

(No Model.)

2 Sheets—Sheet 1.

W. H. ISLEY.

FIRE ESCAPE.

No. 284,740.

Patented Sept. 11, 1883.

Fig. 1.

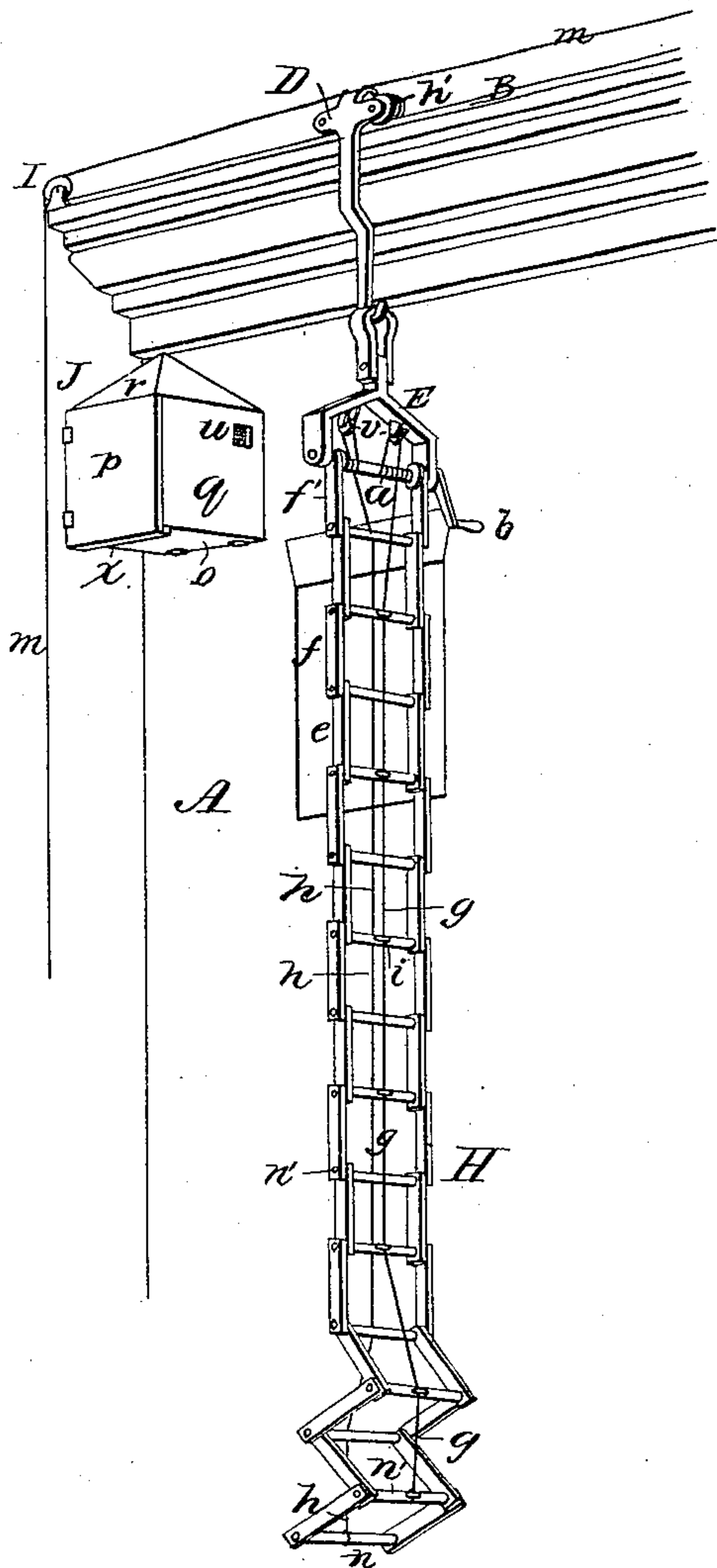
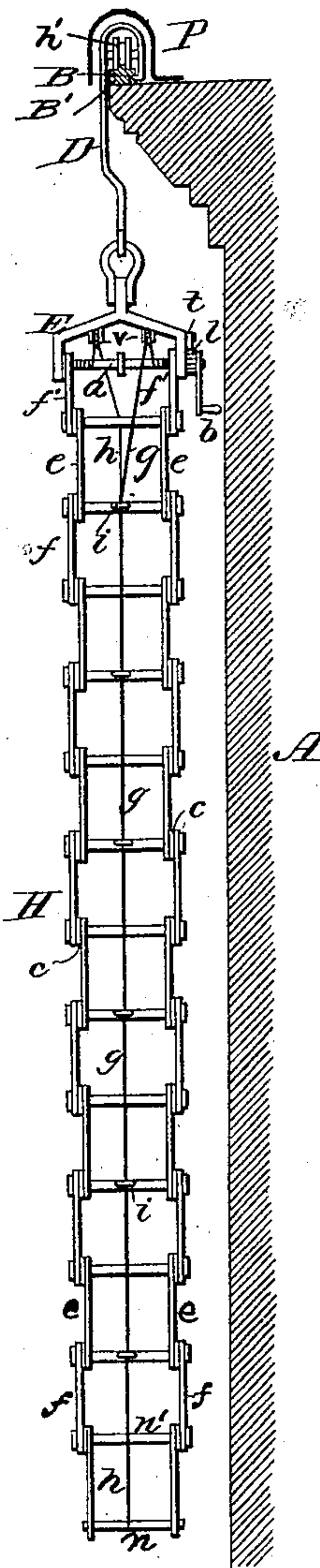


