

No. 641,121.

Patented Jan. 9, 1900.

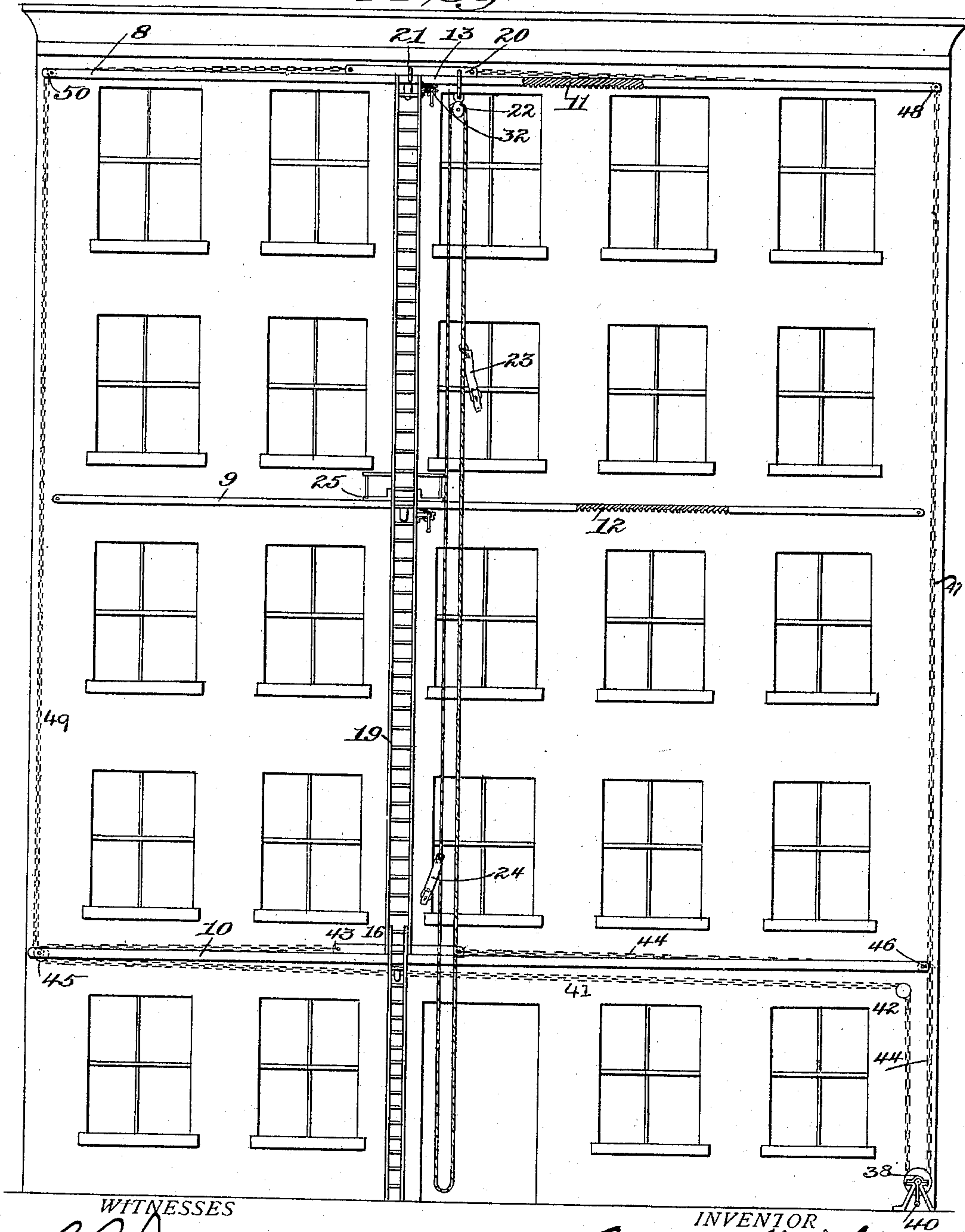
O. KNIGHT.  
FIRE ESCAPE.

(No Model.)

(Application filed June 8, 1899.)

