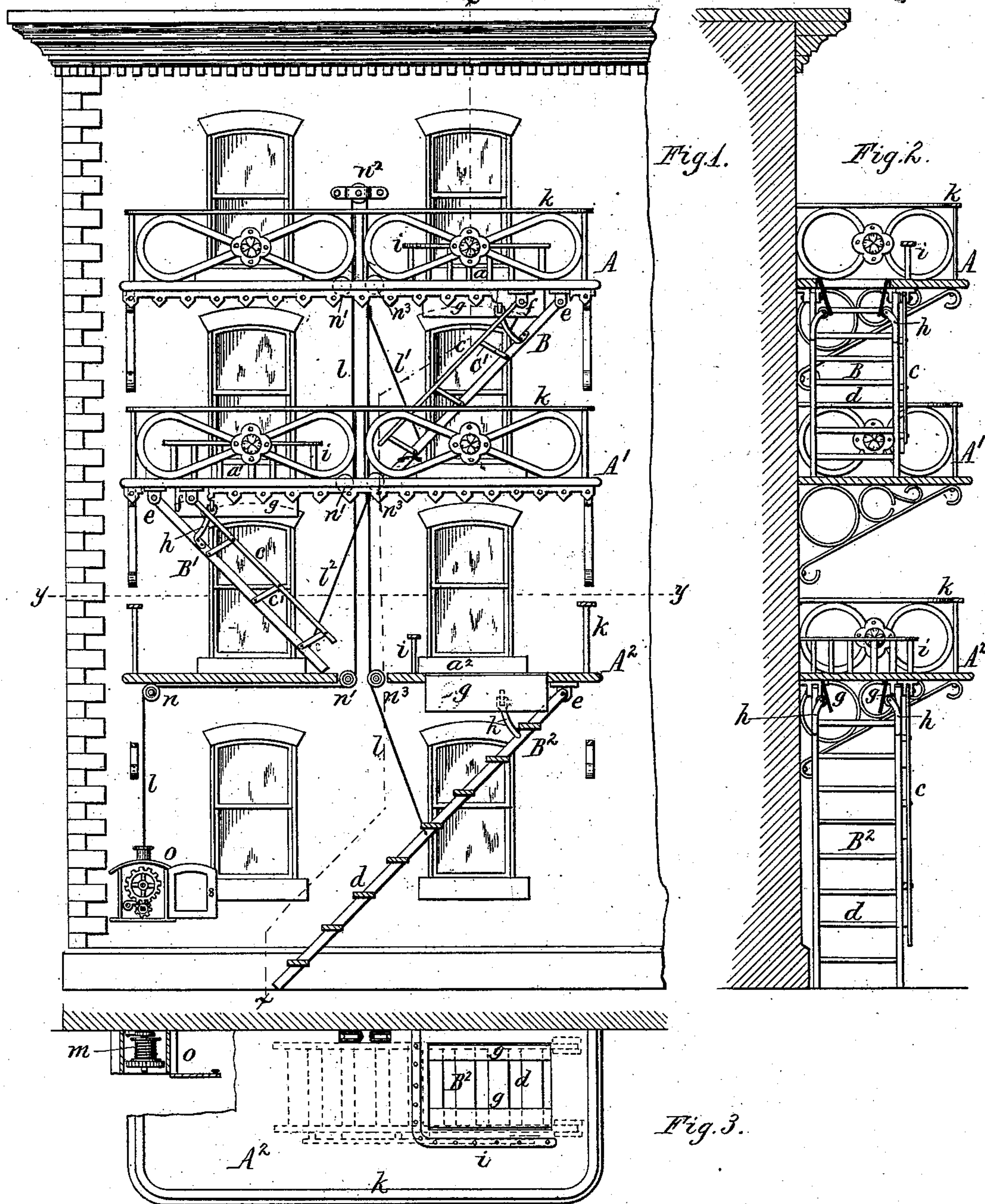


(No Model.)

E. GEROT.  
FIRE ESCAPE.

No. 281,488.

Patented July 17, 1883.



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Witnesses.

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# UNITED STATES PATENT OFFICE.

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## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 231,488, dated July 17, 1883.

Application filed March 13, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, EMILE GEROT, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful  
5 Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to improvements in that class of fire-escapes which embody in their construction a number of balconies, which  
10 are accessible from the windows or other openings in the wall of the building, and ladders which are pivoted to the under sides of the balconies in such manner that they can be  
15 turned up against the under side of the balconies, and secured in this position, when not required for use, and can be lowered when re-  
quired for use, so as to connect each balcony with the one next below, thereby forming a  
20 ready means of escape on the outside of the building.

The object of my invention is to construct the fire-escape in such manner that the hatchways in the balconies which lead to the ladder  
25 will be securely closed by trap-doors when the ladders are not in use, and that such balconies will be opened downwardly as the ladders are lowered, thereby insuring the working of the  
apparatus, and preventing the hatchways from becoming obstructed.

30 My invention also relates to the means whereby the several ladders are raised and lowered simultaneously.

My invention consists of the improvements which will be hereinafter fully set forth, and  
35 pointed out in the claims.

In the accompanying drawings, Figure 1 represents an elevation of a building provided with my improved fire-escape, the lower balcony and its ladder being shown in section.  
40 Fig. 2 is a vertical cross-section in line  $x x$ , Fig. 1. Fig. 3 is a top plan view taken in line  $y y$ , Fig. 1.

Like letters of reference refer to like parts in the several figures.

45 A A' A<sup>2</sup> represent several balconies secured to the outside of a building, one above the other, and in convenient reach of the windows or other openings in the wall of the building.

