2 Sheets--Sheet 1.

P. PETERSON.

Firemen's Extension-Ladder.

No. 162,856. Patented May 4, 1875.

Fig 1.

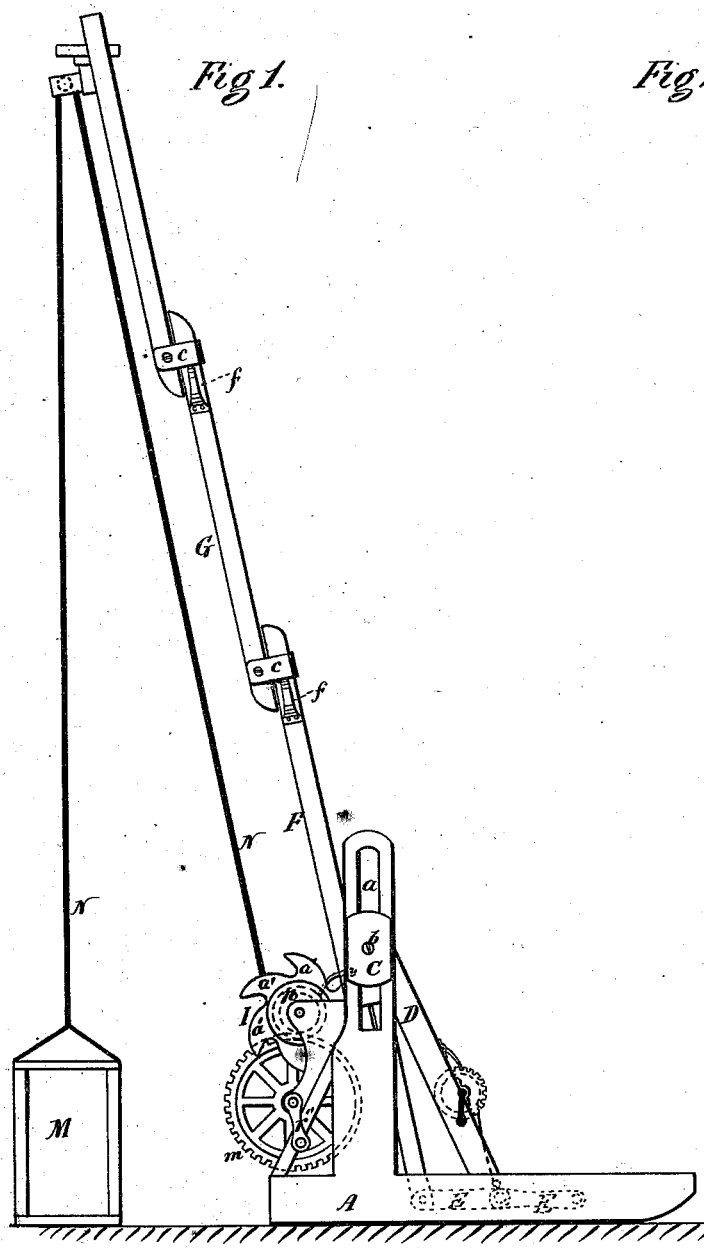
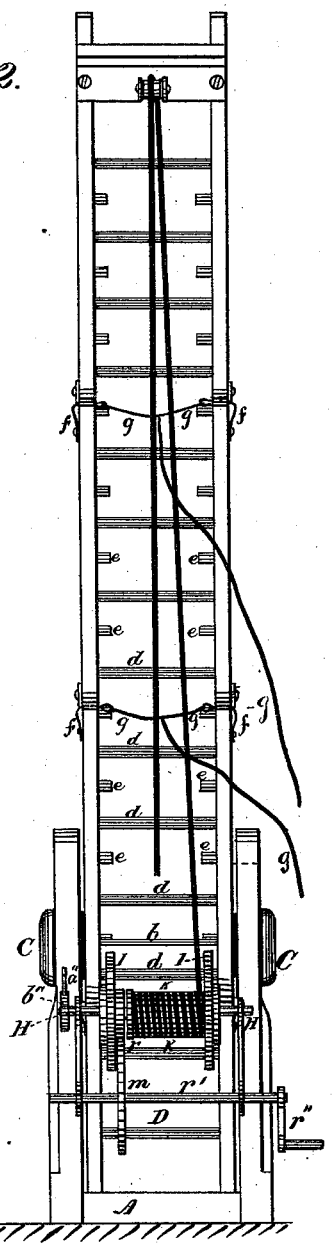


Fig 2.



Witnesses.

C. M. Edwards

William B. Phair

Inventor.

