

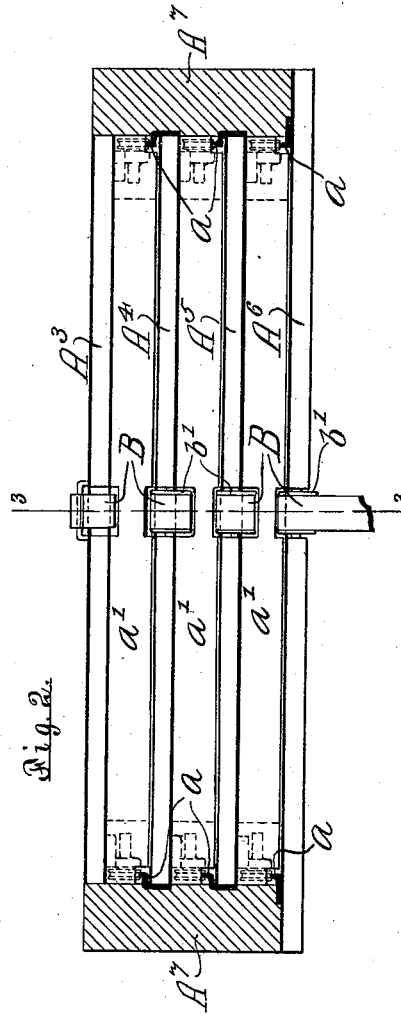
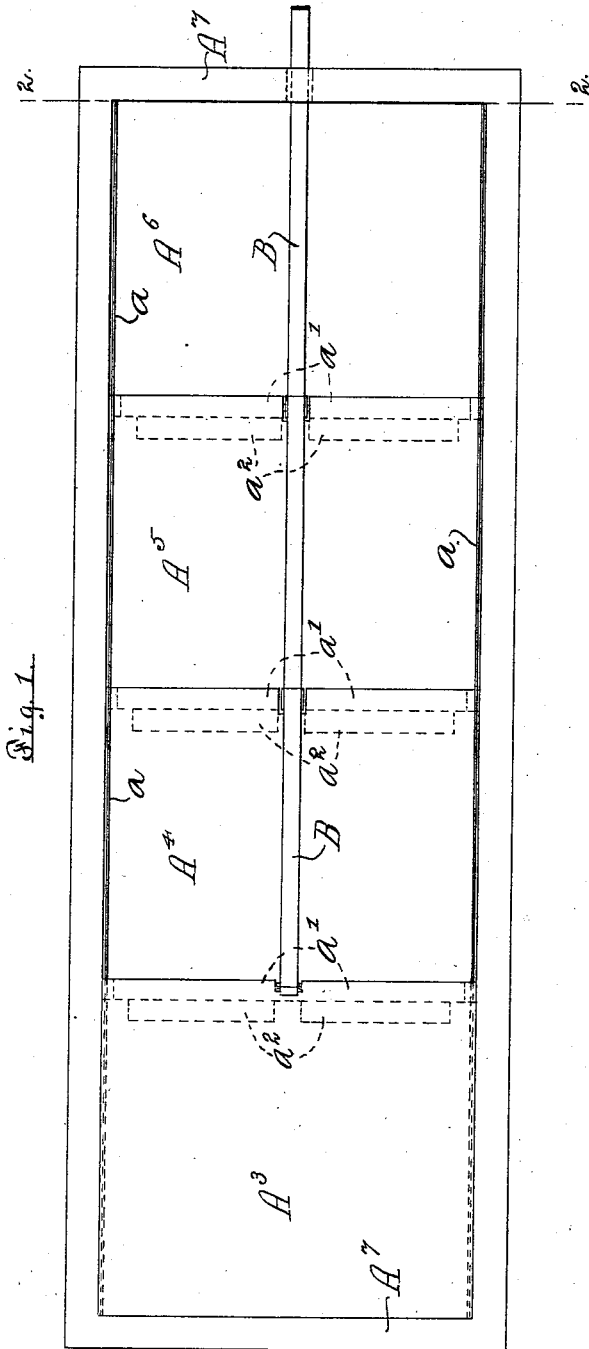
(No Model.)

