(No Model.)

2 Sheets—Sheet 1.

H. F. NEUMEYER.

FIRE ESCAPE.

No. 331,081. Patented Nov. 24, 1885.

Fig. 1.

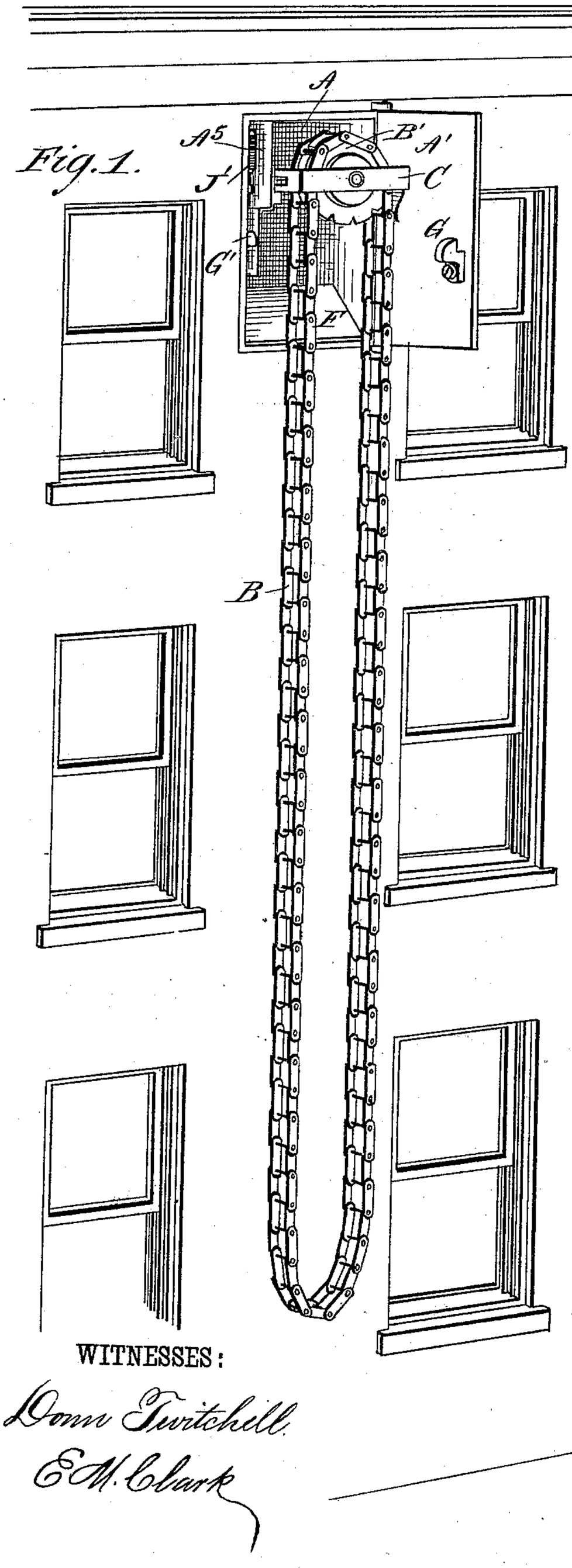
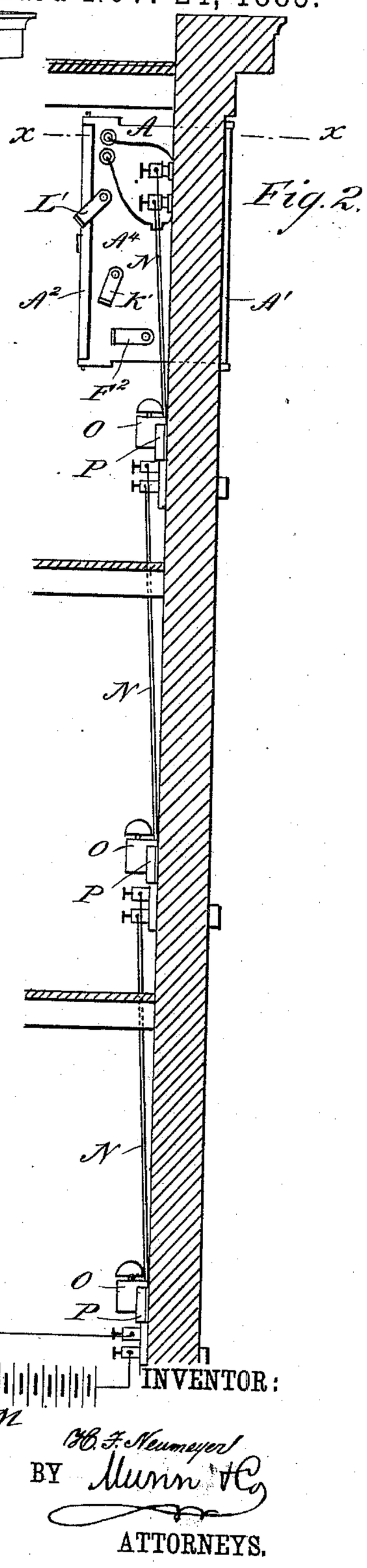


