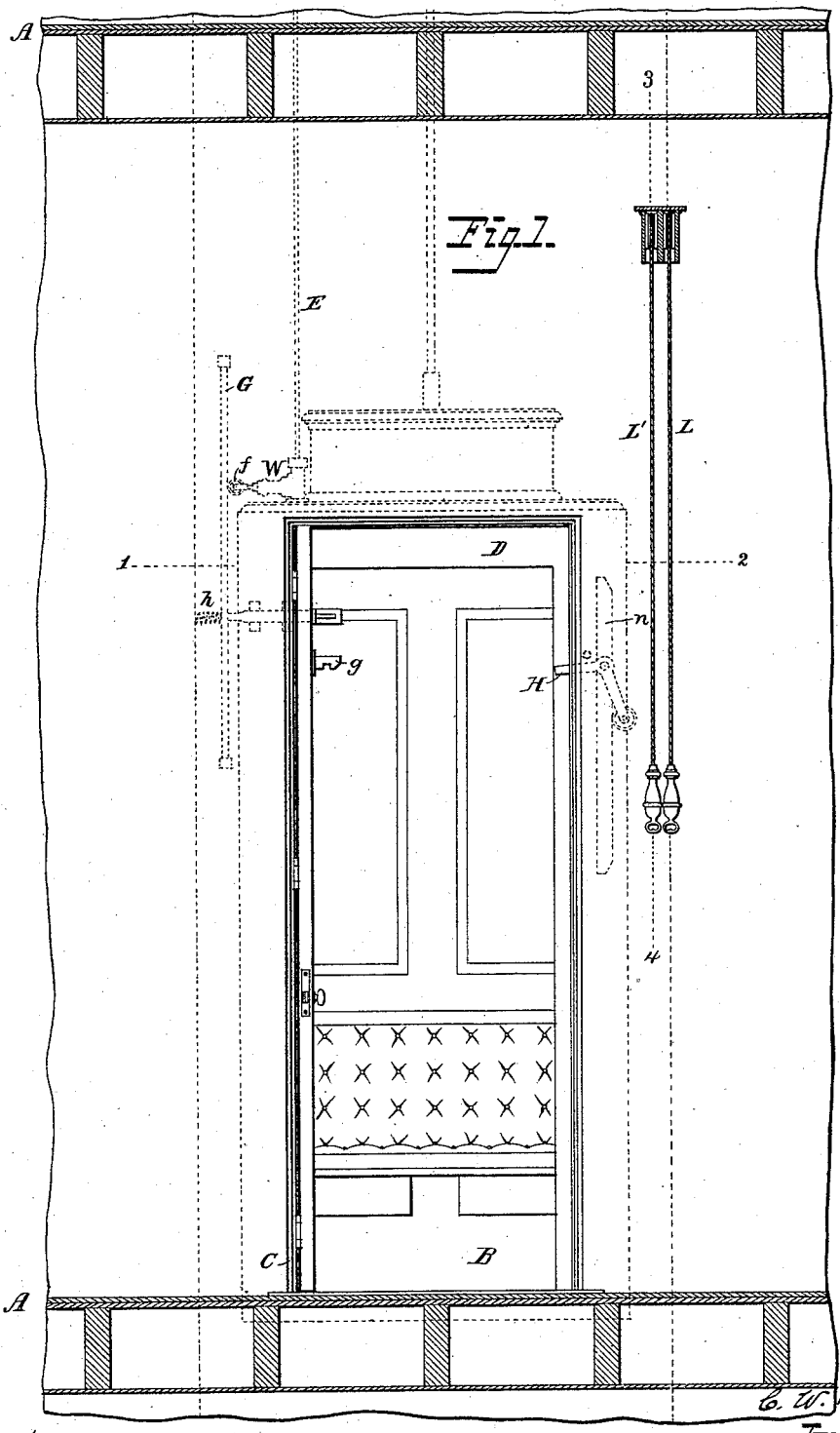
(No Model.) 3 Sheets—Sheet 1.

# C. W. BALDWIN.

## DEVICE FOR OPERATING ELEVATOR DOORS.

No. 306,049. Patented Oct. 7, 1884.




C. W. Baldwin
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(No Model.) 3 Sheets—Sheet 2.

# C. W. BALDWIN.

## DEVICE FOR OPERATING ELEVATOR DOORS.

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Fig. 2.

