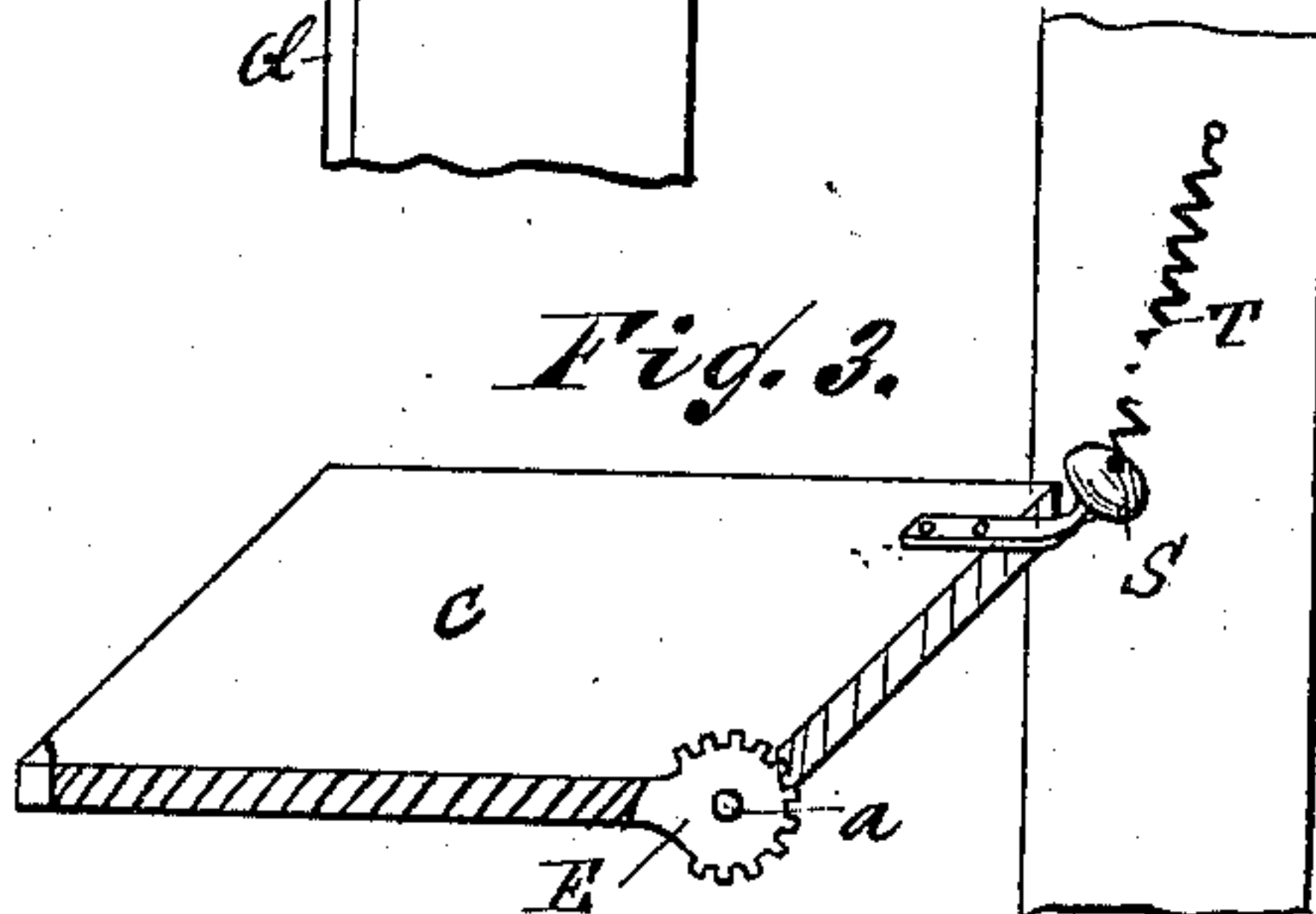


Fig. 3.



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AUTOMATIC HATCHWAY-DOOR OPERATOR.

SPECIFICATION forming part of Letters Patent No. 255,663, dated March 28, 1882.

Application filed January 23, 1882. (No model.)

To all whom it may concern:

Be it known that I, JOHN L. PETERS, of the city, county, and State of New York, have invented a new and Improved Automatic Hatchway-Door Operator, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved device for automatically opening and closing the hatchway-doors of an elevator-shaft as the car rises and descends to let the car pass.

The invention consists in circular racks attached to the pivoted ends of the swinging hatchway-doors, combined with sliding rack-bars on the guide-standards, which sliding bars carry boxes at the upper ends containing sliding bolts and an angular latch-lever for withdrawing the bolts when the doors have been opened. Projections on the elevator-car strike against the projecting ends of the bolts and press these bolts and the rack-bars downward, whereby these racks will turn the circular racks on the swinging hatchway-doors and swing them open. The latch-levers then strike against studs and withdraw the bolts, permitting the car to descend farther, the car holding the doors open. When the car has passed closing-springs swing the doors back into their original positions.

