

(No Model.)

2 Sheets—Sheet 1.

J. A. BARCLAY. HATCHWAY.

Patented Jan. 29, 1889.

No. 396,849.
Fig. 5.

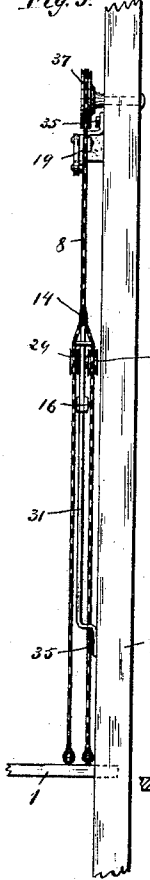


Fig. 1.

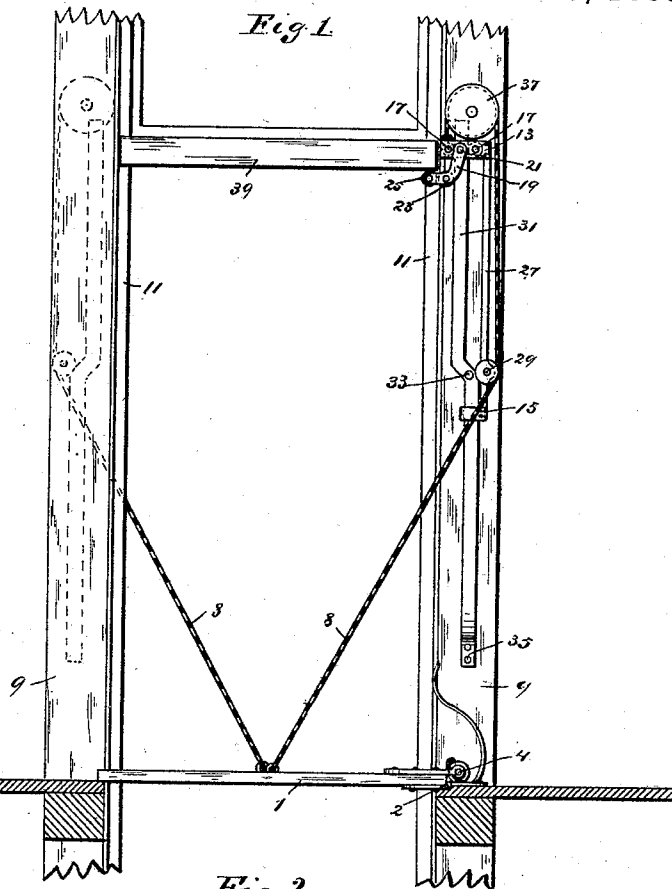
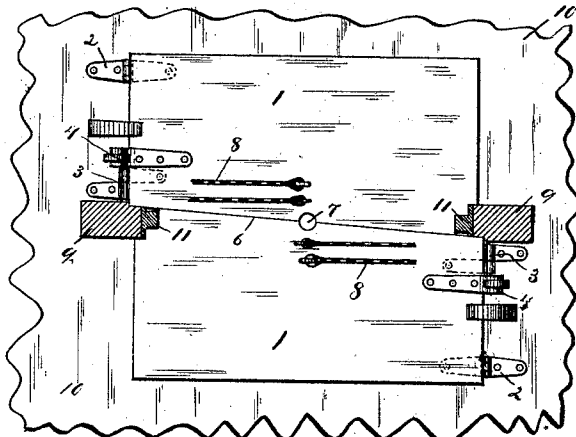


Fig. 2.



Witnesses,

Arthur P. Cothrop
Geo. B. Evans

Inventor,

James Alexander Barclay.

