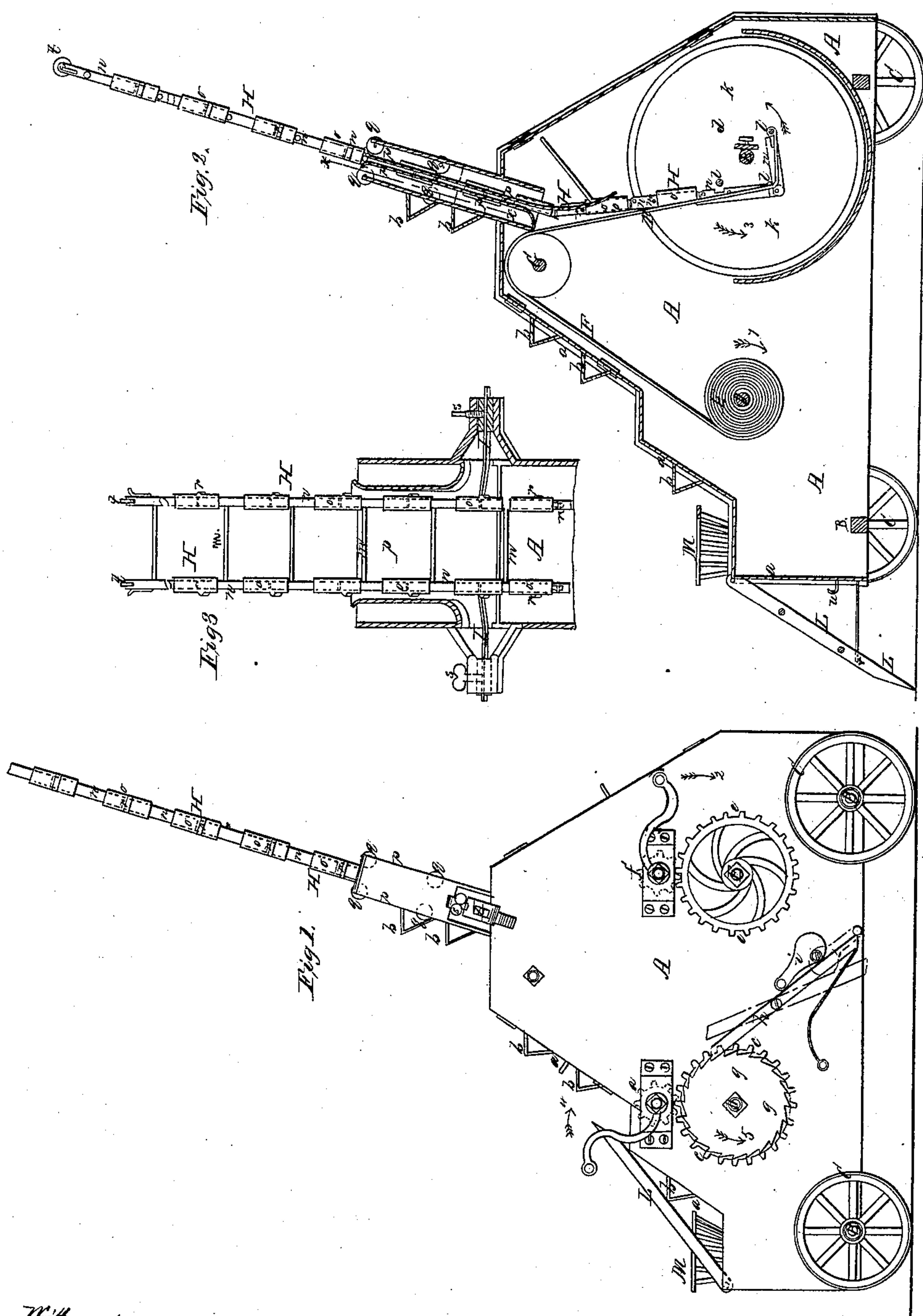


A. Rigny.
Fire Escalier.

N^o 64,569.

Patented May 7, 1867.



Witnesses.
Thos. T. Smith
J. A. Brown

Inventor,
A. Rigny
Per. Wm. C. Atty

United States Patent Office.

ALFRED RIGNY, OF NEW YORK, N. Y.

Letters Patent No. 64,569, dated May 7, 1867.

IMPROVED FIRE-ESCAPE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, ALFRED RIGNY, of the city, county, and State of New York, have invented a new and improved Fire-Escape; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a side elevation of my improved fire-escape.

Figure 2 is a longitudinal sectional elevation of the same.

Figure 3 is a detail vertical sectional view of the same, taken on the line *x x*, fig. 2.

Similar letters of reference indicate corresponding parts.

This invention relates to a fire-escape, which is held in a carriage, and can be transported to any desired place, like a fireman's ladder. It consists mainly of a flexible ladder, the side pieces of which are made in sections hinged together, one round being in each section. The ladder can thus be easily wound around a horizontal drum or shaft contained in the aforesaid carriage. On the hinged side-bars, between the rounds, are arranged slides, which fit close around the side-bars, so as to remain in any position in which they may be placed. When the ladder is to be used it is unwound from the aforesaid drum, and is guided between plates, which are attached to the carriage, and the slides are drawn automatically over the hinges in the side-bars, so as to straighten the same and make them inflexible. The ladder will then be inclined at the proper angle, and can be lengthened so as to reach any desired height. A ladder of a length of fifty or more feet can be enclosed in a carriage which can be easily drawn by two horses. It can be almost instantaneously raised or lowered, as may be desired, and will consequently be invaluable, when, during large fires, but few moments are allowed for the saving of human lives.

