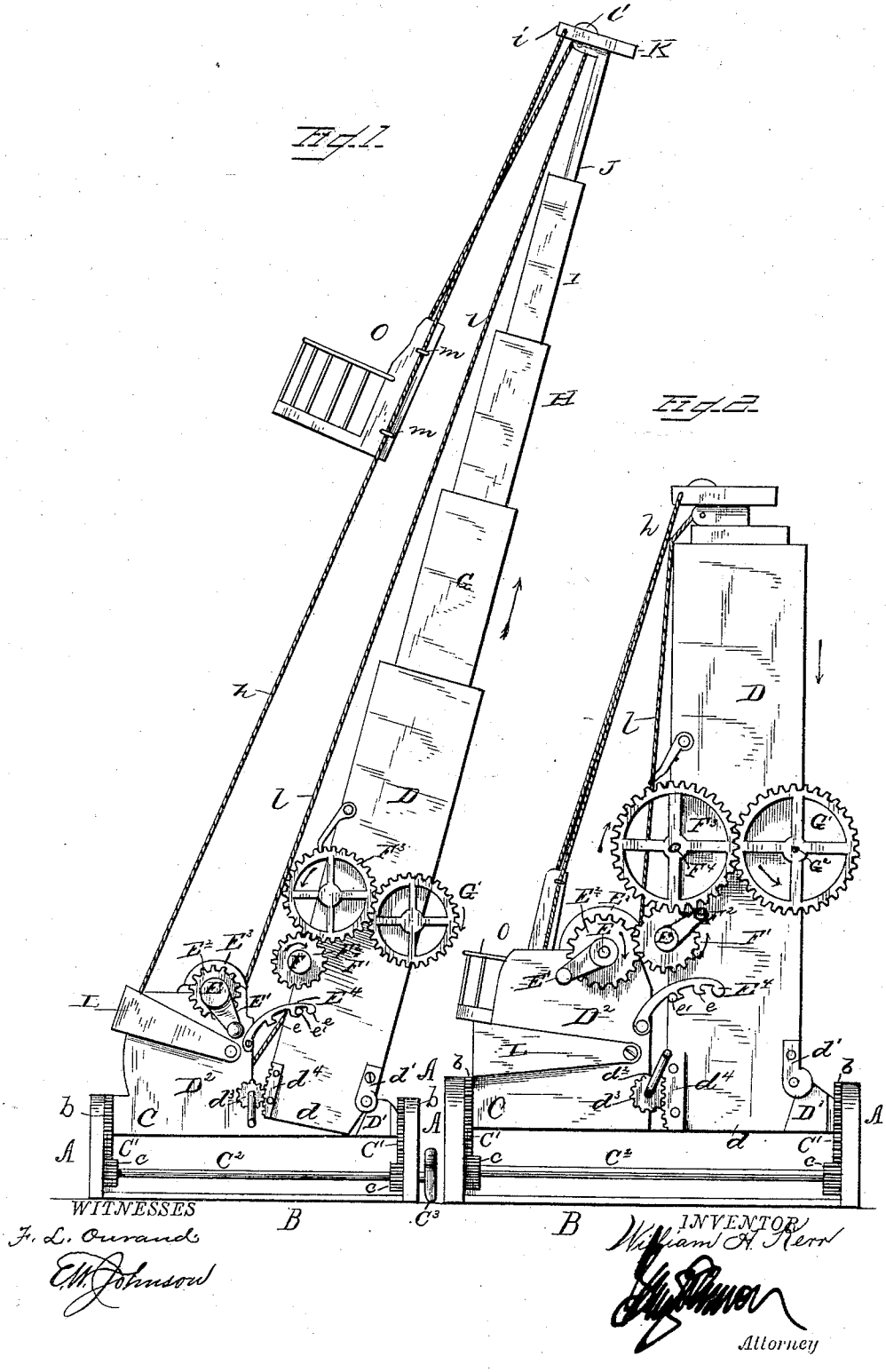
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W. A. KERR.

FIRE ESCAPE.

No. 336,414. Patented Feb. 16, 1886.



