

L. R. BARBOUR.
Self-Closing Hatchways.

No. 154,977.

Patented Sept. 15, 1874.

FIG. I.

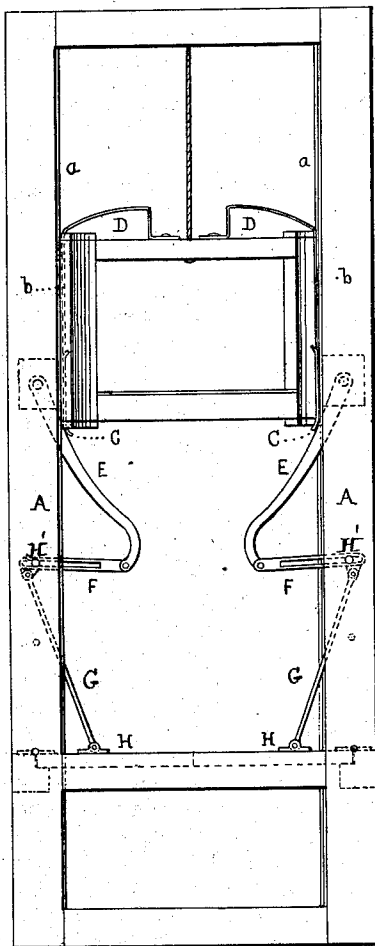


FIG. II.

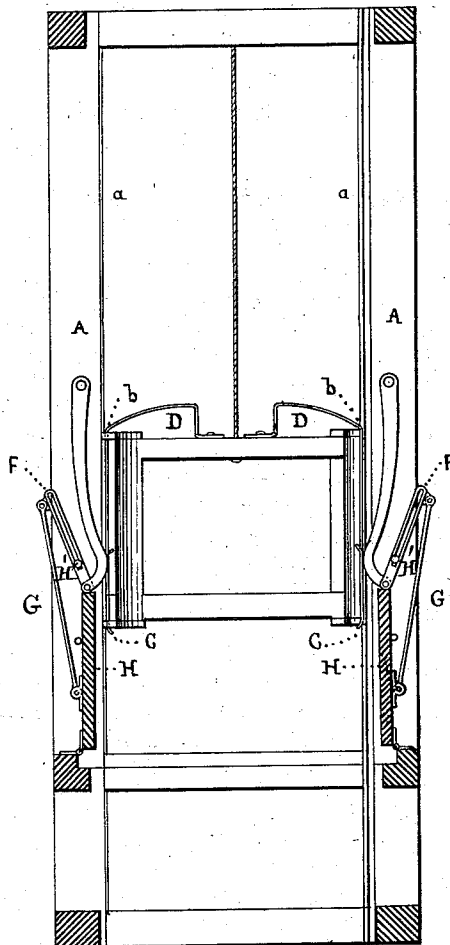
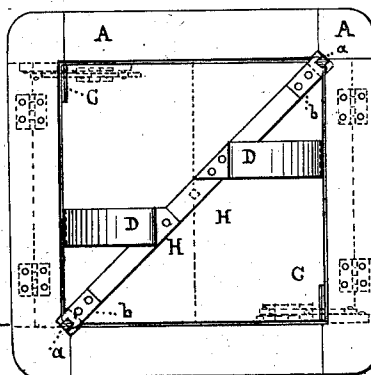


FIG. III.



WITNESSES:

A. H. Norris.
George W. Smith

INVENTOR:

Linton R. Barbour

By his Attorney
James L. Norris.

UNITED STATES PATENT OFFICE.

LINTON R. BARBOUR, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO JAMES H. MCKAY AND BARNET F. WARNER, OF SAME PLACE.

IMPROVEMENT IN SELF-CLOSING HATCHWAYS.

Specification forming part of Letters Patent No. **154,977**, dated September 15, 1874; application filed June 19, 1874.

To all whom it may concern:

Be it known that I, LINTON R. BARBOUR, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Safety-Hatches, of which the following is a specification:

This invention has reference to that class of hatchways in which the doors at the different floors of the building are opened and closed in an automatic manner through the medium of the ascending and descending cab or elevator-cage. The invention consists in the arrangement, in respect to the hatchway-doors, of a system of levers, slotted arms, and connecting-rods, which are constructed and relatively arranged in such a manner above the hatchway-doors that the ascending cab or elevator-cage, after having opened the doors through the medium of inclined planes carried by the cage, will tend to retain the doors in an open position until the bottom of the cab has cleared the same, when the gradual closing of the doors is insured by the arrangement of levers, arms, and rods. The opening of the doors to permit the downward passage of the cab is accomplished by causing projecting plates or strips on the cab to come in contact with the levers arranged above the doors in the path of the cage, thus forcing said levers in an outward direction to cause the doors to be opened through the intervention of the slotted arms and connecting-rods, and retained in an open position until the cage has passed below the same, when they are gradually restored to a closed position.

In the accompanying drawings, Figure 1 is a side elevation of the hatchway-cage, frame, doors, and operating-levers. Fig. 2 is a longitudinal vertical section of the same, and Fig. 3 a top or plan view thereof.

A designates a hatchway of the usual construction, having at the corners diagonally opposite to each other tracks or guide-rails *a*, for the reception of bifurcated guide-plates *b*, or wheels, at the corresponding corners of the cage B. The cage or elevator-cab is provided at the corners not occupied by the guide-plates, with vertical strips or plates C, which subserve the function hereinafter specified; and on the top the cage carries inclined planes

or plates D, which come in contact with the under side of the doors H, when the cab is ascending, so as to bear against said doors, and to cause the same to be forced open by the upward progress of the cab. The doors are hinged in the ordinary manner, and are, respectively, connected at opposite sides thereof to a system of levers, E, slotted arms F, and connecting-rods G, which are brought into action to retain the doors in an open position until the cab has passed above the top edges of the same, when they serve to close the doors in a gradual manner, by causing the projecting corner-strips C to travel in contact with the levers E, which are inclined in an outward direction in respect to the path of the cage, so that the contact of the latter is eventually removed. The levers E are hinged at their upper ends to the corner-posts of the hatchway, and at their lower free ends they are connected with the inner ends of the slotted arms F, which travel or move on guide-studs or pins H'. The rods G, which are jointed to the doors, at or near the outer edges thereof, are connected at their upper ends by a pivot or fulcrum pin to the outer ends of the slotted arms F. The levers E incline in an inward direction when the doors are closed, and the slotted arms F are retained in a horizontal position, while the rods G extend in an outward direction.

When the doors are opened by the ascending carriage or cab, the levers, arms, and rods are moved outward, so as to enable the doors to be opened to their full extent, and to permit the cab to ascend and act upon the bent levers for preventing a too sudden closing of the doors, which would take place if the levers and other devices were not present.

The act of opening the doors when the cab is descending is performed by causing the corner-strips C of the cage to come in contact with the levers E, thus gradually forcing the same outward, and insuring a corresponding gradual opening movement of the doors through the medium of the levers, slotted arms, and connecting-rods. The doors commence to move in a downward direction so soon as the cage has passed below the top edges of the same, and they gradually follow the movement of

the same, so that, by the time the top of the cage has passed below the door-frame, the doors will be in a closed position.

I claim as my invention—

In combination with the doors of a hatchway, the opening and closing mechanism, consisting of the cage, the pivoted levers E, slotted arms F, and connecting-rods G, the various parts being constructed and relatively

arranged to operate in concert with each other substantially as herein described.

In testimony that I claim the foregoing I have hereunto set my hand.

LINTON R. BARBOUR.

Witnesses:

CHARLES A. RHODES,
D. R. SANFORD.