No. 804,494. PATENTED NOV. 14, 1905.

J. O'HEARNE.

FIRE ESCAPE.

APPLICATION FILED MAY 20, 1905.

2 SHEETS—SHEET 1.

Fig. 1.

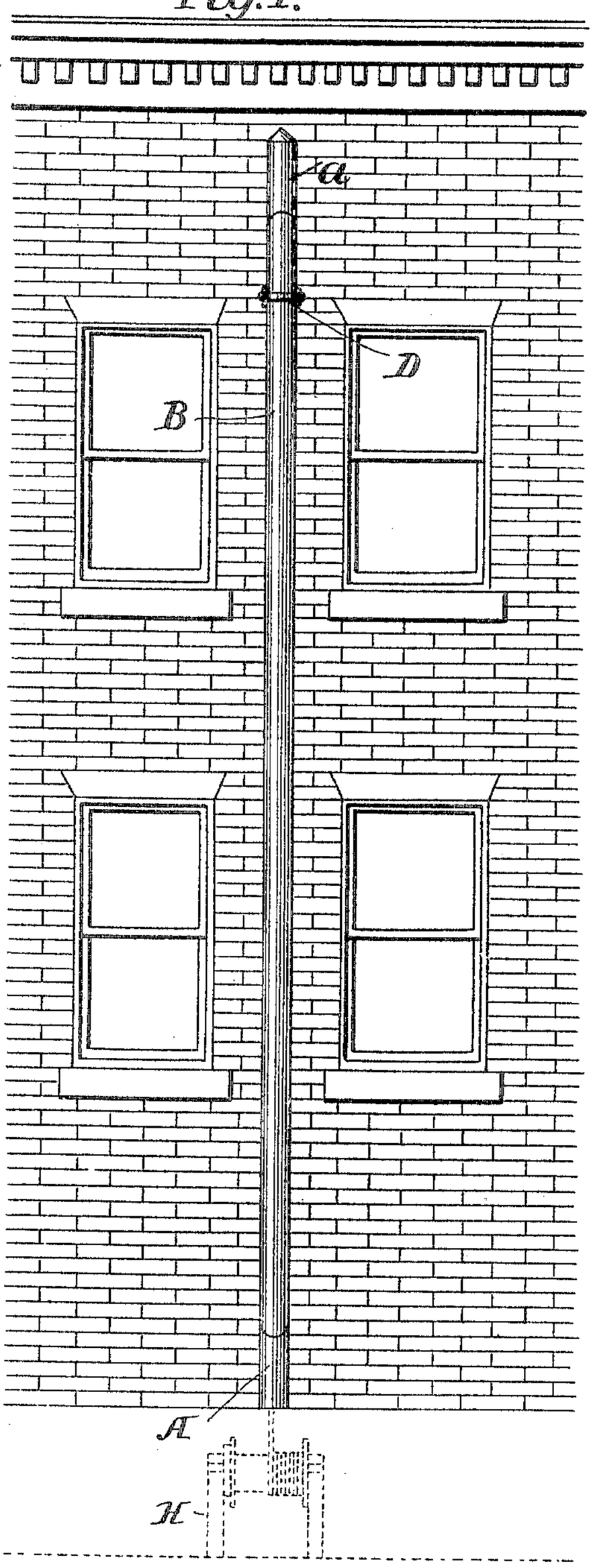


Fig. 4.

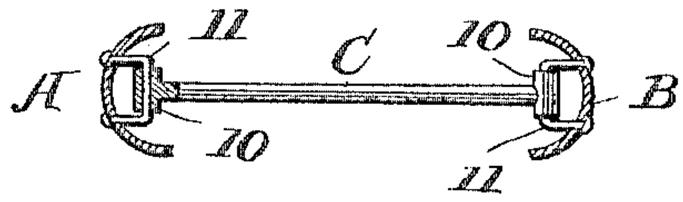
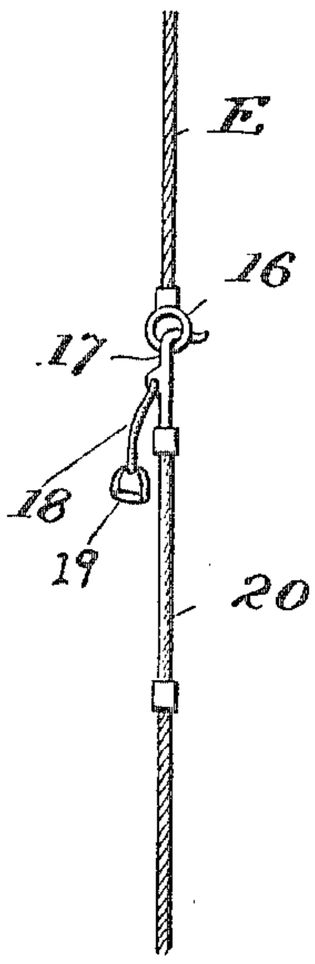


Fig. 5.