N. PETERS. Photo-Lithographer. Washington, D. C.

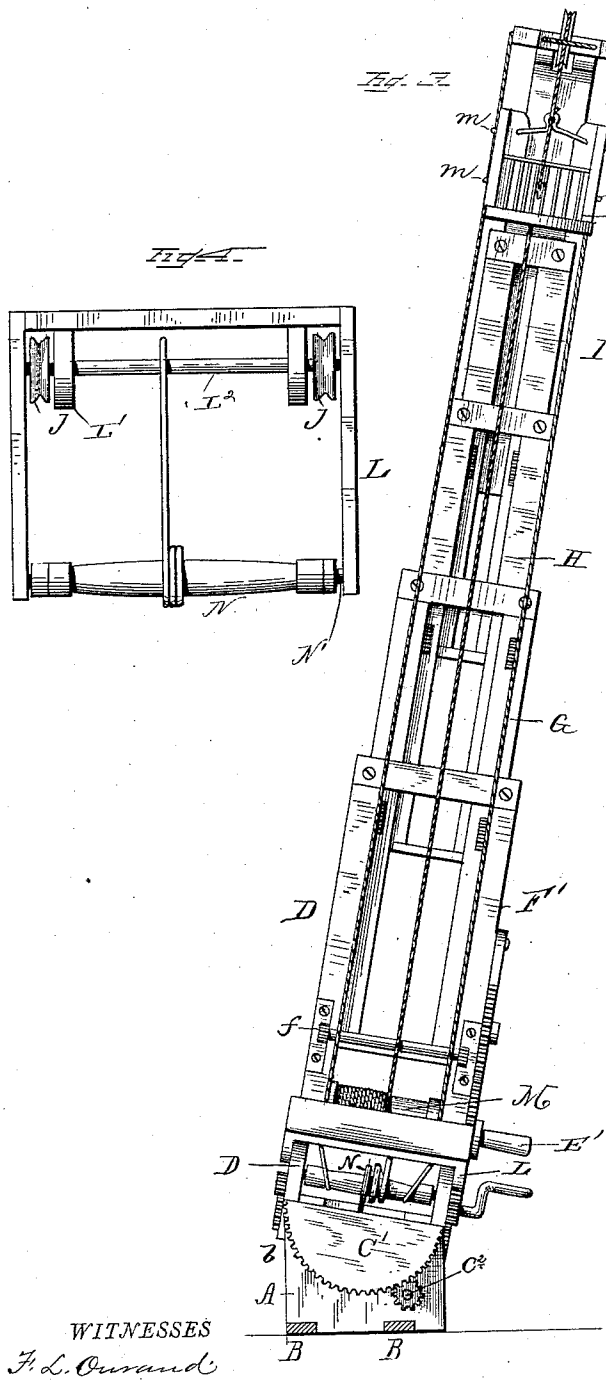
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WITNESSES
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(Model.)

