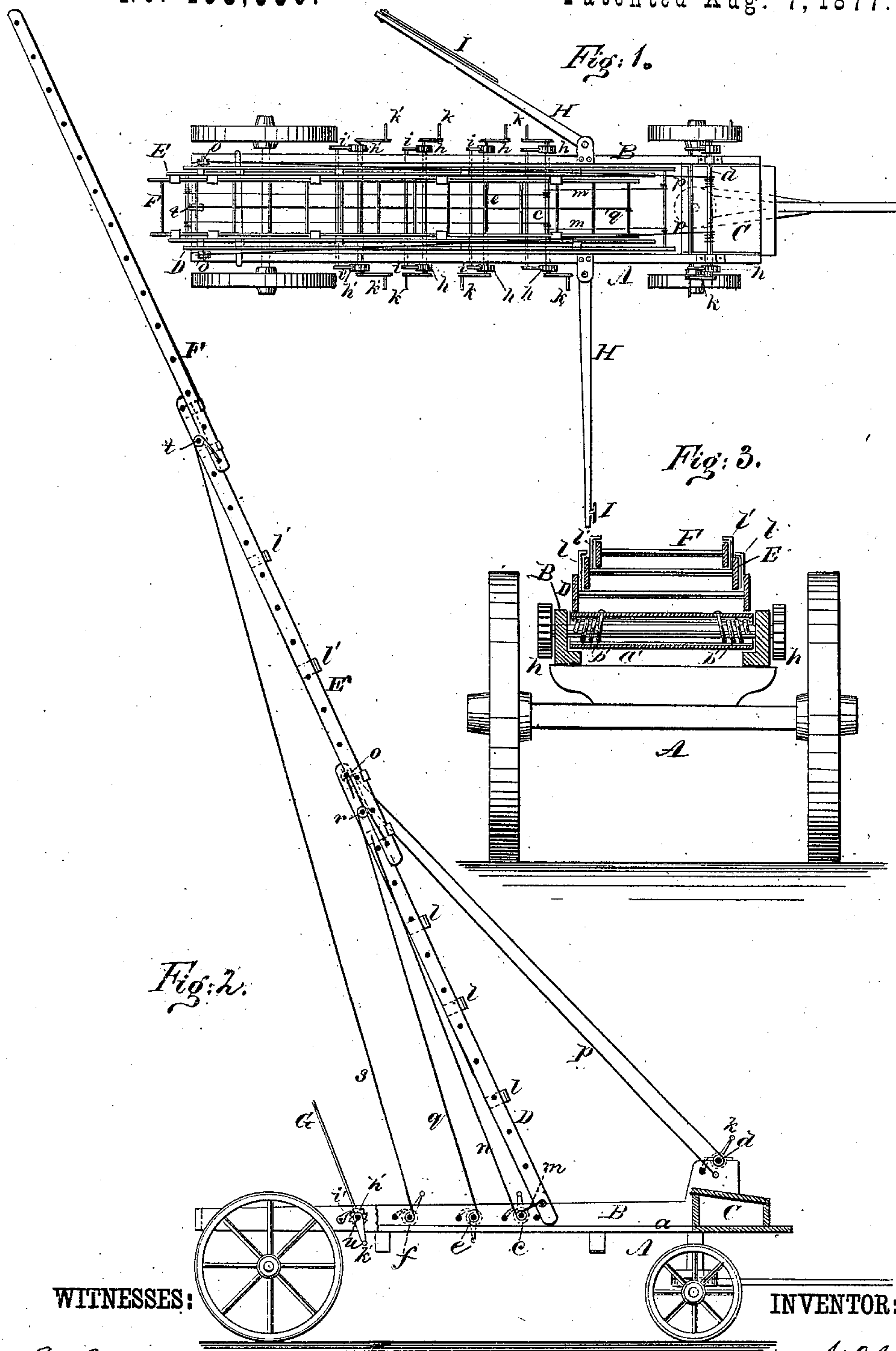


W. A. HOYT.
FIRE-ESCAPES AND EXTENSION-LADDERS.

No. 193,960.

Patented Aug. 7, 1877.



WITNESSES:

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WILLIAM A. HOYT, OF PARIS, TEXAS.

IMPROVEMENT IN FIRE-ESCAPES AND EXTENSION-LADDERS.

Specification forming part of Letters Patent No. **193,960**, dated August 7, 1877; application filed June 30, 1877.

To all whom it may concern :

Be it known that I, WILLIAM A. HOYT, of Paris, in the county of Lamar and State of Texas, have invented a new and Improved Extension-Ladder and Fire-Escape, of which the following is a specification:

Figure 1 is a plan view, showing the ladder closed on the truck. Fig. 2 is a side elevation, in part section, showing the ladder extended. Fig. 3 is a detail view of one of the winding-shafts.

