(No Model.)

# J. A. BARCLAY.

## AUTOMATIC HATCHWAY GUARD.

No. 372,057. Patented Oct. 25, 1887.

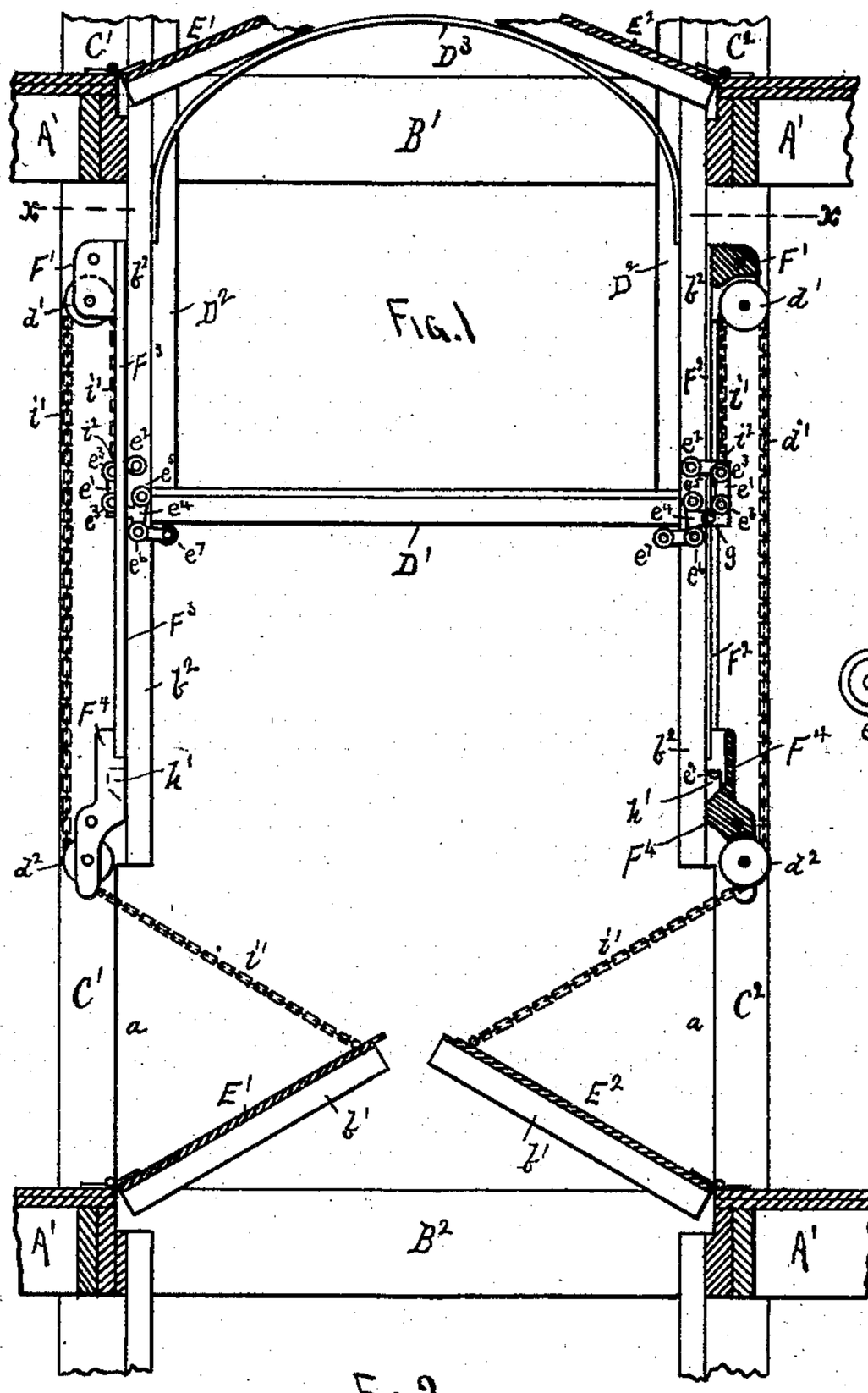
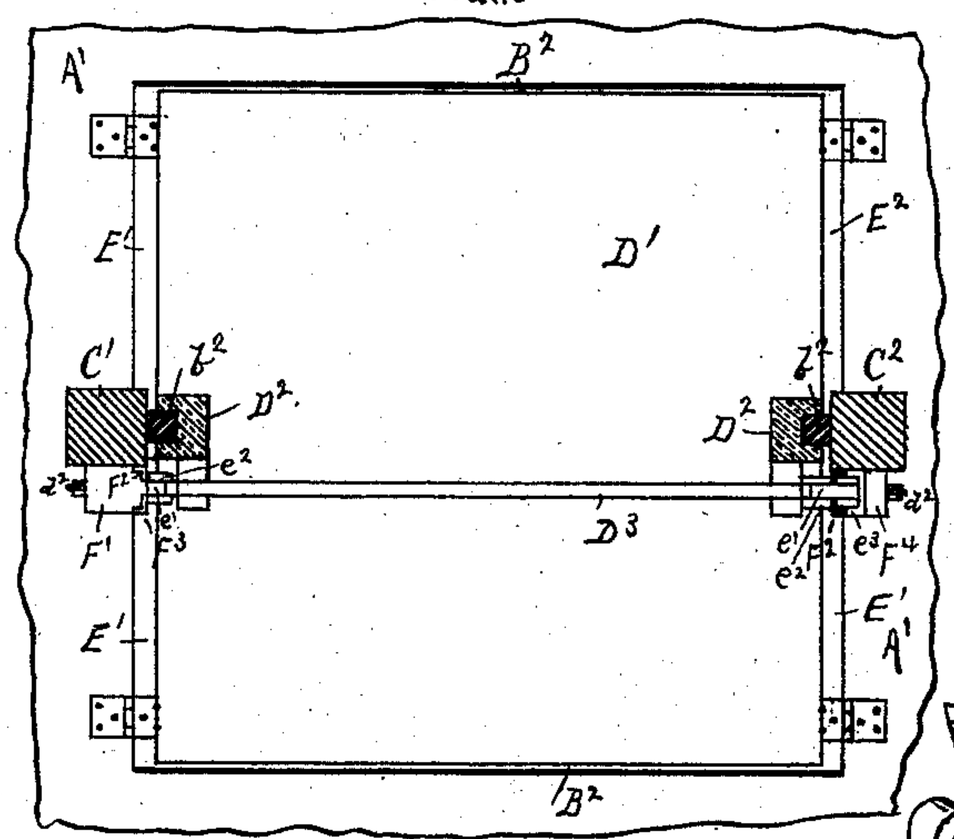