Witnesses
J. G. Stinkel
A. E. Hanemann.

Inventor
Joseph O'Hearne
by Foster Freeman Watson
Attorneys.

No. 804,494. PATENTED NOV. 14, 1905.

J. O'HEARNE.

FIRE ESCAPE.

APPLICATION FILED MAY 20, 1905.

2 SHEETS—SHEET 2.

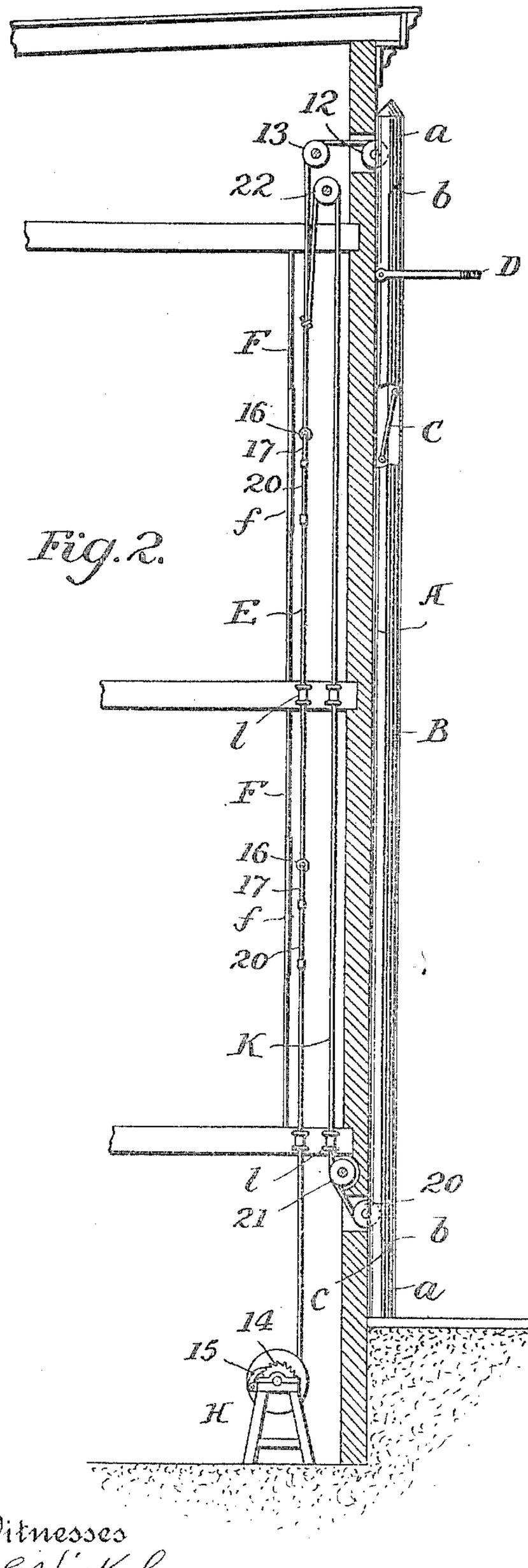


Fig. 2.