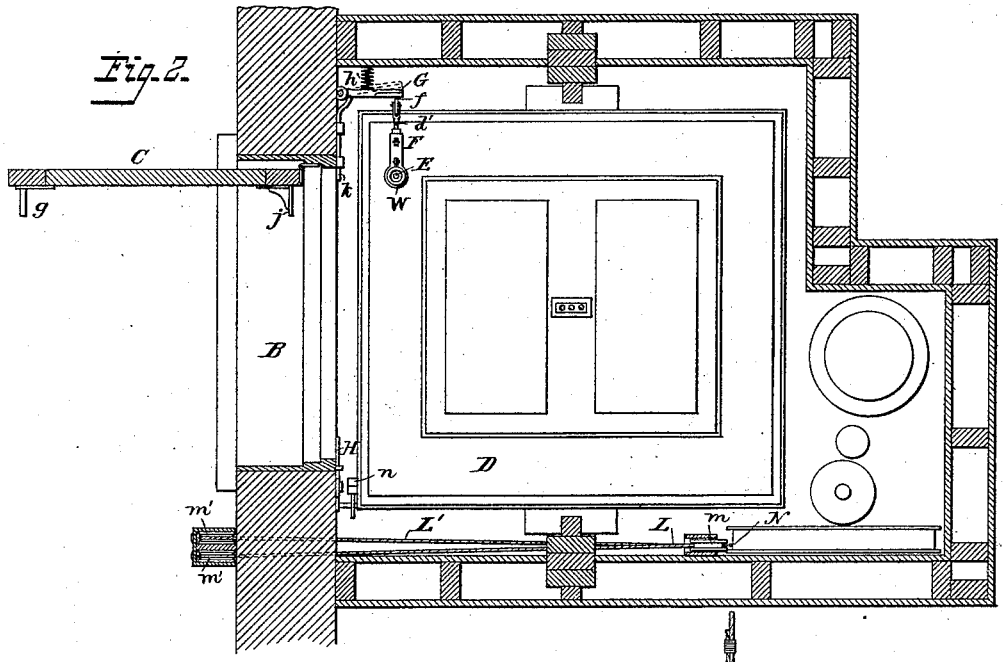
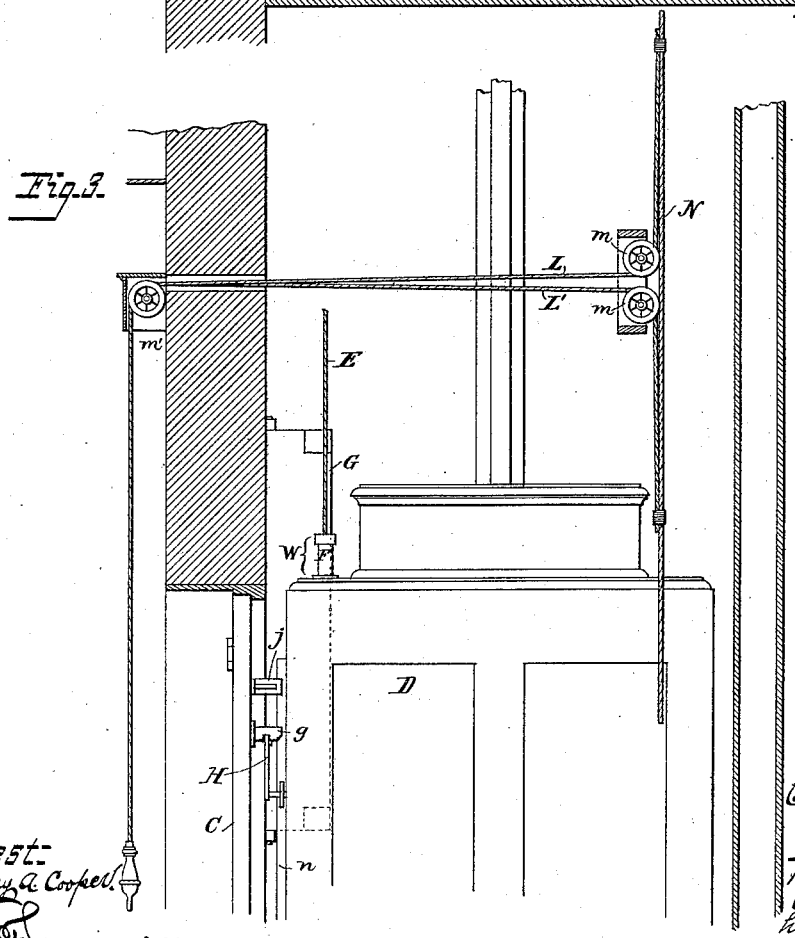



Fig. 3.