2 Sheets—Sheet 1.

*Fig. 1*



WITNESSES

*A. S. Deppes*  
*C. Hugh Duff*

INVENTOR

*Oswald Knight*  
*per J. E. Duff*  
Attorney

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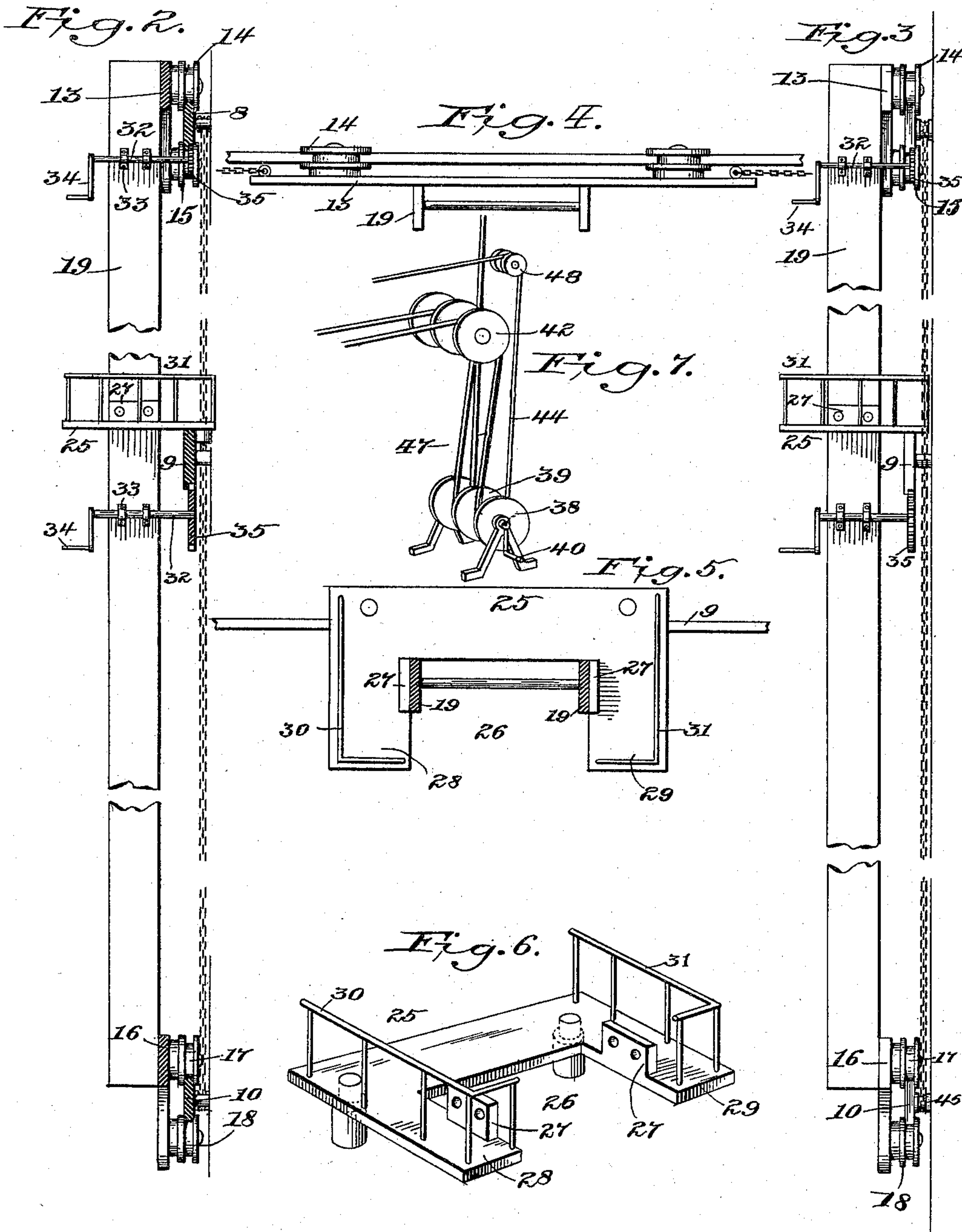
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WITNESSES

*A. B. Deppa*  
*C. Hughes*

INVENTOR

*Oswald Knight*  
*per O. C. Deppa*  
Attorney



# UNITED STATES PATENT OFFICE.

OSWALD KNIGHT, OF RICHMOND, VIRGINIA.

## FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 641,121, dated January 9, 1900.

Application filed June 6, 1899. Serial No. 719,573. (No model.)

*To all whom it may concern:*

Be it known that I, OSWALD KNIGHT, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, 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.

My invention relates to fire-escapes, and more especially to that class of fire-escapes which comprise transversely-movable ladders with safety-platforms mounted on transverse guide-rails.

The object of the invention is to provide a simply-constructed, safe, and reliable structure of this class operable from the ground or from the ladder and means for rescuing unconscious or helpless persons without the necessity of carrying them down the ladder.

With this object in view my invention consists of the improved construction, arrangement, and combination of parts hereinafter fully described and afterward specifically pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in front elevation of a house equipped with a fire-escape constructed in accordance with my invention, part of the transverse guide-rails being omitted and two partly broken away to show the rack-teeth. Fig. 2 is a vertical sectional view on a plane cutting through the rails to the right of the ladder, looking to the left, parts being broken out to shorten the figure. Fig. 3 is a right-hand side elevation with parts broken out to shorten the figure. Fig. 4 is a fragmentary top plan view, the outer ends of the transverse guide-rails being broken away. Fig. 5 is a sectional view on a horizontal plane cutting through the ladder above the middle platform, looking downward. Fig. 6 is a detail perspective view of one of the safety-platforms detached. Fig. 7 is a diagrammatic perspective view to illustrate the manner in which the ropes or chains are connected up with the windlass-rollers.

Like numerals of reference mark the same parts wherever they occur in the several figures of the drawings.

Referring to the drawings by numerals, 8 indicates a transverse rail secured to the building at the top of the upper story. In the prac-

tical use of the invention there will be such a rail at the top of as many stories as desired, and in this illustration I have shown the rail 8 referred to, a similar rail 9 at the top of the third story, and a third rail 10 at the top of the first story. Each of these rails is supported at a short distance from the wall, and the inner portion of the bottom of each rail 8 and 9 is formed with rack-teeth, as shown at 11 and 12.

13 indicates a carriage provided with grooved rollers 14, embracing the upper edge of rail 8 and resting thereon, and a grooved roller 15, embracing the bottom of said rail, and a similar carriage 16 has rollers 17 and 18 embracing rail 10.

A ladder 19 is secured at its upper end to carriage 13 and at its lower end to carriage 16. On the carriage 13 are hooks 20 and 21, to which may be attached a block 22 with pulley, over which is passed an endless rope carrying one or more belts 23 24, and as the carriages and ladder always move together a fireman on the ladder is thus always provided with means whereby he may secure an unconscious or helpless body and lower it without the necessity and danger of bodily carrying it or of getting down to the ground at all, provided there are persons below to receive the rescued body. At the points where the ladder crosses the intermediate rails, as 9, it is provided with safety-platforms, as at 25, resting on the rail and projecting beyond it inwardly and outwardly—inwardly to bring its inner edge close to the house and outwardly to reach the front of the ladder—the outward portion being centrally cut away at 26 to receive the ladder, and upright ears 27 being bent up on each side to secure it to the sides of the ladder. The parts 28 and 29 project outwardly beyond the ladder, and hand-rails 30 31 extend along the side and front edges, as shown, leaving spaces whereby persons may step from the platform to the ladder. Near the rear edge the platform is provided with downwardly-depending rollers to bear against the inside of the rails to prevent the ladder from springing outward and facilitating its transverse movement on the rails.

The carriages 13 and 16 and the ladder and all its attachments may be moved transversely to any point of the front of the build-



ing, either by a person on the ladder or a person on the ground. To accomplish the first, I provide at each rail a transverse shaft, as at 32, journaled in brackets 33, secured to the side of the ladder, provided at its outer end with a crank-handle 34 and at its inner end with a gear-wheel 35, engaging the rack-teeth 11 of rail 8. A similar arrangement is shown with its wheel engaging teeth 12 of rail 9, and a similar arrangement will be used in practice at each intermediate transverse rail. By turning the crank-handle a person on the ladder may cause the carriages, the ladder, and himself to be moved transversely in either direction to reach any desired point.

