

(No Model.)

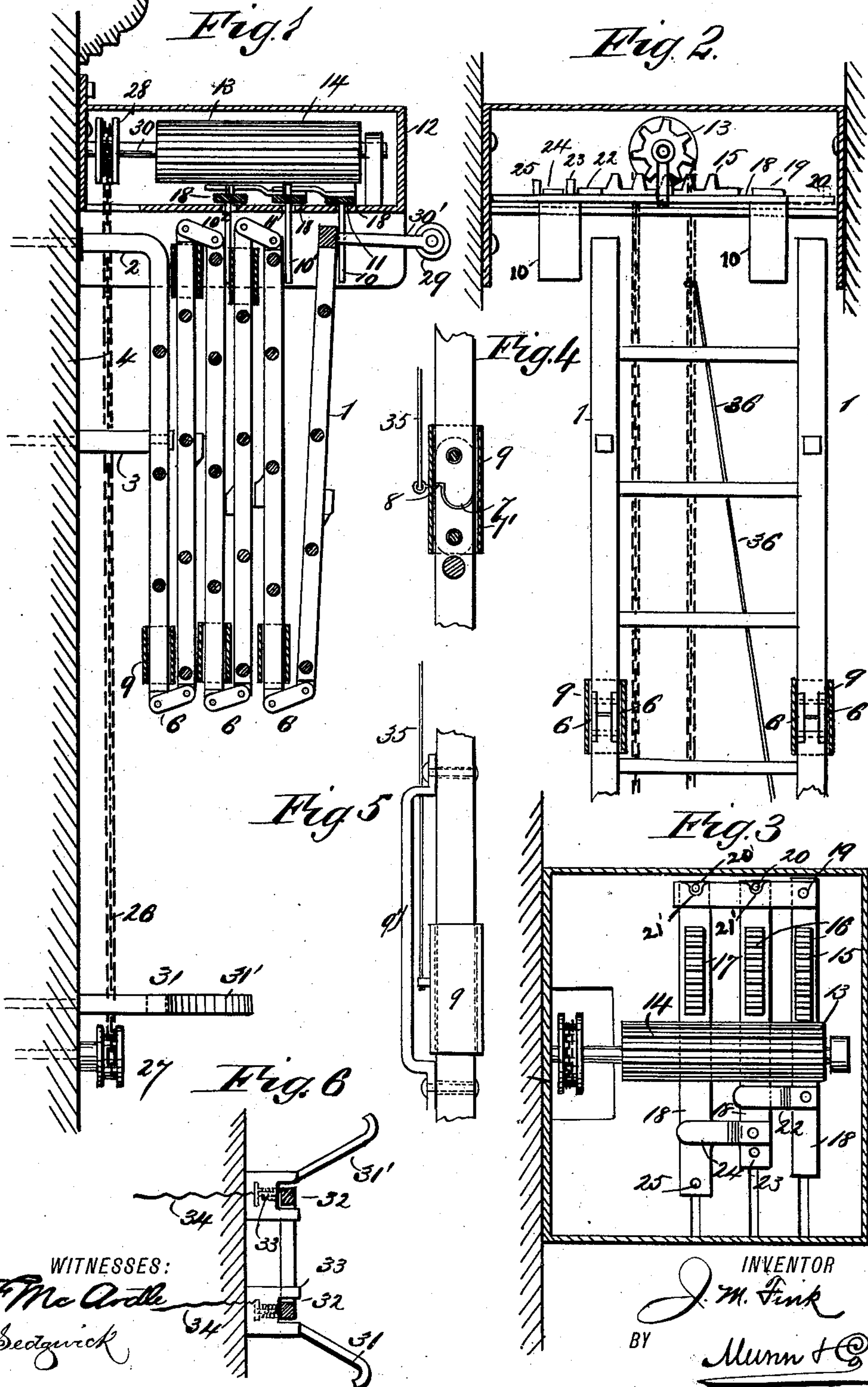
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J. M. FINK.

FIRE ESCAPE.

No. 389,696

Patented Sept. 18, 1888.



WITNESSES:  
*F. Mc Artle*  
*C. Sedgwick*

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ATTORNEY.

(No Model.)

