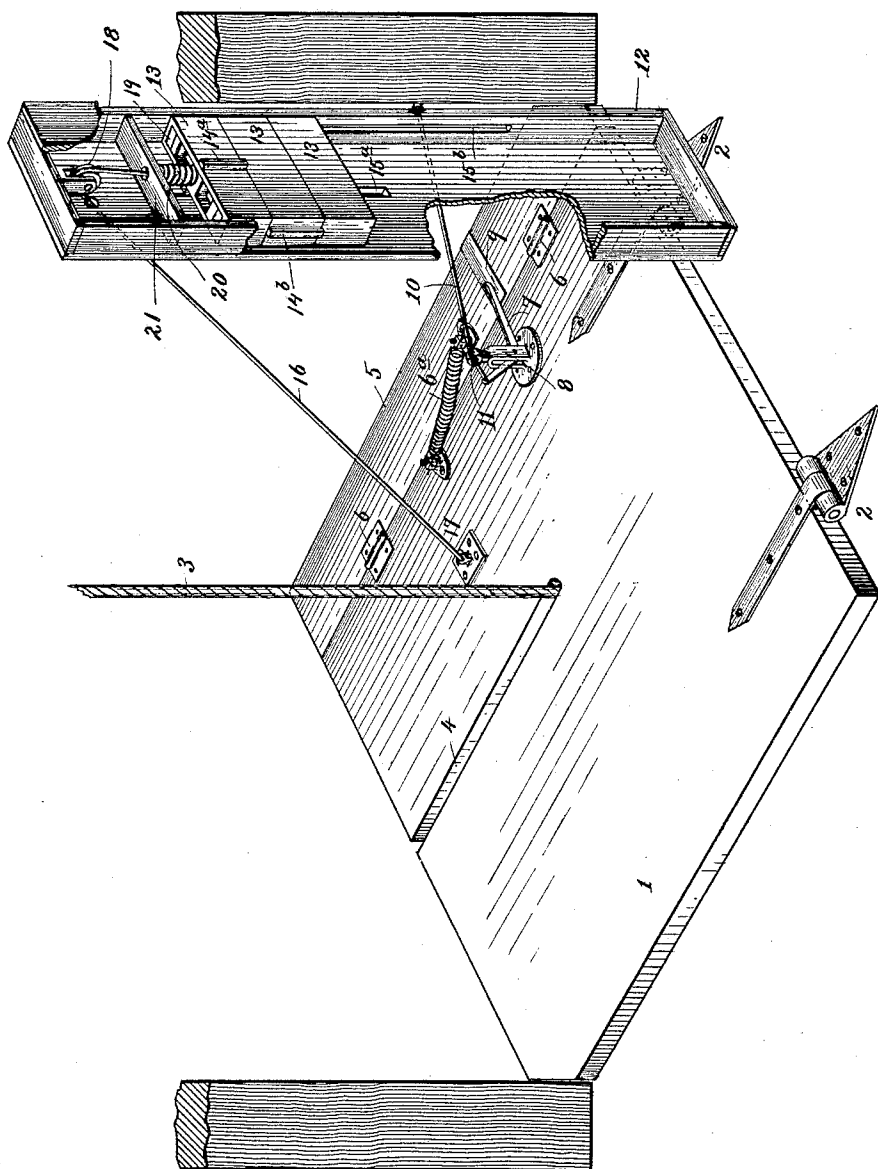


(No Model.)

J. J. McBRIDE.
HATCH DOOR.

No. 462,269.

Patented Nov. 3, 1891.



Witnesses

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UNITED STATES PATENT OFFICE.

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HATCH-DOOR.

SPECIFICATION forming part of Letters Patent No. 462,269, dated November 3, 1891.

Application filed October 3, 1890. Serial No. 366,991. (No model.)

To all whom it may concern:

Be it known that I, JOHN JAMES McBRIDE, a citizen of the United States, residing at Ridgefield Park, Bergen county, New Jersey, have invented certain new and useful Improvements in Hatch-Doors, of which the following is a specification.

My invention relates to certain improvements in and relating to hatch-doors, and I will first fully describe it in connection with the accompanying drawing, and then point out in the claims the novel features.

The said drawing represents in perspective a hatch-door and associated mechanism embodying my improvements.

1 is a hatch-door hinged at 2 2 to the floor.

3 is the cab-hoisting rope. 4 is the slot in the hatch-door through which said rope runs and which allows the door to clear the rope as it rises on its hinges when the cab is about to pass.

Usual mechanism (not here shown) is employed for opening the door to allow the elevator-cab to pass.

To enable the door as it opens to clear the usual corner-posts and side posts of the elevator-shaft, the door proper 1 is usually made somewhat smaller than the hatchway, and as the leaving of even these small openings through the hatchway is dangerous in hastening the spreading of fires it is usual to add a flap to the door to fill the openings at the sides. This flap has usually been slid out of the way to clear the side and corner posts by mechanism operated positively by the rising of the door. Such contrivances have been objectionable by reason of their weight, noisiness, and liability to get out of order. In my improvement the flap 5, preferably hinged to the door proper, as shown at 6 6, is arranged to be thrown by a spring out of the plane of the door to clear the posts as the door rises, and this spring-opening action is moderated and regulated by an easing or flap-closing device, which as the door opens only yields to the spring with sufficient rapidity to insure the complete opening of the flap in time to clear the posts. As the door falls back again to place, the same flap-closing device coming into operation, the weight

