

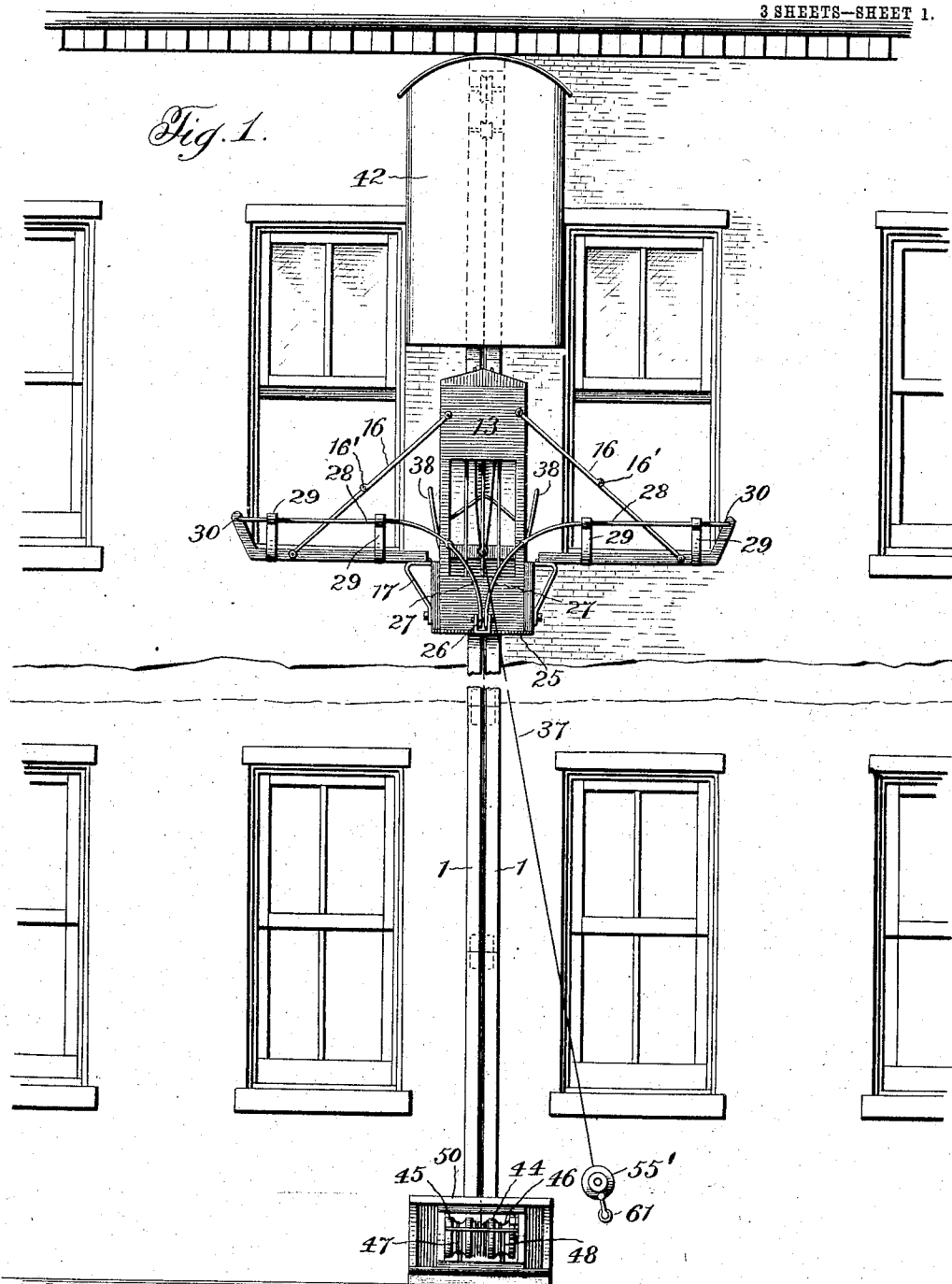
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G. E. DONNELL.
FIRE ESCAPE.

APPLICATION FILED JULY 28, 1904.

