

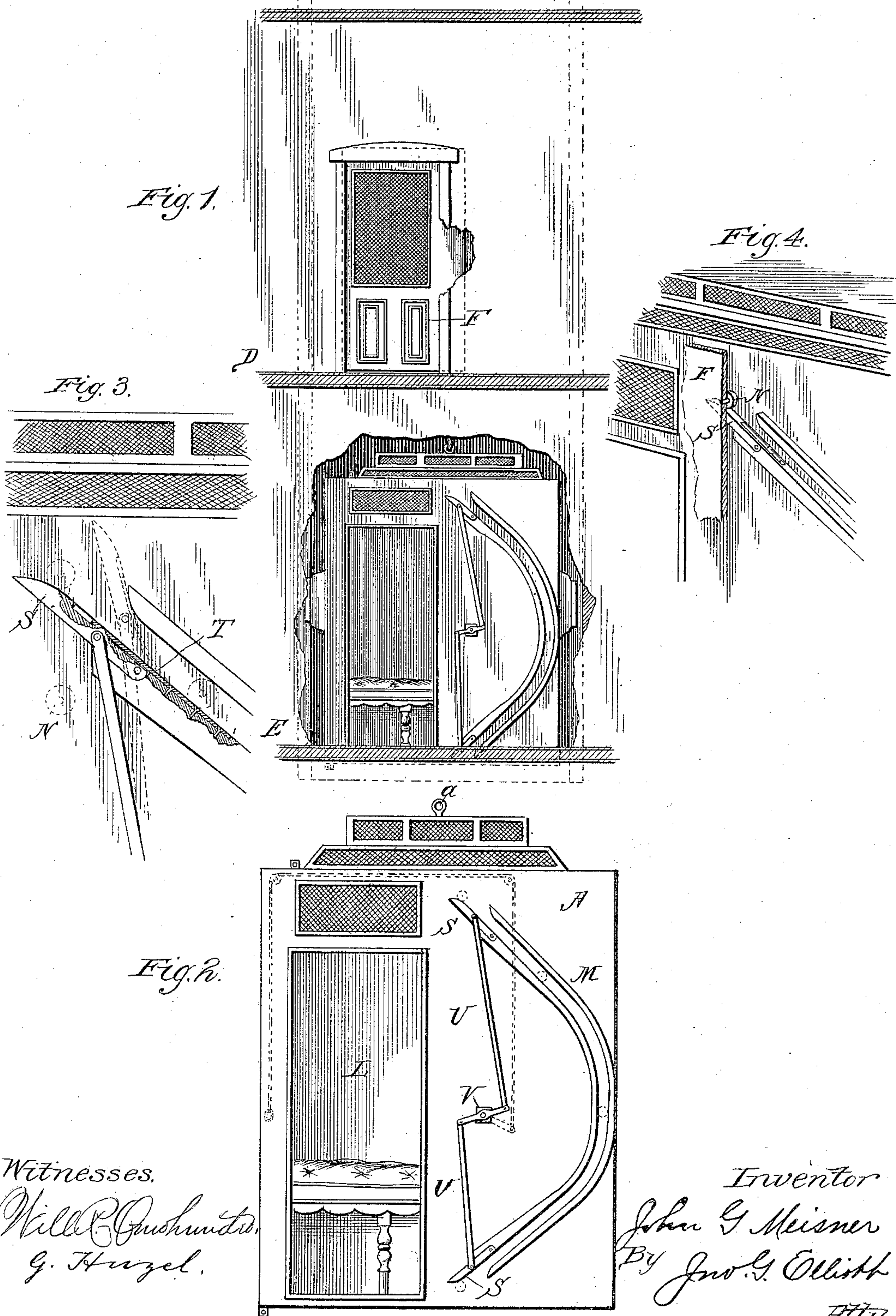
(No Model.)

2 Sheets—Sheet 1.

J. G. MEISNER.  
AUTOMATIC ELEVATOR GATE.

No. 319,292.

Patented June 2, 1885.