2 Sheets—Sheet 1.

E. M. CHRISTIAN.  
HATCH.

No. 525,333.

Patented Sept. 4, 1894.



Witnesses  
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# UNITED STATES PATENT OFFICE.

EDWARD M. CHRISTIAN, OF MINNEAPOLIS, MINNESOTA.

## HATCH.

SPECIFICATION forming part of Letters Patent No. 525,333, dated September 4, 1894.

Application filed February 20, 1894. Serial No. 500,831. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD M. CHRISTIAN, of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Hatches; and I do declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in hatches, adapted for closing hatch-ways, stair-ways, elevator shafts, light shafts and other similar openings in floors, walls and the like.

A primary object of the invention is to provide a hatch for the purpose, so constructed and operated as to insure the closing thereof in case of fire.

In its preferable form, the invention comprises a hatch, consisting of a plurality of sections supported in or upon separate grooves or ways, along which they are movable so as to open and close the hatch-way; a weight or other means applied to each section and adapted to close the hatch; and means to maintain the said actuating device normally passive, but which will release the same upon the application of a sufficient degree of heat.

The invention also consists of the various features, combinations of features and details of construction hereinafter described and then specifically pointed out in the appended claims.

In the accompanying drawings, my invention is fully illustrated.

Figure 1, is a top plan view of said hatch. Fig. 2, is an enlarged section thereof on the line 2—2 of Fig. 1. Fig. 3, is a longitudinal vertical section on the line 3—3 of Fig. 2; and showing the hatch closed; and Fig. 4, is a similar view, enlarged, showing the hatch opened.

Referring to the drawings, A indicates a floor, A', an opening or hatch-way therein, affording means of communication between rooms or compartments above and below said floor, and A<sup>2</sup>, indicates, as a whole, a hatch adapted to close said hatch-way.

In the preferable construction, as illustrated, the hatch, A<sup>2</sup>, comprises three movable sections, A<sup>3</sup>, A<sup>4</sup>, and A<sup>5</sup>, which are supported in or upon separate guides or ways, a

formed on or attached to the sides of a suitable frame, A<sup>7</sup>, secured in the hatch-way, A', and along which said sections are longitudinally movable, and a stationary section, A<sup>6</sup>. In the construction shown, the said movable sections of said hatch, are supported upon rollers which bear upon the said ways, a, whereby the power necessary to operate the same, is greatly reduced and stops are provided, adapted to prevent further movement of the movable sections of said hatch, as they come to their proper positions to close the hatch. As shown, these stops are formed by cleats, a', a<sup>2</sup>, secured, respectively, to the under side of each movable section adjacent to the back ends thereof and to the upper sides of said sections, excepting the front section, A<sup>3</sup>, adjacent to the front ends thereof, and the stop for the rear movable section A<sup>5</sup>, being attached to the stationary section, A<sup>6</sup>, of said hatch. Moreover, the cleats, a', a<sup>2</sup>, are extended down and up as nearly as possible into contact with the surfaces of the adjacent sections of the hatch and thus operate to close the space between the same.

The sections of the hatch may be of any suitable construction and material, a desirable form being made of wood, sheathed on both sides with sheet iron, tin or other suitable material.

As illustrated in the drawings, the means for operating said hatch consists of a cord, wire or other suitable medium B, attached to the rear end of the front section, A<sup>3</sup>, of the hatch and which passes thence over a system of pulleys or rollers, b, b', respectively mounted, so as to rotate freely at the front and rear ends of the sections, A<sup>4</sup>, A<sup>5</sup>, A<sup>6</sup>, of the hatch; the relative positions of said pulleys being such that each of the pulleys, b, will always be in advance of the pulley b', from which it receives the cord, wire or chain B, and said actuating means comprising also a weight or weights, designated as a whole by B', attached to the rear or free end of said cord or wire, B. In the construction shown, the weight B', consists of the aggregate of two weights, b<sup>2</sup>, b<sup>3</sup>, of which the weight b<sup>2</sup> is suspended from a hook, b<sup>4</sup>, or other suitable support, by a link, b<sup>5</sup>, which is fusible at a low temperature and the weight, b<sup>3</sup>, forms a counterpoise supported in a bight of the cord, wire or chain, B, which