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(No Model.) 3 Sheets—Sheet 3.

# C. W. BALDWIN.

## DEVICE FOR OPERATING ELEVATOR DOORS.

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Fig. 4.

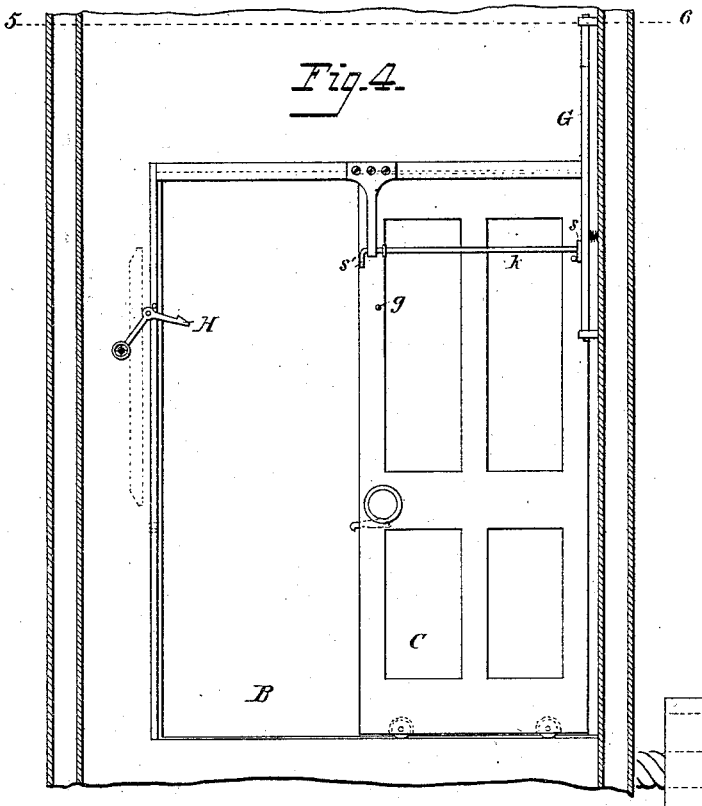
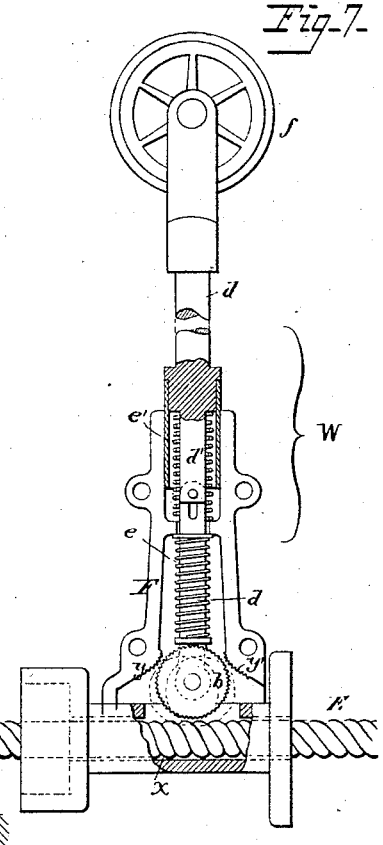



Fig. 7.



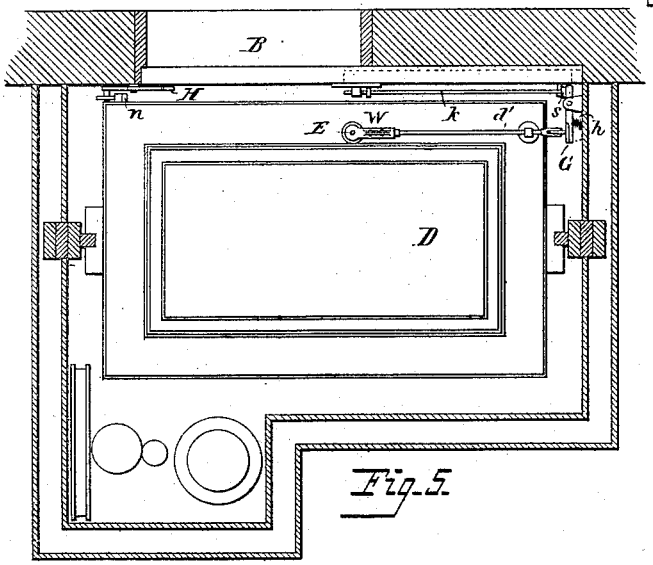
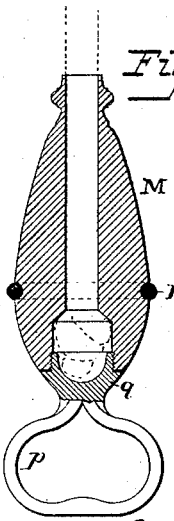




Fig. 5.