Witnesses,  
Will R. Gunderman,  
G. H. Hugel.

Inventor  
John G. Meisner  
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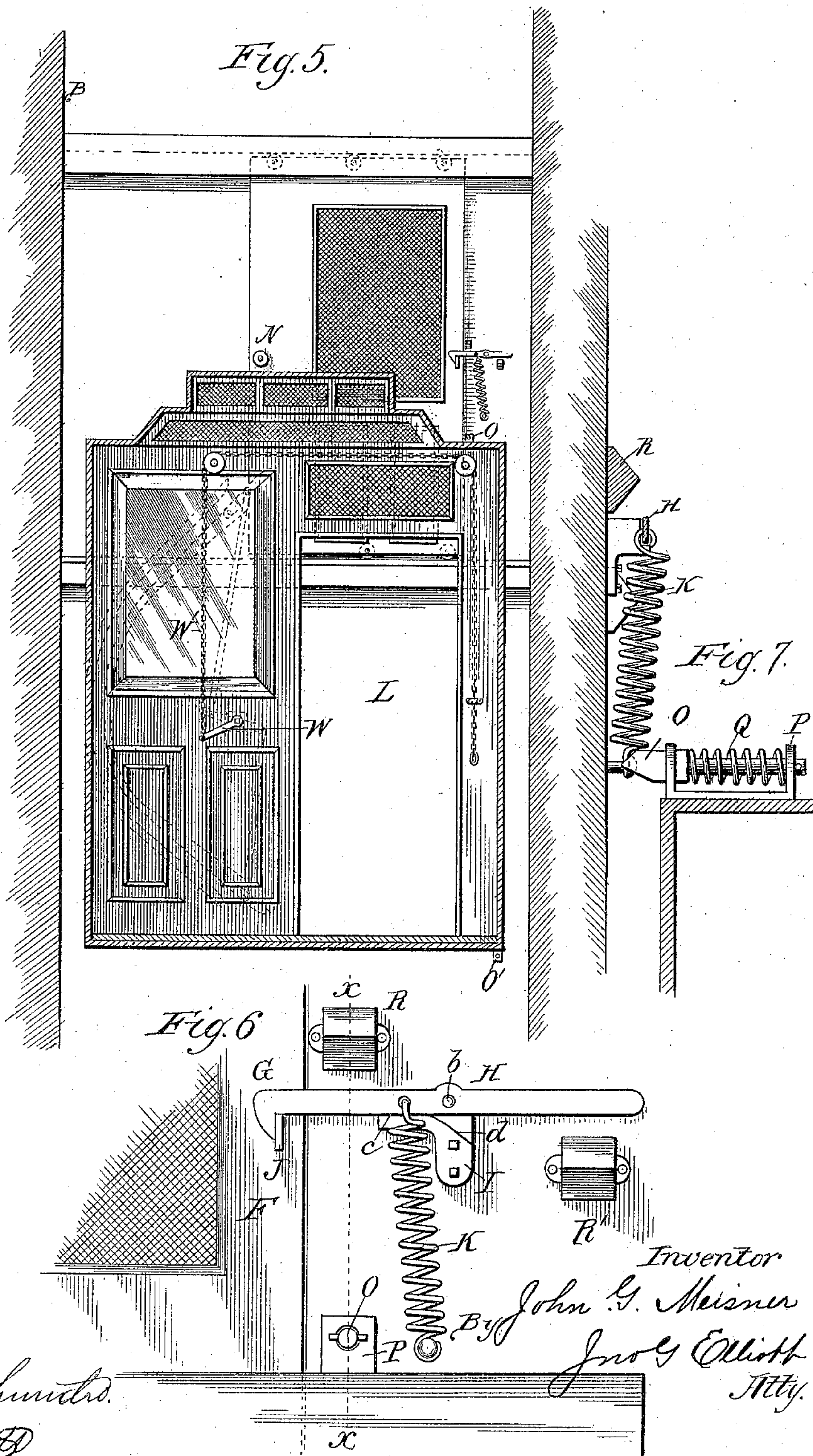
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Will R. Cunningham  
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# UNITED STATES PATENT OFFICE.