2 Sheets—Sheet 2.

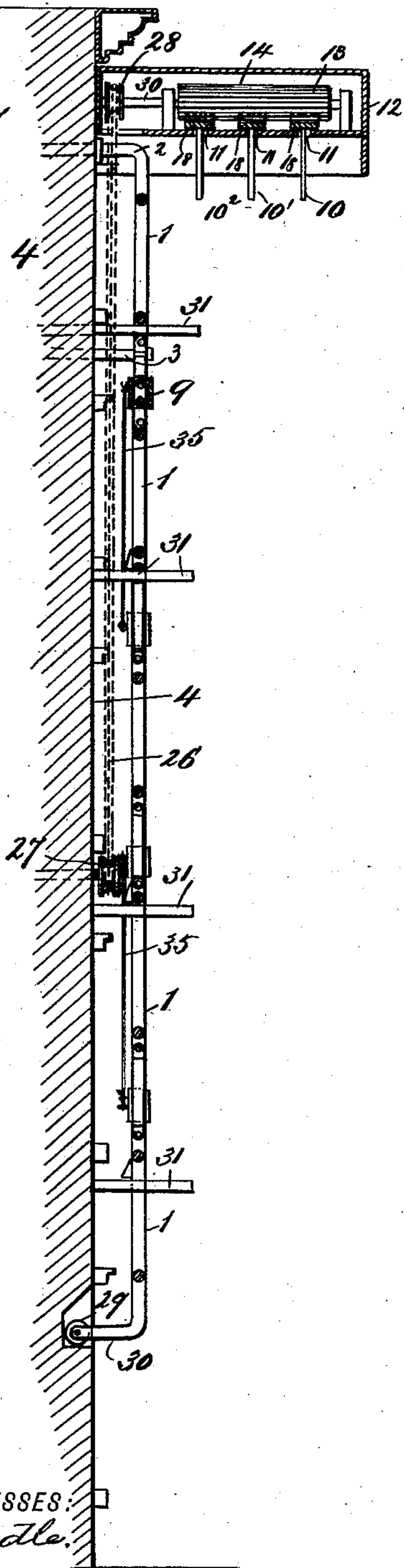
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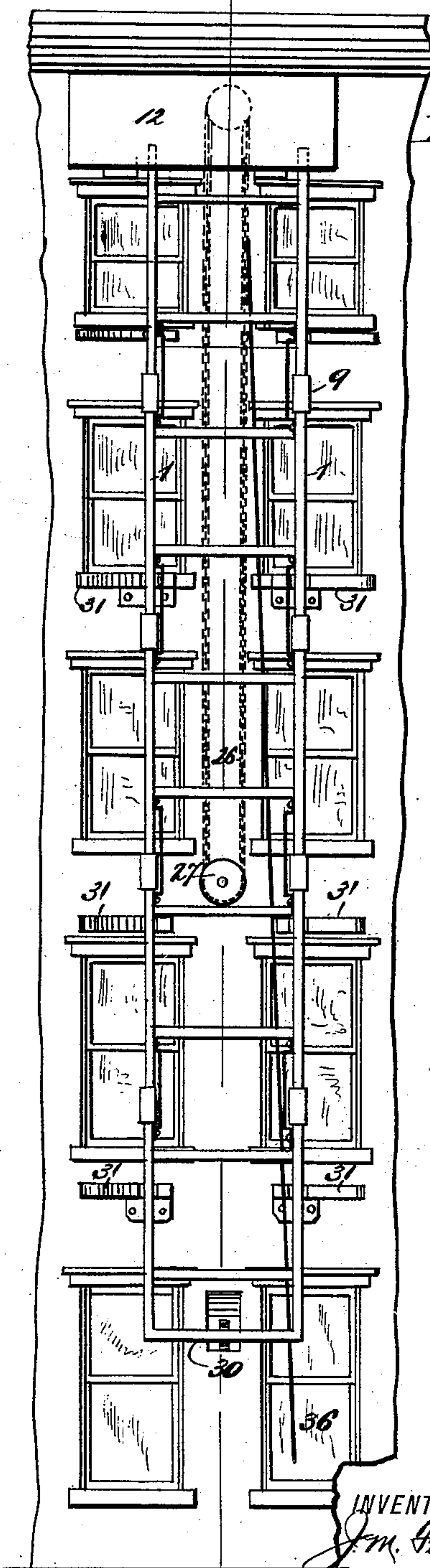
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*Fig. 7*



WITNESSES:  
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*Fig. 8*



INVENTOR

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# UNITED STATES PATENT OFFICE.

JACOB MARCUS FINK, OF NEW YORK, N. Y.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 389,696, dated September 18, 1888.

Application filed May 10, 1888. Serial No. 273,418. (No model.)

*To all whom it may concern:*

Be it known that I, JACOB MARCUS FINK, of the city, county, and State of New York, have invented a new and Improved Fire-Escape, of which the following is a full, clear, and exact description.

This invention relates to an improvement in fire-escapes, and has especial reference to that class of fire-escapes which are constructed to be folded up in a compact space and to be released and extended from the top of a building when required for use.

