

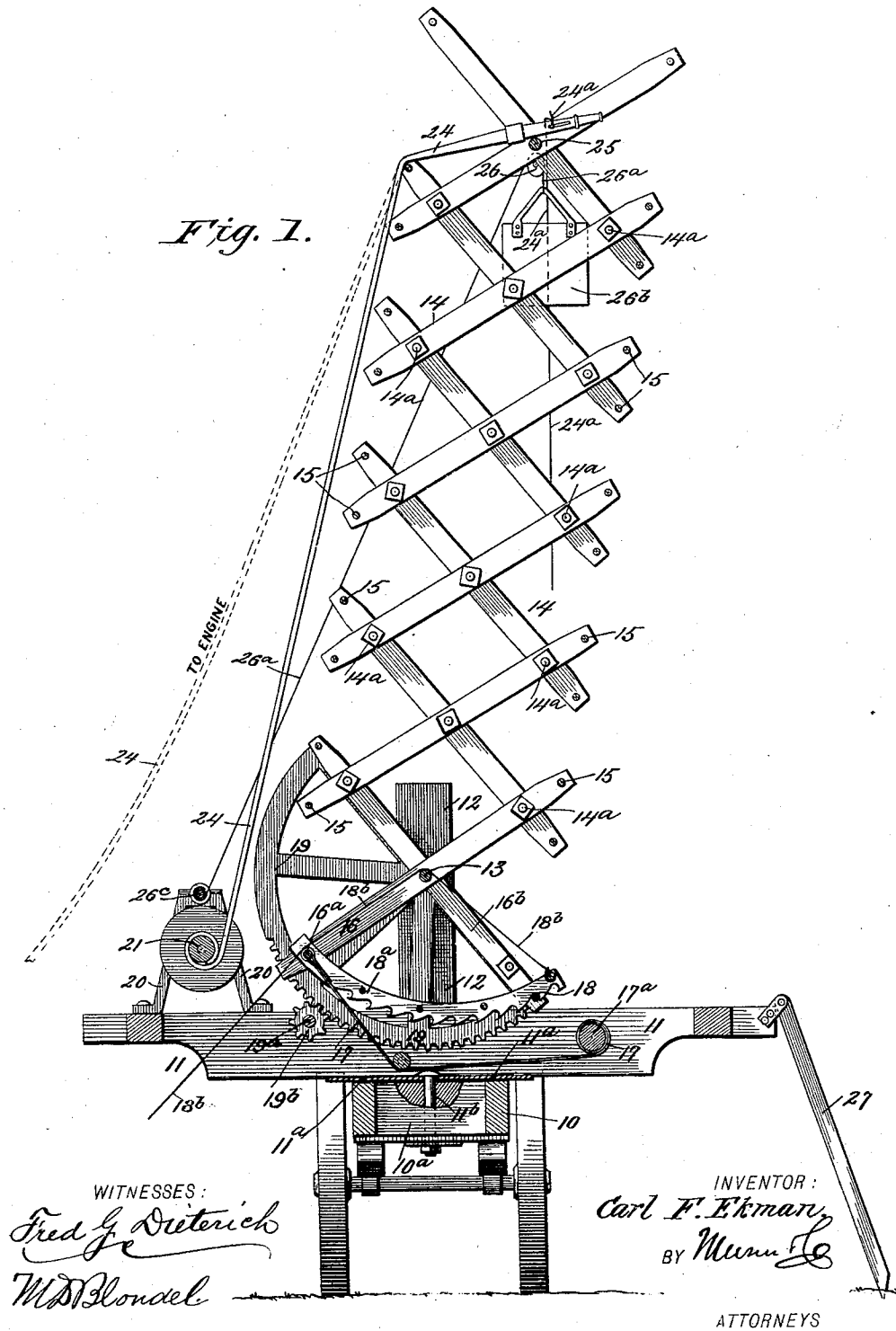
(No Model.)

2 Sheets—Sheet 1.

C. F. EKMAN.
FIRE ESCAPE.

No. 479,257.

Patented July 19, 1892.



(No Model.)

2 Sheets—Sheet 2.

C. F. EKMAN.
FIRE ESCAPE.

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Fig. 2.