is formed between the pulley,  $b'$ , of the stationary section,  $A^6$ , of the hatch,  $A^2$ , and the supporting hook,  $b^4$ , said counterpoise,  $b^8$ , being so supported and preferably just sufficiently heavy to maintain the cord or wire B, taut over the system of pulleys  $b^2$ ,  $b^3$ , thus preventing the same from becoming tangled or disarranged, but not sufficiently heavy to close the hatch and the weights  $b^2$ ,  $b^3$ , together comprising the weight,  $B'$ , being sufficiently heavy to close the hatch whenever the weight  $b^3$ , is released from the hook,  $b^4$ , or other support.

With the construction described, it is obvious that, while the weight,  $b^8$ , is supported from the hook,  $b^4$ , the hatch  $A^2$ , may be conveniently operated by hand as desired, but that a comparatively low degree of heat, by fusing the link  $b^5$ , will allow the combined weights  $b^2$ ,  $b^3$ , to come upon the cord or wire,  $B'$ , and close said hatch.

It is obviously essential to the successful operation of the described device, under all circumstances and conditions, that the link  $b^5$ , be fusible at a considerably lower temperature than the cord or wire, B. If desirable, the weight  $b^3$ , instead of being supported by the link  $b^5$ , may be supported from a line or wire which passes over a pulley or other suitable support, said cord or wire being provided with any desired number of fusible sections. By sufficiently extending said line about the room, the hatch may obviously be closed in the event of fire occurring in any part of the room.

I claim—

1. The combination with a hatch of means for closing the same, said means comprising a cord or wire attached thereto, a system of pulleys over which said cord or wire passes and a weight attached to the free end thereof, said weight being normally supported in inoperative position by a link, fusible at a low temperature, substantially as described.

2. The combination with a hatch of means for closing the same, said means comprising a cord or wire attached thereto, a system of pulleys, over which said cord or wire passes, a weight attached to the free end thereof, said weight being normally supported in inoperative position by a link, fusible at a low temperature and a counterpoise to keep the cord or wire taut over the pulleys, substantially as described.

3. The combination with a hatch, comprising a plurality of sections, of means for closing the same, said means comprising a cord or

wire attached thereto, a system of pulleys over which said cord or wire passes and a weight attached to the free end thereof, said weight being normally supported in inoperative position by a link, fusible at a low temperature, substantially as described.

4. The combination with a hatch, comprising a plurality of sections, of means for closing the same, said means comprising a cord or wire attached thereto, a system of pulleys over which said cord or wire passes, a weight attached to the free end thereof, said weight being normally supported in inoperative position by a link, fusible at a low temperature, and a counterpoise to keep the cord or wire taut over the pulleys, substantially as described.

5. The combination with a hatch, comprising a plurality of sections, of means to maintain the same normally closed, said means comprising a cord, wire or the like attached to the forward section and passing thence over a system of pulleys mounted in the sections of said hatch and a weight attached to the free end thereof, substantially as described.

6. The combination with a hatch, comprising a plurality of sections, of means for closing the same, said means comprising a cord, wire or the like attached to the forward section and passing thence over a system of pulleys mounted in the sections of said hatch and a weight attached to the rear or free end thereof, said weight being normally supported in inoperative position by a link, fusible at a low temperature, substantially as described.

7. The combination with a hatch, comprising a plurality of sections, of means for closing the same, said means comprising a cord, wire or the like attached to the forward section and passing thence over a system of pulleys mounted in the sections of said hatch, a weight attached to the rear or free end thereof, said weight being normally supported in inoperative position by a link, fusible at a low temperature, and a counterpoise to keep the cord or wire taut over said pulleys, substantially as described.

In testimony that I claim the foregoing as my invention I hereunto set my hand this 27th day of June, 1893.

EDWARD M. CHRISTIAN.

Witnesses:

STANLEY R. KITCHEL,  
EMANUEL COHAX.