Fig. 2.



Witnesses;

Jas. F. O'Hamel.
Walter S. Dodge.

Inventor:

Wm H. Isley.
by Dodge & Son
Attys.

(No Model.)

2 Sheets—Sheet 2.

W. H. ISLEY.

FIRE ESCAPE.

No. 284,740.

Patented Sept. 11, 1883.

Fig. 3.

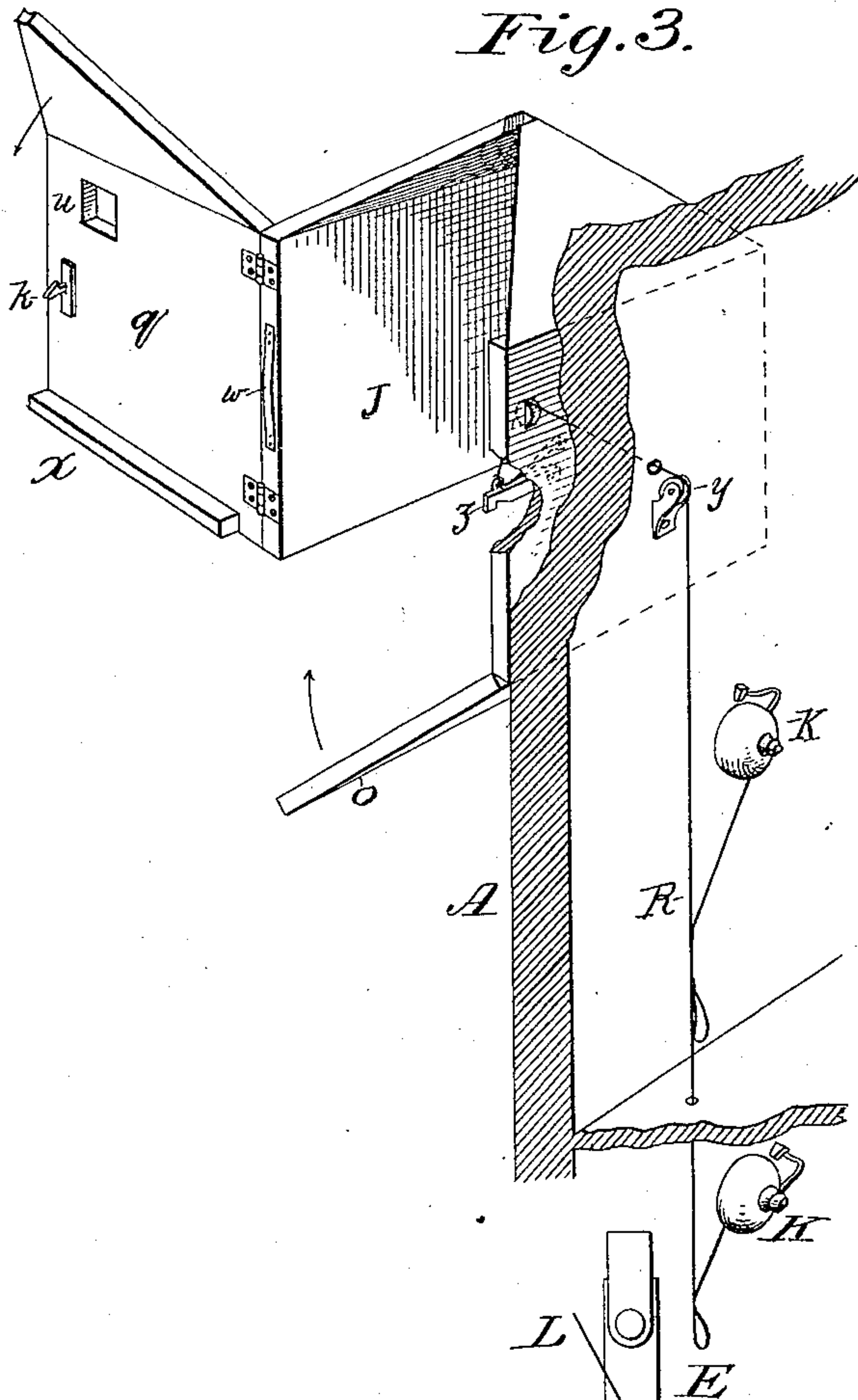
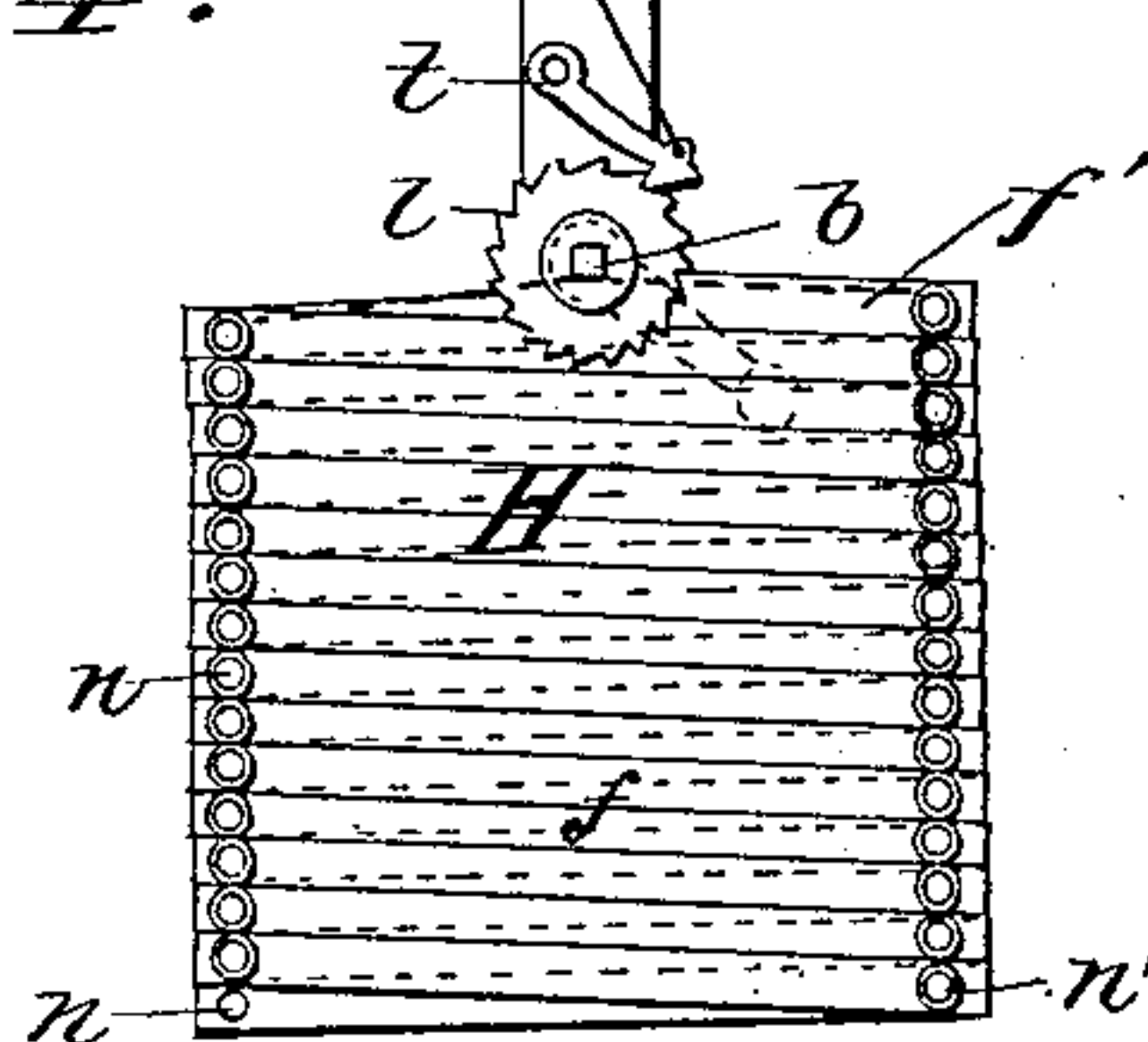