Similar letters of reference indicate corresponding parts.

The object of my invention is to provide an efficient portable extension-ladder that may be used by firemen in gaining access to buildings, and may also be used as a fire-escape.

The invention consists in the construction and arrangement of parts, as hereinafter described and claimed.

In the drawing, A is a truck of suitable size and length for supporting the ladders. The sides of the truck-frame B are tapered from the front to the rear of the truck, and are provided with an internal flange, *a*. A ballast-box, C, is placed over the front axle of the truck, and windlasses *c d e f* are journaled in the frame. Each windlass is provided with ratchets *h* and pawls *i*, which prevent the rope from unwinding, and with cranks *k*, by which they are turned.

Upon the truck-frame B three ladders, D E F, are placed. Clips *l* are attached to the sides of the lower ladder D, between which and the rounds of the said ladder the ladder E slides, and clips *l'* are attached to the sides of the ladder, which form a guide for the ladder F. The lower end of the ladder D is connected with the windlass *c* by ropes *m*, and the upper end of the ladder is connected with said windlass by ropes *n*. The ropes *m* *n* are wound in opposite directions around the windlass, so that when the latter is rotated in one direction the lower end of the ladder will be drawn back by ropes *m* till it comes in contact with the windlass, as shown in Fig. 2, and the ropes *n* will be simultaneously unwound. The ropes *m* and windlass *c* further serve to hold the lower end of the ladder firmly in

place when the ladder is elevated or being elevated, and the ropes *n* serve as a stay for the ladder during the same time.

Pulleys *o* are attached to the ladder D near its upper end, one at each side of the ladder, and a rope, *p*, is attached to the standards that support the windlass *d* at the front part of the frame B, and run over the pulleys *o*, and are attached to the windlass *d*. A rope, *q*, is attached to the windlass *e*, and runs over a pulley, *r*, at the upper end of the ladder D, and is attached to the lower round of the ladder E. A rope, *s*, is secured to the windlass *f*, and runs over a pulley, *t*, at the top of the ladder E, and is attached to the lower round of the ladder F.

G is a frame fixed to the shaft *u*, and designed for raising the upper end of the ladders, so that they may be more readily raised by the windlass *d*. A movable sleeve, *a'*, is placed upon each of the windlass-shafts, and contains springs *b'*, of sufficient strength to take up the slack in the ropes. The shaft *u* is provided with ratchets *h'* and pawls *i'* and with cranks *k'*, by which the frame is thrown upward.

Arms H, having attached to them folding legs I, are hinged to the sides of the frame B, one at each side, and when folded parallel with the frame they prevent the cranks attached to the windlasses from turning. When unfolded at right angles to the frame, they form a brace or support, which prevents the ladders from tipping.

Stirrups K are attached to the frame B, for receiving ordinary ladders. Any number of ladders may be employed, and part or all of them may be used.

When the ladders are to be elevated, the windlass *c* is first turned, so as to wind the ropes *m* and draw the foot of the ladder toward the windlass. The rope *n* at the same time unwinds.

When the foot of the ladder is near the windlass, the pawl *i* engages the ratchet *h*, and if the ladders are heavy they are raised by moving the frame G. The windlass *d* is now operated, and all of the ladders are raised together to the required angle. The ladders

E F are then carried up by turning the windlass *e*, and the ladder F is carried still farther by turning the windlass *f*.

To lower the ladder, these operations are reversed until the ladder lies flat on the truck. The front windlass *d* is then rotated to wind the ropes *p* around it, and thus draw the foot of the ladder back toward the box C. In such case the ropes *m n*, respectively, unwind from and wind on the windlass *c* until the foot of the ladder is arrested by contact with the box C, when the pawls of the respective windlasses *c d* lock the latter, and thereby hold the ladder secured in place on the truck in the folded state.

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

1. The combination of the truck-frame B,

ladders D E, and windlass *c*, having ropes *m n* for drawing the ladders forward and supporting them while being raised, substantially as shown and described.

2. The combination of windlass *d*, mounted on the elevated front of the truck, the ladder-ropes *p*, and the ladder D, made adjustable at its foot, so that when lowered to a horizontal position the windlass may be operated to draw or slide the ladder toward the front, as described.

3. The frame G, having the shaft *u*, provided with ratchets, pawls, and cranks, as and for the purpose shown and described.

WILLIAM A. HOYT.

Witnesses:

C. SEDGWICK,

ALEX. F. ROBERTS.