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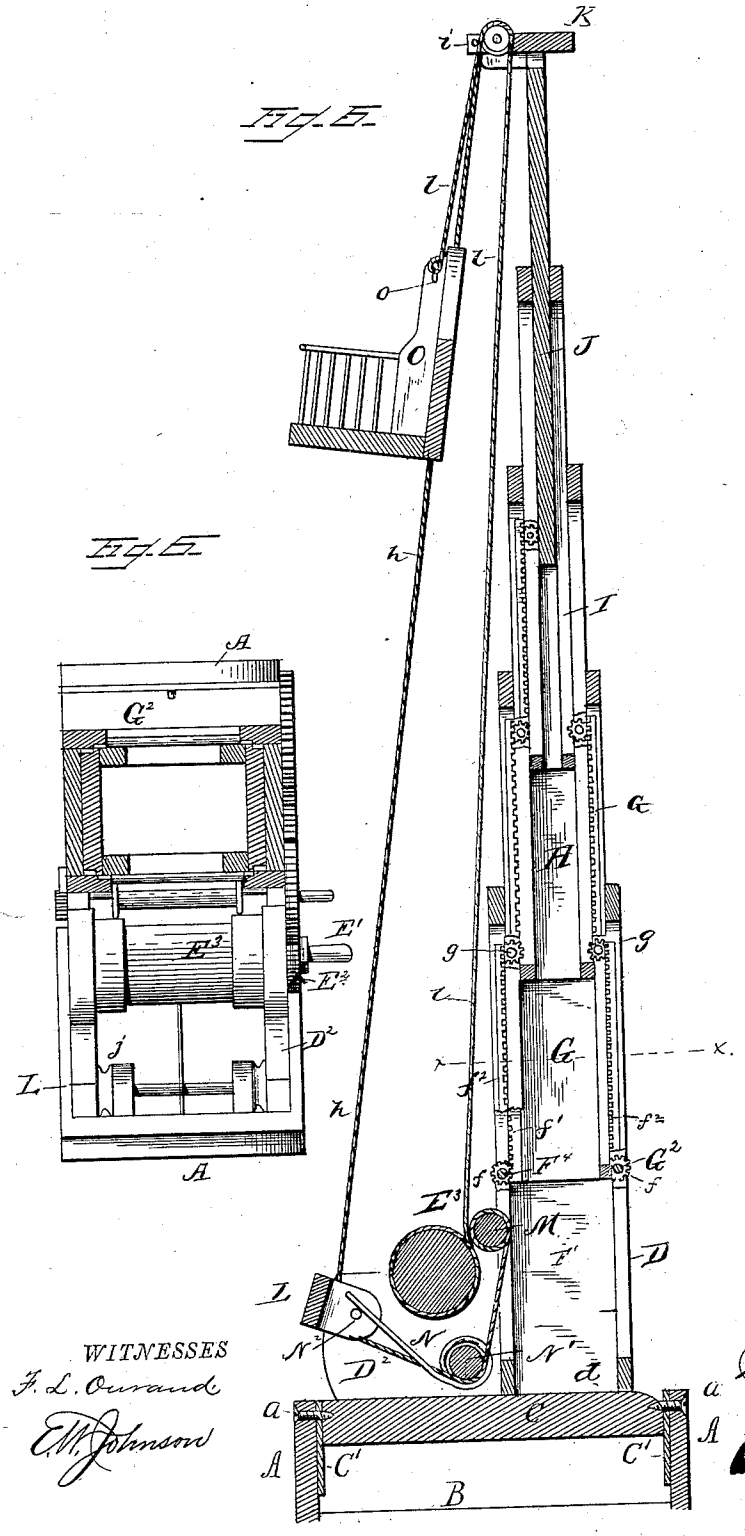
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Fig. 5.

Fig. 6.



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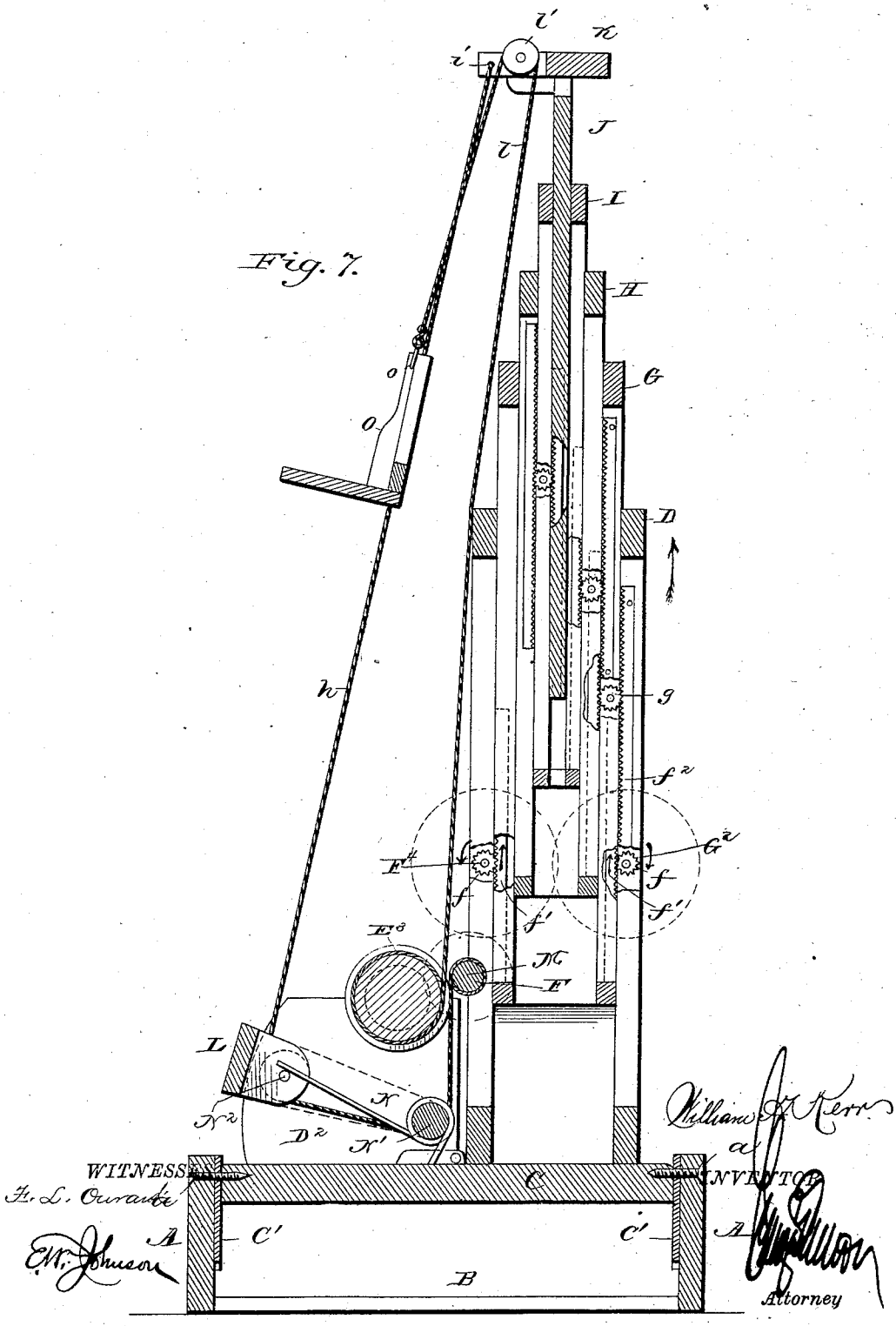
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W. A. KERR.