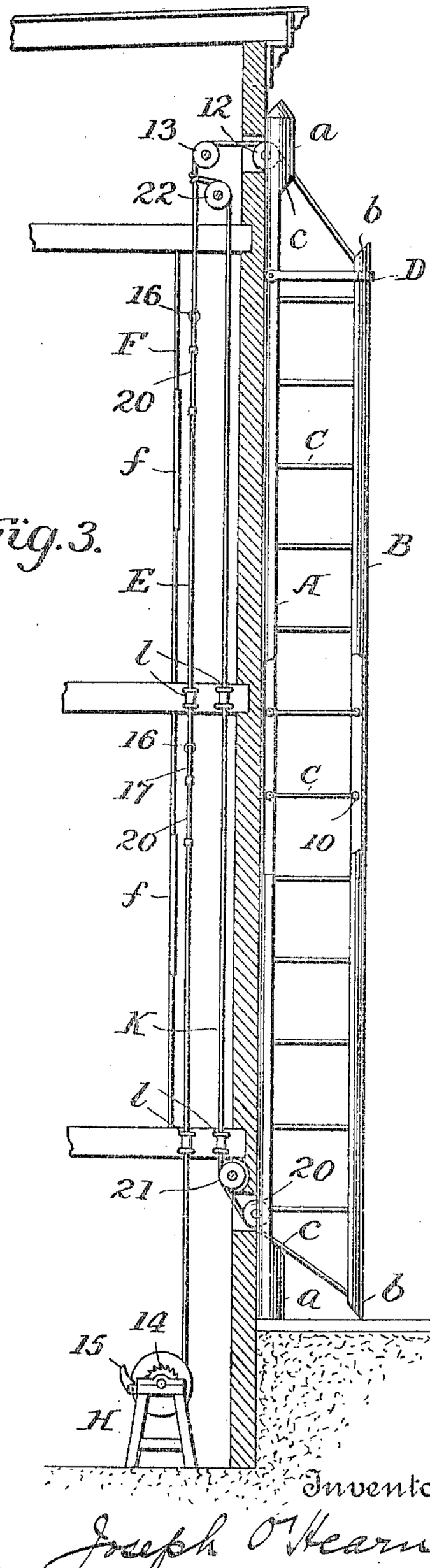


Fig. 3.

Witnesses
J. G. Stinkel
A. E. Hansmann.

Inventor
Joseph O'Hearne
by Foster Freeman & Watson
Attorneys

UNITED STATES PATENT OFFICE.

JOSEPH O'HEARNE, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO CHARLES S. DEVOY, OF BROOKLYN, NEW YORK.

FIRE-ESCAPE.

No. 804,494. Specification of Letters Patent. Patented Nov. 14, 1905.

Application filed May 20, 1905. Serial No. 261,388.

To all whom it may concern:

Be it known that I, JOSEPH O'HEARNE, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

The object of this invention is to provide a fire-escape to be attached to the exterior of a building without defacing it or when not in use obstructing the sidewalk or street and to which access may be had from the several floors of the building.

In carrying out my invention I provide a folding ladder of novel construction, with means for holding it in its closed position and for quickly releasing said holding means to permit the ladder to open ready for use.

The invention will be fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a front view of a portion of a building, showing the fire-escape in its closed condition. Fig. 2 is a sectional view of the building, showing the fire-escape in closed condition and partly broken away and also showing the means for holding the escape closed. Fig. 3 is a view similar to Fig. 2, but showing the fire-escape open and ready for use. Fig. 4 is a sectional detail showing the manner of pivotally connecting the rungs to the sides of the ladder; and Fig. 5 is a detail view, on an enlarged scale, of the connections of the sectional rope.

The sides of the ladder are indicated by A and B, respectively, and preferably will be of metal. The section A will be securely fastened to the wall of the building in any suitable manner. Both sides are semicylindrical in cross-section, except that the side A has a cylindrical portion *a* at each end, and the upper end will preferably be closed to prevent the access of water or dirt. The side B is beveled at each end, as at *b*, and the side A is correspondingly beveled at the junction between the semicylindrical middle portion and the end portions *a*, as indicated by *c*. The lower bevels are cut downwardly and outwardly and the upper ones upwardly and outwardly, and the lower bevels aid in forcing the side B out away from the side A when the holding devices, to be hereinafter referred to, are released.

The rungs C consist each of a bar or rod with an eye 10 at each end, which eyes receive staples 11, and the latter are riveted or otherwise securely fastened in holes in the sides A and B, as clearly shown in Fig. 4. The rungs may, however, be otherwise pivotally connected to the sides.

The length of the side B is preferably such that when the ladder is in open position, as in Fig. 3, the lower end of the side B will rest upon the ground and the rungs C will be horizontal. As an additional means, however, of limiting the lateral movement of the side B I preferably provide a loop D, secured to the building or to the side A, near its upper end, and surrounding the side B, said loop being of such dimensions that when the side B engages its outer end the rungs C will be horizontal.

