(No Model.)

C. G. GRUNZ.

FIRE ESCAPE.

No. 459,285. Patented Sept. 8, 1891.

Fig. 3

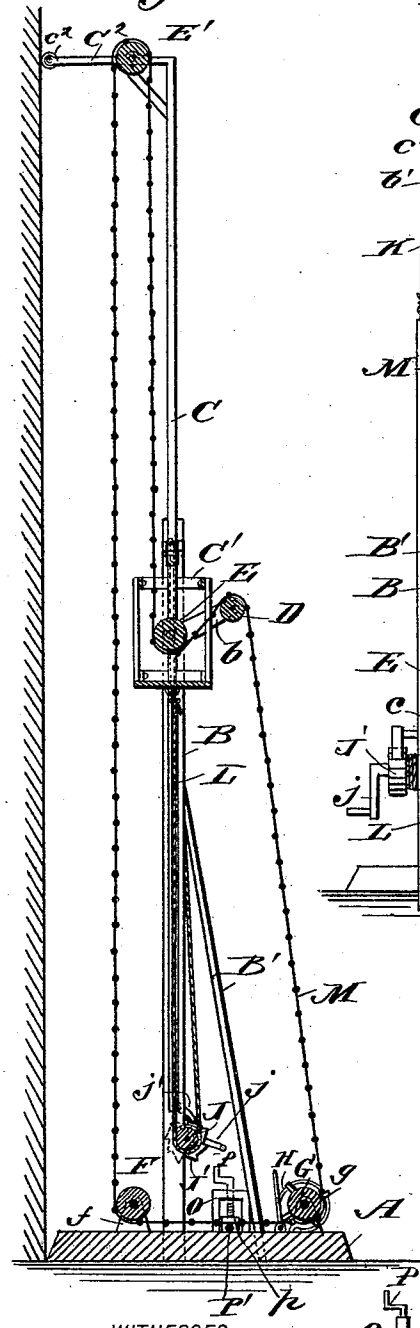


Fig. 4

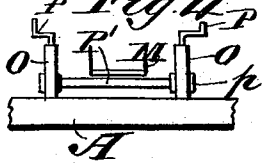


Fig. 1

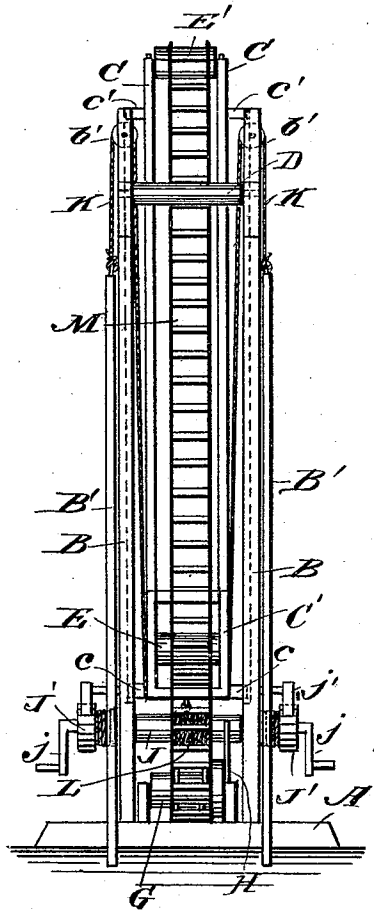
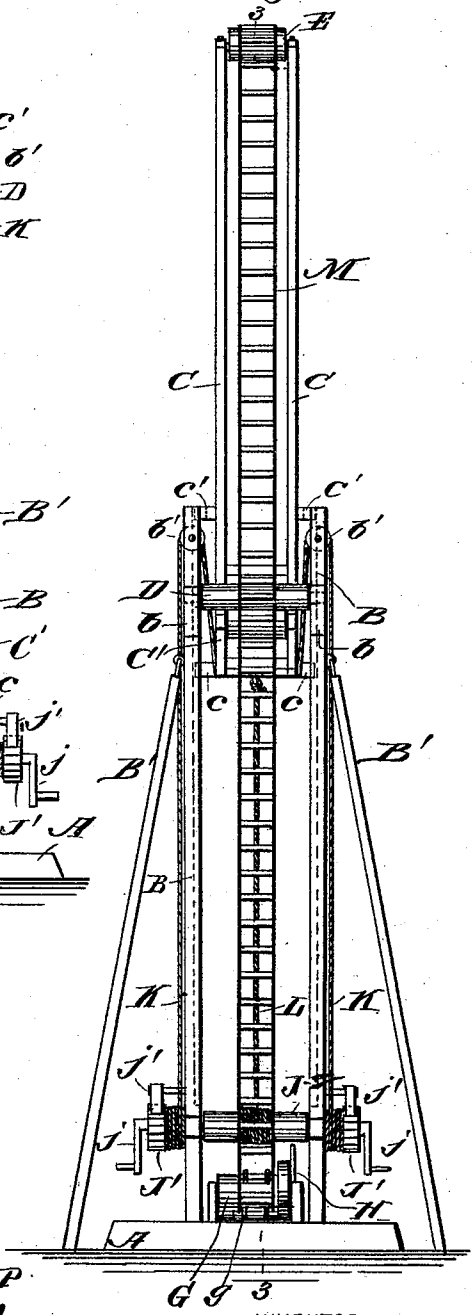


Fig. 2



WITNESSES:

F. McArdle.

C. Sedgwick

INVENTOR:

C. G. Grunz

BY Munn & Co.

ATTORNEYS

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

CARL G. GRUNZ, OF GRAND ISLAND, NEBRASKA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 459,285, dated September 8, 1891.

