

No. 667,803.

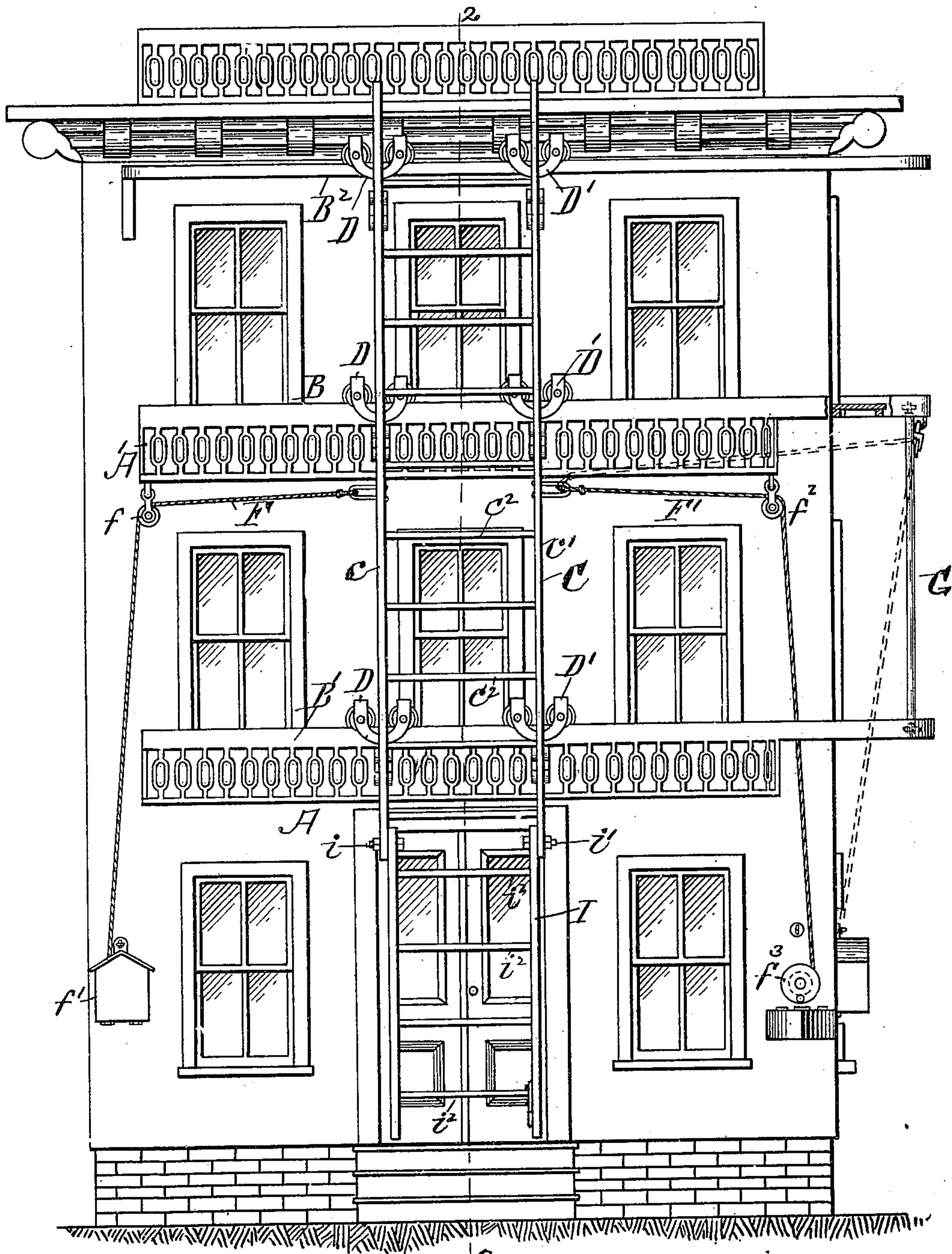
Patented Feb. 12, 1901.

J. STONE.
FIRE ESCAPE.

(Application filed May 16, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES

J. M. Dolan.
Geo. A. Walsh.

Fig. 1.