FIRE ESCAPE.

No. 336,414. Patented Feb. 16, 1886.

Fig. 7.



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UNITED STATES PATENT OFFICE.

WILLIAM A. KERR, OF VIENNA, NEW JERSEY.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 336,414, dated February 16, 1886.

Application filed April 7, 1884. Serial No. 126,859. (Model.)

To all whom it may concern:

Be it known that I, WILLIAM A. KERR, a citizen of the United States of America, residing at Vienna, in the county of Warren and State of New Jersey, have invented certain new and useful Improvements in Fire-Escapes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to fire-escapes; and it consists in the improvements hereinafter fully described and set forth.

In the accompanying drawings, forming part of this specification, Figure 1 is a side view of a fire-escape constructed in accordance with my invention and illustrating the same in an elevated position; Fig. 2, the same view showing the escape closed or collapsed. Fig. 3 is a rear view. Fig. 4 is a detail view. Fig. 5 is a vertical section; Fig. 6, a sectional plan on the line X X, Fig. 5; and Fig. 7 is a sectional view showing the fire-escape partly elevated.

The base or supporting frame consists, essentially, of upright end pieces, A A, which are connected to each other at their lower edges by longitudinal beams B B, which are rigidly attached thereto, and said base has journaled therein a shaft, C″, one end of which projects beyond the vertical end pieces, A, of the frame, and is provided with a hand wheel or bar, C‴, by means of which said shaft can be turned, and said shaft is provided adjacent to the inner sides of the end pieces, A, with pinions which mesh with cog or gear teeth *b*, which are formed in semicircular plates C′, which are rigidly attached to the pivoted frame C. It will thus be noted that the sidewise movement of the escape is adjusted by the shaft C″, which moves the frame C upon its pivots.

The pivoted frame C, which is attached to the uprights A A by pivot screws or bolts *a*, consists of a solid central portion, which is provided at one end with side projecting pieces, D′, the inner faces of the same being beveled, as shown in Fig. 2, to which pieces the extensible sections are hinged.