3 SHEETS—SHEET 1.



Witnesses:

Jas. E. Hutchinson
J. B. Roman

Inventor:

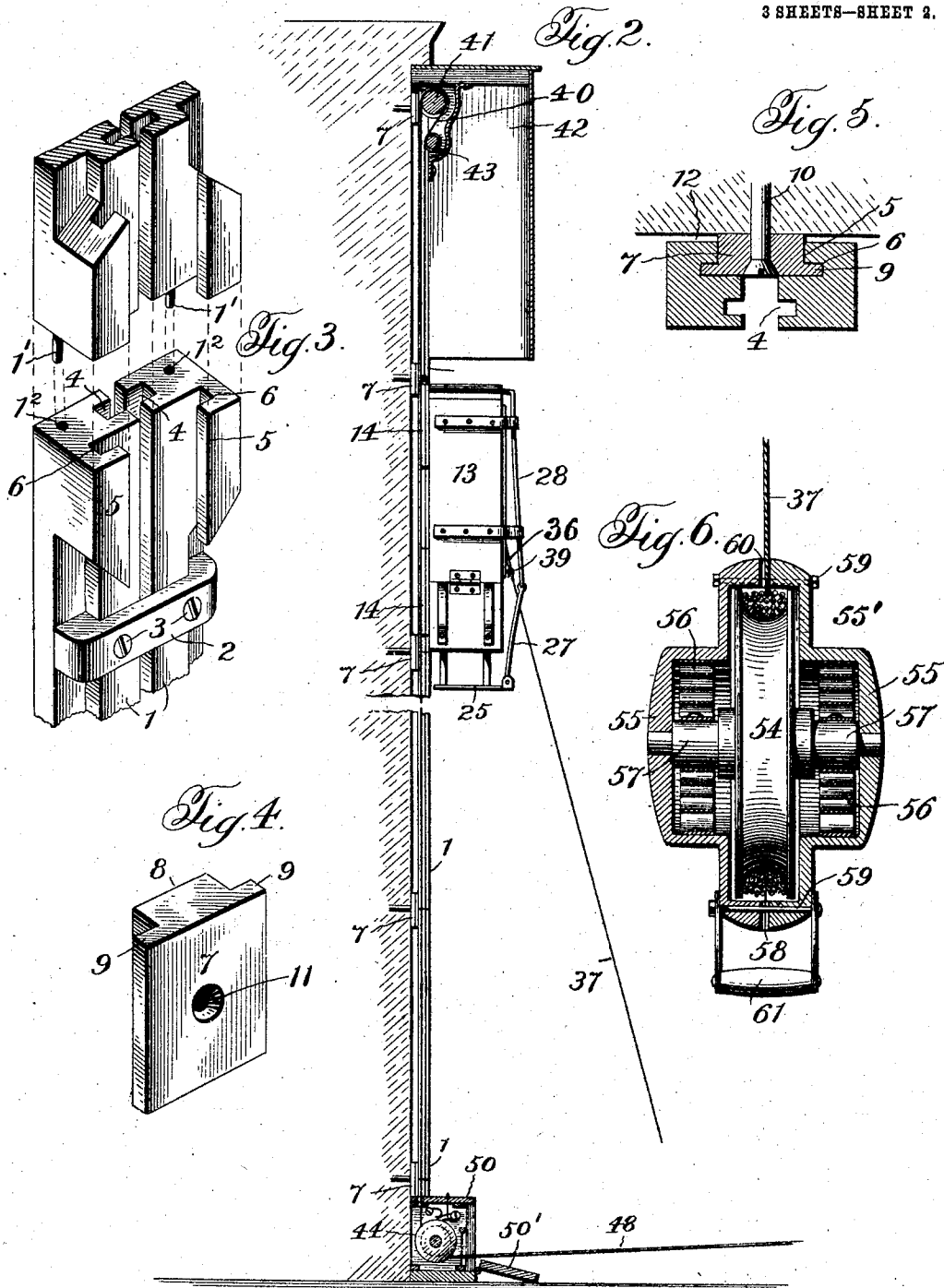
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3 SHEETS—SHEET 2.