FIG. 1

FIG. 2



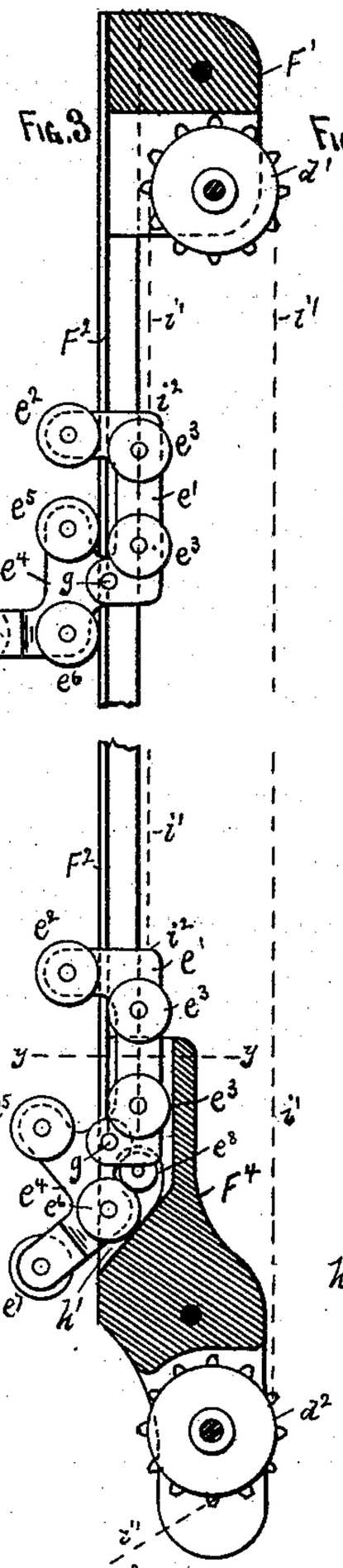




FIG. 3

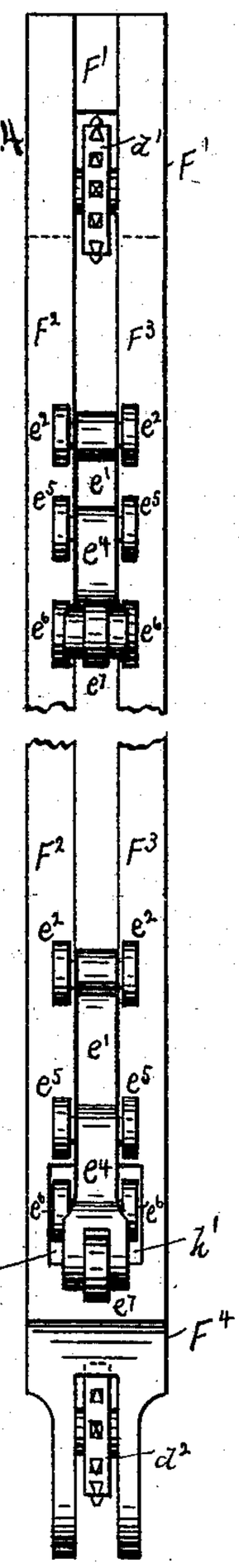



FIG. 4

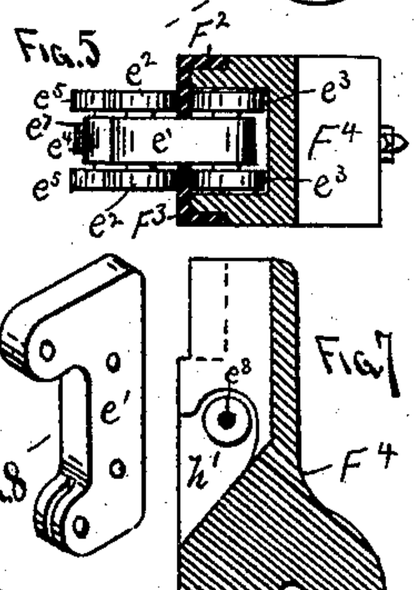



FIG. 5

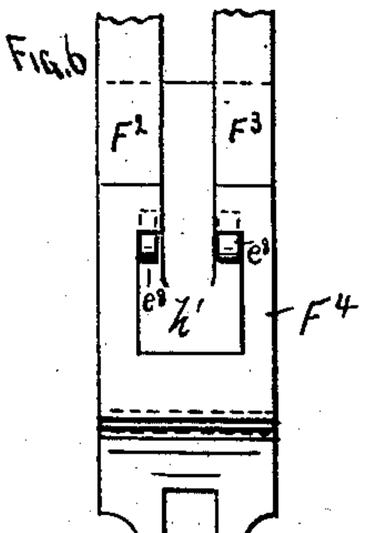



FIG. 6




FIG. 8




FIG. 7

WITNESSES.
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Charles N. Woodward,
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# UNITED STATES PATENT OFFICE.

JAMES ALEXANDER BARCLAY, OF ST. PAUL, MINNESOTA, ASSIGNOR OF ONE-HALF TO GEORGE B. WOODWARD, OF SAME PLACE.

## AUTOMATIC HATCHWAY-GUARD.

SPECIFICATION forming part of Letters Patent No. 372,057, dated October 25, 1887.

Application filed September 27, 1886. Renewed July 6, 1887. Serial No. 243,592. (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.

This invention relates to the hatchways of freight-elevators in buildings; and it consists in the manner of constructing and arranging the mechanism whereby the doors covering said hatchway are automatically opened and closed by the elevator-platform in passing upward and downward through the different floors, as hereinafter shown and described.

In the drawings, Figure 1 is a sectional side elevation of portions of two floors of a building through their hatchways with my improvements attached to the hatchway-doors. Fig. 2 is a plan view on the line *x x* of Fig. 1. Fig. 3 is an enlarged sectional side elevation of the guide-frame and traveler detached. Fig. 4 is a front view of Fig. 3. Fig. 5 is a cross-sectional view on the line *y y* of Fig. 3. Fig. 6 is a front view, and Fig. 7 is a sectional side view, of the lower part of the guide-frame with the traveler removed. Fig. 8 represents the two parts of the frame of the traveler in perspective.