JOHN G. MEISNER, OF CHICAGO, ILLINOIS.

## AUTOMATIC ELEVATOR-GATE.

SPECIFICATION forming part of Letters Patent No. 319,292, dated June 2, 1885.

Application filed February 16, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN G. MEISNER, a citizen of the United States, residing in Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Automatic Elevator-Gates, of which the following is a specification.

This invention relates to improvements in elevators in which sliding gates or doors are employed to close the entrance through the shaft or well to the cab, which doors have heretofore necessarily been opened and closed by hand and by the attendant in charge—an operation not only annoying, but requiring considerable time and labor.

The object of this invention is to have these doors or gates automatically actuated by the elevator-cab to open or close them, as the case may be, at the proper times during ascent and descent of the said cab.

Further objects are to have the opening and closing devices for the door under the control of the attendant, so that their operation may be controlled at will and the door be maintained closed when otherwise it would be automatically opened, and thereby enable the cab to pass one or more doors on as many floors without said doors being actuated; and, finally, to secure these objects by simple, effective, and positive actuating devices, insuring the opening and closing of the doors at proper times and without exerting any undue strains upon said doors or the elevator-cab.

I attain these objects by devices illustrated in the accompanying drawings, in which Figure 1 represents a front elevation of an elevator-shaft with the upper door closed and the lower door and a part of the shaft broken away to show a front elevation of the cab, the grooved guideway for engaging and actuating the entrance-door, and the lever by which the actuation of the door is placed under the control of the attendant; Fig. 2, an enlarged front elevation of the cab; Fig. 3, an enlarged detail front elevation of the grooved guideway and levers shown in the lower part of Fig. 1; Fig. 4, a detail perspective of the cab and a sectional detail of the entrance-door, showing the engagement of the latter with the cab; Fig. 5, a longitudinal sectional view of the cab

and shaft, showing more particularly the door-latch and the arrangement of the cord or chain for actuating the levers forming a continuation of the guideway; Fig. 6, an enlarged detail front elevation of door-latch; Fig. 7, a section on the line *xx* of Fig. 6.

Similar letters of reference indicate the same parts in the several figures of the drawings.

The elevator-cab A is of any ordinary construction and operated by any well-known devices for raising and lowering it in the well or shaft B—as, for example, by cables secured at one end to an eyebolt, *a*, (see Fig. 2,) in the top of the cab.

In the shaft on each of the floors—C D E, for example—is the usual entrance, opened and closed by a sliding door, F, constructed and hung in the ordinary manner, so as to slide as easily as possible.

All elevator-doors should be, and usually are, locked from the inside when closed, for the purpose of preventing persons accidentally or otherwise entering or falling into the shaft when the cab is at some remote point, and to this end I provide (see Fig. 6) a latch, G, of hook form, having a contiguous lever or arm, H, pivoted about its center of length, as shown at *b*, to a casting, I, which latch, when the door is closed, is caused to engage a stud, J, on the door. Casting I is recessed so as to form a seat, *c*, for the latch when in engagement with the door-stud, and also to provide an inclination, *d*, limiting the elevation of the latch above its operative engagement. The latch is rounded or beveled on its forward end, to cause it to ride up on the door-stud as the door is closed, and may afterward be actuated by its own gravity to engage the door-stud, though it is preferred to employ a coiled spring, K, secured at one end to the latch-lever at a point between its pivot and the latch, and its other end to some fixed portion of the doorway or shaft.

The entrance L to the cab is preferably at one side of the front of the cab, but usually the cabs are so much broader than the entrance that there is ample room for the attachment and operation of my invention even if the entrance is in the middle of the front of the cab.

On the front of the cab, at one side of the entrance, is a guideway, M, formed by groov-



ing or by parallel strips in a curved line, extending generally in a line from the top to the bottom of the elevator, which guideway is open at both ends and deviates from a straight line a distance substantially corresponding with the width of the door or a little less.