For moving the ladders and carriages transversely by a person on the ground I provide a winch or windlass-shaft 38, divided into two spools by partition 39 and provided with crank-handle 40. A chain 41 is secured to the front spool and a length equal to the width of the building wound thereon. The chain is then passed upward to and over a grooved pulley 42 below the right-hand end of rail 10, thence across the building under the rail, and back around a pulley 45 at the left-hand end of the rail to carriage 16, to which it is secured at 43. Another wire rope or chain 44 has one end secured to the opposite end of carriage 16, thence to and over a grooved pulley 46 at the right-hand end of rail 10, and thence down to the opposite side of the spool from which rope 41 started. A chain or rope 47, secured to and partially wound on the inner pulley of shaft 38, passes up and over a pulley 48 at the right-hand end of rail 8 and is secured to right-hand end of carriage 13. Another rope or chain 49 is secured to left-hand end of carriage 13, passes over a pulley 50 at the left-hand end of rail 8, thence down and around a pulley at the left-hand end of rail 10, thence to the right to and around the inner pulley of shaft 42, and thence down to the inner pulley of shaft 38 of the winch. By turning the windlass-shaft 38 the ladder and carriage will be moved in either direction, one rope winding up on each pulley as the other unwinds, and there will be no tendency to displacement of the ladder without such turning.

From the foregoing it will be seen that I provide a simply-constructed fire-escape which will be a permanent fixture and always ready for use. A person on the ladder may propel it to any part of the front, and it can be equally as easily moved by a person on the ground. Inasmuch as the ladder reaches a complete vertical line of windows, including all the stories, and will be provided with a safety-platform for each story this lateral movement will provide a safety-platform for any window it is desired to reach. Further, the fireman on the ladder may lower any person or thing without the necessity of going down to the ground, thus saving time and perhaps valuable lives.

While I have illustrated and described the

exact form and construction of the various parts, I desire it to be understood that many changes and variations may be made therein without departing from the spirit and scope of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A fire-escape comprising a series of transverse rails secured to a building at the different stories, a transversely-movable carriage on the top and one on the bottom rail, a ladder secured to these carriages, a safety-platform secured to the ladder, resting on the intermediate rail, shafts depending from said platform, and rollers on said shafts, to engage the inner face of the rail, substantially as described.

2. A fire-escape comprising a series of transverse rails secured to a building at the different stories, a transversely-movable carriage on the top rail and one on the bottom rail, a ladder secured to the top and bottom carriages, a pulley at each end of the top and bottom rails, a windlass-shaft near the ground formed into two parts or pulleys, a similar chain secured to each pulley, the cords or chains being arranged so that those from the right-hand end of each carriage unwind as those from the left-hand end wind up, substantially as described.

3. In a fire-escape the combination with transverse rails at each story, a carriage on the top and bottom rails, a ladder secured to the top and bottom carriages, a safety-platform resting on an intermediate rail close to the building and cut away at the front to straddle the ladder, depending rollers on the safety-platform engaging the inner surface of the rail, and a hand-rail on each side and the front of the safety-platform, substantially as described.

4. The combination in a fire-escape of a transverse rail, a platform resting thereon cut away at the front and having turned-up flanges, a ladder secured in the recess in the front, bolts or rivets securing the flanges to the ladder, and depending rollers journaled on the platform and bearing against the inner face of the rail, substantially as described.

5. The combination with the ladder and the rail, of a platform provided with an opening in which the ladder is located, and projections each side of the ladder, having lugs or ears for securing said platform to the ladder, and beneath the platform and secured thereto friction-rollers adapted to work on the inside face of the rail to prevent the ladder from yielding outward when loaded, substantially as shown and described.

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

OSWALD KNIGHT.

Witnesses:

EDWARD S. ROSE,  
SPENCER CORNICK.