(No Model.)

J. M. TRIMBLE.

LADDER.

No. 313,387. Patented Mar. 3, 1885.

Fig. 1.

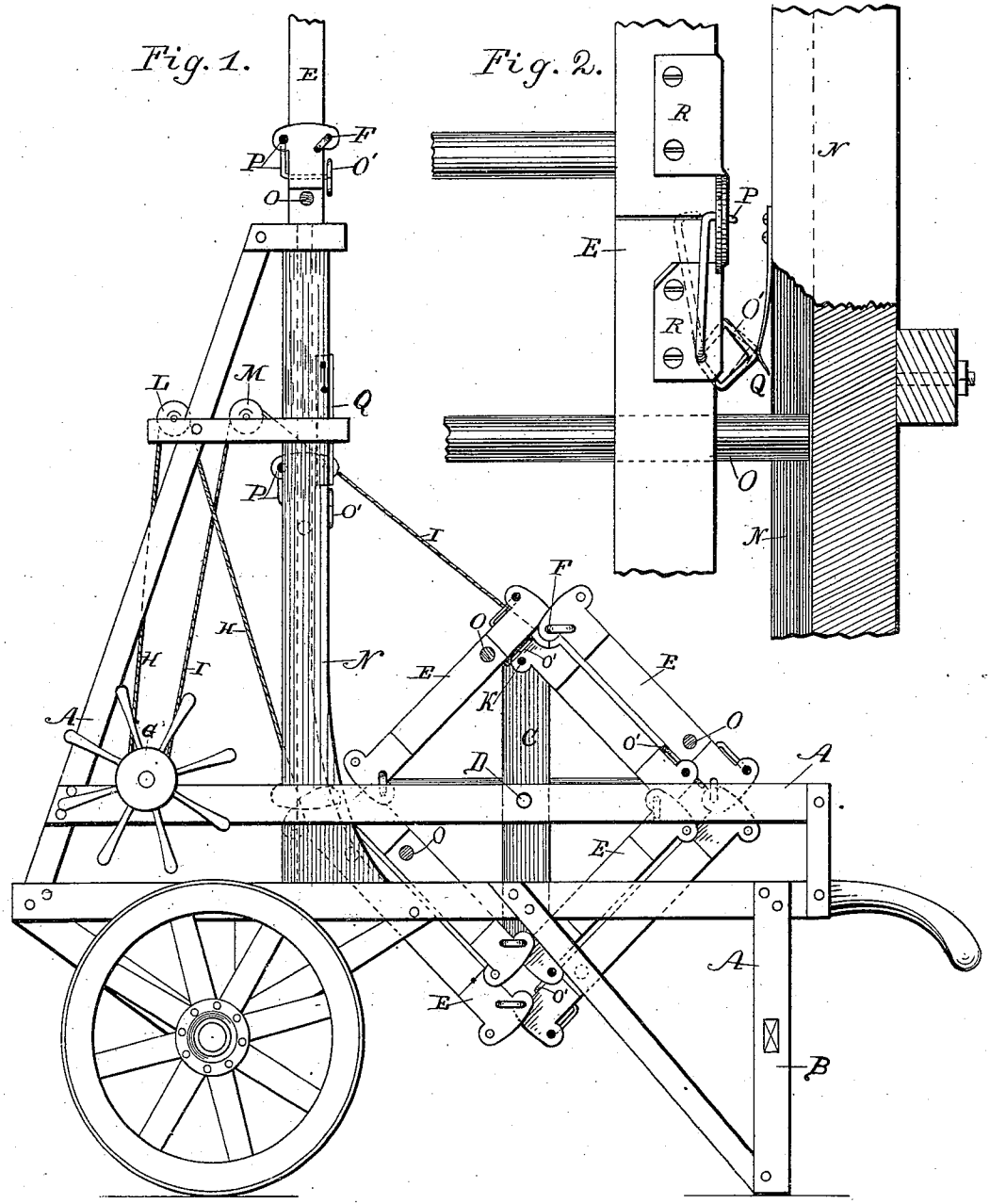


Fig. 2.

WITNESSES:

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UNITED STATES PATENT OFFICE.