Fig. 4.



Witnesses:

Jas. T. Duffanel.
Walter S. Dodge.

Inventor:

Wm. H. Isley.
by Dodge & Son.
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM H. ISLEY, OF JERSEY CITY, NEW JERSEY.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 284,740, dated September 11, 1883.

Application filed April 2, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. ISLEY, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain
5 Improvements in Fire-Escapes, of which the following is a specification.

My invention relates to fire-escapes; and the invention consists of a folding ladder of novel
10 construction suspended on a track, so it can be moved along the face of the building, and provided with a crank and cords for folding it up and keeping it suspended in a folded condition at or near the top of the building.

It further consists in a box arranged to cover
15 and protect the ladder when folded, and in the arrangement of a cord for opening said box, releasing the ladder, and sounding an alarm on each floor of the building, all as hereinafter more fully set forth.

20 Figure 1 is a perspective view, and Fig. 2 is a vertical section, of a building with the ladder suspended ready for use. Fig. 3 is a perspective view, showing the construction of the box and the means for opening the same; and Fig. 4 is a side elevation of the ladder
25 when folded.

To construct an apparatus on my plan, I first make a ladder composed of a series of side bars, *e* and *f*, of light iron bars of uniform lengths,
30 which are connected at their ends by metallic rounds *n*, as shown in Figs. 1 and 2. It will be observed that each alternate pair of these side bars *e* are placed inside of the adjoining pair *f*, and that there is a washer, *c*, between their adjoining ends on the rounds *n*, the object being to permit the bars *e* to shut in between the bars *f*, and thus enable the ladder to be folded compactly, as shown in Fig. 4, so as to occupy the least possible space, the washers compensating for any slight bend that there may happen
40 to be in the side bars. The ladder thus constructed is connected at its upper end by a shaft, *a*, to a yoke, *E*, which is connected by suitable means to a suspension-bar, *D*, which, at its upper end, is provided with one or more
45 grooved rollers, which fit and run on a metallic rail, *B*, secured upon the roof of the building, close along its edge, as shown in Figs. 1 and 2. As shown in Fig. 2, this rail *B* is supported on blocks or an equivalent device, *B'*, which is enough narrower than the rail *B*

to allow the latter to project on its rear edge, and bar *D* has its end bent inward at that point, so as to engage under the projecting edge of the rail *B*, and thus prevent the rollers
55 from being displaced or the ladder from being accidentally detached. As shown in Fig. 1, a cord, *m*, is attached to the bar *D*, and is passed from thence laterally in opposite directions to the corners of the building, where it passes over a pulley, *I*, and thence to the ground, and along the front through a tube under the pavement or in the area or vault, if there be one, thus in effect forming an endless cord, by which a single person at either corner of the
60 building may move the ladder along the face of the building in either direction at will; or, if preferred, the descending cords *m* may be left disconnected at the bottom, their ends being secured inside of the building, if desired. 70