A′ represents portions of two floors of a building, and B′ B² the hatchway-openings through which the elevator rises and falls.

C′ C² are the leaders or guides, between which the platform D′ runs up and down, and E′ E² are the doors, hinged to the sides of the hatchway and adapted, when folded down, to close the hatchway-openings completely, and when raised up to leave them entirely open.

In the drawings the doors E′ E² are shown hinged to the same sides of the hatchway as that through which the leaders C′ C² pass, the latter being cut away at *a* to permit the doors to fold up into them when raised. The bottoms of the doors will be provided with a section, *b′*, of the guide *b²* for the platform D′, so that when the doors are raised up the sections *b′* will fill the cut-away portions *a* and render the guide *b²* continuous for the passage of the platform D′. I do not wish to be limited to this particular form of doors E′ E², as I am aware that the doors may be arranged in many other ways.

Attached to each of the leaders C′ C² on opposite sides of each hatchway-opening is a guide-frame consisting of a cast-iron head-block, F′, having a chain or cable pulley, *d′*, and connected by two angle-iron guide-bars, F² F³, to a foot-block, F⁴, the latter also provided with a chain or cable sheave, *d²*, as shown. The two blocks F′ F⁴ are bolted or otherwise firmly secured to the leaders C′ C², so that the faces of the guide-bars F² F³ are about flush with the inner faces of the leaders and parallel therewith. The bars F² F³ form guides between which a traveler is adapted to run up and down, this traveler consisting of a frame, *e′*, having anti-friction rollers *e² e³* journaled thereon on opposite sides of the bars F² F³, as shown, so that the traveler will move freely up and down between the guide-bars.