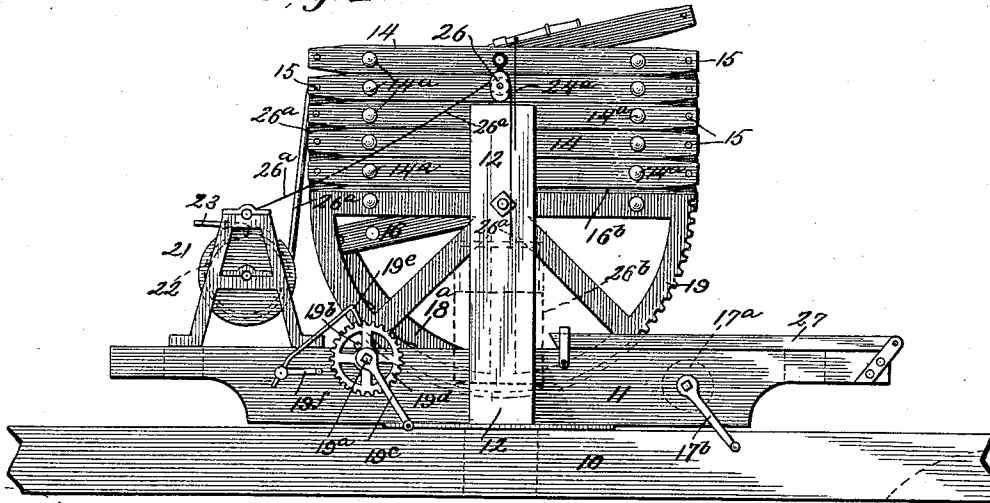


Fig. 3.

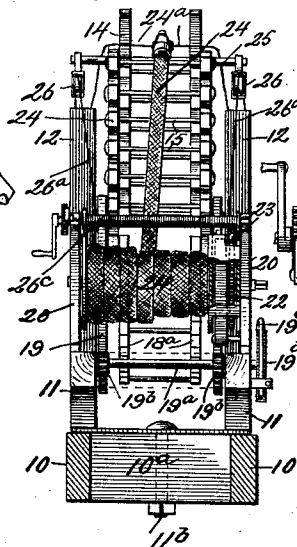


Fig. 5.

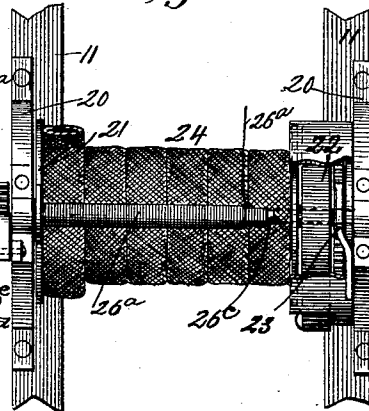


Fig. 4.



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CARL F. EKMAN, OF MARSHALLTOWN, IOWA.

FIRE-ESCAPE.

SPECIFICATION forming part of Letters Patent No. 479,257, dated July 19, 1892.

Application filed February 9, 1892. Serial No. 420,929. (No model.)

To all whom it may concern:

Be it known that I, CARL F. EKMAN, residing at Marshalltown, Marshall county, Iowa, have invented a new and useful Improvement in Fire-Escapes, of which the following is a specification.

This invention relates generally to fire-escapes, and particularly to an improvement in that class thereof known as "portable extension-ladder escapes."

The object of my invention is to provide a ladder that can be quickly and easily extended at any desired angle.

It is also the object of my invention to connect the hose with said ladder in order to make a water-tower of the same in extremely dangerous cases, and it is also intended to attach hoisting devices to the ladder, whereby a number of people can be rescued at one time, similar to ordinary hoist-escapes.

A further object of my invention is to provide for the balancing of the ladder truck or frame.

With these various objects in view my invention consists in the peculiar construction of the several parts and their novel combination or arrangement, all of which will be fully described hereinafter, and pointed out in the claims.

In the drawings forming a part of this specification, Figure 1 is a vertical sectional view showing the ladder extended. Fig. 2 is a side view showing the ladder folded. Fig. 3 is a sectional end view. Fig. 4 is a detail view of the locking-frame. Fig. 5 is a detail view of the hose-reel, &c.

In the practical embodiment of my invention I employ a suitably-supported wagon-body or truck 10, which is provided with a central cross beam or block 10^a. A ladder-carrying frame 11 is arranged upon the truck 10, said frame 11 being provided with a central bearing-plate 11^a, which rests upon the cross block or frame 10^a, and said frame and truck are connected with each other by means of a pivotal bolt 11^b, which is passed through the said bearing-plate and beam. By this construction the frame 11 is adapted to turn horizontally upon the body or truck, for a purpose hereinafter explained. Parallel upright standards 12 12 are secured to the frame 11 upon opposite sides near the center of the

same, and connecting the said standards near their upper ends is the horizontal cross-bar or journal 13, upon which is mounted the lazy-tong extension-ladder 14. The lazy-tongs of this ladder are peculiarly constructed, inasmuch as the links or levers comprising the structure are continued beyond the outer joints or pivots 14^a and the ends of the opposing links or levers connected by means of the rounds or bars 15, thus producing a ladder which can be easily ascended or descended, as by extending the links or levers the rounds are brought sufficiently close to one another to permit such ascent or descent even when the tongs are extended to their full extent. A cross-bar 16^a connects the lower ends of the inner set of prime levers 16, and to said cross-bar 16^a is attached an elevating strap or cable 17, which in turn is connected with and adapted to be wound upon a drum or spool 17^a, journaled in the ladder-carrying frame. The drum or spool 17^a is revolved by means of a crank 17^b, and by revolving said drum or spool the strap or cable is wound thereon, and the latter will be extended as usual in this class of escapes.