A represents the box of a carriage, which is made of sheet-metal or other side and end pieces, the front piece *a* being formed in steps, as shown, or made inclined, and steps *b b* are secured to it in any suitable manner. Two horizontal axles *B B* are firmly secured in the side pieces of the box *A*, and on their ends the wheels *C C* are mounted, upon which the whole apparatus rests. Bearings are provided in the side pieces of the box *A* for two horizontal shafts *D* and *E*, which are placed across the said box and nearly on the same level with each other. On the end of the shaft *D* and on the outside of the box *A* is mounted a cog-wheel, *c*, which meshes into a pinion, *d*, that is arranged on the outside of box *A*, as shown in fig. 1. On the end of the shaft *E*, also outside of the box *A*, is mounted a cog-wheel, *e*, which meshes into a pinion, *f*, arranged on the side of the box *A*, as shown. A crank is secured to the shaft of each of the pinions *d* and *f*, so that by means of them the shafts *D* and *E* can be rotated at will. On the shaft *D* is also mounted a ratchet-wheel, *g*, into the teeth of which a spring-pawl, *h*, fits, thereby preventing the shaft *D* from revolving in the direction of the arrow 1 shown in fig. 2. By an eccentric lever, *i*, the pawl can be thrown out of the ratchet-wheel, as is indicated by red lines in fig. 1. On the shaft *E* between the sides of the box *A* are mounted two disks *k*, between which the end of a broad strap, *F*, is secured to a pin, *l*, of which a number (four or more) are arranged between the disks *k* and around the shaft *E*, as is clearly shown in fig. 2. The belt *F* passes over a roller or drum, *G*, which is arranged in the box *A*, between the shafts *D* and *E*, but considerably higher than the same, as is clearly shown in fig. 2. The other end of the belt *F* is attached to the shaft *D*. The said belt is considerably longer than the distance between the shafts *D*, *G*, and *E*, and must therefore be wound round one of the said shafts. To that end of the belt *F* which is attached between the disks *k* is attached the lower end of the ladder *H*. Each one of the rounds *m* of this ladder is held between short side pieces *n n*, and the sections thus formed are hinged together in the manner shown in fig. 2, so as to make a flexible ladder. Around the side pieces *n* between the rounds are arranged sleeves *o o*, which fit tightly around the pieces *n*, so as to remain in any position in which they may be placed. The ladder passes from the shaft *E* between two inclined plates *p p*, which are part of the box *A*, and which indicate the direction in which the ladder is to stand, fitting closely against the sides of the rounds. Friction-rollers *q q* are arranged in the plates *p p*, which fit against the side pieces of the ladder and facilitate its passage through up or down. Each of the sleeves *o o* is provided at its outside with a small rounded projection, *r*. In the sides of the box *A* are secured, by means of set-screws, (see fig. 3,) two or more springs *I*, one, at least, on either side of the ladder. The said springs reach just to the outside of the sleeves *o*, and as the ladder passes

upward between the plates *p p* the springs *I* come in contact with the knobs *r* on the sleeves, and move the said sleeves down over the hinge in the sectional side pieces. Thereby the flexibility of the ladder is stopped as soon as the same comes out of the box *A*, and the ladder can be used with perfect safety. When the ladder is drawn into the box, the springs *I* will press the sleeves up again, and clear the hinges in the side pieces, so that that portion of the ladder which is without the box *A* is flexible, while the projecting portion is inflexible. The ends of the springs *I*, after having pressed the sleeve up or down, as the case may be, allow the ladder to move in the required direction on account of their flexibility, which permits the knobs to raise them and pass under the same. In the drawing, the ladder is represented as being almost completely unwound from the shaft *E*, while the belt *F* is wound upon the shaft *D*. When the ladder is to be drawn in the pawl *h* is disengaged from the ratchet-wheel *g*, and the crank on the pinion *f* is revolved in the direction of the arrow 2 in fig. 1, whereby the shaft *E* is revolved in the direction of the arrow 3 in fig. 2. The belt *F* will by this motion be wound around the pins *b*, and unwound from the shaft *D*. The belt *F* passes against the rounds *m*, and thereby winds the chain or ladder around the pins *l*, while it is wound up itself. The whole of the ladder can thus be wound upon the shaft *E*. When to be unwound the pawl *h* is thrown into the ratchet-wheel *g*, and the crank on the pinion *d* is turned in the direction of the arrow 4, fig. 1, whereby the shaft *D* is revolved in the direction of the arrow 5, in the same figure. The belt is then wound around the shaft *D* again, but it cannot unwind from the shaft *E* unless the ladder is also unwound from the same, and the latter will be pushed forward and unwound by the action of the belt. To the upper end of the ladder are secured two friction-rollers *t*, which touch the side of the house against which the ladder is to be placed. The carriage is anchored by two pointed bars *L*, hinged to the front of the box *A*, their lower ends brought to the ground, when they will act as braces for the carriage when the ladder is being used, as shown in fig. 2. When the carriage is to be moved the braces *L* are swung back, as shown in fig. 1. A seat, *M*, is arranged on the box *A* for the driver. The horses can be attached to a hook, *u*, which is shown in fig. 2.

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

1. The flexible ladder *H*, arranged in a box or case, *A*, so that it can be wound around a drum or roller, or be straightened for use, as may be desired, substantially as herein shown and described.
2. The strap or belt *F*, when arranged as described, in combination with the flexible ladder *H*, all made and operating substantially as herein shown and described.
3. The springs *I I*, when arranged as described; in combination with the sleeves *o*, and hinged side pieces *n n*, all made and operating substantially as and for the purpose herein shown and described; and
4. A fire-escape, made and operating substantially as herein shown and described.

ALFRED RIGNY.

Witnesses:

ALEX. F. ROBERTS,
J. A. SERVICE.