Fig. 2.



WITNESSES:

Donn Twitchell.

E. M. Clark

INVENTOR:

H. F. Neumeyer

BY Munn & Co

ATTORNEYS.

(No Model.)

2 Sheets—Sheet 2.

H. F. NEUMEYER.

FIRE ESCAPE.

No. 331,081. Patented Nov. 24, 1885.

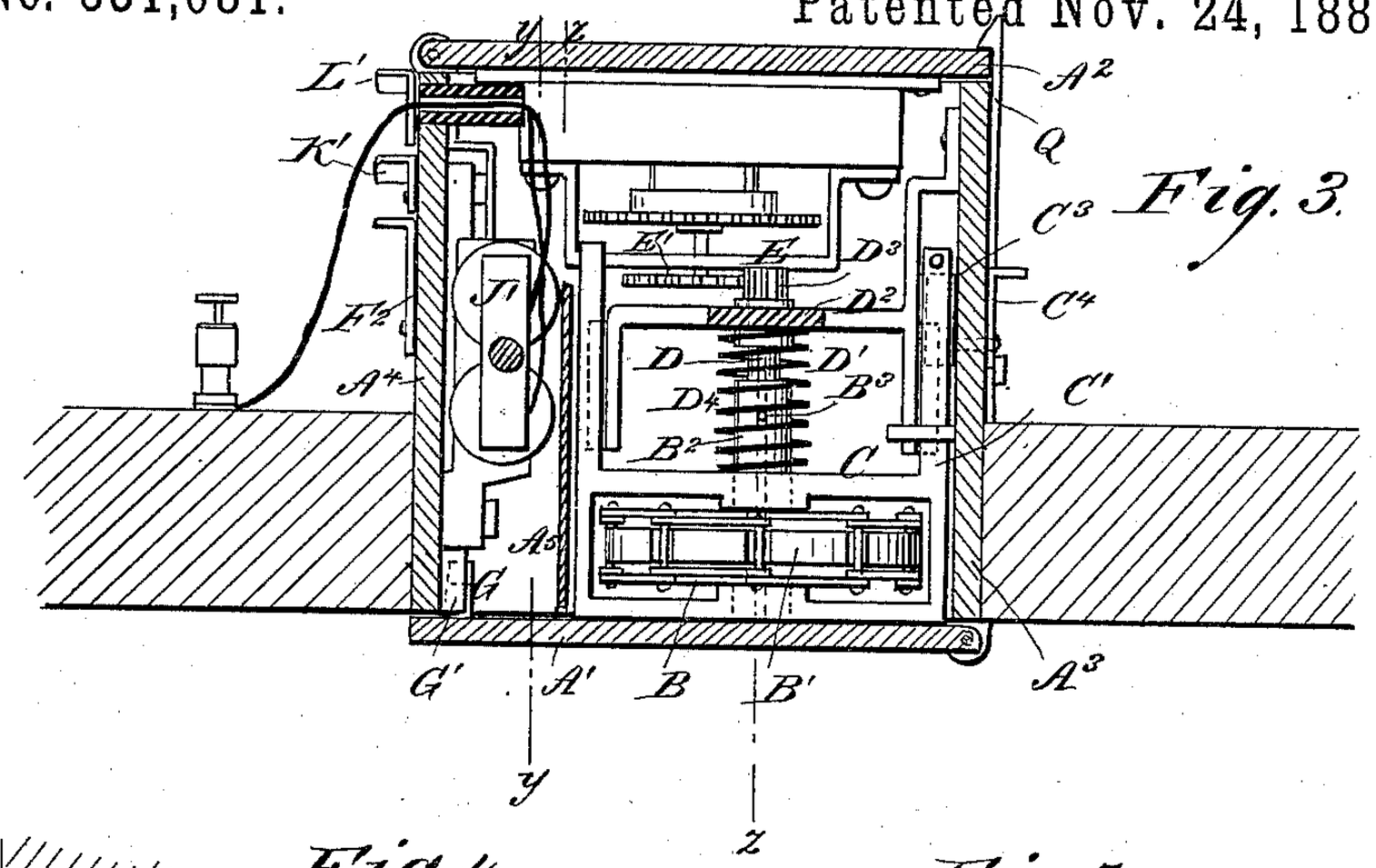


Fig. 3.

Fig. 4.