The object of the invention is to provide a fire-escape of this description so constructed and arranged that a ladder formed of hinged sections may be located at the top of a building in folded position when not required for use, and can be readily released and extended down the side of the building.

The invention will be set forth in the following description and claims.

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

Figure 1 is a view of a fire-escape constructed according to this invention, shown as folded up at the top of the building, the parts being in section. Fig. 2 is a front view of the fire-escape, showing a portion thereof in extended position, partly in section and broken away. Fig. 3 is a plan view of the top of the device, with the casing of the operating mechanism in horizontal section. Fig. 4 is a detail view, partly in section and broken away, of one of the joints of the ladder-sections. Fig. 5 is a side view, with parts broken away, of one of the joints of the ladder-sections. Fig. 6 is a horizontal section showing one of the alarm-connections of the ladder with the building. Fig. 7 is a sectional side view of the fire-escape in extended position, and Fig. 8 is a front view thereof.

In the construction of this invention I employ a ladder made with a number of folding sections, 1, the top section being formed with arms 2 and provided with supports 3, the arms 2 and supports 3 being secured to the wall 4 of the building. The several sections 1 of the ladder are hinged together by means of pivot-links 6, and the meeting ends of the sections are

formed with a projection, 7, recess 7', and shoulders 8, by means of which, when the sections are extended, a rigid joint will be secured.

To secure and hold the joints in position when the ladder is extended, sliding sleeves 9 are located on the uprights of the sections 1 adjacent to the joints, so that when the sections are extended sleeves 9 will drop into place over the joints and rest on the adjacent rung of the ladder. The sections 1 are also braced and held together by bars 9', pivoted to the adjoining sections, the lower end of each bar 9' being pivoted nearer to the adjacent ends of two sections than the upper end. The relative position of the pivotal points of the ends of each bar 9' with the ends of the adjoining ladder-sections is such that, taken in connection with the links 6, the sections are permitted to fold up, the links 6 being in the position shown in Fig. 1, and the bar 9' extending in a slightly diagonal direction from one section to an adjacent section.

The several sections 1 are held in folded position by means of downwardly-projecting pins or plates 10 10' 10<sup>2</sup>, extending from slots 11 in a casing, 12, secured to the front of the building adjacent to its eaves, or in any other suitable position, and containing the roller 13, having longitudinal cogs or teeth 14, which mesh with a rack, 15. Adjacent to the rack 15 is a second shorter rack, 16, and adjacent to the latter is a third rack, 17, the several racks 15, 16, and 17 being mounted on sliding plates 18, which are located over the slots 11 in the bottom of the casing 12, and to which the depending pins 10 10' 10<sup>2</sup> are secured.

The rear end of the plate 18 on which the rack 15 is mounted is provided with a bar, 19, at right angles thereto, which extends over the plates 18 on which the racks 16 and 17 are mounted, and serves, in connection with the pins 20 on the plates and recesses 21 in bar 19, to draw back the racks 16 and 17 to normal position. The plate 18 on which the rack 15 is mounted is also provided with a lip or arm, 22, which extends over the adjacent plate 18 on which the rack 16 is mounted. By the forward movement of the rack 15 the arm 22 is brought in contact with a pin, 23, on the end of the plate 18 on which the rack 16



is mounted, and the further movement of the rack 15 causes the arm 22 to bear against the pin 23 and move the rack 16 forward into gear with the toothed roller 13.

5 Upon the plate 18 on which the rack 16 is mounted is an arm, 24, extending over the plate 18 on which the rack 17 is mounted. By the forward movement of the rack 16 the arm 24 is brought against the pin 25 on the end of the plate 18 on which the rack 17 is mounted, and causes the rack 17 to be brought into gear with the toothed roller 13. By means of this construction, arrangement, and movement of the racks, arms, and pins, the several depend-  
10 ing plates or pins 10 10' 10<sup>2</sup> are successively moved out from the sections 1, thereby releasing the same and causing the sections to automatically drop into place against the side of the building one after the other.

20 The toothed roller 13 is operated by an endless chain, 26, passing over a pulley, 27, mounted on the side of the building and over a pulley, 28, mounted on the shaft 30 of the toothed roller 13. When the ladder is lowered into extended position, upon the first or lowest section 1 being released from its pin 10, the section drops down and the friction-roller 29 upon the end of arms 30', extending out from the section 1, strikes against the wall of the building, and, as the sections are successively de-  
30 tached from their retaining-pins 10' 10<sup>2</sup>, holds the latter in extended position and permits it to slide down the side of the building. As shown, the operating-chain 26 is located between the windows of the building, and the ladder also extends down in such a position as to bring the rounds between the vertical rows of windows of the building.