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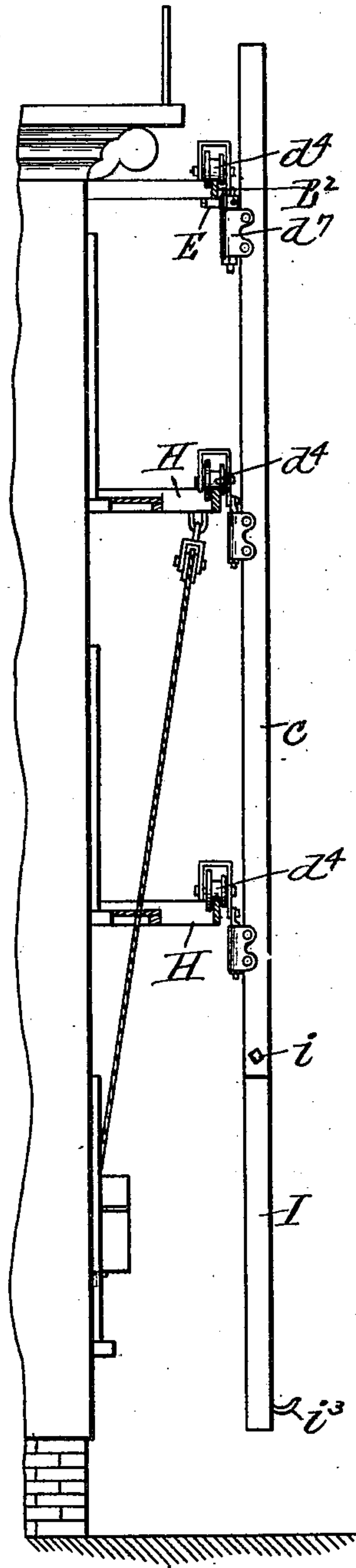
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FIRE ESCAPE.

(Application filed May 15, 1899.)

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2 Sheets—Sheet 2.



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UNITED STATES PATENT OFFICE.

JULIUS STONE, OF BOSTON, MASSACHUSETTS.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 667,803, dated February 12, 1901.

Application filed May 15, 1899. Serial No. 716,845. (No model.)

To all whom it may concern:

Be it known that I, JULIUS STONE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a new and useful Improvement in Fire-Escapes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a fire-escape which comprises one or more balconies conveniently located to the windows of a house or building and which is or are constructed to provide a rail or rails for the support of a vertical ladder or stairway and upon which said vertical ladder or stairway is adapted to be moved horizontally from one position to another.

In the drawings, Figure 1 is a view of a building of three stories equipped with my improvement. Fig. 2 is a vertical section upon the dotted line 2 2 of Fig. 1. Fig. 3 is a view in end elevation to illustrate a modification; and Fig. 4 is an enlarged detail view, principally in elevation, of a suspending-truck with a safety-roll attached thereto.

Referring to the drawings, A A' represent two balconies attached to a building in any convenient and the usual way.

B B' represent rails forming the upper edge of the outer section of the balconies and which furnish a support for the ladder C and also means for the transfer or movement horizontally of the ladder from one position with respect to the side or front of the building to another position with respect thereto. The ladder preferably comprises two perpendicular side bars $c c'$, united by cross-rounds c^2 . These side bars may end at any desired distance from the ground and they may extend to or above the roof, as represented in Fig. 1. The ladder is mounted upon the balcony-rails preferably by means of supporting-trucks D D', and when the ladder is carried to or near the roof there may be employed an additional rail B², answering the purposes of the rails B B', but not necessarily forming a part of the balcony, and upon which the suspending-trucks may be mounted, so that the upper end of the ladder may be stayed and supported, as well as the sections below it. As a rule I prefer to connect the ladder with each balcony,

although this is not necessary, and in Fig. 1 I have shown the ladder as connected with the two balconies and with the upper rail. 55

Each suspending-truck consists of an inverted-U-shaped frame d , the upper ends of which are bent outward at d' and then downward at d^2 , (see Fig. 4,) forming a space d^3 for the reception of guiding wheels or rolls d^4 , having flanges d^5 on each side. These rolls are supported by shafts or studs extending from the back of the frame to the arm d^2 . (See Fig. 4.) Each U-shaped frame is attached at the bottom of the U by a horizontal pivot, upon which it swings, to a swivel-pin d^6 , which is free to swivel in the holder d^7 , surrounding it and attaching it to the bar of the ladder. The swivel-pin extends through the holder and has its lower end threaded at d^8 , and there is screwed upon this end a nut d^9 , which spans the holder and secures the truck to the holder. By means of this nut and thread the U-shaped frame may be adjusted slightly, so that it will bear its due proportion of the weight of the ladder, thus compensating for any expansion or contraction, as well as for any slight inaccuracy in the arrangement of the frame upon the ladder. The flanges d^5 of the rolls or wheels extend upon either side of the balcony or other rail, as represented in Fig. 4, and to prevent the rolls or wheels from lifting from the rail, and thus disengaging the ladder from the rails, there may be used in connection with the upper rail B a safety-roll E to run under each truck upon the under edge of the rail. This roll is mounted upon a stud e , which extends from a clamp e' , spanning the swivel d^6 , and upon which it may be clamped to hold it under the rail, as represented in Fig. 4, or may be moved laterally to turn it from the rail. The ladder will thus be supported at each balcony or other rail by two swiveling trucks, each carrying two wheels or rolls, (as well as the safety-roll E, if the truck have such a roll,) and I prefer that the swivels be arranged at the center of the trucks and in the vertical line of the bars of the ladder. This will bring the two rolls one outside of each bar and one inside of each bar and will place the bar at a uniform distance between both. By this means any inequalities in the balcony-rails are compensated for and provision for the 100

turning of the ladder from one face of the building to another—such, for instance, as would be necessary in a corner building—is obtained, as the trucks will accommodate themselves to curves in the rails and will permit the ladder to be swung around a corner.