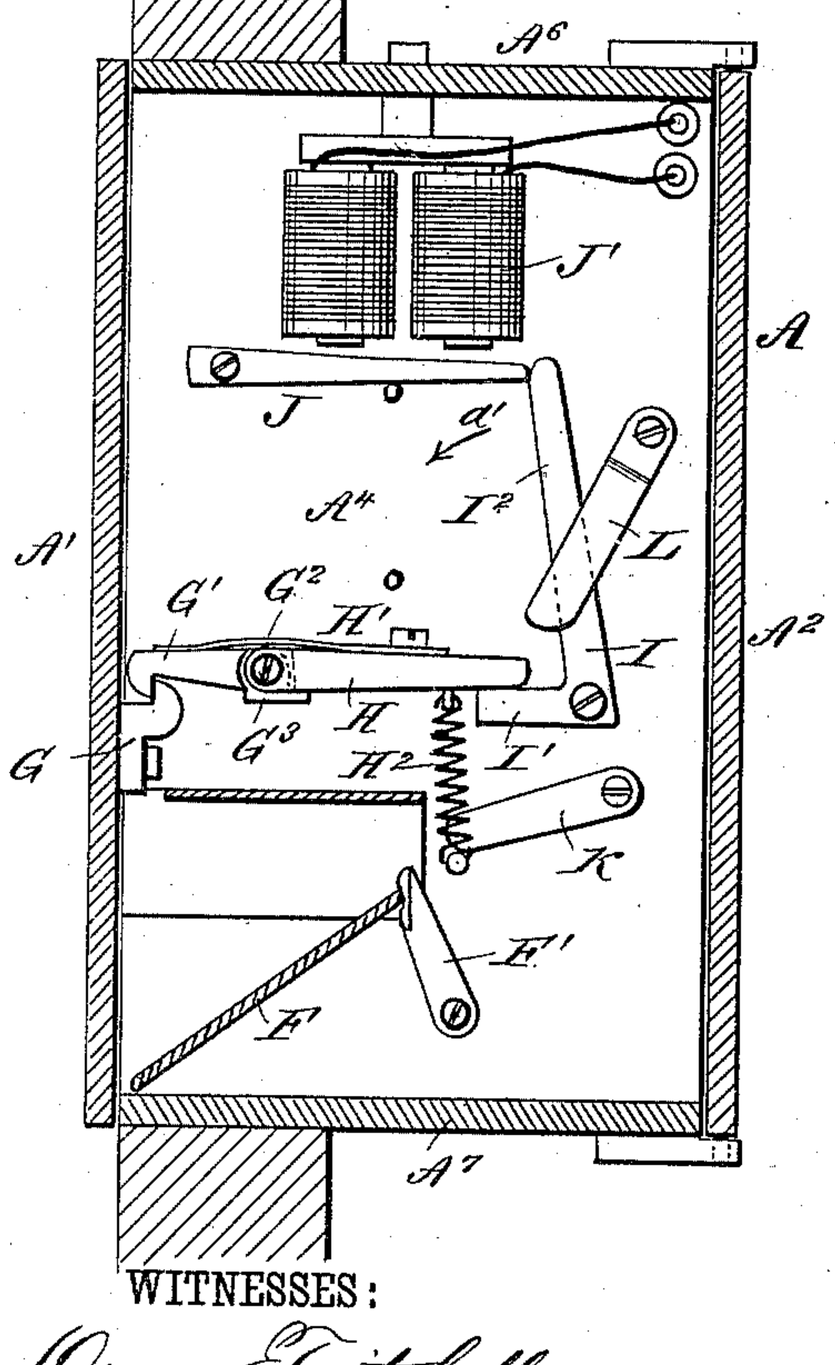
