

G. N. Creamer,

Machway.

No. 100264.

Patented Mar. 1. 1870.

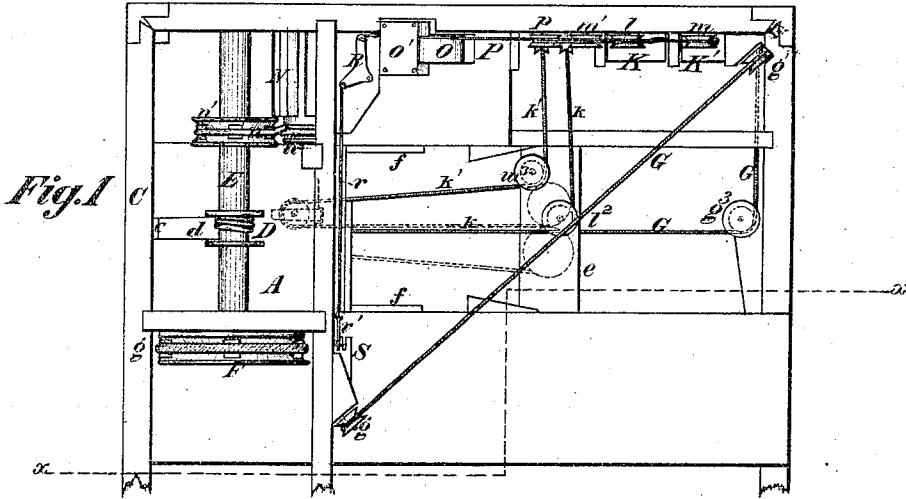
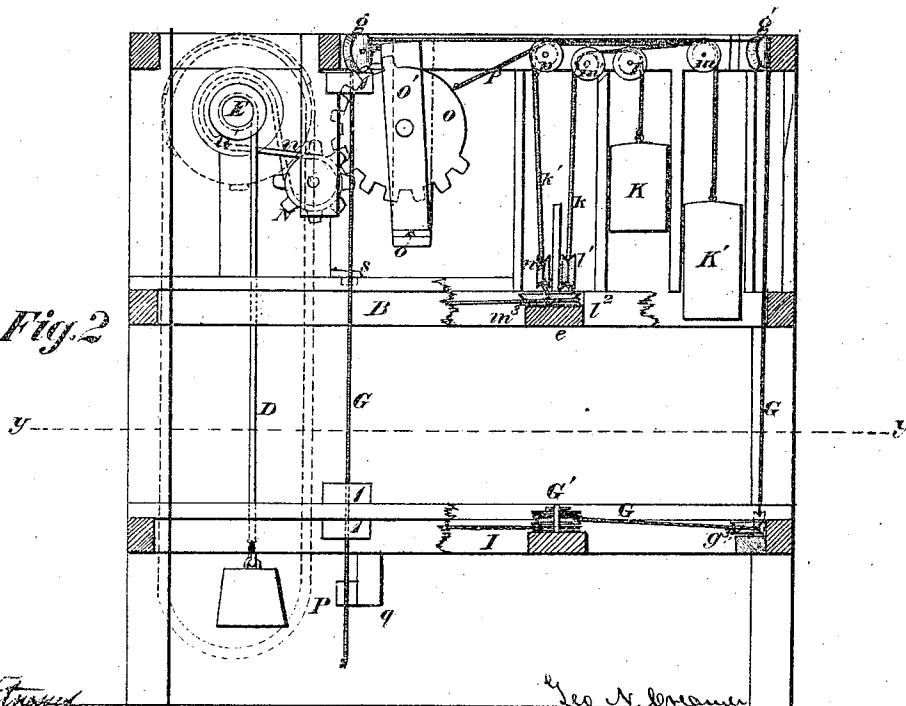


Fig. 2



Witnessed
 Joe S. Taylor
 Charles De Long.

G. N. Creamer
 by his atty
 W. L. Baldwin

G. N. Creamer,

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No. 100,264.

