

UNITED STATES PATENT OFFICE.

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HATCHWAY MECHANISM.

SPECIFICATION forming part of Letters Patent No. 497,828, dated May 23, 1893.

Application filed November 9, 1892. Serial No. 451,436. (No model.)

To all whom it may concern:

Be it known that I, ELISHA DOUGLAS SHAW, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Mechanism Automatically Operated by Elevators for Opening and Closing Floor or Hatch Doors, of which the following is a specification.

The principal objects of my invention are first, to provide a simple, compact, durable, efficient and comparatively inexpensive mechanism adapted to be automatically actuated by an elevator and operating to open transversely ranging floor or hatch doors to permit of the descent of the elevator and so arranged as to close after the elevator has passed; and second, to provide mechanism applied to the guide rail beam or stile in such manner as not to require cutting into the beam or stile or into the wall of the building, the construction and arrangement being such that the movement of the elevator or car automatically actuates mechanism to open the hatch doors of an elevator well connected with the different floors of a building.

My invention consists of the improvements hereinafter fully described and claimed.

The nature, characteristic features and scope of my invention will be more fully understood from the following description taken in connection with the accompanying drawing forming part hereof and illustrating partly in vertical elevation and partly in section an elevator shaft or well, an elevator car, and mechanism embodying features of my invention adapted to be automatically actuated by the elevator car and operating to open the floor or hatch doors to permit of the descent of the elevator car and to permit the floor or hatch doors to close after the elevator car has passed.

In the drawing, *a* is a club-shaped pawl pivotally connected at one of its extremities to the stile or beam of the guide rail *b* of the elevator well *b'*, by means of a plate or bracket, and having its other extremity disposed in range of a roller or lug *e*, projecting from the bottom of the elevator car *f*.

g, is a curved tapering arm similarly pivoted to the guide rail beam or stile *b*, of the ele-

vator well *b'*, a plate or bracket and having one of its extremities *g'*, weighted to balance a portion of the weight of the floor door *b²*, and also connected with the arm *a*, by means of a link or rod *h*. The other extremity *g²*, of the arm *g*, passes through and works in a loop or staple *i*, secured to the floor door *b²*. This staple may be provided with a roller *i'*, in order to permit the end *g²*, of the arm *g*, to work freely therein.

From the foregoing description it will be observed that the arms *a* and *g*, and the link *h*, are located wholly within the elevator well *b'*, so that the wall of the well is not cut away.

The hereinbefore described hatchway mechanism located at one side of the elevator well is duplicated on the other side thereof.

The mode of operation of the hereinabove described mechanism is as follows:—When the elevator car *f*, is descending toward the story 1, as indicated by the arrow in the drawing, the rollers *e*, collide with the arms *a*, and turn them downward. This movement of the arms *a*, acting through the instrumentality of the links or rods *h*, causes the ends *g'*, of the arms *g*, to be turned downward. The downward movement of the ends *g'*, of the arms *g*, causes the outer ends *g²* thereof to move upward, thus opening the floor doors *b²*, and bringing strips secured to the under side thereof into a position for guiding the elevator car. It is to be understood that the ends *g²*, of the arms *g*, are afforded a range of movement in the loops or staples *i*, and thus form a sliding connection which compensates for the eccentricity of the movements of the floor or hatch door *b²* and the arm *g*, due to the distance between the axis of the door and the axis of the arm *g*. While the elevator car is descending past the floor or hatch doors *b²*, the latter are held in open position by the side walls of the car, and as soon as the elevator car has passed by the floor or hatch doors the latter are released and permitted to close, either under the influence of gravity or of a suitable spring, into the position shown at story 2, in the drawing.

When the elevator car is ascending, the band or loop *f'*, contacts with the under side of the doors and pushes them and also the arms *a*, upward into open position, and as

soon as the elevator car has passed beyond the doors the latter are again permitted to return under the influence of a spring or by gravity to a closed position.

5 The fact that the entire mechanism here-
inbefore described, and adapted to be oper-
ated upon by the movement of the elevator for
opening the floor or hatch doors, is confined
as to location to about the guide rail beams
10 or stiles, is important, because all necessity,
in the applying of the same to elevators now
in use, of cutting into the walls of a building
therefor adjacent to the floor or hatch doors
is avoided.

15 It will be obvious to those skilled in the art
to which my invention appertains that modi-
fications may be made in the details; for ex-
ample, one floor door extending across the
elevator shaft may be employed instead of a
20 pair of doors.

Having thus described the nature and ob-

jects of my invention, what I claim as new,
and desire to secure by Letters Patent, is—

In an elevator, recessed guide rail stiles,
hinged doors provided with staples on one of 25
their respective faces, two sets of brackets
secured to said guide rail stiles, club-shaped
pawls pivoted to one set of said brackets,
curved tapering arms pivoted to the other set
of said brackets and having sliding engage- 30
ment with said staples, vertical rods respect-
ively pivoted at one of their extremities to said
pawls and at the other to said arms; and a
car adapted to run on said stiles, substan-
tially as set forth. 35

In witness whereof I have hereunto set my
signature in the presence of two subscribing
witnesses.

ELISHA D. SHAW.

Witnesses:

THOMAS M. SMITH,
RICHARD C. MAXWELL.