Witnesses:

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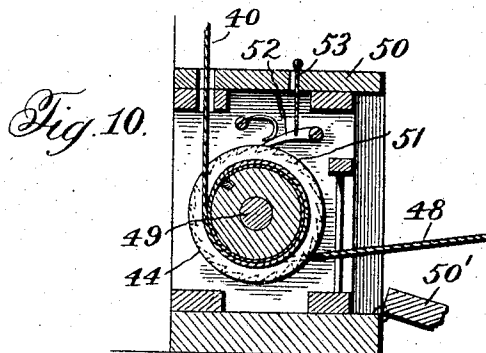
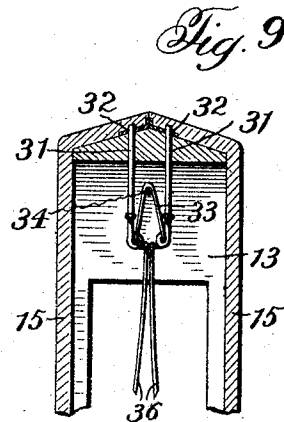
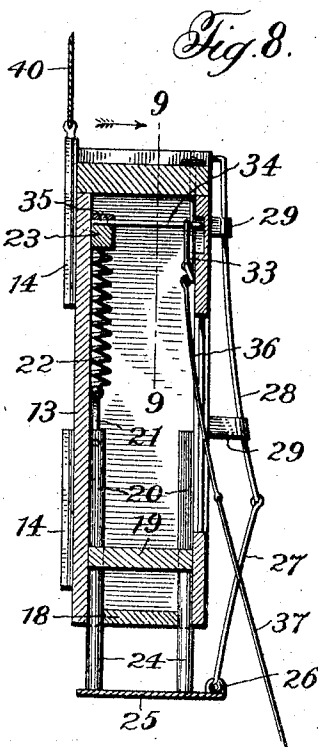
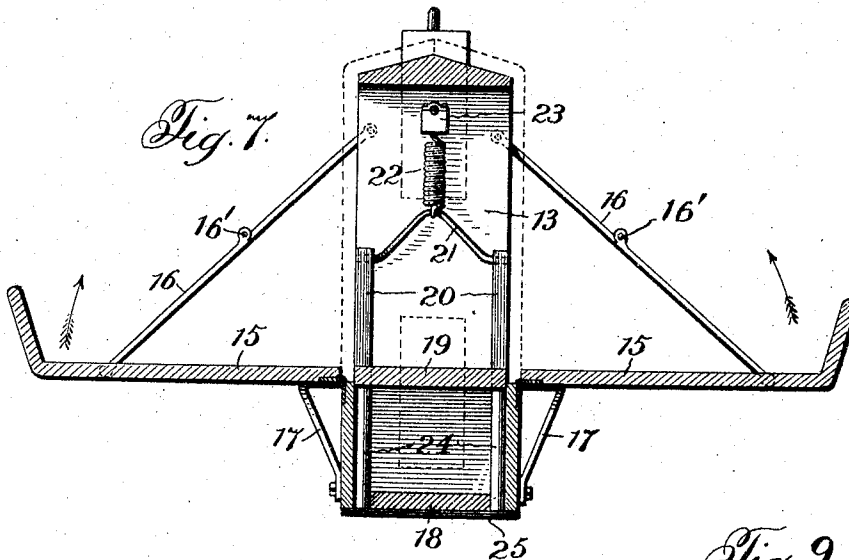
Inventor:

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G. E. DONNELL.
FIRE ESCAPE.

APPLICATION FILED JULY 28, 1904.

3 SHEETS—SHEET 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

GEORGE EMSLEY DONNELL, OF CHAPELHILL, NORTH CAROLINA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 780,711, dated January 24, 1905.

Application filed July 28, 1904. Serial No. 218,525.

To all whom it may concern:

Be it known that I, GEORGE EMSLEY DONNELL, a citizen of the United States, residing at Chapelhill, in the county of Orange and State of North Carolina, have invented certain new and useful Improvements in Fire-Escapes, of which the following is a specification.

This invention relates to that class of fire-escapes in which the occupants of buildings are brought down from the windows or other exits by means of a car or its equivalent designed to travel on substantially vertical guideways secured to the side of the building, preferably between adjacent windows. This car is provided with sides which are adapted to open outward in front of the windows to form platforms by which the occupants of the building may enter said car. Suitable mechanism for operating said car sides is provided, which is adapted to be actuated from a distance, thereby enabling a person on the ground to operate the sides or platforms when the car is opposite the desired windows or other exits. When a certain number of persons enter the car, the platforms close automatically. The car is raised and lowered, preferably, by means of a cable or the like passing over a drum located at the base of the guideways.