D″ refers to upwardly-extending side pieces, which are rigidly attached to the center portion of the pivoted frame, and said side pieces are curved at their front sides, and have journaled thereto shafts E *d*″ N′, as will be hereinafter set forth. A yoke bar or frame, L, is also secured to the side pieces, D″, preferably by the ends of the shaft N′, which project through the same. The first of main section D is rectangular in cross-section, and is provided near its lower front end with a hinge-connection, *d*′, through which a shaft or pintle passes, by means of which the same is pivotally connected to the frame C, and directly to that portion thereof indicated by D′. The lower ends of the side pieces of the section D overlap the sides of the frame C, and the lower front edges have secured thereto curved rack-bars d^4, with which mesh the pinions *d*‴, which are secured upon the shaft *d*″. By turning this shaft it will be readily seen that the section D will be tilted or inclined from a vertical position to the desired angle. When the section D has been adjusted to the desired angle, which may be either vertical or inclined, it is held in place by the bar E^4, which is pivotally secured adjacent to the vertical edges of the side piece, D″, and said bar is provided with projecting portions or teeth *e*, which are adapted to engage with a stud, *e*′, which projects from the section D a slight distance above the curved rack-bar d^4, and by means of this bar E^4 the section D can be rigidly held at different angles, or in a vertical position, as shown in Fig. 2 of the drawings, so that the cog-wheels or pinions F″ and E″ will mesh with each other.

To the front edges of the side pieces of the section D are journaled shafts F and F^4, the shaft F carrying centrally between the side pieces of the section D a drum, M, the ends of which are flanged and provided with perforations, through which pass and are secured thereto the ends of the parallel cords which serve as guides for the car. The shaft F has also rigidly secured thereon a gear wheel or pinion, F″, which meshes with a gear-wheel, F‴, which is rigidly mounted on the end of the shaft F^4, and the gear-wheel F‴ meshes

with a gear-wheel, G′, of the same size, which is attached to a shaft, G″, on the opposite side of the section D. The shaft F is provided at one end with a crank-handle for turning the same when pinion F‴ is not in gear with pinion E″, and the side piece of the section D has pivotally secured thereto a pawl, which is adapted to engage with the gear-wheel F‴, so as to prevent the rotation of the same and hold the telescopic sections in an elevated position.

E‴ refers to a drum which is rigidly attached to the shaft E between the side pieces, D″, of the pivoted frame, and over and around this drum passes a cord, *l*, which also passes over a pulley, *l′*, which is journaled in a recess in the platform *k* of the upper section, J. This cord *l*, at its opposite end, is attached to the car O, and said car is raised and lowered by means of the same.

L refers to a yoke bar or frame which is pivotally attached to the side pieces, D″, and the front cross-bar of this frame is provided with inwardly-projecting studs L′ with perforations through which passes the shaft L″, said shaft carrying between the studs and the side pieces, D″, guide-pulleys *j*, under which passes the guide-cord *h*. Said guide-cord also passes under the roller N, and from thence upwardly around the drums M, to which the ends of said cords are made fast. The cord *h* passes through perforations *i* in the platform K.

The car or receptacle O is provided with grooved sides, within which groove the cord *h* lies, and the same is held therein by staples or bails *m m*, and to the transverse bail *o* thereof the elevating-cord is secured.

The extensible portion of my improved fire-escape consists of a plurality of telescopic sections, the intermediate sections being similar in construction, and said similar sections are referred to in the drawings by G, H, and I. The pivoted section D has journaled thereto transverse shafts F⁴ and G″, which carry near their ends adjacent to the side pieces of said section pinions *f f*, said pinions each turning in unison in opposite directions, and each meshing with rack-bars *f′ f′*, which are attached to the corners of the adjacent section. Thus when the pinions *f f* are turned in the directions indicated by the arrows in Fig. 5 they will elevate the adjacent section. The section D has rigidly secured thereto rack-bar *f″*, with which mesh pinions *g g*, which are journaled on short shafts adjacent thereto and to one side of the sliding section G. By this construction when the shafts F⁴ and G″ are rotated the pinion thereon will engage with the rack-bars *f′*, so as to elevate the section G, and the rack-bar *f″*, which is also attached to the section D, will cause the pinions *g* to rotate, and said pinions engaging with rack-bars attached to the section will cause the same to be elevated. Thus each section will be elevated by the upward movement of the adjacent section.