Application filed February 16, 1891. Serial No. 381,567. (No model.)

To all whom it may concern:

Be it known that I, CARL G. GRUNZ, of Grand Island, in the county of Hall and State of Nebraska, have invented a new and Improved Fire-Escape, of which the following is a full, clear, and exact description.

My invention relates to improvements in fire-escapes; and the object of my invention is to produce a fire-escape of simple construction, which may be easily erected at a point adjacent to a building, and which may be quickly raised or lowered, so as to make it of a desired height.

To this end my invention consists in certain features of construction and combinations of parts, which will be hereinafter described and claimed.

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

Figure 1 is a front elevation of a fire-escape in its most compact position. Fig. 2 is a front elevation with the ladder extended its full length. Fig. 3 is a vertical section on the line 3 3 in Fig. 2, and Fig. 4 is a broken detail view of the ladder brake or regulator.

To a suitable base A are fixed a pair of parallel side pieces or supports B, and to these, near the top, are pivotally connected the guide rods or braces B′, by means of which the ladder may be easily maintained in a vertical position. An upper frame, comprising two vertical parallel supports C, is held to slide vertically in the lower frame or supports B, the upper frame having a rectangular base portion C′, from which extend small guide-arms *c*, which enter corresponding grooves or ways on the inner sides of the supports B, and the supports C are also braced in a similar manner by arms *c′* on the top of the supports B, so that the upper supports will always be maintained in a vertical position. It is not necessary that the guide-arms described be used, as any suitable means may be employed to hold the upper frame in position and guide it in its movements.

Extending from the front sides of the supports B, near the top, are the brackets *b*, which support a drum or roller D, and similar drums or rollers E and E′ are mounted, respectively, in the lower and upper portions of the upper frame or supports C. On the base A in the rear of the supports B is another roller or drum F, which is mounted in standards *f*, and on the front portion of the base and aligning with the drum F is another drum G, which has projecting pins *g* to prevent the ladder from slipping, as described below, and which is also provided with a strap-brake H, of common form, by means of which the drum may be prevented from turning too fast.

Mounted on the supports B and extending across from one to the other is a drum J, which is turned by means of crank-handles *j*, and at each end of the drum is a ratchet-wheel J′ and a pawl *j′* for the same, which ratchet-wheels and pawls prevent the drum from turning in the wrong direction. Secured to opposite ends of the drum J are ropes or cables K, which extend upward over the pulleys or sheaves *b′* in the upper part of the supports B, the upper ends of which ropes are secured to the lower portions of the supports or frame C, so that when the ropes are wound upon the drum the upper frame will be raised. A rope or cable L is secured to the central portion of the drum J and wound in a direction opposite to the ropes K, and the upper end of the rope is secured to the frame C′, and it will be seen that when the ropes K are wound the rope L will be unwound, and vice versa. The rope L will thus serve to steady the upper frame, and will also tend to draw the frame down in case it should stick in any way. The upper frame C is provided at the top with laterally-extending arms C^2, which have at their free ends rollers c^2, which press against a building, and the arms and rollers also serve to steady the upper frame when it is raised, as shown in Fig. 3.

An endless flexible ladder M is arranged upon the various drums described above, the ladder extending beneath the drums F and G, over the drum D, beneath the drum E, and over the drum E′. The drum D is held in a stationary position, and it will be seen that when the upper frame is raised or lowered the drums E and E′ will be moved vertically as they are fixed thereto, and the pressure of the lower drum E on the ladder will tend to hold it constantly tight; but to provide against any possible slack in the ladder and to hold it so that it will move at a desired rate of speed a regu-

lator is employed, by means of which a suitable amount of pressure may be brought to bear upon the ladder. This regulator comprises a frame O, mounted on the base A, and in the frame at opposite ends are the vertical screw crank-shafts P, which have blocks p at their lower ends, and these blocks are connected by a cross-rod P′, which extends beneath the ladder, and by raising the shafts and blocks the cross-rod will be raised against the ladder, so as to act as a brake on the same.

To operate the device the upper frame is raised in the manner described, thus raising the ladder, the base A being first adjusted adjacent to the wall of the building, so that the rollers c^2 will run up upon the walls, as shown in Fig. 3, and the ladder will thus be brought within reach of the windows of the building, so that a person within may step from the windows onto the ladder. The weight of a person will cause the ladder to move on the rollers, so that they will be gradually brought to the ground, and if several persons should get upon the ladder at one time it may be prevented from moving too fast by means of the brake described above.

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

1. A fire-escape comprising a lower frame or support having a revoluble drum at the top, drums mounted in front and rear of the support, an upper frame held to move vertically in the support and provided at the top and bottom with drums, and an endless ladder made to extend over the several drums, substantially as described.

2. A fire-escape consisting, essentially, of a lower support having a drum in the upper end, drums mounted in the front and rear of the support, an upper frame held to move vertically in the support and provided at the top with laterally-extending arms having rollers at their free ends, drums mounted in the upper and lower ends of the upper support, and an endless ladder extending over the several drums, substantially as described.

3. In a fire-escape of the character described, the combination, with an endless ladder, of a brake or regulator comprising two vertical screw-shafts carrying blocks at their lower ends, and a cross-rod connecting the blocks and adapted to contact with the ladder, substantially as described.

4. In a fire-escape of the character described, the combination, with the endless ladder, of a brake or regulator comprising two vertically-movable blocks, and a rod connecting the blocks and adapted to contact with the ladder, substantially as set forth.

CARL G. GRUNZ.

Witnesses:
TIMOTHY H. ELSNER,
FRED. F. FEDDER.