One of the principal objects of this invention is to afford means of escape for occupants of a burning building by which said occupants may be safely brought to the ground without subjecting them to danger while escaping. When the escaping occupants enter the car according to my invention, the sides close and the car descends not in front of the windows or other exits, but between them, thus protecting the occupants escaping from windows above from flames issuing from windows below. Furthermore, the means which I provide for raising and lowering the car admits of absolute safety.

A fire-escape of the present type while possessing absolute safety, as above pointed out, also gets rid of the objectionable feature of fire-escapes of the permanent balcony-and-step type, which in many cases afford means for burglars to enter windows and other openings in the building.

With the above objects in view, together with others which will hereinafter be pointed out, my said invention consists in the novel combination and arrangement of parts herein described and more particularly pointed out in the accompanying claims.

Referring to the accompanying drawings, which illustrate an embodiment of my invention, Figure 1 represents a portion of the side of a building provided with my improved fire-escape, showing the latter in front elevation and lowered to receive escaping occupants; Fig. 2, a central vertical section of the same, showing the car in side elevation; Fig. 3, a perspective detail view of a portion of the guideways; Fig. 4, a similar view of one of the supporting-brackets; Fig. 5, an enlarged cross-section through the guideways and one of the supporting-brackets; Fig. 6, a central sectional view of the self-winding reel; Fig. 7, a central cross-sectional view of the car; Fig. 8, a similar view taken along a plane at right angles to the one on which the section Fig. 7 is taken; Fig. 9, a section of the upper portion of the car, taken along the line 9 9, Fig. 8, and looking in the direction of the arrow; and Fig. 10 is a sectional view of the reel for raising and lowering the car and the box for containing said reel.

In carrying out my invention I secure to the side of the building to which it is desired to apply my improved fire-escape a continuous guideway or track, upon which the car is designed to travel. This guideway is made up of a plurality of sections consisting of parallel guide-rails 1 1, held rigidly at the proper distance apart by means of cleats 2, secured to the backs of the rails by countersunk screws 3. Each rail-section is provided with a longitudinal slot 4, forming guideways for the car to run on, as hereinafter more fully described. These rail-sections are provided also at each end with a flange 5, which forms a slot or way 6. At proper points I secure to the building supporting-brackets 7 for the purpose of holding the guide-rails against the building. These brackets are located, preferably, at the point where the rail-sections abut and consist each of a metal block or body portion 8, having

side flanges or wings 9. These brackets are secured to the side of the building by bolts or equivalents passing through a countersunk opening 11. The rail-sections are arranged one above the other, as shown, each section being provided at one end with a pair of dowel-pins 1' 1', which pass into a pair of holes 1² 1² in the end of the adjacent rail. When the rail-sections are in position, the flanges 9 of the brackets engage the ways 6 of the rails, and thus support the latter out of contact with the building, the flanges 9 being so situated as to leave a space 12 (see Fig. 5) between the guide-rails and the side of the building. This form of connection between the rails and brackets also allows the rails to expand and contract without altering their alinement. Adapted to travel up and down on these guide-rails is the car 13, which is secured to said rails by means of shoes 14, secured to the back of the car and adapted to engage the guideway or slot 4. This car is provided with hinged sides 15, which open outward from said car, as shown in Figs. 1 and 7, and when so opened are supported by the hinged supports 16 and stationary supports 17. The supports 16 are provided each with a joint 16', arranged to allow them to break downward when the hinged sides or platforms rise in the act of closing, the said joints being made, preferably, loose in order to allow the supports 16 to break easily. The car is also provided with a permanent bottom 18 and a false bottom 19, the latter being loosely mounted above the permanent bottom and supported, through the medium of the uprights 20 and cross-piece 21, by means of a spring 22, secured at its lower end to said cross-piece and at its upper end to a permanent support 23. Extending downward from said false bottom 19 and through the permanent bottom 18 are extensions 24, which are secured at their lower ends to a plate 25. To this plate are secured, as at 26, a pair of levers 27, which connect to rods 28, passing through uprights 29 on the hinged doors and made fast at their ends to the ends of said doors, as at 30. It will therefore be seen that when sufficient weight is placed upon the false bottom 19 the spring 22 will allow the said bottom to descend, which will cause the levers 27 and rods 28 to pull the sides or platforms 15 upward and inward in the directions of the arrows shown in Fig. 7, thus automatically closing the same. The force of the sides in closing, as described, causes the supports 16 to break downward at the joints 16', thus allowing the said sides to close. These sides or platforms are held normally in the closed position by means of the rods 31, extending into the openings 32 in the tops of said platforms. In the case shown these rods are formed of an iron rod bent in a substantially U-shaped formation, the yoke of which is connected by means of a link 33