Pivoted at *g* to the lower end of the frame *e′* is a bell-crank-shaped arm, *e⁴*, having rollers *e⁵* pivoted upon the sides of its upper end, and with rollers *e⁶* upon the sides of its elbow, these rollers being adapted to run in contact with the outer faces of the guide-bars F² F³. In the outer end of the arm *e⁴* is another roller, *e⁷*, adapted to project beneath the platform D′, as shown, so that the platform will carry the traveler down with it. In the face of the foot-blocks F⁴ a cavity, *h′*, is formed, into which the rollers *e⁶* will run when the platform has carried the traveler down far enough, and thus enable the roller *e⁷* to pass out from beneath the platform D′.

A chain or cable, *i′*, is attached at *i²* to each of the frames *e′* and passes upward and over the pulleys *d′*, thence downward around the pulley *d²*, and thence to the doors E′ E², each door having its own independent connection with its own traveler, as shown. The traveler will be so set that when the doors E′ E² are closed the travelers will be up just below the pulleys *d′*, and then when the platform D′ descends it will strike upon the inwardly-projecting portions of the arms *e⁴* and carry the traveler down with it, and thus, through the

connecting-chains $i'$, raise the doors E' E². The length of the chains $i'$ will be so graduated that the rollers $e^6$ will come opposite the cavities $h'$ when the doors E' E² have been raised to a perpendicular position, and the rollers $e^6$, by moving backward into these cavities, will cause the arm $e^4$ to turn upon its pivot $g$ and allow the roller $e^7$ to pass out from beneath the platform D', and thus cause the latter to cease to act upon the traveler. Then the platform is free to pass on down through the hatchway, the sides D² of the platform pressing against the roller $e^5$ and holding the lower end of the arms $e^4$ back into the cavities $h$.

When the platform is rising, the bows D³ strike the doors E' E² and open them upward, this action of the doors in opening causing the chains $i'$ to be slackened and permitting the travelers to descend until the rollers $e^6$ come opposite to the cavities $h'$, when they will move back into it and remove the rollers $e^7$ back from the track of the platform, so that the latter can pass the traveler.

When the platform rises above the upper edge of the doors E' E², the latter will fall inward and tighten up the chains $i'$, and when the platform rises above the rollers $e^7$ the weight of the doors E' E² will cause the traveler to rise and follow the platform upward, the rollers $e^6$ passing out of the cavities $h'$ and the rollers $e^7$ projecting beneath the platform, as before. Thus the doors close only with the same speed as the platform rises or falls. The arm $e^4$ being pivoted about in the center of its upright member, when the rollers $e^6$ pass into the cavities $h'$ the upper end of the arm will be projected outward slightly beyond the rollers $e^3$ until the rollers $e^5$ and $e^7$ are in line perpendicularly, as shown in the lower part of Fig. 3. The rollers $e^5$ $e^7$ are thus thrown in contact with and bear all the strains of the platform-frame D² in passing through the hatchway and prevent the platform from coming in contact with the other parts of the traveler. This is an important feature of my invention, greatly lessening the danger of breakage of the parts by severe strains, and avoids all wear and friction upon the traveler except the small part borne by the rollers $e^5$ $e^7$.

Small rollers $e^8$ may be set into the upper part of the cavities $h'$ to throw the rollers $e^6$ outward when the traveler is required to rise upward, or a small inclined stud may be substituted for the rollers, if preferred.

The manner of constructing and arranging the guide-frame is also an important feature of my invention, as it combines great strength with lightness, cheapness, and durability.

Having thus described my invention, what I claim as new is—

Means for opening and closing hatchway-doors, comprising a platform, D', moving upward and downward through said hatchways, said platform having bows D³ to open said doors when said platform rises, guide-frames consisting of head-blocks F', having chain-pulleys $d'$, foot-blocks F', having chain-pulleys $d^2$ and cavities $h'$, connecting-bars F² F³, travelers consisting of frame $e'$, carrying anti-friction rollers $e^2$ $e^3$, bell-crank arms $e^4$, pivoted to said frame $e'$ and carrying anti-friction rollers $e^5$ $e^6$ and bearing-rollers $e^7$, and chains or cables $i'$, connecting said frame $e'$ with said hinged doors, all combined substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

JAMES ALEXANDER BARCLAY.

Witnesses:
C. N. WOODWARD,
H. S. WEBSTER.