The shaft *a* is provided with a crank, *b*, preferably made detachable, and with a ratchet-wheel, *l*, as shown more clearly in Fig. 4, with which a pawl, *t*, pivoted to the yoke *E*, engages. Upon the outer face of each round *n*
75 of the ladder there is secured an eye or loop, *i*, as shown in Figs. 1 and 2, and to the upper or cross bar of the yoke *E* two grooved pulleys, *v*, are secured, as shown also in Figs. 1 and 2. Two cords, *g* and *h*, are secured to the shaft *a*, and are passed thence up over the pulleys *v*, and then down on opposite sides of the ladder, the cord *h* passing through the eyes *i* on each alternate round on one side, and the cord *g* through the eyes *i* on the intermediate
80 rounds on the opposite side, as shown more clearly in Fig. 1, the cord *h* having its end securely fastened to the lower round, *n*, and the cord *g* being in like manner fastened to the next round, *n'*. By this arrangement it will follow that if the crank *b* be turned the cords *g* and *h* will be wound upon the shaft *a*, and as they are wound up they will commence to fold the ladder at the bottom first, as indicated in Fig. 1, the cords passing over the
85 outside of the rounds, drawing upon each joint of the ladder in such a manner as to insure their moving, so as to fold up in consecutive and regular order until, when wound as far as they can be, the ladder will be compactly folded in the form shown in Fig. 4, in which condition it will be held by the ratchet and 100

pawl from unfolding, and will in that condition be suspended close up to the yoke E, near the roof. It will be observed that the upper pair of side bars, *f'*, are only about half as long
5 as the rest, so that when the ladder is folded the shaft *a* will be at the center, as shown in Fig. 4.

By making the side bars, *e* and *f*, one inch wide and eighteen inches long, and arranging
10 them to fold in the manner shown, a ladder seventy-two feet in length will be, when folded, but a trifle over two feet high; or, in other words, as the bars *f* rest directly upon each other, and the bars *e* in like manner rest upon
15 each other, and inside of or between the bars *f*, it follows that the total height of the ladder when folded will be but half as much as that of the several pairs of bars if placed in a pile one upon another.

As the intention is to keep the ladder suspended in its folded condition near the top of the building at all times when not in use, in order to protect it from the elements and from becoming covered with snow, sleet, or
20 ice, I provide means for housing it in its elevated position, as follows: I provide a box, J, which is permanently attached to the building at the proper height, preferably above or near the top of the upper windows, and at
25 one edge of the building, as shown in Fig. 1, its exact position in each particular case being determined of course by the height of the windows and the height of the cornice or roof above the windows, the object being to get it
30 as high and as much out of the way as possible, and yet have it within reach of a person at the window nearest to it, the length of the suspension-bar D of course being such as to bring the ladder, when folded, directly opposite and on a level with the box J, so that when
35 the box is opened, as shown in Fig. 3, the folded ladder can be run into the same by merely drawing on the cord *m* at that side of the building, or by the person at the window
40 shoving it in by hand.

The box J may have the side *q*, next to the window, hinged to swing open, as shown in Fig. 3; or it may have its two sides, *p* and *q*, both hinged to swing open, as indicated by
50 the position of the hinges in Fig. 1, and its bottom *o* will be hinged on the edge next to the building, so as to swing down when the box is opened, as indicated in Fig. 3, this bottom being held in a horizontal position when
55 the box is closed by having its free edge or edges resting on a cleat or bar, *x*, secured to the inner face of either one or both of the sides *p* and *q*, according as one or both may be hinged, as above described, the bottom *o* being swung
60 up to a horizontal position and held there while the hinged side or sides are closed, which will thus support it in that position. A spring, *w*, of any suitable kind, is to be arranged to cause the hinged side or sides to swing open
65 and out of the way of the ladder when unfastened, as indicated in Fig. 3; or, instead, levers may be arranged to effect this result, they be-

ing connected with the cord R, which opens the box, as hereinafter explained, in such a manner as to be operated thereby.

To the inner face of the door *q* of the box I secure a catch, *k*, which, when the door is closed, engages with a spring-latch, *z*, pivoted to the inner face of that side of the box next to the wall, as shown in Fig. 3, so that as the
75 door is closed these parts will engage automatically, and thus hold the parts securely in place. In order to open the box and release the ladder, I connect a cord, R, to the latch *z* and pass it up over a pulley on the inside of
80 the box, and thence through a hole in the wall over another pulley, *y*, and from there pass it down through the several stories of the building, as shown in Fig. 3, so that by pulling on this cord in either story the box will be opened
85 and the ladder dropped or unfolded, as hereinafter explained.