By his Attorneys
Paul Sanford Merwin

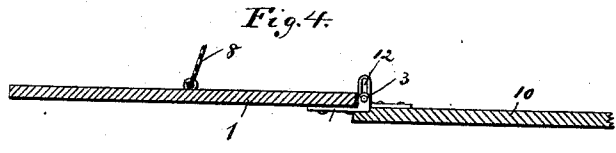
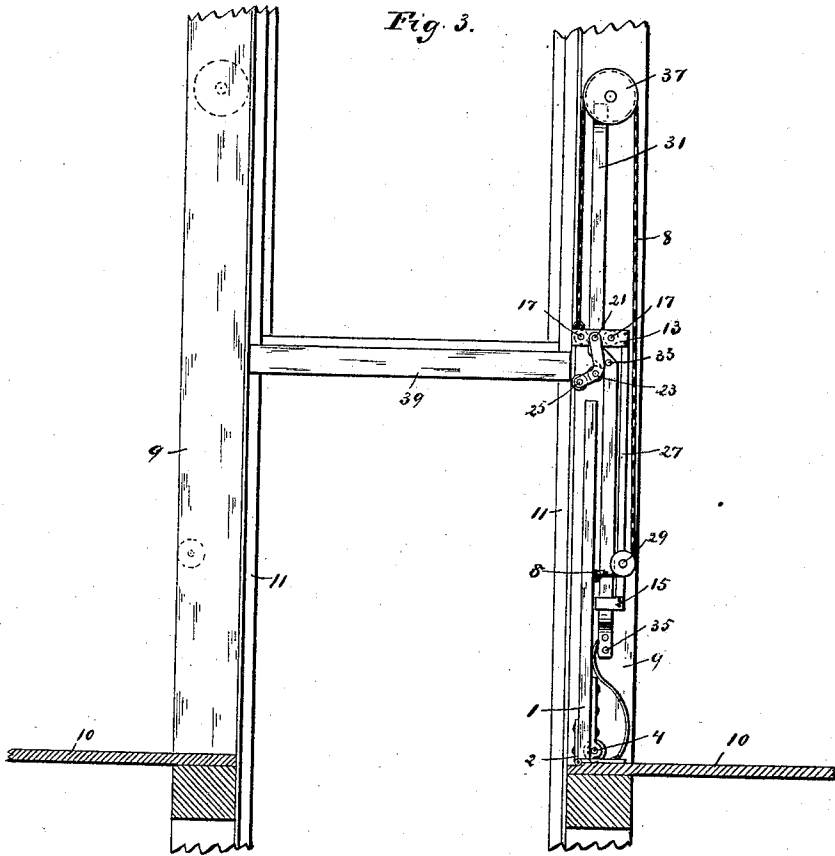
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UNITED STATES PATENT OFFICE.

JAMES ALEXANDER BARCLAY, OF ST. PAUL, MINNESOTA.

HATCHWAY.

SPECIFICATION forming part of Letters Patent No. 396,849, dated January 29, 1889.

Application filed April 21, 1888. Serial No. 271,441. (No model.)

To all whom it may concern:

Be it known that I, JAMES ALEXANDER BARCLAY, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Automatic Hatchway-Guards, of which the following is a specification.

My invention relates to the hatchways of freight-elevators in buildings; and it consists in improvements on my invention for which I obtained Letters Patent No. 372,057, dated October 25, 1887.

In the drawings forming a part of this specification, Figure 1 is a sectional side elevation of the floor of a building through the hatchway and showing the guide-posts of the elevator with my improvements attached, the hatchway-doors being closed. Fig. 3 is a view of the same with the hatchway-doors thrown open by the operation of my device. Fig. 2 is a plan view of floor with hatchway-doors closed. Fig. 4 is a sectional side view of hatchway-door, showing slotted hinge. Fig. 5 is a back view of my invention as applied to supporting post and door.

In the drawings, 1 1 are elevator hatch-doors, which cover and completely close the hatchway excepting a small hole, 7, through which the cable of the elevator runs. These doors are made narrower at their hinged end than at the other, their inside edges meeting in a diagonal line, 6, running from one side of one guide-post to the opposite side of the other, the doors being hinged on opposite sides of the hatchway.

To avoid the necessity of cutting the elevator-guides 11 to allow space for the doors to open out of the way of the elevator, as is done in other devices, these doors are so hinged that when opened they "clear" the guide-posts and offer no obstruction to the elevator in passing. I accomplish this by using an ordinary strap-hinge, 2, at the outer corner of door, while at the inner corner I use a hinge, 3, whose construction is shown in Fig. 4. It is similar to what is commonly called a "hook-and-eye hinge;" but the eye 12 is made in the form of a slot, so that when applied to the floor and hatch-door there is a vertical play in the joint. I attach the lifting

cable or chain 8 to the doors near their inner edge, so that when power is applied to the cable the first effect is to tilt the doors outward from each other, so that they will pass by the elevator-cable, if the elevator is below the doors, as they open. The next movement of door is to rise, turning on its hinges, and as it does so the stilt 4, which is shown with friction-roll, rests upon the floor and holds the door while open in its tilted position away from the guide-post sufficiently to allow it to pass the guide-post and stand out of the way of the elevator, as shown in Fig. 3, the operation of both doors being identical, but on opposite sides of hatchway. My device for opening these doors automatically is a peculiarly-constructed frame or traveler, which operates the lifting-cable and runs on its supporting-track 31. This traveler consists of an upper sleeve, 13, inclosing the track 31, fitted with friction-rolls 17 17, which bear on the edges of track, a lower sleeve, 16, fitted similarly with friction-rolls, a bar, 27, connecting the two sleeves 13 and 16, having pivoted at its lower end the sheave 29, which is thus carried by the traveler up and down, and the bell-crank arm 19, pivoted to the sleeve 13 at 21. This arm 19 carries a friction-roll, 23, which rests upon the track 31, and its outer end, carrying bearing-roll 25, projects from the traveler into the path of the elevator 39, so that the floor of elevator in descending strikes upon the roll 25.