It is necessary to provide some means for holding the side B against the side A, which holding means must, however, be such as may be quickly released to permit the ladder to open. Various devices may be employed for this purpose; but preferably I employ a rope E, made up of sections detachably connected together and connected at its upper end to the upper end of the side B and passing over pulleys 12 and 13 at the upper part of the building down to a windlass H in the lower part of the building, provided with a ratchet-wheel 14 and a pawl 15. By winding the rope E on the windlass the side B will be lifted upward and inward from its position in Fig. 3 against the side A, as in Fig. 2, and when in the latter position the ladder presents the appearance of a pipe against the building, and the beveled ends *b* will make close joints with the bevels *c* and effectually exclude moisture and dirt from the interior. To permit the ladder to open, the pawl 15 may be released from the teeth of the ratchet-wheel and the side B will drop to open position, this movement being aided by the bevels *b* and *c*, as before stated. It may not always be possible to get to the windlass to release the rope E, and it is desirable, therefore, to provide means for releasing it at each floor of the building, and it is for this purpose that I preferably make the rope E in sections detachably connected together. Preferably the rope E, which is on the inside of the building, will be inclosed in a casing F, and this casing will be provided with a window or door *f*, preferably of glass, on each floor. Opposite these doors the con-

nections between the sections of the rope E will appear when the ladder is closed. These connections must be such that they can be easily separated and may be of various constructions. Preferably, however, on account of its simplicity I employ the connection illustrated, consisting of a ring or eye 16, connected to the end of one section, and a hook 17, connected to the end of the adjacent section, the part of the hook engaging the ring or eye being nearly straight, as shown. Connected in this case to the hook is a pull consisting of a short cord or chain 18 with a knob 19 or other suitable handhold at its end. Obviously the pull could be connected to the ring. It is evident that by disengaging the hook 17 from the ring 16 at any floor the rope will be released and permit the side B of the ladder to move to its open position. Of course the window *f* may be opened or broken to obtain access to the pull-rope 18. I prefer to employ a rope E of wire, as it is desirable that it shall vary as little as possible in length. To afford another means, however, for releasing the rope E, I may provide each section with a short piece of hemp rope at one end, as indicated by 20 in Fig. 5, such hemp pieces being opposite the windows *f* when the ladder is closed. In the event that the strain on the rope is too great to permit the ready disengagement of the hook 17 from the ring 16 the hemp rope may be easily cut, and for this purpose a knife may be supported adjacent to the window *f*. In order to insure that the lower portion of the side B is brought in close to the side A, I preferably employ another rope K, connected at its lower end to the lower end of the side B and passing around pulleys 20 and 21 at the lower portion of the building, up through the casing F, and over a pulley 22 at the top of the building, where its upper end is connected to the rope E a sufficient distance below the pulleys 13 and 22 to prevent either rope from jamming when the ladder is opened. Thimbles *l* are preferably provided in each floor for the passage of the ropes E and K through them.

Without limiting myself to the precise details of construction illustrated and described, I claim—

1. In a fire-escape, a folding ladder consisting of a fixed side and a movable side, and rungs pivotally connected to said sides, combined with a rope formed of sections, separable connections between said sections, said rope being connected at one end to the movable side of the ladder, means for holding the other end of the rope, and means for separating the connections between any two sections of the rope, substantially as described.

2. In a fire-escape, a folding ladder consisting of a fixed side and a movable side, and rungs pivotally connected to said sides, combined with a rope formed of sections, separable connections between the sections consisting of a hook on one section and a ring on the adjacent section, and one end of the rope being connected to the movable side of the ladder, means for holding the other end of the rope, and a pull connected to one member of the connecting devices, substantially as described.

3. In a fire-escape, a folding ladder consisting of a fixed side and a movable side and rungs pivotally connected to the sides, combined with a rope for holding the movable side against the fixed side, said rope consisting of sections of wire rope and short sections of hemp rope, said hemp sections being interposed between adjacent wire sections and securely attached to one section and detachably connected to the other, whereby the movable side of the ladder may be released by separating either of the detachable connections or by cutting either of the hemp sections, substantially as described.

4. In a fire-escape, a folding ladder consisting of a fixed side and a movable side, and rungs pivotally connected to said sides, combined with a rope formed of sections, separable connections between said sections, said rope being connected at one end to the movable side of the ladder, means for holding the other end of the rope, and means for separating the connections between any two sections of the rope, a casing inclosing said rope, and windows or doors in the casing opposite the separable connections, substantially as described.

5. In a fire-escape, a folding ladder consisting of a fixed side, a side movable to and from the fixed side and rungs pivotally connected to said sides, combined with a rope connected to the upper end of the movable side and passing over pulleys to a windlass near the bottom of the ladder, and a second rope connected at one end to the lower end of the movable side, passing over a pulley near the upper end of the ladder and secured to the first-named rope a suitable distance below the upper pulleys, whereby on operating the windlass both ends of the movable side of the ladder will be positively and uniformly moved, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH O'HEARNE.

Witnesses:
THOS. P. CROWNE,
SAMUEL WULFF.