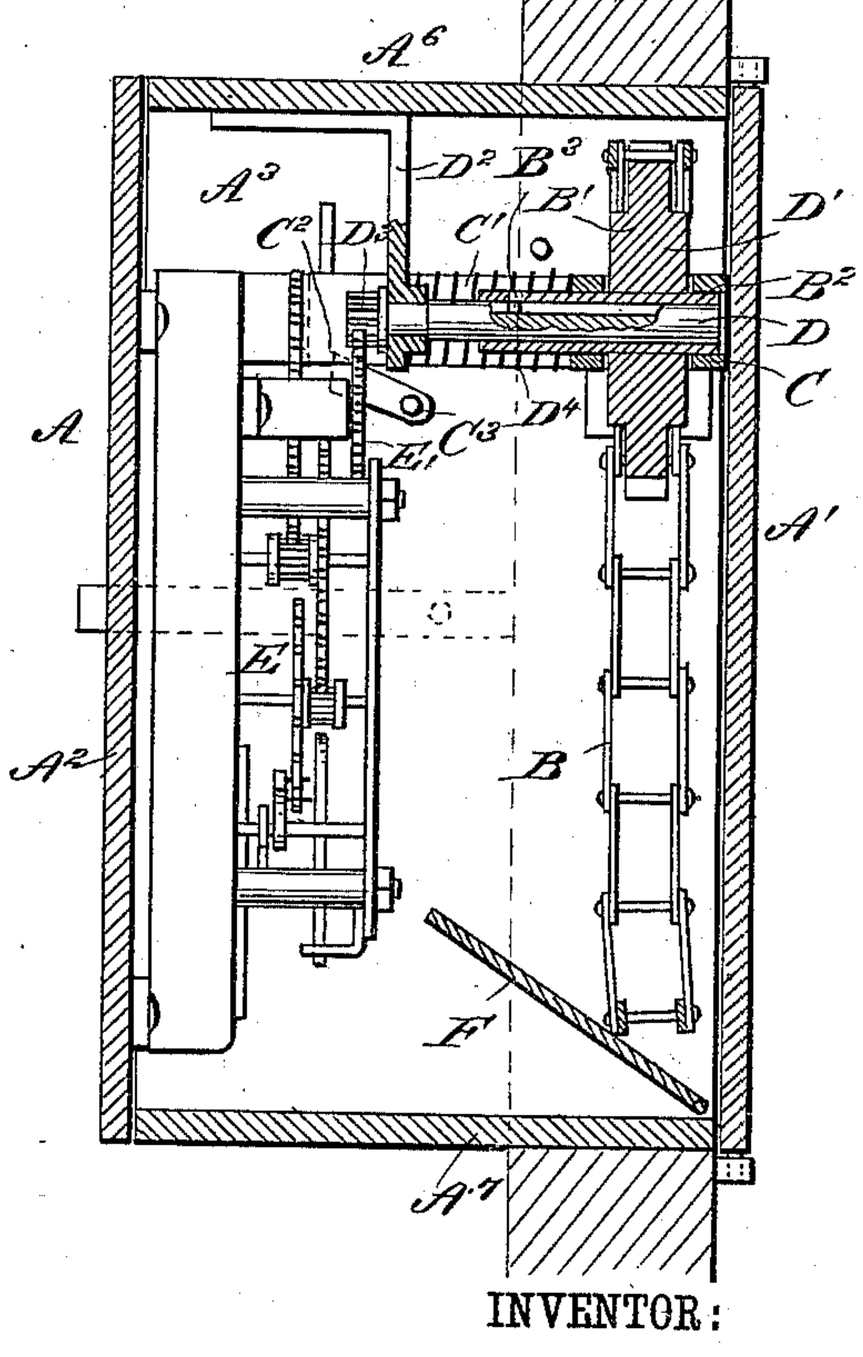