In order to alarm or notify the inmates of the building in case of a fire, I arrange a gong or bell, K, in each story, and connect them all with
90 the cord R, as shown in Fig. 3, so that whenever this cord is pulled to open the box it will at the same time sound an alarm on each floor of the building, thus notifying the inmates. These bells, instead of being rung directly by
95 pulling the cord, may be operated by a spring or weight, or by electricity, in any of the well-known ways, and the cord be arranged to simply start them by releasing a stop, whereby they may be set to ringing and continue for any de-
100 sired length of time. So, too, it is obvious that numerous bells may be arranged in various parts of the building on each floor, and all be set to ringing simultaneously, if desired, to more effectually notify all the inmates, this
105 being a matter of detail to be determined according to the requirements of each building.

When the ladder has been folded and placed within the box and the latter closed, the pawl *t* is to be released from the ratchet *l*, whereby
110 the cords *g* and *h* will be loosened, thus letting the latter unfold enough so that it will rest loosely on the bottom *o* of the box. In order to do this, an opening, *u*, is made in the side *q* of such a size as to permit the hand to be thrust
115 through it and release the pawl after the box has been closed, this opening being provided with a slide or hinged door for closing it. If desired, a cord, L, may be attached to the pawl *t*, as shown in Fig. 4, and may have its end
120 passed out through the opening *u*, to afford better facilities for releasing the pawl, it being replaced within the box before closing the opening *u*.

The operation will be as follows: The ladder, being folded, runs into the box J, and the latter closed, and the pawl *t* being released, so that the weight of the ladder will rest upon the hinged bottom *o* whenever a fire occurs, by pulling on the cord R the latch *z* will be raised,
125 the door *q* be thrown open, thereby releasing the bottom *o*, when the ladder resting thereon will at once unfold and hang suspended, ready for use. By means of the cords *m* on the out-
130

side, the ladder can be moved along in front of any of the windows, and as it is designed to reach from the top to the ground, persons in any of the stories have only to throw up the
 5 window-sash and get onto the ladder and descend in safety. When the fire is over, the ladder will be drawn up by turning the shaft *a*, run into box J, which will then be closed, the pawl *t* be released from the ratchet-wheel,
 10 when it will be left in that condition, ready for use again when required.

In order to protect the rail or track B from snow, ice, &c., it may have a covering of galvanized iron or other sheet metal secured to
 15 the roof, as shown at P, Fig. 2, it passing up over the rail and pulleys from the rear side, where it is fastened upon the roof, and extend down in front below the top of the roof, with an open space all along the front edge of the
 20 roof to permit the suspension-bar D to move freely from one extreme to the other along this open space. This metal cap or covering P may be made as ornamental as desired, and will preferably be made to appear as the top mem-
 25 ber of or a continuation of the cornice, thus preventing it from having an unsightly appearance.

The cords *g*, *h*, and *m* should all be fire-proof, preferably of wire, though fibrous cords
 30 rendered fire-proof by well-known methods may be used.

Having thus described my invention, what I claim is—

1. The jointed ladder H, provided with
 35 means of support at its upper end, and having the yoke E, provided with the pulleys *v*,

the crank-shaft *a*, with the ratchet and pawl, and the cords *g* and *h*, all arranged to operate substantially as and for the purpose set forth.

2. In combination with the folding ladder
 40 H, provided with the crank-shaft *a*, and the cords *g h*, the rail B, and the suspension rod or bar D, provided with one or more pulleys adapted to run on said rail, and said bar D having its rear portion made to engage under
 45 the rail B to prevent displacement, as set forth.

3. In combination with the folding ladder H, provided with the shaft and cords for fold-
 ing the same, the stationary box J, having one or more of its sides and a portion of its top
 50 hinged, and having an opening, *u*, in one of its sides, all arranged to operate substantially as shown and described.

4. In combination with the folding ladder H, provided with the shaft and cords for rais-
 55 ing and folding the same, the box J, having one or more of its sides with a portion of its top and its bottom hinged, as described, the catch *k*, and spring-latch *z*, with the cord R and bells K, all arranged to operate as shown
 60 and described.

5. In a traveling fire-escape, the combination of the track B with a traveler or wheeled sup-
 port for the ladder arranged to move thereon, and the shield or protector P, said track and
 65 shield both being secured upon and supported by the roof of the building, substantially as shown and described.

WILLIAM H. ISLEY.

Witnesses:

WM. C. MATTHEWS,
 F. A. HARLAND.