$a a' a^2$  are the hatchways or openings formed  
50 in the floors of said balconies, and B B' B<sup>2</sup> are

the ladders, which are hung or pivoted to the balconies near the hatchways of the same, so that a person can step through these hatchways upon the upper portion of the ladder below the hatchway. Each ladder is preferably  
55 provided with a hand-rail,  $c$ , which is attached to the outer side pieces of the ladder by pivoted bars  $c'$ . The side pieces of the ladder are connected by the steps  $d$ , and are pivoted at their upper ends to the balconies  
60 at  $e$ , and the hand-rails  $c$  are also pivoted to the balconies at  $f$ . The hand-rails and the connecting-bars are arranged on the outer sides of the outer side pieces of the ladders, as represented in Fig. 2, so that in raising and clos-  
65 ing the ladders against the under sides of the balconies the ladders and the hand-rails and connecting-bars will fold compactly and be hidden from view by a depending ornamental plate, with which the balconies may be pro-  
70 vided.

$g g$  represent two trap-doors arranged in each of the hatchways  $a a' a^2$ , for the purpose of closing the same when the ladder is in its  
75 raised position against the under side of the balcony. These trap-doors are hung or pivoted loosely to the inner and outer sides of each hatchway, so as to drop down readily when the ladder supporting the doors is low-  
80 ered.

$h$  represents upwardly-projecting arms secured to the side pieces of each ladder, and adapted to bear against the under sides of the trap-doors  $g$ , so as to close the latter when the  
85 ladder is raised. The upper ends of the arms  $h$  are preferably provided with rollers which bear against the trap-doors.

$i$  represents a low railing which projects on those sides of the hatchways which are farthest from the ladder when lowered. The railing  $i$   
90 compels persons to pass to the outer end of the hatchway which is nearest to the pivoted upper end of the ladder, and prevents persons from falling or stepping accidentally through those parts of the hatchway which are located  
95 so high above the ladder that there would be danger of injury to the persons by stepping through those portions of the hatchway. The balconies are protected by the usual railings,  $k$ .

$l$  represents a rope or cable, which is wound 100



upon a windlass, *m*, and which runs from said windlass upwardly around guide-pulleys *n n'* to a guide-pulley, *n''*, arranged above the upper balcony, and thence downwardly and over 5 guide-pulleys *n'''* to the lowest ladder, *B<sup>2</sup>*. The upper ladders, *B B'*, are connected with the rope *l* by branch ropes *l' l''*. The branch ropes *l' l''* are so connected with the ladders *B B'* as to compensate for the difference in height between the stories of the building and the corresponding difference in length in the several ladders, so that upon winding the rope *l* upon the windlass *m* all of the ladders will be raised simultaneously and closed against the under 10 side of their respective balconies, while upon unwinding the rope from the windlass all the ladders will be lowered simultaneously and establish a connection with the balcony or other landing next below. The windlass is 20 inclosed in a suitable case, *o*, which can be locked, and that portion of the rope *l* which extends immediately above the casing *o* may be protected by a suitable tube extending to a suitable height to prevent tampering with 25 the rope. The windlass may be provided with a crank attached to its pinion, or the crank may be made detachable and placed in the casing *o*, when not required for use.

When the ladders are not required for use 30 as fire-escapes, they are held up against the under sides of the balconies by the ropes *l' l''*. The ladders support in this position the trap-doors *g* in a horizontal position, which are prevented from unwinding from the drum of 35 the windlass by a suitable detent, thereby forming a closed floor in each balcony, and permitting the balconies to be used for ordinary purposes.

When the ladders are required for use as 40 fire-escapes, the casing *o* is opened, the windlass *m* turned so as to unwind the rope from the same, thereby lowering the ladders and permitting the trap-doors to open downwardly. The trap-doors open by their own weight, 45 and, as they open downwardly, the hatchways cannot be choked up or obstructed by persons in their anxiety to escape. The hatchways are preferably arranged alternately at opposite ends of the balconies, as shown in the 50 drawings; but, if preferred, they may all be arranged on the same side, one above the other, and the ladders may in this case be

raised and lowered by an upright bar sliding in suitable ways affixed to the side of the building, and provided at its lower end with a 55 gear-rack and a gear-wheel, or a train of gear-wheels meshing therewith, and which are turned for raising and lowering the bar.

I claim as my invention—

1. The combination, with a balcony provided with a hatchway, of a trap door or doors 60 hung in said hatchway so as to open downwardly, and a pivoted ladder, whereby said trap-door is supported when the ladder is in an elevated position, and which permits the 65 door to drop down when the ladder is lowered, substantially as set forth.

2. The combination, with a balcony provided with a hatchway, of a trap door or doors, 70 *g*, hung in said hatchway so as to open downwardly, and a pivoted ladder constructed with an arm or arms, *h*, whereby the trap-door is supported, substantially as set forth.

3. The combination, with a series of fixed balconies provided with hatchways, of pivoted 75 ladders depending from the under sides of said balconies, and actuating mechanism attached to said ladders, whereby said ladders are raised and lowered simultaneously and secured in an elevated position when not re- 80 quired for use, substantially as set forth.

4. The combination, with a series of balconies, *A A' A''*, provided with hatchways *a a' a''* and trap-doors *g*, hung therein to open 85 downwardly, of ladders *B B' B''*, pivoted to the under sides of said balconies, and means, substantially as described, whereby said ladders are raised and lowered simultaneously, substantially as set forth.

5. The combination, with a series of balconies, *A A' A''*, provided with hatchways *a a' a''* and trap-doors *g*, hung thereto and opening downwardly, of ladders *B B' B''*, pivoted to the under sides of the said balconies, a wind- 90 lass, *m*, and a rope, *l*, and branch ropes *l' l''*, connected with said ladders and running over suitable guide-pulleys, whereby the ladders are raised and lowered simultaneously, sub- 95 stantially as set forth.

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Witnesses:

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