

(No Model.)

3 Sheets—Sheet 1.

S. J. PHREANER.
FIRE ESCAPE LADDER.

No. 273,386.

Patented Mar. 6, 1883.

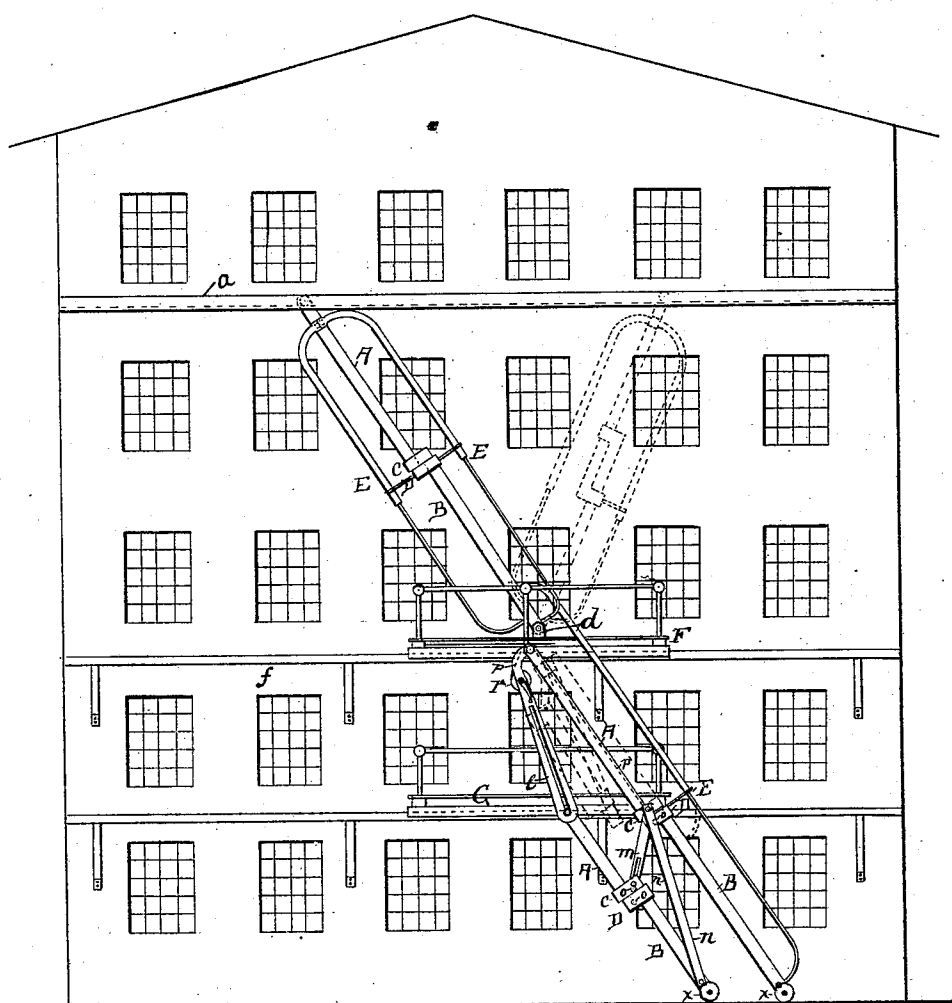


Fig - 1 -

WITNESSES:

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Fred J. Lambeth

INVENTOR

Samuel J. Phreaner
by his attorney
Chas A. Rutter.

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Fig. 4.

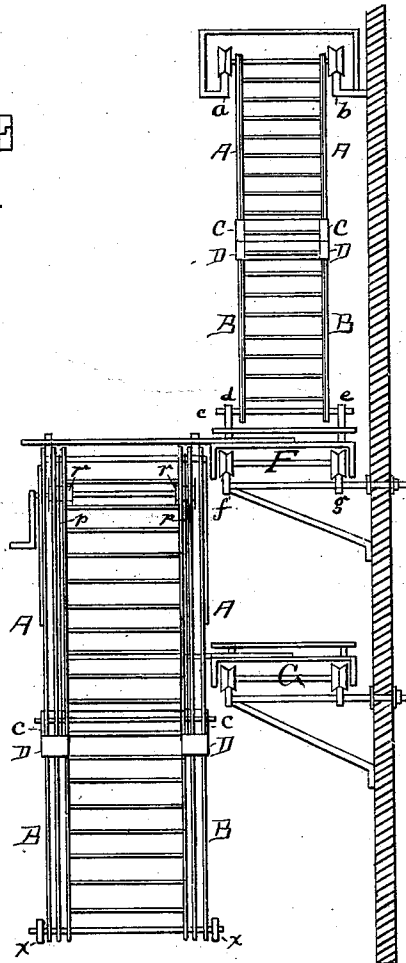


Fig. 2.

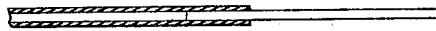


Fig. 3.



Fig. 5.