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Fig. 3

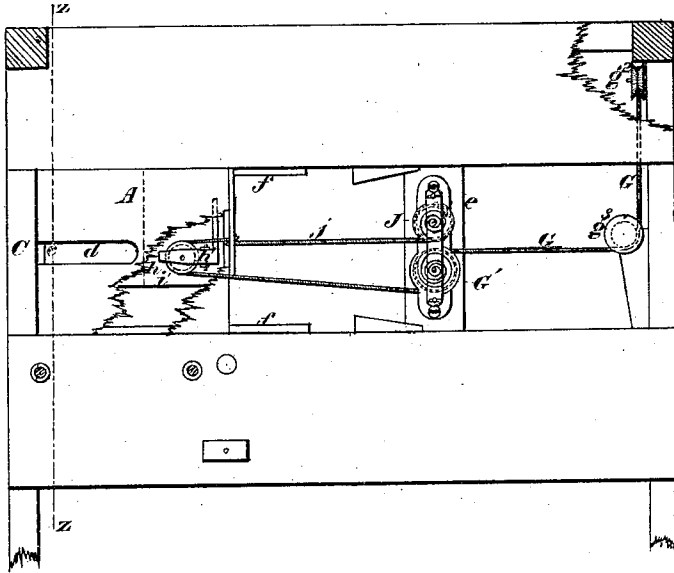


Fig. 4

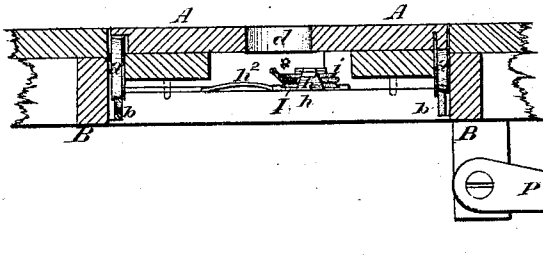
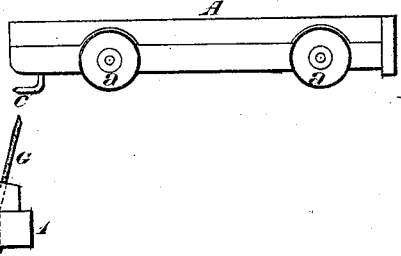


Fig. 5



Witness:
 Joe S. Ryton,
 Balis & Co. Eng.

G. N. Creamer
 by his atty
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United States Patent Office.

GEORGE N. CREAMER, OF TRENTON, NEW JERSEY.

Letters Patent No. 100,264, dated March 1, 1870.

IMPROVED SAFETY-HATCH FOR BUILDINGS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern :

Be it known that I, GEORGE N. CREAMER, of Trenton, in the county of Mercer, and State of New Jersey, have invented certain new and useful Improvements in Safety-Hatches for Buildings, of which improvements the following is a full, clear, and exact description.

The object of my invention is to construct a safety-hatch, or series of hatches, which, on whatever floor or in whatever part of the building it may be located, can be operated from any other part or floor of the building, and, when not held open, will close and lock itself, and when several hatches are used in the same building, they may be operated separately and independently, as above.

The first part of my invention consists in making the horizontally-moving hatch single, or in one piece, instead of making it in two parts which open away from each other; and the improvement to this end consists in cutting a slot across the hatch, in line with the movement, extending from the front edge of the hatch backward past the line at which the hoisting-rope depends through the hatch. By this means the hatch can slide past the rope in opening or closing, rendering it unnecessary to have the hatch divided and sliding away from the rope in both directions, as is the case when the rope depends through a hole in the center of the hatch only.

The second part of my invention consists in supporting the single hatch firmly against vertical or lateral pressure, thus preventing it from giving way or being lifted up or forced open when not in use; and to this end, the improvements consist in combining a supporting-ledge for the front of the hatch, a locking device on the front of the hatch, and an automatic locking device at the back of the hatch.

The third part of my invention consists in a method of opening the hatch, from any part of the building; and to this end the improvements consist in the combination with the hatch of a system of cords, pulleys, spring drums, and marking blocks, as hereinafter more particularly set forth.

The fourth part of my invention consists in making the hatch, when not held open, self-closing and self-locking; and to this end the improvements consist in a novel combination with the hatch, of a system of cords, pulleys, spring drums, and an automatic locking-tumbler.

The object of the fifth part of my invention is to hold the hatch open when desired, and yet admit of its being closed from any floor of the building without going up or down for the purpose; and to this end my invention consists in a friction-brake or swinging arm provided with a gain-fork or kerf, in which the cord that operates the hatch may be held against the force

of a spring drum until it is desired to close the hatch, when by a slight pull upward or downward the retaining-brake or arm is raised, and the cord released from it, thereby allowing the hatch to close and lock itself.

The sixth part of my invention consists in arranging the pulleys and operating mechanism in such manner and in such places, that they present no obstruction to the ordinary use of the floors of the building.

The object of the seventh branch of my invention is to render it practicable to open any one of a series of hatches, from any floor or part of the building, so that, for example, a man on the ground-floor can hoist a box to the upper story, opening a hatch on each floor as the box comes to it, and as soon as the box passes through, the hatch will close and lock itself, or the hatches may all be kept open and closed as desired from any part of the building.