Door F is of a width greater than the cab-entrance, and has secured on its inner side, about its center of length, and next the edge opposite the latch, a knob or anti-friction roller, N, (see Fig. 5,) adapted to fit and traverse the grooved guideway on the front of the cab. This roller, as indicated by dotted lines, Fig. 3, is in a vertical line beyond the grooved guideway, but when it is not desirable to have the automatic opening and closing of the door under the control of the attendant the guideway may be extended, so that every time the elevator-cab passes the door the guideway and roller will be engaged to open and close the door. In other words, it will be seen from the construction so far described that if, for instance, the door is unlatched and the elevator is rising, and the roller on the door is engaged with the upper end of the guideway, as the cab continues to rise, the button will be forced to traverse the guideway, and in doing so force the door open. The door will be fully opened when the roller is at the center of length of the guideway, at which time the floor of the cab will be on a line with that of the floor on which the door is located. If the cab continues to ascend, the roller will be forced forward and out the lower end of the guideway, and in doing so cause the door to gradually be closed, and fully so by the time the cab has risen to a height corresponding with half of the length of the door.

In order to automatically unlatch the door as the elevator rises or ascends, a bolt, O, bearing in a bracket, P, is secured on the cab, (see Fig. 7,) which bolt is normally projected beyond the cab by a spring, Q, coiled about and bearing at one end against a shoulder on the bolt, at its other end bearing against the bracket. As the elevator rises, this spring-seated bolt engages the latch-lever at a point between its pivot and forward end, lifting the latch off the door-stud and holding it in that position until the roller has engaged the guideway and commenced opening the door, immediately after which moment the bolt strikes against an inclined projection, R, rigid on the door-frame, which pushes the bolt inwardly with reference to the cab, and releases the latch, which by the action of its spring returns to its normal position to engage and lock the door as soon as it is closed.

There is also a similar spring-bolt, O', on the lower end of the cab, (see Fig. 5,) which engages the outer end of the latch-lever, and presses it downwardly to lift the latch as the elevator descends, which bolt is likewise engaged with an inclined projection, R', to release the latch.

For the purpose of permitting the attendant

to control the automatic opening of the door, and so that the cab may pass a floor without opening the door on that floor, the inner side of the guideway is continued at each end by levers or extensions S, pivoted at one end and actuated by a countersunk flat spring, T, to project it normally across the path of the roller on the door. Both of these levers may be actuated simultaneously by means of rods or bars U, pivoted intermediate the ends of the levers and to a rotating head, V, well down on the sides of the cab, which head may be conveniently actuated by means of a crank-arm, W, from which extends a chain or cord, W', passing over suitable pulleys to within convenient reach of the attendant, so that by pulling on the cord the levers may be shifted to the position shown in dotted lines, Fig. 3, and permit the cab-roller to pass without engaging the guideway. Any other means, however, may be provided for actuating the levers without an essential departure from that part of my invention which contemplates controlling the engagement of the door with the guideway.

By the construction described the attendant is not required to touch the door during the operation of the elevator, and hence all liability of the door to be left open after the cab has passed is effectually avoided, and besides the door is only opened at the proper time to permit the ingress or egress of the passengers.

In conclusion, it may be observed that the guideway may be on the door and the roller on the cab, instead of as shown and described.

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

1. The cab and the door, in combination with a guideway upon one of said members and a roller upon the other member beyond the path of the guideway, and means for engaging said guideway and roller, substantially as described.

2. The cab and the door, in combination with a curved guideway upon one of said members and a roller upon the other member, and a movable extension of and at the extremities of the guideway, substantially as described.

3. The cab, the door, the guideway, and the roller, in combination with movable extensions of said guideway, and a connection between said extensions whereby they may be simultaneously actuated, substantially as described.

4. The door and the latch thereof, in combination with the cab and a yielding bolt on said cab for engaging and lifting the latch, substantially as described.

5. The latch and the bolt and the inclined stud engaging the bolt to release the latch therefrom, substantially as described.

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Witnesses:

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