The operation of my invention is as follows: The frame or base A is placed upon the ground adjacent to the building which it is desired to reach, the telescopic sections being within each other, the parts being in the position shown in Fig. 2 of the drawings. The shaft E being rotated, causes the pinion F″ to mesh with the cog-wheel in shaft F, which meshes with cog-wheel F‴, which is also geared to the cog-wheel G′, so as to cause the rotation of said cog-wheels in the direction indicated by the arrows, and the pinions on said shafts will engage with the rack-bars and elevate the adjacent sections, as hereinbefore described. After the telescopic sections have been elevated to a sufficient height they can be inclined, as shown in Fig. 1, by turning the shaft which carries the pinion *d‴*, which mesh with the plates *d⁴*, and the parts are held in the desired inclined position by the bar E⁴. A sidewise inclination, as shown in Fig. 3, is made by means of the semicircular plates C′, which are attached to the pivoted frame, said plates being adjusted by the shafts C″. When the telescopic sections have been elevated and adjusted, the endless cord *h*, which is made fast to the shaft or roller M, will be taut, and the same is paid out when the telescopic sections are elevated. This cord *h* passes under the roller N′, and also under pulleys *j*, which are carried by the pivoted section L, and from thence pass upward parallel to each other through perforations in the end of the platform K. This cord serves as a guide for the car, and is kept taut by the pivoted section L. The cord *l*, which is employed for elevating and lowering the car, is attached at one end to the drum E, and passes from thence over a pulley, *l′*, which is pivoted to the platform, the opposite end being secured to a central eye which is formed in the bail *o*. The side pieces of the car O are recessed, so that the cords *h* will be within said recesses, and the same is held therein by staples or bails *m m*. The pivoted section L, besides serving to keep the rope or cord *b* taut, will also serve as a spring-stop for the car. The pivoted section or yoke-bar L is forced downwardly, as shown in Fig. 2, by a spring, N, which is suitably secured to the platform, the free end of the same bearing upon the shaft L″. The object of this construction is to provide a means whereby the pivoted yoke-bar will be held downward with a spring-tension, which will be acted against by the cords *h h*, which have a tendency to elevate said yoke-bar, thus providing a means for taking up the slack of said cords.

The movable or sliding sections may be provided on both sides with rack-bars and pinions, as shown in Fig. 5, or said rack-bars and pinions may be only on one side of each section, the operation in each case being the same.

I am aware that it has been proposed to provide a fire-escape with sliding sections which are located adjacent to each other, and to ele-

vate the sections by means of rack-bars and pinions; but the parts are not constructed or arranged so that when one section is elevated all the sections will be moved correspondingly. It has also been proposed to elevate telescopic sections by means of flexible connections.

I claim—

1. The combination, in a fire-escape, of a series of telescopic sections, devices for elevating the same, a car with means for elevating and lowering the same and adapted to be thrown into and out of engagement with the devices for elevating the telescopic sections, and a rack-bar or its equivalent for locking said means in an engaged or disengaged position, substantially as set forth.

2. The combination, in a fire-escape, of a series of telescopic sections, pinions and rack-bar attached thereto for elevating and lowering the same in unison, substantially as shown, and for the purpose set forth.

3. The combination, in a fire-escape, of a series of sections which slide one within the other, pinions and rack-bars, arranged substantially as shown, for elevating and lowering the same simultaneously, said sections being supported upon a pivoted base, with segmental rack-plates which are operated by a shaft with pinions, and devices for inclining the sections at right angles therewith, for the purpose set forth.

4. A fire-escape consisting of a series of telescopic sections, each section carrying two independent rack-bars and a pinion, the parts being organized so that when one of the sections is moved the adjacent sections will be similarly actuated, substantially as shown, and for the purpose set forth.

5. In a fire-escape, a series of telescopic sections geared to each other so as to move in unison, the operating-shaft having attached thereto a drum around which passes a guide-cord, said guide-cord being attached to the upper section so that the same will be paid out as the sections are elevated, and a pivoted spring-section with guide-rollers, substantially as shown, and for the purpose set forth.

6. In a fire-escape, constructed substantially as shown, a pivoted yoke-bar, L, which serves as a spring-stop for the car and takes up the slack of the guide-ropes for the car, substantially as and for the purpose set forth.

7. In a fire-escape, the combination of the adjustable and extensible telescopic sections with a guide-rope, *h*, attached to a roller which is geared to the operating mechanism of the telescopic sections, a car mounted thereon and provided with a rope for elevating and lowering the same, a spring yoke-bar which serves as a stop for the car and takes up the slack of the rope *h*, the parts being organized substantially as shown.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM A. KERR.

Witnesses:
B. P. COLE,
D. M. COOK.