The track 31 is preferably constructed of flat bar-iron fastened rigidly to its supporting-post at 35, its ends being bent so that it stands out from and parallel to the post 9, as shown in Fig. 5, and allows the traveler to run freely along it. At 33 the track is constructed with a reverse turn or angle, the upper and lower portions of track being in the same plane and parallel to each other.

The downward movement of elevator pushes along the arm 19, and with it the traveler, until the turn 33 in the track is reached, when the arm 19 drops back out of the way of the elevator, as shown in Fig. 3, and the traveler stops.

The cable 8 is carried over the fixed pulley 37, so that the traveler in descending pulls up the hatch-door. The cable being also carried

over the sheave 29, the position of the sheave determines the angle at which the power is applied through the cable to lift the door.

By pivoting the sheave to the traveler its position is highest when the door is shut, and consequently the cable pulls most directly upon the door and less power is required to lift it than if the sheave were fixed at the position shown in Fig. 3, as is the case in similar devices.

To avoid a slightly-indirect draft and friction from the cable running over a single sheave, 29, two sheaves may be used, pivoted oppositely on the traveler, and a double or branched cable from 14 to run over both sheaves to the door. (See Fig. 5.)

The mode of operation is as follows: The hatch-doors being closed, the elevator, descending from above, Fig. 1, strikes the projecting arm 19, which, running along the track 31, carries the traveler downward, which in turn lifts the door 1 by means of the cable 8, running over pulley 27 and sheave 29, until the turn 33 in track is reached by the arm 19, when it drops back and allows elevator to pass, the cable and other parts of the mechanism being so adjusted that when the arm 19 falls back at 33 the door is completely opened and the sheave 29 is on a level with the point of fastening of cable to door, the door being thus held firmly by the cable pulling it at right angles up to sheave. (See Fig. 3.) The elevator having passed downward, a spring or other suitable device throws the door forward, when it closes by its own weight. A suitable device fixed to the roof of the elevator ascending from below throws open the hatch-doors, and the traveler descends to the position shown in Fig. 3 until the elevator has passed, when the doors automatically close as before.

While this mechanism is specially designed and adapted for elevator hatch-doors, it is suitable for use in other places where a door or gate is to be automatically operated by an approaching or passing vehicle or other body.

I claim as my invention—

1. In a mechanism for automatically operating elevator hatch-doors by means of a cable, the combination, with a frame or traveler consisting of the sleeves 13 and 16, and the bar 27, connecting said sleeves, of the project-

ing arm 19, pivoted to the traveler and adapted to engage a passing elevator, the sheave 29, upon which said cable is adapted to run journaled upon the traveler, and the door 1, attached to said cable and fitted with a slotted hinge, 3, and a support or stilt, 4, by means of which the door is lifted and tilted laterally, so as to pass the elevator-guide, substantially as described.

2. In a mechanism for automatically opening hatch-doors by means of a cable, the combination, with a suitable support or track, 31, of a traveler or frame connected to said cable and adapted to run upon said track as impelled by contact with a passing elevator, and the sheave 29, on which said cable is adapted to run, journaled upon said traveler, so that when the cable is operated by the traveler the angle at which it pulls upon the hatch-door is greatest when the door is closed, substantially as described.

3. In a mechanism for automatically opening a door or gate, the combination, with a suitable support or track, of a pulley, 37, a cable attached to said door or gate and passing over said pulley, a traveler or frame attached to said cable and adapted when impelled by contact with a passing body to run upon said track and operate the cable, and the sheave 29, journaled upon said traveler, by means of which the direction in which the cable pulls upon the door or gate is determined, substantially as described.

4. In an elevator, the combination, with the hatch-doors 1 1, of tapering form, hinged at their narrower ends to the floor of the building on opposite sides of the hatchway, with their inner edges meeting each other when closed in a diagonal line from the inner side of one guide-post to the outer side of the other and completely covering the hatchway-opening, of the hook-and-eye hinges 3, attached to the inner corners of each of said doors, having slotted eyes admitting of vertical play in the joints, and supports or stilts 4, by means of which the doors when opened are tilted outwardly and so held by the stilts, substantially as described.

JAMES ALEXANDER BARCLAY.

Witnesses:

C. J. MALLOY,

T. D. MERWIN.