Fig. 5.



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UNITED STATES PATENT OFFICE.

HORACE F. NEUMEYER, OF MACUNGIE, PENNSYLVANIA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 331,081, dated November 24, 1885.

Application filed September 18, 1885. Serial No. 177,449. (No model.)

To all whom it may concern:

Be it known that I, HORACE F. NEUMEYER, of Macungie, in the county of Lehigh and State of Pennsylvania, have invented a new and Improved Fire-Escape, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved fire-escape which can be used continually from all the floors of the building at the same time, and is set in motion by an electric current, which also gives an alarm on each floor.

The invention consists of an endless folding ladder which, when not in use, is inclosed in a casing provided with a drop-door, of electrically-operated devices for releasing the ladder, and at the same time giving an alarm on all floors of the building, and of a clock-work to regulate the movement of the endless folding ladder.

The invention also consists in various parts and details, hereinafter more fully set forth and described.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of my improvement attached to a building and showing the escape ready for use. Fig. 2 is a vertical section of part of a building to which my improvement is attached, showing the electric connections of the escape and the alarm-bells on each floor. Fig. 3 is a horizontal section on the lines *x x* of Fig. 2. Fig. 4 is a vertical cross-section of the box on the line *y y*, Fig. 3, showing the device for releasing the door by means of an electric current; and Fig. 5 is a vertical cross-section of the box on the line *z z*, Fig. 3, showing the clock-work, the endless folding ladder, and connections.

The casing A, which incloses my escape when not in use, is placed in the wall of the building near its upper part, and is provided with the front door, A′, which opens outwardly, and with the rear door, A^2, which can be opened inwardly from the inside of the building. The endless folding ladder B passes over a notched pulley, B′, secured to a sleeve, B^2, having its bearings in the sliding frame C, moving in bearings attached to one side plate, A^3, of the casing A, and to a partition, A^5, secured to the side plate A^4 and the top plate, A^6, of the casing A. In the sleeve B^2 is placed one end of the shaft D, provided with a groove, D′, in which fits a pin, B^3, attached to the inner face of the sleeve B^2, so that when the pulley B′ is rotated it causes the sleeve B^2 and the shaft D to rotate, and at the same time allows a sliding movement of the sleeve B^2 on the shaft D. The inner end of the shaft D has its bearing on the bracket D^2, attached to the side plate A^3 and the top plate, A^6, of the casing A, and is provided with a pinion, D^3, which meshes into the gear-wheel E′ of the clock-work E, which is attached to the rear door, A^2, and may be of any suitable construction provided with an escapement, and needs no further description. A spring, D^4, is placed between the outer face of the bracket D^2 and the sliding frame C, and has the tendency to press the sliding frame C outwardly. The arm C′ of the sliding frame C is provided on its under side with a notch, C^2, in which engages the pawl C^3, pivoted to the plate A^3 of the casing A, and operated from the outside of the plate A^3 by the arm C^4. This pawl C^3, when engaged with the notch C^2 of the sliding frame C, holds the latter in its innermost position. The lower part of the endless ladder B is folded upon a platform, F, pivoted at its front end to the side plates, A^3 and A^4. This platform F is raised to and held in an inclined position by means of the lever F′, pivotally attached to the side plate A^4, and operated from the outside by means of the arm F^2. The front door, A′, is provided with a catch, G, which engages, when the door A′ is closed, with the latch G′, pivoted on the stud G^2, attached to the inner face of the plate A^4. On the stud G^2 is also pivoted one end of the lever H, which rests on a projection, G^3, of the latch G′, and is provided with a flat spring, H′, which bears on the upper front edge of the latch G. A coiled spring, H^2, is attached to the inner lower edge of the lever H and to the side plate A^4, and has the tendency to draw the lever H downward.