Fig. 6.

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Inventor:
By Charles E. Foster
his attorney.

# UNITED STATES PATENT OFFICE.

CYRUS W. BALDWIN, OF CHICAGO, ILLINOIS.

## DEVICE FOR OPERATING ELEVATOR-DOORS.

SPECIFICATION forming part of Letters Patent No. 306,049, dated October 7, 1884.

Application filed September 22, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, CYRUS W. BALDWIN, of Chicago, Cook county, Illinois, have invented certain Improvements in Operating Elevator-Doors, of which the following is a specification.

My invention consists of certain devices, fully described hereinafter, whereby the opening of any door leading to an elevator-well will result in arresting the movement of the cage, and in so locking the operating-rope that the cage cannot be started until the door is closed.

The invention further consists in means whereby each door is locked automatically at the inside and automatically released only when the cage is in position opposite such door; and, further, in appliances for starting the cage from the landings when the doors are closed.

In the drawings, Figure 1 represents in part sectional elevation a portion of a building wherein the well and doors leading thereto are situated. Fig. 2 is a sectional plan on the line 1 2, Fig. 1, the cage being below the section plane. Fig. 3 is a cross sectional elevation on the line 3 4, Fig. 1. Fig. 4 is an elevation showing a modification. Fig. 5 is a sectional plan on the line 5 6, Fig. 4; and Fig. 6 is a section of one of the pulls. Fig. 7 is a detached section of the clutch device.

A A represent the floors of a building; C, the doors closing the openings B leading to the well, which doors may be either hinged or sliding doors.

D is the cage, of any suitable construction, and operated by any of the usual appliances, and E is the hand-rope, passing alongside of or through the cage and connected to the valve or other device by means of which the movements of the cage are controlled. The hand-rope also passes through or adjacent to a clamp device, W, which is so constructed in any manner as to clutch and release the rope. In the first case the rope is connected immovably with the cage, so that the further motion of the latter in either direction will move the rope and close the valve. In the second case the cage can slide up and down without moving said rope, as is usual in elevators.

I have shown a clamp device which has proved to be effective, the same consisting of a hollow case, F, through an opening, *x*, in one end of which the rope passes, and a serrated grooved roller, *b*, which, when brought against the rope and carried up or down will be forced into contact with a serrated inclined face, *y* or *y'*, in the case, and jammed between the latter and the rope, thus binding the rope against the opposite side of the opening *x* and clamping it securely. Normally the roller *b* is out of contact with the rope, and is thrown toward the latter by any suitable means whenever a door of the well is open, so that no movement of the cage can result until such door is closed. I may employ many different devices for thus controlling the movements of the clutch. As shown, the wheel turns on a pin passing through a flat extension on a rod, *d*, having a sliding and jointed connection with another rod, *d'*, extended through and guided by the case. A spring, *e'*, bearing against a shoulder on the rod *d'* suffices to throw both rods outward, and a lighter spring, *e*, bearing on a shoulder of the rod *d*, will, when the rod *d'* is moved inward, carry the wheel against the rope, the jointed connection then permitting the wheel *b* to move up or down according to the direction the case is traveling. In either case the clamping of the rope and its movement in either direction operates the valve to stop the motion of the cage. The end of the rod *d'* extends beyond the cage, and carries a friction-roller, *f*, and within the well adjacent to each door is arranged a movable plate, G, which, as represented, is hinged at one edge, and a weight or a spring, *h*, tends to press the plate G against the roller *f*, force inward the rod *d'*, and stop the cage. Each plate G is combined with devices which when the door is closed throw the plate G back to the position shown in dotted lines, Fig. 2, and when the door is open permit the plate to move inward against the roller *f*. Thus each door may carry a bracket, *j*, which, as the door is closed, strikes the end of a sliding rod, *k*, connected to the plate G, and thus moves back the latter. When the door is opened, the removal of the bracket *j* from contact with the rod *k* permits the plate G to swing toward the cage, push in the rod *d'*, and thus arrest the motion of the cage.