JAMES MONROE TRIMBLE, OF SEDAN, KANSAS.

LADDER.

SPECIFICATION forming part of Letters Patent No. 313,387, dated March 3, 1885.

Application filed September 8, 1884. (No model.)

To all whom it may concern:

Be it known that I, J. M. TRIMBLE, a citizen of the United States, residing at Sedan, in the county of Chautauqua and State of Kansas, have invented certain new and useful Improvements in Ladders, of which the following is a description.

This invention relates to that class of ladders which are adapted to be extended or retracted at will, and made portable, more particularly for the use of firemen in ascending houses from the outside, or in ascending to the necessary height without other support than the ladder and its accessories; and the object of the invention is to provide means whereby a ladder may be wound upon a reel or be extended therefrom, and its joints be automatically secured in the act of extension or released in the act of retraction.

To this end my invention consists in the construction and combination of parts forming a ladder, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of my invention, and Fig. 2 is a rear elevation of a portion of a ladder at the joint on a larger scale.

A represents any suitable truck or wagon. I have here shown a two-wheeled hand barrow or truck having two rear legs, B, upon which the rear portion of the truck is supported when at rest.

C is a reel journaled to revolve in the frame at D.

E is my ladder, made in sections and hinged together at F. The first three sections at the bottom are the same length as the three sides of the reel, and are adapted to be wound thereon, like a chain belt. The next following sections are enough longer than the first three to wind thereon, extending at the corners, as required by the increased circumference, to lie flat down upon the previously-wound sections.

G is a windlass, upon which two ropes, H and I, are wound in opposite directions, each occupying about half the length of the windlass-drum. The lower end of the ladder is hinged to the reel at K, and the rope H is attached either to the reel at the same point or to the lower end of the ladder, to be wound with the ladder upon the reel from the windlass, drawing over a roller, L. The rope I is attached to the reel at one side of the ladder, to be wound opposite to the ladder around the reel; but it passes off therefrom to a roller, M, and thence to the windlass G. If the windlass be turned to draw upon rope H, the ladder will be unwound, and by the rope running up over the roller L will be drawn upward.

N represents two guideways, each grooved to receive arms O', which project from the sides at the upper end of each section of the ladder. The side guides are hopper-mouthed at each end to guide the arms O into the grooves. The arms O' serve as levers to the hooks P, which secure the ladder from bending at the joints by passing through projecting ears R of the hinge-plates.

Q Q are spring-stops standing in the path of the outer ends of arms O'. When the ladder passes upward, its sections are aligned by the guides N, and when so aligned the holes for the hooks P register with each other. Now, the stops Q retain the arms O, causing them to insert the hooks P and secure the ladder-sections in line. The ladder may now project upward as one piece without other supports.

In raising the ladder the windlass has wound on the rope H and let off the rope I, which latter, being attached to the top of the ladder, has gone up along with it. By reversing the action of the windlass the rope I will be wound thereon, drawing down the ladder, letting off rope H, and winding it on the ladder on the reel. As the ladder descends the arms O', coming in the opposite direction against the same stops Q, are moved to disengage the hooks, permitting the joints to bend for the ladder to be wound onto the reel. The first side of the reel wound by the ladder is its under half. The side guides, N, are tangent to the angles of the reel, and I prefer to fix them in a vertical position, yet they may be slanted at any practicable angle.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with a truck and a reel journaled thereon, of a hinge-jointed lad-

der to be wound upon the reel, a windlass, two ropes to be wound in opposite directions upon the windlass and upon the reel, side guides and arms on the sides of the sections of the ladder to run therein, hooks and perforated projections on the hinge-plates to secure the joints, an arm on each hook, and a spring-stop in the path of the arm, as and for the purpose specified.

2. The combination, with a supporting-frame, a reel journaled therein, and a ladder made in hinged sections to wind upon the reel, of a windlass consisting of a single winding-drum journaled in the frame, a rope attached at one end to wind upon the reel, and at the other end to wind upon the windlass, and another rope attached at one end to the reel, and at the other end to the windlass, to wind upon both in the direction opposite to the first-mentioned rope, substantially as shown and described.

JAMES MONROE TRIMBLE.

Witnesses:
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