In the accompanying drawings which make part of this specification—

Figure 1 represents a plan or top view of the skeleton frame of a portion of a building to which my improvements are applied.

Figure 2 represents a view of the same, partly in elevation and partly in section, at the line $x x$ of fig. 1.

Figure 3 represents a plan or top view of the same partly in section at the line $y y$ of fig. 2, showing the lower floor.

Figure 4 represents a vertical transverse section through the same at the line $z z$ of fig. 3.

Figure 5 represents a view in elevation of one of the hatches detached and seen from one side.

I have shown my apparatus applied to a two-story building, as being sufficient to illustrate my invention, though the number of floors may be varied.

Figs. 1 and 2 also show devices for opening the hatches by weights and by the hoisting apparatus, but these devices constitute the subject-matter of another application filed simultaneously with this one, and therefore constitute no part of the subject-matter of this application.

Through that part of the floor at which it is desired to locate the hatchway, I cut an opening of size conformable to the requirements of the bulks to be raised, bringing, by preference, each side of this opening flush with a joint. In line with this opening I also cut away the flooring and the intervening joists, in the direction in which the hatch is to run, as far as is requisite for the movement of the hatch in opening and closing, and to a width corresponding with that of the opening.

I then fasten across the forward end of the opening and flush with the under side of the joist C , a piece of timber, c , which serves as a ledge to support the front end of the hatch when it is closed. I fasten a strong piece of timber, h , fig. 4, across the back of the open-

ing, also making it flush with the under side of the joist. Still further back and about midway of the cut, in the flooring, I frame in a cross-piece, *e*. Along the sides of the opening and back to the end of the cut in the floor, I attach strips of timber, *ff*, below the upper surface of the joists, and on these strips I fasten the rails *b b*. I bevel off the under edges of the strips *ff*, so as to prevent anything that is being hoisted from being caught upon the edges of these strips. I, moreover, set the strips *ff* a little off from the side pieces or joists, (by putting in blocks at intervals,) so as to leave openings between the side pieces and the rail strips, through which openings dirt and trash will fall instead of accumulating on the rails. I thus have the opening ready for the application of the hatch and its opening and closing mechanism.

Of course where the hatch opens across the joists, the framing above described will simply be made to conform to the cross-timbers and side pieces will be framed in as the end pieces are described above. In most cases, however, the opening will be found already provided in the building, and it will only be necessary to cut away the flooring back of the openings and put in the rail strips.

Upon the strips *ff* I fasten the rails *b*, which I make of iron, having a narrow bearing-surface, and sloping on one side downward toward the openings between the strips *ff* and the joists, so as to facilitate the discharge of the dirt or trash.

The hatch itself is made to cover the opening, its forward end resting, when the hatchway is closed, upon the ledge *c*, while its back end rests upon and mainly covers the piece *h*, the hatch being thus supported against direct or vertical pressure when anything is moved across it.

To prevent the hatch from being lifted up by any catching of the rope or other accident, I provide on the under side of its front end, tenons, or hooked pins or studs *c'*, fig. 5, which, when the hatch is closed, catch in holes or recesses provided for that purpose in the face of the ledge *c*.

I cut an opening, *d*, through the hatch from its forward edge to a point back of the perpendicular of the rope, the rope hanging in the usual manner in this slot, but with this advantage, that I am enabled by this means to make a single hatch serve instead of having a double hatch as when a round hole only is cut in the hatch, in which case the hatch must be opened away from the rope on both sides.

I mount the hatch upon rollers *a a*, which have flanges on their outer sides and run on the rails *b b*, in the usual manner.

Across the under side of the hatch at a point which when the hatch is closed, rests a little in advance of the back piece *h*, I fasten a cleat or any other projection, against which the locking-tumbler holds, as hereinafter described.

On the back cross-piece *h* I secure two lugs, in which I pivot a forked casting, *h'*, with a projecting nose, the fork being horizontal, that is, parallel with the line of movement of the hatch, and working freely up and down on its pivot. In this fork I secure a pulley, *i*, the weight of which should be such as to depress the fork when it is not held up by the cord, as hereinafter described.

The nose of the fork projects beyond the pulley, and a spring under the nose holds it up when not pulled down.