It will be apparent that different appliances may be used to move the plate G in and out on the closing or opening of the door, and that, instead of using a plate, any other de-

vice that by its different positions (resulting from opening or closing the door) will operate the clamp to cause it to seize or release the rope E may be employed. Where a sliding door is used in connection with the plate G, the latter may be operated by a rod, *k*, having stops *s'* at the ends which are struck by a pin or bracket upon the door as the latter is opened and closed, as shown in Figs. 4 and 5.

By the use of the detent or clamp and devices operated on the opening or closing of the doors, as above described, the stopping of the cage opposite any door that may be open is thus insured, not only preventing accidents, but also facilitating the operation of elevators in private residences, where the cage must be often stopped and started by parties on the landings.

It will be seen that a cage, when arrested opposite an open door, cannot be started by any parties at other landings. It will further be seen that if (as sometimes happens,) the car settles, it carries the hand-rope with it and soon shuts the valve, and that a like result ensues if the car rises of itself from any cause. While the car is thus stopped and locked, if a door is opened when the car is passing, this automatic action does not in the least interfere with the ordinary functions of the hand-rope when the doors are all shut. Each door is locked when closed by a detent or catch, H, hung within the well and engaging with a hasp, *g*, on the door. This detent, as shown, is a bell-crank lever, the horizontal arm of which engages with the hasp, while the vertical arm carries a friction-stud that engages with a long rib, *n*, upon the cage as the latter approaches the door either way, so as to be thereby swung to one side, thus releasing the detent from the hasp and permitting the door to be opened from the landing or from the cage, but only when the latter is opposite the door.

In private residences, and places where it is not advisable to maintain an attendant in the cage, the latter must be started and stopped by parties on the landings outside of the well. For this purpose I employ ropes L L', passing over guide-pulleys *m m'* to a supplemental valve-cable, N, and extended in opposite directions, and so attached to the cable that a pull upon one rope will draw down the cable, and a pull on the other will raise the cable, with the same effects as result from raising and lowering the usual hand-rope. If desired, the cable N may be a continuation of the hand-rope, passing round sheaves at the bottom and top of the well. A lever or other device may be substituted for the ropes L L'. Each rope is provided at the end with a weight to keep it taut, and such weight may be made in the form of a "pull," as shown in detail in Fig. 6, which shows the weight having an egg-shaped body perforated longitudinally to receive the end of the rope and the knot thereon, and with an eye or yoke, *p*, forming part of a block, *q*, that screws into one end of the opening in the body and covers the knot on the rope.

An annular recess in the periphery of the body receives a rubber ring, *r*, that acts as a guard to prevent the pulls from marring each other or the walls.

I claim—

1. A stop device for elevators, consisting of a clamp arranged upon the cage in proximity to the hand-rope, and appliances constructed and arranged to operate said device and clutch the rope whenever the cage approaches an open door, as set forth.

2. The combination, in an elevator, of a clamp upon the cage, and devices connected to be operated by the door, and arranged within the well to strike the clamping device and insure the clutching of the rope when a door opposite the cage is opened, as specified.

3. The combination, with the cage and its rope, of a case having inclined faces *y y'*, a wheel or roller arranged between the rope and said faces, and appliances whereby to throw the roller to or from the rope according to the position of the door opposite which the cage is traveling, substantially as set forth.

4. The combination, with the case F and its opening *x*, and inclined faces *y y'*, of the rods *d d'*, jointed loosely together, the pulley *b*, carried by the rod *d*, and springs *e e'*, proportioned as set forth.

5. The combination, with the cage and its clamp and with the doors of the well, of movable plates G, arranged adjacent to the doors in the well, and devices whereby a plate is brought into position to be struck by the arm of the clamp when a door is open, substantially as set forth.

6. The combination, with the doors leading to the well and arranged to be opened only from within the cage, of self-latching catches within the well, and a rib upon the cage arranged to unlatch each catch as the cage is brought opposite the door, substantially as specified.

7. The combination, with the cage, of a supplemental valve operating cable and ropes L L', or their equivalent, leading therefrom in different directions and extending to the landings, substantially as described.

8. The combination, with the ropes L L', of weights formed with pulls, as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CYRUS W. BALDWIN.

Witnesses:

HOLMES HOGE,

H. L. KENT.