The ladder may be moved from one place to another by hand or by devices actuated from the ground, and in Fig. 1 I have represented for this purpose two drawing-ropes $F F'$. One, F , is attached to the side bar c of the ladder near the center of its length and extends over a fixed pulley f to a winding-drum f' , said winding-drum being located in convenient proximity to the ground to be operated. The draw-cord F' extends from the ladder-bar c' at a point opposite that which the draw-cord F is attached and passes over the fixed pulley f^2 to the winding-drum f^3 . (Shown near the ground and exposed in Fig. 1.) To move the ladder with the ropes or cords, it is necessary to release both cords and to then draw upon one or the other, as circumstances may require. Where the ladder is moved about a corner, the rails $B B'$ are curved to extend about it, and there is arranged between two of the rails a rod or long roll G , around which the drawing-cord which is used for pulling the ladder around the corner may extend. In this event the pulley for said drawing-cord will be located around the corner and in a position at right angles to the ladder before it is moved, and this necessitates the employment of the rod or roll G , as the trucks would clamp and the ladder would not be movable if the rope were to bear against the corner of the building and not be held removed from it.

In Figs. 1 and 2 the ladder is mounted from the balconies or roof by passing around one bar to the outer side of the ladder and then descending upon its outer side.

In Fig. 3 I have represented balconies which have between their outer rails and the building openings H , through which access to the inner side of the ladder may be obtained and the ladder descended upon the inner side.

I prefer that the balconies have narrow mounting-platforms for each when provided with these openings. The ladder when it does not extend to or near the ground has a hinged lower section I , pivoted to the lower ends of the bars $c c'$ at $i i'$ and having cross-rolls i^2 . This section when not in use is adapted to be folded upward and latched against the main ladder by a latch i^3 , adapted to latch onto a round of the main ladder.

The advantages of the invention have been fully described or are easily inferred from what has been said, and no further description thereof would seem to be necessary.

It will be understood that the ropes or cords for moving the ladder may be of material indestructible by fire. They should also be of sufficient length to enable the ladder to be moved from the ground and at a distance from the building, and the slack necessary

for this purpose is contained, when not in use, on the reels above specified.

While I have shown the ladder as suspended upon the rails by tracks having two wheels or rolls, I would say that for some purposes single wheels or rolls may be employed.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. A fire-escape comprising one or more balconies attached to the wall of a building, connecting a number of windows or outlets, each balcony bearing a horizontal rail, with a fire-escape comprising means whereby a descent may be made from each balcony or the roof of a building, and having a roll or rolls attached to it and mounted upon said rail or rails, whereby it is suspended from said rail or rails and may be also movable horizontally thereon from one position to another, as and for the purposes described.

2. In a fire-escape the combination of one or more balconies arranged upon the wall of the building and connecting two or more openings, each of which has a rail, a ladder and rolls connecting said ladder with the rail or rails having a swiveling relation to the ladder, as and for the purposes described.

3. In a fire-escape the combination of one or more rails upon the outer face of a building, a ladder and ladder-suspending devices mounted upon said rail or rails, each comprising an adjustable pair of rolls connected with the side bars of the ladder by a swiveling pin attached to the said bars of the ladder and in line therewith, and so that one roll of each pair shall be outside the line of its ladder-bar, and the other roll shall be inside of said line, as and for the purposes described.

4. In a fire-escape, in combination, two or more rails on the outer side of the building, a ladder, frames attached thereto and suspending-rolls in said frames, each frame being adjustable upon said ladder to the exact position of the rail upon which it is to run, as and for the purposes set forth.

5. In a fire-escape, in combination, two or more rails on the outer side of the building, a ladder, swiveling pins each attached to one of the bars of said ladder and parallel therewith, and means whereby the vertical position of each swiveling pin on said ladder may be adjusted, frames each mounted on one of said swiveling pins, and suspending-rolls each mounted in one of said frames, all as and for the purposes set forth.

6. The combination in a fire-escape, of rails attached to the wall of the building and extending about the corner thereof, a ladder, swiveling suspending-trucks attached to said ladder and mounted upon said rails, draw cords or ropes F, F' and fixed pulleys therefor, said draw-cords being attached to said ladder, and a vertical roll or guide G mounted in bearings at the corner of the building and extending from one rail to the next, whereby either draw-cord, when operated from the

ground around the corner of the building, may pass from one of said fixed pulleys about said guide-roll G, as and for the purposes set forth.

- 5 7. In a fire-escape, a building, a balcony attached thereto, two or more rails attached to said building, one of said rails being attached to said balcony, said balcony having an open-

ing in its floor between the rail and the building, in combination with a ladder mounted on said rails to be movable horizontally thereon, as set forth.

JULIUS STONE.

In presence of—

F. F. RAYMOND, 2d,
J. M. DOLAN.