The several sections of the ladder are held  
40 out from the building by means of projections or brackets 31, having inclined guide-arms 31' and formed with recesses 32, in which the up-rights of the sections 1 rest, and which are constructed with buttons 33, having wires 34 in  
45 an electrical circuit extending to suitable alarm mechanisms on the several floors of the building, whereby upon the sections of the ladder dropping into place and pressing against the buttons 33 the occupants of each floor will be  
50 immediately notified of a fire.

In order to release the sleeves 9 from the joints of the ladder-sections when it is desired to fold up the several sections, I provide operating-cords 35, by means of which the sleeves  
55 may be raised up from the joints. When it is desired to operate the chain 26, a suitable rope, such as 36, may be fastened thereto and the chain 26 operated thereby from the ground.

The several sections 1 are secured again in  
60 folded position by reversing the movement of the toothed roller 13, and, by the action of the bar 19 causing the racks 16 and 17 to be moved back, the pins 10 10' 10<sup>2</sup> are moved back into original position for holding the sections folded  
65 up.

I do not intend to limit myself to the specific details of construction, as they may be varied

without departing from the essential features of the invention.

By means of this invention a fire-escape is  
7c provided which can be readily extended into position for use, and is at the same time simple in construction and efficient in operation.

To return the ladder to folded position, it will only be necessary to raise the sleeves from  
75 the joints by means of the cords 35 and then to hoist the sections to folded position by a rope or any other suitable means, the pins 10 10' 10<sup>2</sup> being moved back to engagement with the sections, as heretofore described, as fast as the  
80 sections are hoisted up to folded position.

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

1. A fire-escape consisting of a ladder se-  
85 cured at its upper end to a building and constructed with folding sections, retaining projections for holding the ladder-sections in folded position, and a releasing mechanism, substantially as described, for successively  
90 withdrawing the retaining projections and permitting the sections to drop one after the other into extended position, substantially as described.

2. A fire-escape consisting of a ladder se-  
95 cured at its upper end to a building and constructed with folding sections, retaining projections for holding each ladder-section in folded position, a releasing mechanism, substantially as described, for successively with-  
100 drawing the retaining projections and permitting each ladder-section to drop one after the other into extended position, and guide bracket-arms on the lowest ladder-section extending at right angles thereto, and serving to  
105 guide and hold out from a building the lower end of the ladder in its descent, substantially as described.

3. The combination, with bracket-arms projecting from the wall of a building, and having electric buttons connecting with an elec-  
110 tric alarm mechanism, of a fire-escape consisting of a ladder secured at its upper end to the building and formed with folding sections, retaining projections for holding each ladder-section in folded position, and a releasing  
115 mechanism, substantially as described, for successively withdrawing the retaining projections and permitting each ladder-section to drop one after the other into extended position and bear against the electric buttons and  
120 sound an alarm, substantially as described.

4. A fire-escape consisting of a ladder se-  
125 cured at its upper end to a building and constructed with folding sections, retaining-plates adapted to hold each section in folded position, a series of slide-bars, with which the retaining-plates are connected, provided with racks and engaging arms and pins which successively  
130 are thrown into engagement to operate the slide-bars one after the other, and an endless chain and toothed roller engaging and successively operating the racks, substantially as described.

5. In a fire-escape ladder formed with fold-



ing sections, a mechanism for retaining and releasing the folded sections, consisting of the toothed roller 13, with endless operating-chain 26, and the slide-bars 18, with racks 15 16 17, 5 lateral arms 22 24, pins 23, 25, and 20, bar 19, secured to the outer bar 18, and having recesses 21 in line with pins 20, and depending plates 10 10' 10<sup>2</sup>, attached to slide-bars 18, and adapted to retain and release the ladder-sections 1, substantially as described.

10 6. A fire-escape consisting of a ladder formed with the folding sections 1, the top section being secured to a building, and the sections united by joints consisting of projection 7 and 15 recess 7', with shoulders 8, links 6, and brace-bars 9', pivoted to sections 1, and sliding sleeves 9, with operating-cords 35, in combi-

nation with brackets 31 on a building having inclined guide-arms 31', electric buttons 33, for tripping an alarm mechanism, and a mechanism for extending the ladder, consisting of the toothed roller 13, with endless operating-chain 26, the slide-bars 18, with racks 15 16 17, and lateral arms 22 24, pins 23, 25, and 20, bar 19, secured to the outer bar 18, and having recesses 21 in line with pins 20, and depending plates 10 10' 10<sup>2</sup>, attached to slide-bars 18 and adapted to retain and release the ladder-sections, substantially as described.

JACOB MARCUS FINK.

Witnesses:

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