of the door in opposition to the action of the flap-opening spring closes the flap. When a hinged flap is used, as with the door illustrated, I employ, by preference, what is called in the trade a "torsional spring" 6^a, one end being fastened to the flap and the other to the door proper. These springs are customarily made adjustable, so that when in place they will act with any desired force on the flap. Uniformly hitherto, I am informed, the function of such springs has been to close and not to open a hinged door or member. Here its function is to constantly tend to open the flap, and so when applying it I wind it in an opposite direction to that in which it invariably has heretofore been wound. As a means for opposing the action of the spring, I employ the following: A lever 7 is hinged to a forked bracket 8, fixed to the door, and is preferably slightly bent, as shown, at its pivot. One end of the lever rests on a wear-plate 9 on the flap 5. At its other end a connection 10, flexibly jointed or telescopic, as by chain or cable, is made with any fixed portion of the building or elevator. The connection 10 is preferably passed through an eye 11 at the top of bracket 8, and thence to the end of the lever, and so a direct pull can be exerted on the lever whenever the chain is connected to the building or elevator. By "flexible connection" I mean to include any folding, collapsible, or yielding connection that will answer the purpose in substantially the same way as a cord or cable. It will now be seen that so long as the door is down the connection 10, being held taut, will press the nose end of lever 7 down on flap 5, and so hold the flap down, the whole weight of the door in this way acting successfully against the spring 6^a; but when a cab is about to pass and the door is raised, the tension on connection 10 is eased, and the spring 6^a is allowed to act on the flap just quickly enough to bring the flap clear of the side and corner posts. When the flap is sufficiently opened, it is stopped by the meeting of lever 7 and the door 1. The flexibility of the connection 10 then becomes of use in allowing the complete opening of the door. When the cab has passed, the door in falling first takes up the slack of connection 10, and

the latter is brought taut and commences to depress the flap just as the door has reached a position, say, of about eighteen inches from the floor, when the flap can be safely closed without interfering with the side and corner posts. The reverse result is reached by the upward or reverse movement of the door. Precisely the same mechanism would be used on the cable-slot cover, where such a cover is used, for the purpose of additional safety:

For the sake of clearness I have thought it best to illustrate the invention as applied to a single flap at the side of the door; but it is to be understood that it may be applied to a flap of any kind for closing an opening in or at the sides of a hatch-door or between two hatch-doors, as where a side-guide elevator has entrances on two sides and must be closed by two doors, so as to have the space between the two side guides open unless covered by flap. The connection 10, acting on the door yieldingly through the medium of spring 6^a, will somewhat oppose the rapid descent of the door; but it is best that the strain on the flap-operating mechanism be as little as possible, and to secure this end and insure the noiseless closing of the door, as well as to take the weight of the door off of the cable, I preferably employ a special form of counter-weight, now to be described. 12 is a vertical guide-box situated on the floor at the foot or hinged edge of the door. In it are arranged a series of box-shaped open-topped metallic counter-weights 13. Corresponding guide-pins 14^a 14^b and guide-grooves 15^a 15^b are provided on the counter-weights and on the inside of the guide-box 12. The guide-grooves of separate counter-weights end at different heights from the floor, as shown, the grooves 15^a of the uppermost counter-weight, which are in this instance shown in the front and rear sides of the guide-box, stopping at a point somewhat above those in the sides of the guide-box which receives the guide-lugs 14^b of the middle counter-weight. The lowermost counter-weight is arrested by the floor or by an abutment placed thereon. The counter-weight connection 16, in the form of a chain or rope, is fixed at 17 to the door sufficiently far out to give a good "purchase." It passes over a sheave 18, arranged in the top of the guide-box, down through a central hole in the upper counterweight-boxes, and is knotted below or otherwise fixed to the lowermost counter-weight. Any number of counter-weight boxes may be employed, the position of their guide pins and grooves being so arranged as to secure the stoppage of the counter-weights successively as the lowermost counter-weight is lowered away from them on

the raising of the door, so that as the weight of the door comes more and more over its hinges the counter-weights are taken off and so "slam" is avoided. In the reverse movement as the door closes the counter-weights are picked up one after another as the lowermost counter-weight rises, and when the weight of the door is most effective the counter-weights offer the most resistance and the door is noiselessly closed. The weights of the different boxes may be varied by placing and wedging movable weights 19 therein, and the counter-weight is thereby rendered capable of use on doors of different weights and sizes and with elevators of different speeds. To prevent upward slam of the counter-weights in their guide-box and ease the down slam of the doors, a spiral spring 20 is preferably arranged around the chain or rope 16 and fixed to a cross-board or abutment 21.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

1. In combination with a hatch-door, a movable flap for closing an opening, a spring tending to open said flap, and means for holding the flap closed against the action of the spring when the door is closed, substantially as set forth.
2. In combination with a hinged hatch-door, a movable flap for closing an opening, a spring tending to open said flap, and a lever engaging the flap and flexibly connected to the building, substantially as and for the purposes set forth.
3. In combination with a hatch-door, a movable flap, a spring for opening said flap, and means for opposing the action of said spring, having flexible connection with a fixed support, whereby the action of the spring is controlled, substantially as set forth.
4. In combination with a hatch-door, an adjustable counter-weight comprising a plurality of separable boxes connected to and moving with the door and adapted to receive variable weights, and separate and independent guides and seats for said boxes, substantially as set forth.
5. In combination with a hatch-door, a guide-box having grooves at different heights and an adjustable counter-weight comprising a plurality of separable boxes provided with arresting-tongues sliding in the grooves and connected and moving with the door and adapted to receive variable weights, substantially as described.

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Witnesses:

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