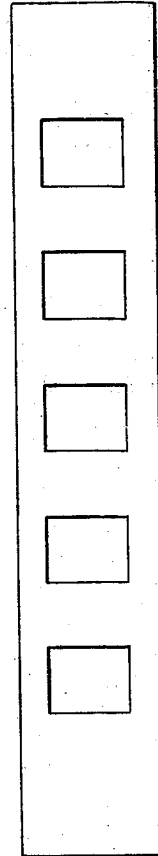
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Fig. 6.



(No Model.)

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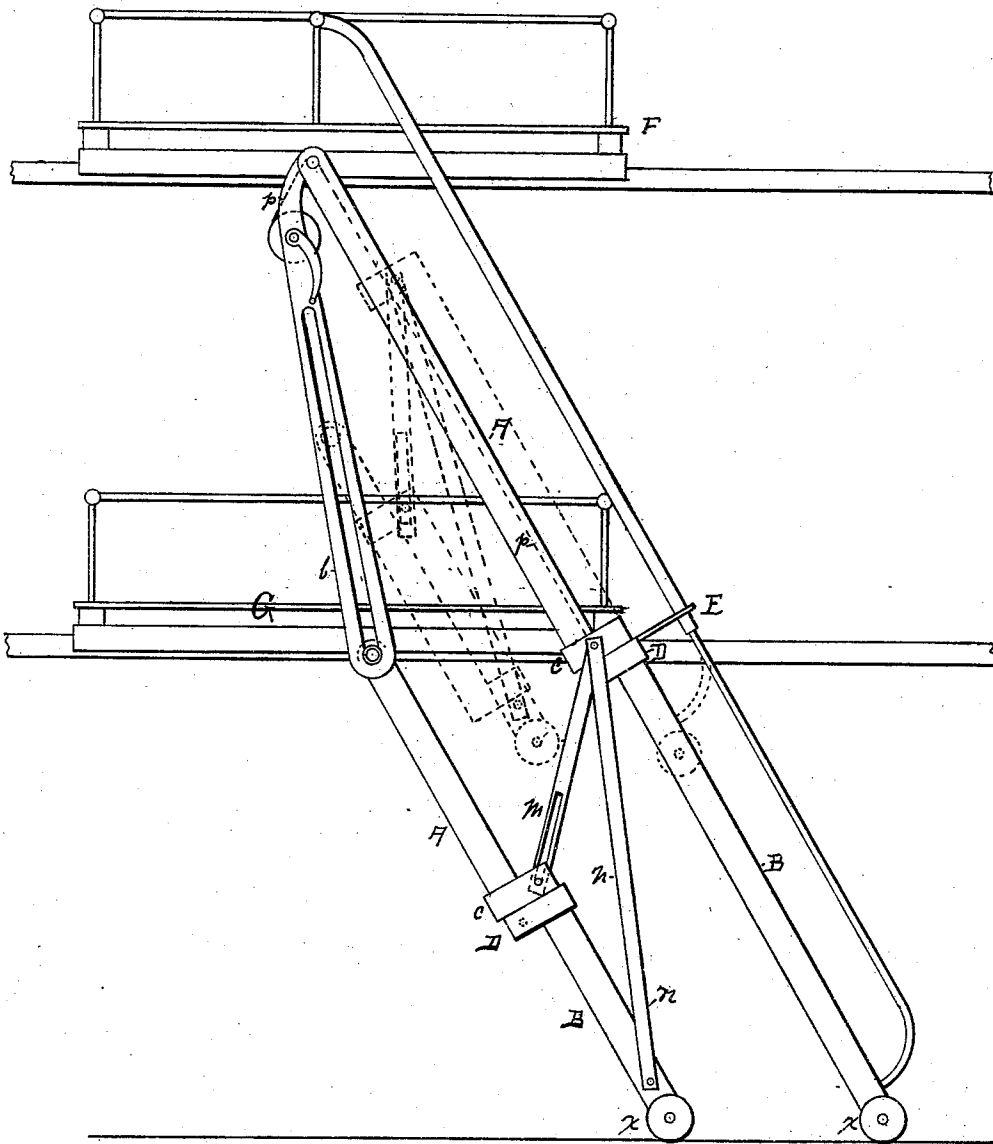


Fig. 7.

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UNITED STATES PATENT OFFICE.

SAMUEL J. PHREANER, OF PHILADELPHIA, PENNSYLVANIA.

FIRE-ESCAPE LADDER.

SPECIFICATION forming part of Letters Patent No. 273,386, dated March 6, 1883.

Application filed April 25, 1882. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL J. PHREANER, a citizen of the United States, and a resident of the city and county of Philadelphia, and State of Pennsylvania, have invented a new and useful Improvement in Fire-Escapes, of which the following is a specification.

The objects of my invention are to furnish a system of movable adjustable steps or ladders to be placed upon the outside of a building to facilitate the escape of the inmates in case of fire.

In the accompanying drawings, forming part of this specification, and in which similar letters of reference indicate like parts throughout the several views, Figure 1 represents the front elevation of a building with my invention attached; Fig. 2, a side view; Fig. 3, a longitudinal section of the hand-rails; Fig. 4, an end view of the horses of the upper ladder; Fig. 5, an end view of the horses of the lower ladder; Fig. 6, a top view of the upper balcony, and Fig. 7 is an enlarged side view of the lower ladders.