to a resilient rod 34, made fast at one end, as at 35, to form a spring. Secured also to the yoke of the rods 31 is a heavy wire loop 36, adapted to be secured at its lower end to a heavy cord or suitable flexible line 37. By this arrangement a person on the ground by pulling on the line 37 may release the rods 31 from engagement with the sides of the cage 15, when the latter will be sent outward by springs 38, secured to the sides of the car. The cord 37, however, is not designed to be permanently connected to the member 36, but is connected thereto by means of a hook 39 only when the car is in actual use, as will be hereinafter described. The car is suspended by means of a cable 40 or its equivalent, which is connected to the upper shoe 14 on the back of the car and passes over a pulley 41, located at the upper end of the guideways and within a housing 42, which is designed to normally inclose the car. Located near the pulley 41 is an idler 43 to keep the cable well within the guideway formed between the rails. The cable 40 then passes to a reel 44, to which it is secured. This reel 44 is made in three sections, the center being designed to receive the cable 40, while on each side of this central section are the sections 45 46, around which passes, respectively, ropes or cables 47 and 48, each of said ropes or cables being secured at one end fast to its respective reel-section. This reel 44 is mounted on an axis 49, journaled within a box or housing 50, located at the foot of the guide-rail. A ratchet 51 is secured to one end of the reel 44 and is provided with a pawl 52, by which the rotation of the said reel may take place in one direction only, except when the said pawl is raised by means of the arm 53.

The end of the line 37 opposite the end which carries hook 39 is secured to a pulley 54, rotatably mounted in a casing 55. (See Fig. 6.) Carried within this casing 55 are also two coil-springs 56, one located on each side of the pulley 54, and each connected at its inner end to the hub 57 of said pulley and at its outer end to casing 55. The casing 55 is made in two sections split along the line 58 and held together by means of bolts 59, the line 37 passing into said casing through an opening 60 therein. A handle 61, by which the device may be held, is secured to one of the bolts 59, as shown. This arrangement constitutes a self-winding hand-reel, the line 37 when paid out being automatically wound up on the reel 54 by the action of the coil-springs 56.

Having described the parts of my invention in detail, the operation is substantially as follows: Normally the car is stored or inclosed in the hood 42, and the self-winding reel 55' is stored in the box or housing 50, which incloses the reel for raising and lowering the car, the door 50' of said housing being normally closed and preferably locked. When it is de-

sired to use the fire-escape, the door of the housing 50 is opened, the pawl 52 released from the ratchet 51, and the car is allowed to descend, the rate of travel being governed by the ropes or cables 48, which are held by persons operating the device. When the car has been lowered, the line 37 is secured to the member 36, and by pulling on the cables 47-48 the car is then raised to the desired windows to receive occupants. While the car is being thus raised, the hand-reel 55' is held by a person on the ground, the line 37 being paid out from said reel as the car ascends. When the car has reached the proper point and it is desired to let down the sides, this is accomplished by pulling on the line 37, which will release the rods 31, which hold the said sides in their closed position. When this is done, the sides of the car will open outward in front of the windows, as shown in Fig. 1, when the escaping occupants may enter the car by way of the sides, which then become platforms. When a desired number of applicants have entered the car, their weight will cause the false bottom thereof to descend, and this, as described, will cause the sides of the car to close. The car may then be allowed to descend by allowing the reel to wind up the cables 47-48 and unwind the supporting-cable 40. As the car descends the line 37 will be wound on the reel 54 by the springs 56. In this way there is never any of the cord 37, which is allowed to lie around on the ground. When the car has been lowered, the sides may be let down in the same manner as when the car was elevated and the occupants allowed to get out. When the car has been emptied, it may be again raised and lowered as many times as desired.