On the cross-piece *e* I fasten two horizontal drums, *G'* and *J*, one, *G'*, being larger than the other one. In each of these drums is a coiled spring, the spring in the drum *J* being made weaker than that in the larger drum *G'*. Beneath the floor, and by preference near the wall farthest from the hatch and in line with the slot *d* in the hatch, I mount a horizontal pulley, *g'*, and in one corner I mount a vertical pulley, *g''*.

At the upper corner over this pulley *g''*, I mount a vertical pulley, *g'*, and a fourth pulley, *g*, is mounted vertically over that point in the floor from which it is desired to operate the hatch.

I now attach to the spring drum *G'*, at one side, a cord, *I*, one end of which is coiled around the drum, and the other end around the pulley *i* in the forked casting *h'*, and fastened to the back end of the hatch. To this same end of the hatch I fasten another cord, *j*, the other end of which is attached to the smaller spring drum *J*. I then attach to the side of the spring drum *G'* at the side of it opposite to the cord *I*, a long cord, *G*, the other end of which is carried back to and around the pulley *g''*, under the pulley *g'*, up to and over the pulley *g'*, and to and over the pulley *g*, from which it depends through holes cut for the purpose to within easy reach of a person standing on the floor from which it is desired to operate the hatch.

The operation of opening and closing the hatch is as follows:

By pulling on the cord *G* it is unwound from the spring drum *G'* toward the pulley *g''*, and at the same time unwinds the cord *I*, toward the hatch, thus slacking it, so that all tension being removed from the pulley *i* in the forked casting, the forked casting is depressed by the weight of the pulley *i* and the pull on the cord, and the hatch is unlocked. The spring drum *J* now immediately takes up this slack by winding up the cord *j*, and in doing this it draws back the hatch, its tension in so doing tending to hold down the (pivoted) locking-tumbler *k*.

To close the hatch, it is only necessary to release the cord *G*, when the superior force of the spring drum *G'* will wind up the cord *G*, and at the same time the cord *I*, thus drawing the hatch forward, and closing it, when the tension of the drum *G'* on the cord *I* will raise the forked locking-tumbler *r* against the cleat on the under side of the hatch, and hold it up, firmly locking the hatch.

A simple device is provided to keep the hatch open, and to close it from a higher or lower floor, without going from one story to another for that purpose. I attach to or beneath the floor on each story, an arm or bracket, *P*, which swings on a bolt or pivot, and has a gain or kerf cut in it that will hold the cord *G* lightly, but firm enough to resist the spring drum *G'*.

By slipping the cord *G* into this kerf, as the arm hangs down, the hatch is kept open. When it is desired to close the hatch, a slight pull will lift the arm and release the cord, when the hatch will close. It is obvious that this pull can be given effectually either from above or below the floor on which the hatch is located.

To prevent any accident that might occur from operating the wrong hatch, when there are hatches on each story, I attach blocks *L*, or other marks, to each cord, on each floor that it passes through, so as to designate which hatch it is connected with.

The spring drums and pulleys, it will be observed, are all arranged between the floors and ceilings, in which position they present no obstruction to the occupants of the building.

I do not claim broadly a hatch sliding horizontally over a hatchway, and operated from a distance or from a different floor.

Having thus described my improvements,

What I claim therein as new, and desire to secure by Letters Patent, is—

1. The hatch, moving horizontally across the entire hatchway, with a slot extending in the line of its movement through which the hoisting-rope depends, substantially as and for the purpose described.

2. The combination with the slotted hatch moving entirely across the hatchway, of the ledge supports and the tenons and mortises, to prevent the hatch being lifted, substantially as described.

3. The combination with the hatch, of the peculiar locking-tumbler, constructed and operating substantially as described.

4. The combination with the hatch and the system of pulleys and cords, of the spring drums, substantially as and for the purpose described.

5. The combination with the hatch and the tripping-cord, of the friction-arm or bracket P, substantially as and for the purpose described.

6. The combination with the hatchway, of the rails, when set off from the framing of the hatchway so as to leave openings between the rails and framing, substantially as and for the purpose described.

7. The combination with the mechanism for opening the hatch, of the spring drums for automatically closing the hatch, substantially as described.

8. The combination with the tripping-cord and the hatch, of the marking blocks, substantially as and for the purpose described.

9. The arrangement of the pulleys and spring drums, substantially as described, whereby the operating mechanism is all placed out of the way, and does not obstruct the floor, substantially as described.

10. The combination with the hatch, of a cord, J, for pulling it open, and a cord, I, for closing it, substantially as described.

In testimony whereof, I have hereunto subscribed my name.

GEORGE N. CREAMER.

Witnesses:

HENRY BALDWIN, Jr.,

E. N. MILLER.