As will be seen from the drawings, my steps or ladders are capable of two motions—one a progressive motion upon horizontal tracks situated at suitable heights upon the side of the building, by means of which it is possible to bring a ladder opposite or in front of any or nearly any given window, the other an axial motion, by means of which the same object can, under some circumstances, be more conveniently attained and the manageability and general efficiency of the device increased.

The sides or horses of my steps are each constructed, as respects their length, of two pieces, A and B, each of which is provided with clips C D, serving as guides and at the same time as keepers, thus enabling one section of the ladder, with its horses, to be slid or telescoped upon the other in order to reduce its length. The object of this arrangement is to permit the shortening of the ladder in the case when an axial movement is required, for if the ladder could not be shortened it is plain to see that there would not be sufficient vertical height between the tracks at the top and bottom of the ladder to permit the ladder to pass from the position shown in full lines to that shown in dotted lines, or to any position intermediate between those two. For a similar reason,

the hand-rails E, with which this ladder is furnished, are also made to allow one part of the rail to telescope within the other. The upper ladder is supported at both its upper and lower ends, the upper end resting upon rollers or wheels, which in their turn rest upon horizontal rails *a b*, attached in some suitable manner to the wall of the building, and these rails, as well as all other rails intended for a similar purpose in this system, are V-shaped, the vertex of the V-section constituting the top of the rail. The object of this is to prevent any accumulation of ice, snow, or any other foreign substances which would have a tendency to obstruct the movement of the rollers upon the rails. The lower end of this ladder is supported upon a shaft, *c*, which has its bearings upon the standards *d e*, which standards are rigidly affixed to the movable carriage F. If it is desired to shift the position of this upper ladder from that shown by the full lines to or toward that shown in dotted lines, the upper part of the ladder is drawn in the direction required, and as the upper rollers are constrained to travel along the upper rails the horses A will be made to descend through the clips C. The rails E will telescope themselves at the same time, thus shortening the ladder more and more as a vertical position is reached, after which, the same direction being still maintained, a reverse action of the horses and rails will take place.

In addition to the guiding and maintaining effect of the clips, I have provided that those portions of the horses which slide one upon the other shall be constructed with shoulders, as shown in Fig. 4. This axial motion, in addition to the convenience which it may afford in time of danger, has also the advantage of permitting the ladder, when not in use, to be placed in such a position as shall least obstruct the light to the windows of the building.

The traveling platform F at the bottom of this ladder is supported upon rollers or wheels, which travel upon the horizontal tracks *f g*. These tracks are supported upon the walls of the building by means of suitable bracing. The ladder which descends from this platform to the ground is not capable of an axial motion. Its horses and hand-rails have nevertheless a telescoping arrangement similar to the one already described, the purpose of which is to

permit the drawing up of the lower part of the ladder, thus preventing undue obstruction of the sidewalk or other place to which it leads. It will be seen from the drawings that this ladder descends from the third story of the building, and that there is a third telescoping ladder which descends from the second-story platform to the ground.

My apparatus for telescoping these ladders is as follows: The upper horse of the second-story ladder has its bearing at the lowest end of the slotted link *l*, the upper end of which link is pivoted to the upper end of the upper horse of the third-story ladder. Near the upper end of this link is situated a roller, *r*, having a crank or winch attached to it, and serving as a windlass. Around this windlass is a chain, *p*, which passes over the upper part of the third-story ladder, and its end is secured to the lower horse of this ladder. These ladders are further joined together by the links *m n*, the upper ends of both of which are pivoted to the clip of the lower horse of the third-story ladder, while the lower end of *n* is pivoted to the lower end of the lower horse of the second-story ladder, and the lower end of *m* is pivoted to the clip of this horse. This link is also furnished with a long slot. If, now, the windlass is revolved, the lower part of the third-story ladder will be drawn up, and as it ascends the link *n* will draw up the lower horse of the second-story ladder, and the ladders will at last assume the positions shown by the dotted lines.

To avoid friction as much as possible, I have provided a set of friction-wheels, *o o*, which are situated so as to run upon the bearing parts of these ladders; and, if it is necessary, I may face my working parts with brass, copper, or some other material which does not rust or oxidize easily.

It will be noticed that the lower horses of the second and third story ladders are furnished with wheels *x*, which rest upon the pavement, and upon which the ladders run when their positions are shifted when they are down.

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

1. In a fire-escape, the combination of the adjustable ladder *A B*, tracks and wheels *a b*, and the platform *F*, and tracks and wheels *f g*, substantially as set forth.

2. The herein-described adjustable ladder, consisting of the parts *A* and *B*, secured together by clips *C* and *D*, and furnished with a telescopic hand-rail, *E*, substantially as and for the purposes set forth.

3. The combination, in a fire-escape, of the second and third story ladders, windlass *r*, rope or chain *p*, and links *l*, *m*, and *n*, substantially as and for the purposes described.

SAMUEL J. PHREANER.

Witnesses:

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CHAS. A. MAHONY.