Peter Peterson

per James A. Whitney

Atty

THE GRAPHIC CO. PHOTO-LITH. 39 & 41 PARK PLACE, N.Y.

P. PETERSON.

Firemen's Extension-Ladder.

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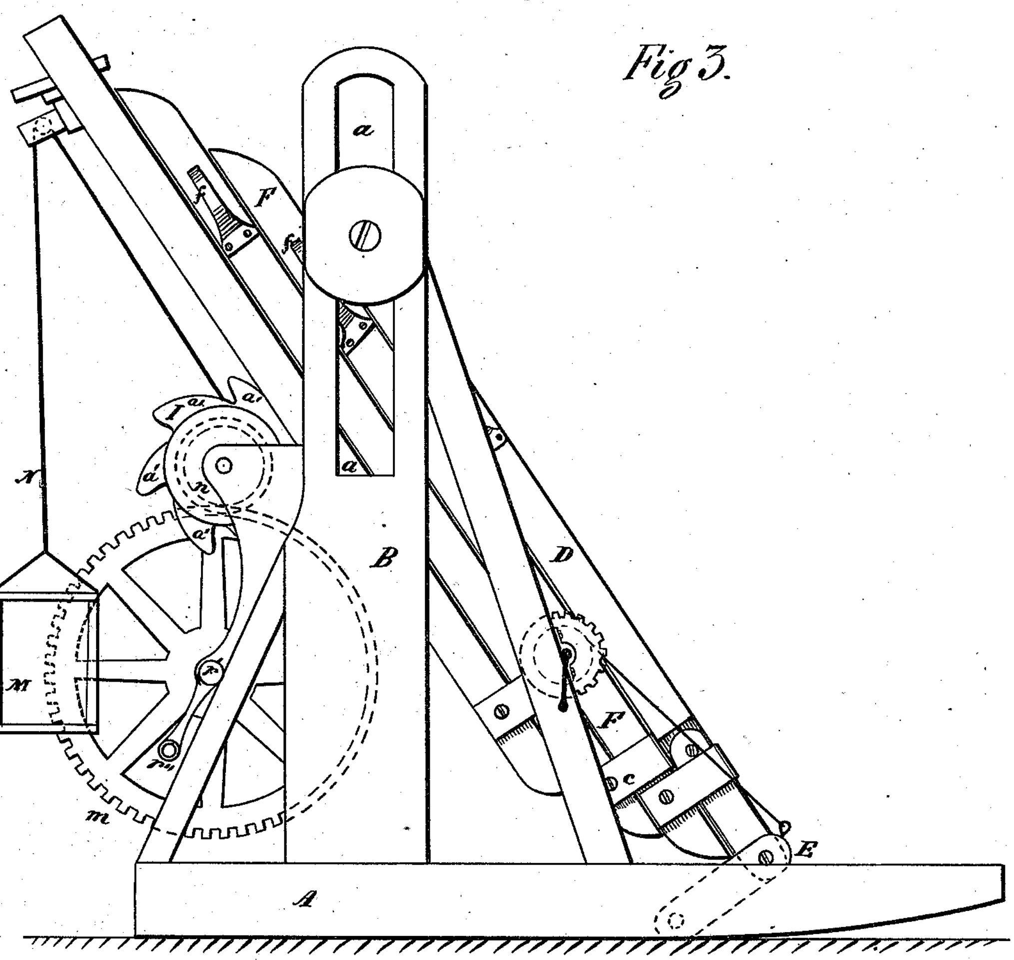
Fig 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

PETER PETERSON, OF NEW MILFORD, CONNECTICUT.

IMPROVEMENT IN FIREMEN'S EXTENSION-LADDERS.

Specification forming part of Letters Patent No. **162,856**, dated May 4, 1875; application filed April 7, 1874.

To all whom it may concern:

Be it known that I, PETER PETERSON, of New Milford, in the county of Litchfield and State of Connecticut, have invented certain Improvements in Fire-Escapes, of which the following is a specification:

This invention is designed to provide a fire-escape ladder, which may be readily transported from place to place on any suitable vehicle, and which may be quickly and conveniently elevated or extended to any required height to afford access to the windows, &c., of buildings, and which, aside from the facilities afforded by the rounds of the ladder, will present a feasible means of lowering persons, goods, &c., to the ground from the upper stories of burning buildings, when desired. The invention consists in the combination, with a system of extensible ladders, of toggle-joint braces, slotted standards, and weighted slides, whereby the angle from the vertical of the system of ladders may be varied without injury to the stability of the same, and the ladder-sections kept in suitable relation with the elevating devices.