In order to lock the ladder in any desired position, I provide a locking-bar 18, which extends transversely across the frame near the bottom of the same, but above the strap or cable 17, and to the cross-bar 16 is hung the toothed frame 18^a, which extends inwardly across the transverse locking-bar and is provided with a series of ratchet-teeth upon its lower face, which engage the said locking-bar, and thus hold the tongs extended. By having the frame provided with ratchet-teeth it will slide freely over the locking-bar when the ladder is being extended, and will lock by its own weight as soon as the tension is released. A rope 18^b is attached to the free end of the toothed frame and passed over the journal 13, whereby the teeth of said frame can be lifted out of engagement with the locking-bar when it is desired to contract the ladder. Toothed sectors 19 are rigidly secured to the outer set of prime levers 16^b, the curved or toothed sides of said sectors projecting downwardly, as shown. A shaft 19^a is passed transversely through the frame 11 upon the side opposite the winding-drum, and upon said shaft are mounted the pinions 19^b, which

engage the teeth of sectors 19. The shaft 19^a is operated by means of a crank 19^c, and also carries a ratchet-wheel 19^d, which is adapted to be engaged by a pawl 19^e, pivoted to the side of the frame. By revolving the shaft in either direction the ladder, either before or after extension, can be adjusted to the desired inclination, and the pawl 19^e, in connection with the locking-frame 18^a, will serve to hold the ladder in its extended and adjusted positions. A lever 19^f is connected with the pawl 19^e, whereby said pawl can be readily thrown into or out of engagement with the ratchet-wheel.

Uprights 20 20 are secured to the frame 11 adjacent to the pinion-shaft, and between said uprights is journaled a hose-reel 21, said reel having a spring winding mechanism 22 attached to one end of the same, and a pawl 23 is employed in connection with said mechanism to lock the same after it has been wound, as hereinafter explained. The water-hose 24 is wound upon the reel 21, the nozzle of said hose being adjustably mounted upon a cross-rod 25, which connects the upper links of the lazy-tongs, and connected with said nozzle are the ropes 24^a, one upon each side of the ladder, by means of which the nozzle can be drawn from one side to the other in order to throw the stream in any desired direction. Pulley-blocks 26 are attached to the upper portion of the ladder upon opposite sides of the same, and through said blocks are passed the ropes or cables 26^a, to which are attached the baskets or carriages 26^b, the opposite ends of said ropes being connected with a transverse winding-shaft 26^c, journaled in the uprights 20 20 above the hose-reel, whereby the said baskets or carriages are raised to and lowered from the windows of a building, and by winding the ropes in opposite directions upon the shaft 20^c one basket will be ascending as the other one is descending.

From the above it will be seen that I provide a compact and efficient fire-escape and ladder, which can be rapidly transported from place to place.

The wagon or truck is usually stopped in the middle of the street and the ladder-frame released and swung around at right angles to the said body or truck, the ladder being inclined toward the building to which it is to be raised. The hose-reel upon the opposite end of the frame acts as a counterbalance to the ladder in maintaining the steadiness of the frame; but to prevent any movement whatever I provide the legs 27, which are hinged to the corners of the frame and adapted to be turned down to support said frame. The frame having now been adjusted, the ladder is extended by winding the strap or cable upon the winding-drum, and the inclination

of said ladder can be regulated at any time by means of the toothed sectors and pinion-shaft. In case the hose is elevated with the ladder, the spring mechanism of the reel is wound as the hose is unreeled, and when the ladder is to be contracted the pawl 23 is thrown out of engagement with said mechanism, and the spring will cause the reel to automatically wind the hose thereon.

By means of the winding-shaft 26^c the baskets or carriages can be raised and lowered, as already described.

The links being extended beyond the outer joints of the lazy-tongs is quite an essential feature, as by connecting said extended ends by means of rounds I provide the necessary ladder, which can be easily ascended or descended, as the rise from one round to the other is never too great. One prime lever being attached to the the sectors, which are always secured, the ladder can be easily extended by operating upon the other prime lever.

While I have shown and described hand-power devices for raising and lowering the various parts, it is obvious that any suitable motive power may be employed, and any changes necessary to employ such preferred power can be readily effected.

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

1. In a fire-escape, the combination, with the lazy-tongs the links or levers of which are extended beyond the outer joints, of the rounds or bars connecting the ends of the said links or levers, substantially as shown and described.

2. The combination, with the frame, of the upright standards, the lazy-tong extension-ladder journaled between the same, the elevating-strap, the winding-drum, the locking-bar, the toothed swinging frame connected with the ladder and adapted to engage the locking-bar, the toothed sector, the pinion-shaft, ratchet-wheel thereon, and engaging pawl, all arranged substantially as shown and described.

3. In a fire-escape, the combination of a lazy-tong extension-ladder, a toothed semi-circular segment secured to one of the lower members, an elevating-strap attached to the other lower member, the pinion and shaft for operating the toothed sector, and the pawl for locking the same, whereby the ladder can be adjusted at any suitable angle, and the winding-drum for operating the elevating-strap, substantially as shown and described.

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Witnesses:

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