(No Model.) 2 Sheets—Sheet 1.

J. E. WALKER.

EXTENSION FIRE LADDER.

No. 301,308. Patented July 1, 1884.

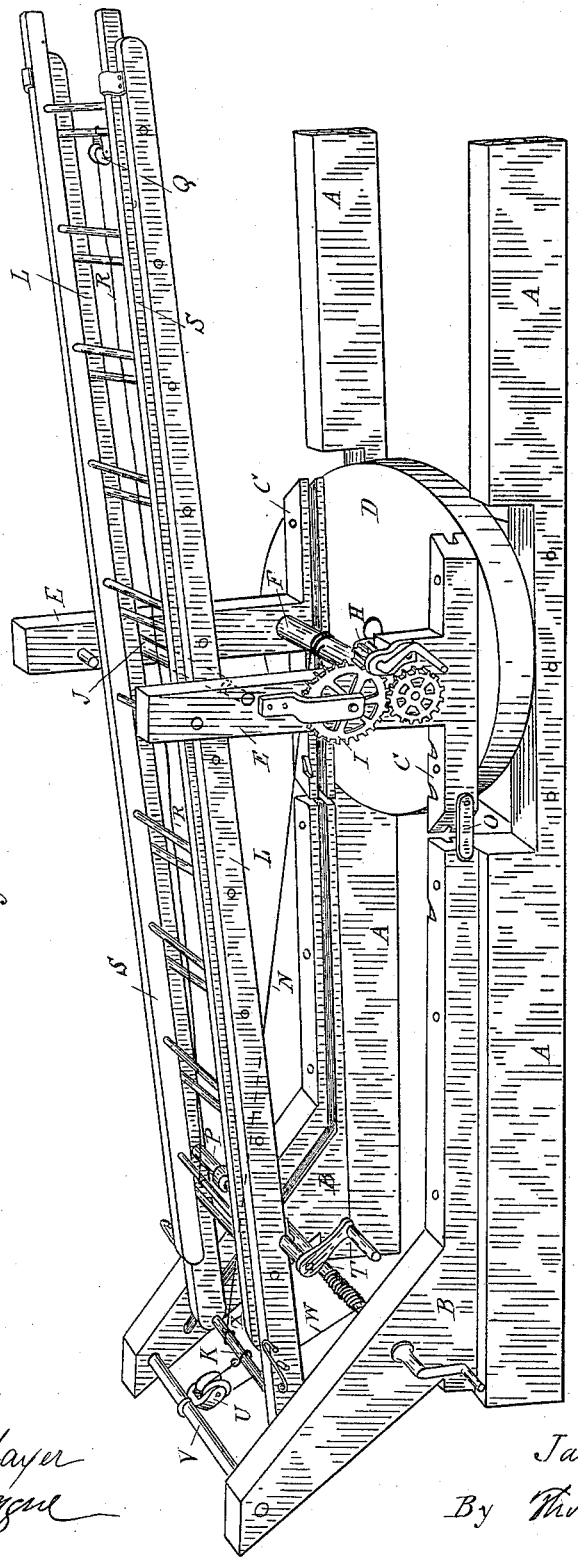

Fig. 1

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 2

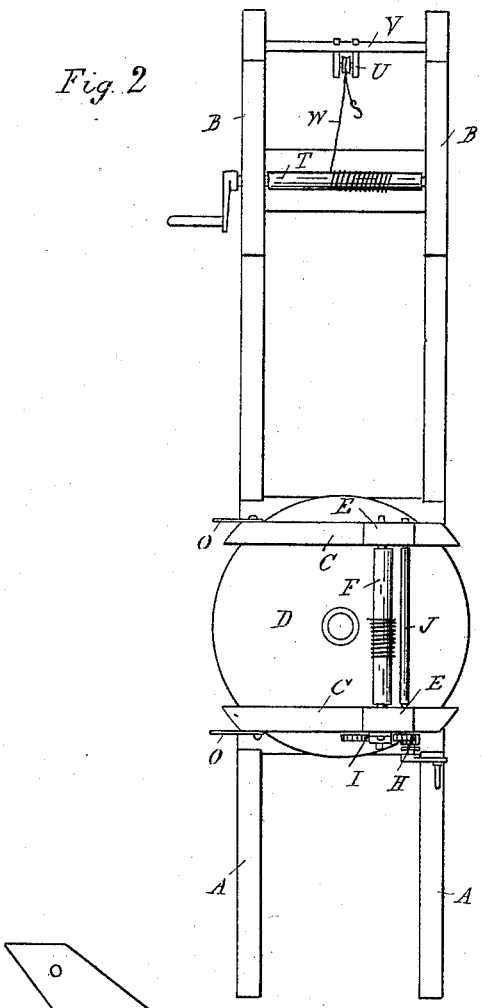
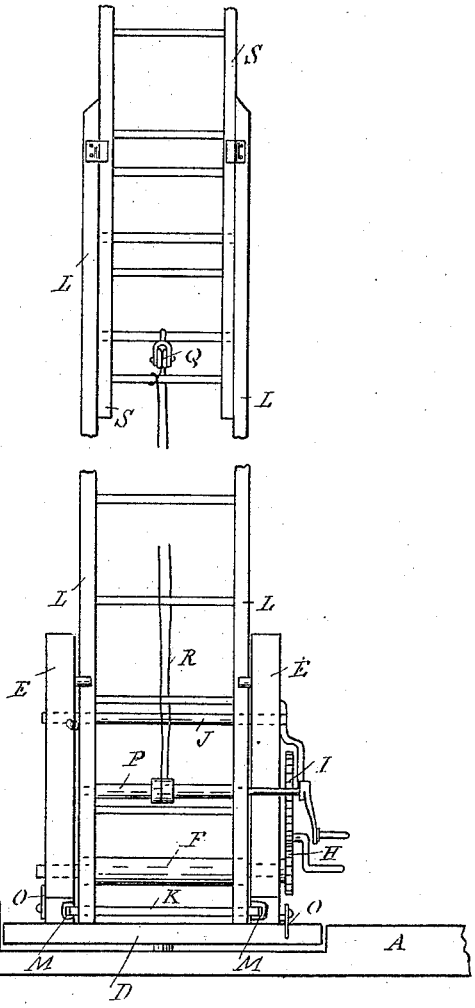


Fig. 3



Attest
J. Paul Mayer
[signature]

Inventor
James E. Walker
By Thos. J. Sprague Atty

UNITED STATES PATENT OFFICE.

JAMES E. WALKER, OF DETROIT, MICHIGAN.

EXTENSION FIRE-LADDER.

SPECIFICATION forming part of Letters Patent No. 301,308, dated July 1, 1884.

Application filed March 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, JAMES E. WALKER, of Detroit, in the county of Wayne and State of Michigan, have invented new and useful Improvements in Extension Fire-Ladders; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to certain new and useful improvements in the construction of what are ordinarily termed "ladder-trucks" for firemen's use.

In the construction of such trucks as are in use and known, too much power is required to elevate the ladders from their recumbent position on the truck to the position required for use, such position being vertical, or nearly so; and the object of the present invention is to obviate this difficulty; and to this end the present invention consists in the peculiar construction, operation, and combinations of parts, as more fully hereinafter described.

Figure 1 is a perspective view of the ladder upon its bed, such bed being designed to rest upon a suitable truck, which is not shown. Fig. 2 is a plan of the bed looking from the top. Fig. 3 is a side elevation showing the ladder raised and partially turned upon its rotating base.