Figure 1 is a side elevation of an apparatus constructed according to my invention, with the system of ladders elevated or extended as when in use. Fig. 2 is a rear elevation of the same in the same position; and Fig. 3 is a side elevation, on a larger scale, with the system of ladders lowered to the position required while the apparatus is being transferred from place to place, as desirable when not in use.

A is a bed-plate, provided with standards B, slotted as shown at *a* in Figs. 1 and 3. In each of the slots slides a weight or loaded slide, C, a rod, *b*, extending across from one weight to the other, as shown in Fig. 2, and to this rod is pivoted or attached the upper end of a ladder-section, D. The lower end of this ladder-section D is connected by toggle-braces E with the bed-plate A in such manner that, with the said braces in one position, as in Fig. 1, the ladder-section will be nearly vertical, while, when the brace is in another position, as shown in Fig. 3, the said section will be much nearer horizontal. Upon the rear side of the ladder-section D is another, F, connected therewith by clasps or guides *c*, which permit a longitudinal movement of the section F upon the section D, and in like manner the sections F G are provided with clasps or guides, the number of ladder-sections thus connected being greater or less, as may be preferred. Working in bearings fixed upon the standards, or upon the bed-plate, as desired, is a shaft, H, carrying at each end two notched, cogged, or spurred wheels, I. These wheels are preferably shaped after the manner of ratchet-wheels, as represented in Figs. 1 and 3, the teeth *a'* thereof gearing into the rounds *d* of the ladder-sections, and studs *e* placed intermediately with the said rounds in such a way that, when turned in the proper direction, the said wheels will lift longitudinally each ladder-section as it comes adjacent. For example, first acting on the section G, it elevates the same until its clasps or guides *c* press inward and catch upon certain spring-catches *f*, provided in the sides of the other ladder-section F, upon which it moves, the moving section G being thus fixed upon the end of the other section F, and extending above the same. This done, the second or next adjacent ladder-section F falls into gear with the lifting-wheels I, this being permitted by the movement allowed to the lower end of the ladder-section D by the toggle-braces, and that permitted to the upper end of said section by the movement of the slide C in the slots *a*, and, by the continued rotation of the said lifting-wheels, the section is elevated in the same way as the section G until, in the same manner as with the latter, its clasps or guides *c* pass over and catch upon other spring-catches *f*, which attach it fixedly to and extending upward from the top of the section D. It will thus be seen that the connected ladder-sections constitute together a telescopic ladder, elevated or elongated for use by the action of the lifting-wheels, and with its sections held in their elevated positions by the fixed resistance of the spring-catches *f*. As thus elevated, in the immediate neighborhood of a burning building, the ladder will afford access to the windows thereof or a means of escape therefrom. From each of the spring-catches *f*, passing inward to the one opposite, is a cord, *g*, extended at its center to the ground. By pulling this cord the

spring-catches are drawn inward, and, thereby releasing each pair of catches, the ladder-section above enables the same to be brought downward, when desired, a reverse movement of the lifting-wheels during this descent of the ladder-sections being, of course, permitted. The movement of the lifting-wheels is obtained from that of a spur-wheel, *m*, gearing into a pinion, *n*, on the shaft H of the lifting-wheels; but loose upon this shaft, between the lifting-wheels, is a drum, K, upon one end of which is provided a pinion, *r*, having the same diameter and pitch of teeth as the pinion *n*, so that the shaft *r'* of the spur-wheel *m*, being moved longitudinally, the spur-wheel *m* may be brought out of gear with the pinion *n* and into gear with the pinion *r* to actuate the drum K. When the spur-wheel is thus disconnected from the pinion *n* the shaft H is kept from turning backward by a pawl, *a''*, working against a ratchet-wheel, *b''*, on the said shaft. Of course this pawl is thrown out of gear when the ladder-sections are brought down, as hereintofore set forth. A rope, N, extends from the drum K up over a pulley, *u*, on the top of the ladder-section G, and, thence depending, has a car or platform, M, at its extremity, the shaft *r* being provided with a crank, *r''*, or other suitable means, whereby it may be rotated. The drum is readily actuated to raise or lower the car in providing for the escape of persons or the removal of goods, &c., from the upper windows or stories of buildings. When the ladder-sections are lowered, as herein previously described, and as indicated in Fig. 3, the apparatus may be placed upon any suitable vehicle for transport from place to place.

What I claim as my invention is—

The combination of the toggle-braces, slotted standards, and weighted slides with the telescopic ladders, operating as set forth, the whole arranged as and for the purpose specified.

PETER PETERSON.

Witnesses:

SHERMAN T. ADDIS,

JOHN S. TURRILL.