The invention also consists in parts and details of construction, as will be fully described hereinafter.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front elevation of an elevator-car and of an elevator-shaft provided with my improved devices for automatically operating the hatchway-doors, which are shown closed, parts being shown in section. Fig. 2 is an elevation of one lower corner of the car and part of the shaft, showing the doors opened, parts being shown in section. Fig. 3 is a perspective view of the door, showing it closed and the arrangement of its counter-weight and closing-spring, parts being shown in section.

The elevator-car A, of the usual construction, is adapted to slide up and down between side guide-posts or standards, B B. The hatchway-doors C are mounted at the inner ends on suit-

able shafts, *a*, secured at the ends in the sides of the well-holes D in the floors, and these doors are provided with cog-wheels or circular racks E at or near the middle of the inner ends of the same. Each circular rack E engages with the lower toothed end, *h*, of a vertically-sliding bar, F, held by guide-clips *b* to the standard or post B. The bars F are each provided at the upper end with a box, G, containing a bolt, H, adapted to slide transversely to the longitudinal axis of the bar F, which bolts are pressed toward the well-hole or elevator-shaft by a spring, J. Above the bolt H an angular latch, K, is pivoted in the box G, and the inner end of this latch K rests against the inner surface—that is, the surface toward the well-hole—of a projection, *d*, of the bolt H. A stud, L, projects from the standard B a short distance below the box G. The car A is provided at the lower parts of the sides with projecting blocks or studs N, adapted to strike the projecting ends of the bolts H. At one side of these blocks the car is provided with bevel-blocks O, projecting from the bottom of the car. The standards are each provided with a recess, P, of sufficient length to receive a door, C, when the same is raised.

The standards B are provided with the usual longitudinal guide-ridges, Q, and strips Q' to complete these ridges when the doors C are raised, and are attached to the underside of the doors. Guide-clips *g*, projecting from the sides of the car A, slide on these guide-strips Q Q'. The top of the car is provided with a peaked frame, R, to open the doors C when the car is rising.

The doors C are each provided at the inner ends with a counterbalancing-weight, S, to facilitate operating the doors, and springs T, for automatically closing the doors, are attached to the weights S or to arms projecting from the inner ends of the doors and to the standards B or to the casing of the elevator-shaft. The distance from the bolt H to the shaft *a* must be slightly greater than the width of the door C.

The operation is as follows: If the car descends, the projections N strike the projecting ends of the bolts H and press these bolts, the boxes G, and the bars F downward, causing the racks *h* to rotate the circular racks E, whereby the doors C will be swung upward

against the sides of the elevator-shaft—that is, into the recesses P of the standards B. By this time the outer ends of the latch-levers K strike against the studs or projections L of the standards B, causing a slight rotation of these latch-levers, whereby the inner ends of these latch-levers will draw the bolts H into the casings G and disengage them from the projections N, thus permitting of a further descent of the car.

The ends of the beveled blocks O press the upper or outer ends of the doors C into the recesses P, and thereby prevent the bottom of the car from striking against the upper or outer ends of the doors. The car then descends, and, as the sides of the car press against the doors C, these doors are kept open. When the car has passed the springs T close the doors automatically, and the circular racks or cog-wheels E raise the bars F. The outer ends of the latch-levers K are raised from the projections L, and the springs J force the bolts H out of the box G again. When the car rises the peaked projection R raises the doors, as shown at Fig. 1, whereby the bars F will be lowered and the bolts H withdrawn, so as not to be struck by the top of the car. The side edges of the doors C rest in suitable rabbets of the well-hole opening when the doors are closed. The circular racks E can be attached to the side edges of the doors instead of to the middle; but as this construction would require additional standards B at the corners of the elevator-shaft, the construction shown is preferred.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, with an elevator-car having side projections, and with the swinging hatchway-doors, of circular racks attached to the pivoted ends of the doors, and of vertically-sliding rack-bars engaging with the circular racks on the doors and carrying boxes at the

upper ends, which boxes contain bolts and latch-levers for withdrawing these bolts, substantially as herein shown and described, and for the purpose set forth.

2. The combination, with the elevator-car A, having side projections, N, at the bottom, and with the swinging hatchway-doors C, each provided with a circular rack, E, of the sliding bars F, provided with racks h at the lower ends, the sliding bolts H, the pivoted angular latch-levers K, and the studs L, substantially as herein shown and described, and for the purpose set forth.

3. The combination, with the elevator-car A, having side projections, N, at the bottom, and with the swinging hatchway-doors C, provided with circular racks E, of the sliding spring-bolts H, provided with projections d, the pivoted angular latch-levers K, and the studs L, projecting from the standards B, substantially as herein shown and described, and for the purpose set forth.

4. The combination, with the elevator-car A, provided with the side projections, N, and the beveled bottom projections, O, and the swinging hatchway-doors C, provided with circular racks E, of the sliding rack-bars F, the bolts H, the latch-levers K, and the studs L, substantially as herein shown and described, and for the purpose set forth.

5. The combination, with the standards B, the elevator-car A, and the swinging hatchway-doors C, of the counterbalance-weights S, the closing-springs T, and of devices for automatically opening the hatchway-doors, substantially as herein shown and described, and for the purpose set forth.

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