In the accompanying drawings, which form a part of this specification, A represents the bed, which is designed to rest upon a suitable truck. Upon one end of this base are secured the grooved ways B, the extreme outer ends of which turn upwardly, as shown, at an angle of about thirty-five degrees, and this angle may be varied more or less without departing from the spirit of my invention. Extensions C of these ways, but entirely disconnected from the same, are secured on the same horizontal plane to the turn-table D, which is centrally secured upon the bed in any of the known ways of securing such turn-tables for effectual work. Upon this turn-table are secured the standards E, between which, and near the bottom thereof, is journaled the shaft F, the projecting end of which has secured to it a toothed pinion, which receives motion by means of the crank and pinion H and the main driving-wheel I, which is properly secured to a counter-shaft, and projects from one of the standards, as shown. At a considerable distance above the shaft F, and preferably in rear of the axis thereof, and to the said standards, is suitably journaled a bearing roller or shaft, J. A rod, K, is secured to the foot of the ladder L by passing through the legs thereof, and the projecting ends of said rod are provided with anti-friction wheels M, (see Fig. 3,) which travel in the grooves in the ways.

The ladder, in the position shown in Fig. 1, is nearly horizontal, resting not far from the center of its length upon the rod J, while its foot, through the friction-wheels journaled thereto, is held against the upper ends of the grooves in the inclined portion of the ways by cord W and its attached hook. When it is desired to raise the ladder, the crank H is turned in a proper direction, giving motion to the shaft F, secured to which is a rope or chain, N, the opposite end of which is secured to the rod K at the foot of the ladder, and by winding up this rope upon said shaft the foot of the ladder is compelled to travel down the inclined grooves, its weight principally resting upon the bearing-roller J, and the foot of said ladder, under the continued actuation of the crank, travels in the grooves in the ways to the rear, and enters the grooves upon the extensions of such ways upon the turn-table until it is at the desired incline. Now, by disengaging the stops O, which lock the turn-table in position, said turn-table may be rotated as far as desired, or until the upper end of the ladder will rest against or near the height to be reached.

P is a winch suitably journaled to the ladder L near its foot, and near the opposite end, and to one of the rounds thereof, is secured a block, Q, and a rope, R, passing around said winch and through such block, is secured, in the ordinary way, to the extension S of the ladder, which may be used or not, as occasion may require. To the inclined portion of the grooved ways there is secured another winch, T, and a block, U, is secured to a suitable stretcher, V, near the top of such inclined ways. A rope, W, is secured to such winch, and, passing through such block, terminates in a hook, X. When desired to draw back the ladder, this hook is extended and engaged

with the rod near the foot of the ladder, and the reverse motion being given to the crank and pinion H and a suitable motion given to the winch T, the ladder is drawn back, after the turn-table has been replaced to its original position, to the position shown in Fig. 1.

By this construction the power required to elevate the ladder is reduced to the minimum by furnishing the central bearing-roller, upon which, in the process of elevation, it turns, as upon a fulcrum, while it is held in position against displacement by the friction-rollers traveling in the grooved ways.

What I claim as my invention is—

1. In combination with the bed A, grooved ways B, and ladder L, the foot of which is provided with friction-rollers, the turn-table D, having permanently secured thereto the extensions C, carrying the standards E, and grooved to correspond with the grooves in the ways B, of which they form extensions, substantially as and for the purpose specified.

2. The combination of the bed A, grooved ways B, turn-table D, provided with extensions C, rigidly secured thereto, and carrying the standards E, shaft F, and bearing-roller J, ladder L, provided with friction-rollers M, and means, substantially as described, for raising and lowering the ladder, as and for the purposes set forth.

3. A ladder bearing at all times upon a roller near the center of its length, which roller is supported upon standards secured to a turn-table upon the bed, grooved ways, friction-rollers secured to the foot of such ladder and traveling in said groove, and means, substantially as described, for elevating and retracting said ladder, substantially as and for the purposes specified.

4. The combination of the bed A, grooved ways B, secured thereto, and terminating at one end in an upward incline, turn-table D, having permanently secured thereto the standards E, the lower ends of which terminate in extensions C, grooved to correspond with the grooves in the ways B, and the ladder L, the foot of which is provided with friction-rollers M, substantially as and for the purpose specified.

JAMES E. WALKER.

Witnesses:
H. S. SPRAGUE,
J. PAUL MAYER.