While I have thus shown and described a specific embodiment of my invention, I am well aware that the same may be altered in many respects without departing from the spirit of the invention; but

What I claim as my invention is—

1. In a fire-escape, the combination with substantially vertically disposed guides and means for supporting the same in close proximity to a building structure, of a car adapted to travel on said guides, said car having hinged sides arranged to open outward from said car to form platforms, means arranged to be actuated from a distance to cause said sides to open outward from said car, automatic means to cause said car sides to close, and means to raise and lower said car.

2. In a fire-escape, the combination with substantially vertically disposed guides adapted to extend up the side of a building structure alongside the windows or openings therein, of means to secure said guides to said building, a car adapted to travel on said guides, said car having hinged sides arranged to open outward from said car to form platforms, means arranged to be actuated from a distance to cause

said sides to open outward from said car, automatic means to cause said car sides to close, and means to raise and lower said car.

3. In a fire-escape, the combination with substantially vertically disposed guideways adapted to be located in close proximity to a building, of means for securing the said guideways to said building, a car adapted to travel on said ways, said car being provided with hinged sides arranged to open outward therefrom to form platforms, means arranged to be actuated from a distance to cause said sides to open outward from said car, means operated by the weight of the occupants of the car to automatically close said sides, and means to raise and lower said car.

4. In a fire-escape, the combination with substantially vertically disposed guideways adapted to be located in close proximity to a building, of means for securing the said guideways to said building, a car adapted to travel on said ways, said car being provided with hinged sides arranged to open outward therefrom to form platforms, means arranged to be actuated from a distance to cause said sides to open outward from said car, a vertically-movable bottom in said car, levers connecting said bottom with said sides and arranged to coöperate with said bottom to close said sides when a predetermined weight is placed upon said bottom, and means to raise and lower said car.

5. In a fire-escape, the combination with substantially vertically disposed guideways, of means to secure said ways to a building structure, a car adapted to travel on said ways, said car being provided with hinged sides adapted to open outward to form platforms, mechanism arranged to normally hold the said sides closed, springs against the tension of which said sides are held closed by said mechanism, a flexible line operatively connected to the said holding mechanism for releasing the same to permit said sides to open, and means to raise and lower said car.

6. In a fire-escape the combination with substantially vertically disposed guideways, of means to secure said ways to a building structure, a car adapted to travel on said ways, said car being provided with hinged sides adapted to open outward to form platforms, mechanism arranged to normally hold the said sides closed, springs against the tension of which said sides are held closed by said mechanism, a flexible line operatively connected to the said holding mechanism for releasing the same to permit said sides to open, a self-winding reel to which the end of said line is connected, and means to raise and lower said car.

7. In a fire-escape, the combination with substantially vertically disposed guides and means for supporting the same in close proximity to a building structure, of a car adapted to travel on said guides, said car having hinged sides arranged to open outward from said car

to form platforms, means arranged to be actuated from a distance to cause said sides to open outward from said car, automatic means to cause said car sides to close, a reel located at the foot of said guides, a pulley at the top of said guides, and a cable secured to said reel and to said car and passing over the said pulley.

8. In a fire-escape, the combination with substantially vertically disposed guides and means for supporting the same in close proximity to a building structure, of a car adapted to travel on said guides, said car having hinged sides arranged to open outward from said car to form platforms, means arranged to be actuated from a distance to cause said sides to open outward from said car, automatic means to cause said car sides to close, a reel located at the foot of said guides, a pulley at the top of said guides, a cable secured to said reel and to said car and passing over the said pulley, and a box at the foot of said guides containing said reel.

9. In a fire-escape, the combination with sub-

stantially vertically disposed guides and means for supporting the same in close proximity to a building structure, of a car adapted to travel on said guides, said car having hinged sides arranged to open outward from said car to form platforms, means arranged to be actuated from a distance to cause said sides to open outward from said car, automatic means to cause said car sides to close, a reel located at the foot of said guides, a pulley at the top of said guides, a cable secured to said reel and to said car and passing over the said pulley, a box at the foot of said guides containing said reel, and a hood at the top of said guides inclosing said pulley and arranged to receive said car and normally inclose the same.

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

GEORGE EMSLEY DONNELL.

Witnesses:

THOMAS RUFFIN,
W. S. ROBERSON.