The L-shaped lever I is pivoted to the side

plate A^4, and the short arm I′ of the lever I supports the inner end of the lever H when the door A′ is closed, while the upper end of the arm I^2 of the lever I rests against the armature-lever J, pivoted to the side plate A^4. An electro-magnet, J′, is attached to the casing A in close contact with the armature-lever J, so that when the latter is attracted by the electro-magnet J′ it permits the arm I^2 of the lever I to fall downward in the direction of the arrow *a′*, whereby the lever H is released, allowing the latch G′ to disengage the catch G of the door A′, so that the latter can swing open.

The L-shaped lever I is placed in the position shown in Fig. 4 by means of the lever K, pivotally attached to the side plate A^4, and operated from the outside by the arm K′. The lever L is pivotally attached to the inside of the plate A^4, and is operated from the outside by the arm L′, and serves to release the lever I from the armature-lever J without the aid of the electro-magnet J′ by being caused to strike the under side of the armature-lever J, and thereby swinging it upward until the arm I^2 can fall downward in the direction of the arrow *a′*, which is caused by the pressure of the spring H^2 through the lever H acting on the short arm I′ of the lever I.

The electro-magnet J is actuated by means of an electric current generated in the battery M, placed at any suitable place in the building to which my escape is attached, and connected with the battery by properly-insulated wires N. These wires N also connect at suitable places on each floor of the building with alarm-bells O and push-buttons P, so that when, in case of fire, one of these push-buttons P is pressed, an alarm will be sounded throughout the building on each alarm-bell O, and at the same time the electro magnet J′ is actuated and draws the armature-lever J upward.

In order to fold the endless ladder B into the casing A, so as to be enabled to close the door A′, it is necessary that the sliding frame C, carrying the pulley B′, be pressed inward and held temporarily in this position by the pawl C^3 engaging the notch C^2 on the arm C′ of the frame C. The ladder B is then folded on the platform F, resting on the bottom plate, A^7, of the casing A, and the door A′ is then closed, and as the lever I has been placed in the position shown in Fig. 4 by means of the arm K′ and the lever K, so that the upper end of the arm I^2 rests against one end of the armature-lever J, the door A′ is locked by the latch G′ engaging the catch G, attached to the door A. The pawl C^3 is now disengaged from the notch C^2 of the sliding frame C by means of the arm C^4 on the outside of the plate A^3 of the casing A, thus causing the sliding frame C to press against the inner face of the door A′ by means of the spring D^4. The platform F, on which the chain B is folded, is raised to and held in an inclined position by the lever F′ being turned upward by the arm F^2 on the outside of the casing-plate A^4. The rear door, A^2, is also closed and locked by the spring-catch Q, or by some other suitable device.

The escape is now prepared for action, and can be released in case of fire by either throwing the lever L upward by turning the arm L′ or by pressing on one of the push-buttons P, thereby sending an electric current to the electro-magnet J′, which causes the armature-lever J to move upward and release the arm I^2 of the L-shaped lever I. The latch G′ releases the catch G, as before described, and the door A′ is forced open by the pressure of the spring D^4 against the sliding frame C and by the weight of the ladder B, resting on the inclined platform F and against the door A′. The spring D^4 causes the frame C, carrying the pulley B′, to slide outward, and the lower part of the ladder B drops down close to the wall on the outside of the building, as shown in Fig. 1. A person mounting now the endless ladder B from any floor can descend the ladder B, which is also given a downward motion on one side by the weight of the person at a reasonable rate of speed, which is regulated by the clock-work E, and its escapement being actuated by the pulley B′, the sleeve B^2, the shaft D, and the pinion D^3, meshing into the gear-wheel E′ of the clock-work E. It will thus be seen that the fire-escape can be used continually from either floor or all floors at once, insuring thereby a speedy escape, and as one side of the ladder B moves downward by the persons going down, and the other side of the ladder B moves upward, this upward-going side of the ladder B can be used by the firemen to ascend to any floor of the building.

The clock-work E may be entirely dispensed with and simply an endless ladder be used.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. In a fire-escape, the combination, with a casing having a hinged door, and means for locking and releasing the door, of a pulley journaled in the casing, an endless folding ladder passing over said pulley, and an inclined support for the ladder adjacent to the door, substantially as herein shown and described.

2. In a fire-escape, the combination, with the case A and its door A′, provided with a catch, of an electro-magnet in said case, a latch pivoted in the case, and a lever engaging the said latch and the armature of the electro-magnet, substantially as shown and described.

3. In a fire-escape, the combination, with the case A, provided with a door, A′, held closed by a spring-actuated latch, and which latch is held locked by a lever engaging with the armature of an electro-magnet, of a spring-pressed reel mounted loosely on a shaft in said case to bear against the door A′, substantially as shown and described.

4. In a fire-escape, the endless folding lad-

der B, the pulley B′, the sliding frame C, the sleeve B^2, the pin B^3, the shaft D, having a slot, D′, and the spring D^4, in combination with the casing A, the door A′, means for holding and releasing the door, and the platform F, substantially as shown and described.

5. In a fire-escape, the endless folding ladder B, the pulley B′, the sleeve B^2, the pin B^3, the sliding frame C, having a notch, C^2, the lever C^3, the arm C^4, the shaft D, having the recess D′, and the spring D^4, in combination with the casing A, the door A′, means for holding and releasing the door, the platform F, the lever F′, and the arm F^2, substantially as shown and described.

6. In a fire-escape, the casing A, the door A′, and means for holding and releasing the door, the endless folding ladder B, the pulley B′, the sleeve B^2, the pin B^3, the sliding frame C, the shaft D, the spring D^4, and the pinion D^3, in combination with the gear-wheel E′ of the clock-work E, having an escapement, substantially as shown and described.

7. In a fire-escape, the casing A, the ladder B, the door A′, and the catch G, in combination with the latch G′, the lever H, the springs H′ and H^2, the lever K, the arm K′, the L-shaped lever I, the lever L, the arm L′, and the lever J, substantially as shown and described.

8. In a fire-escape, the casing A, the ladder B, the door A′, and the catch G, in combination with the latch G′, the lever H, the springs H′ and H^2, the lever I, the armature-lever J, and the electro-magnets J′, substantially as shown and described.

9. In a fire-escape, the casing A, the ladder B, the door A′, the catch G, the latch G′, the lever H, the springs H′ and H^2, the lever I, and the armature-lever J, in combination with the electro-magnet J′, the battery M, the wires N, the push-buttons P, and the alarm-bells O, substantially as shown and described.

10. In a fire-escape, the casing A, the door A′, the catch G, the ladder B, the pulley B′, the sleeve B^2, the pin B^3, the shaft D, having the recess D′, the pinion D^3, the gear-wheel E′ of the clock-work E, having an escapement, the sliding frame C, the spring D^4, the platform F, the lever F′, and the arm F^2, in combination with the latch G′, the lever H, the springs H′ and H^2, the lever K, the arm K′, the lever I, the armature-lever J, the electro-magnets J′, the battery M, the wires N, the alarm-bells O, and the push-buttons P, substantially as shown and described.

HORACE F. NEUMEYER.

Witnesses:

JOHN ERDMAN,

A. K. DESH.