

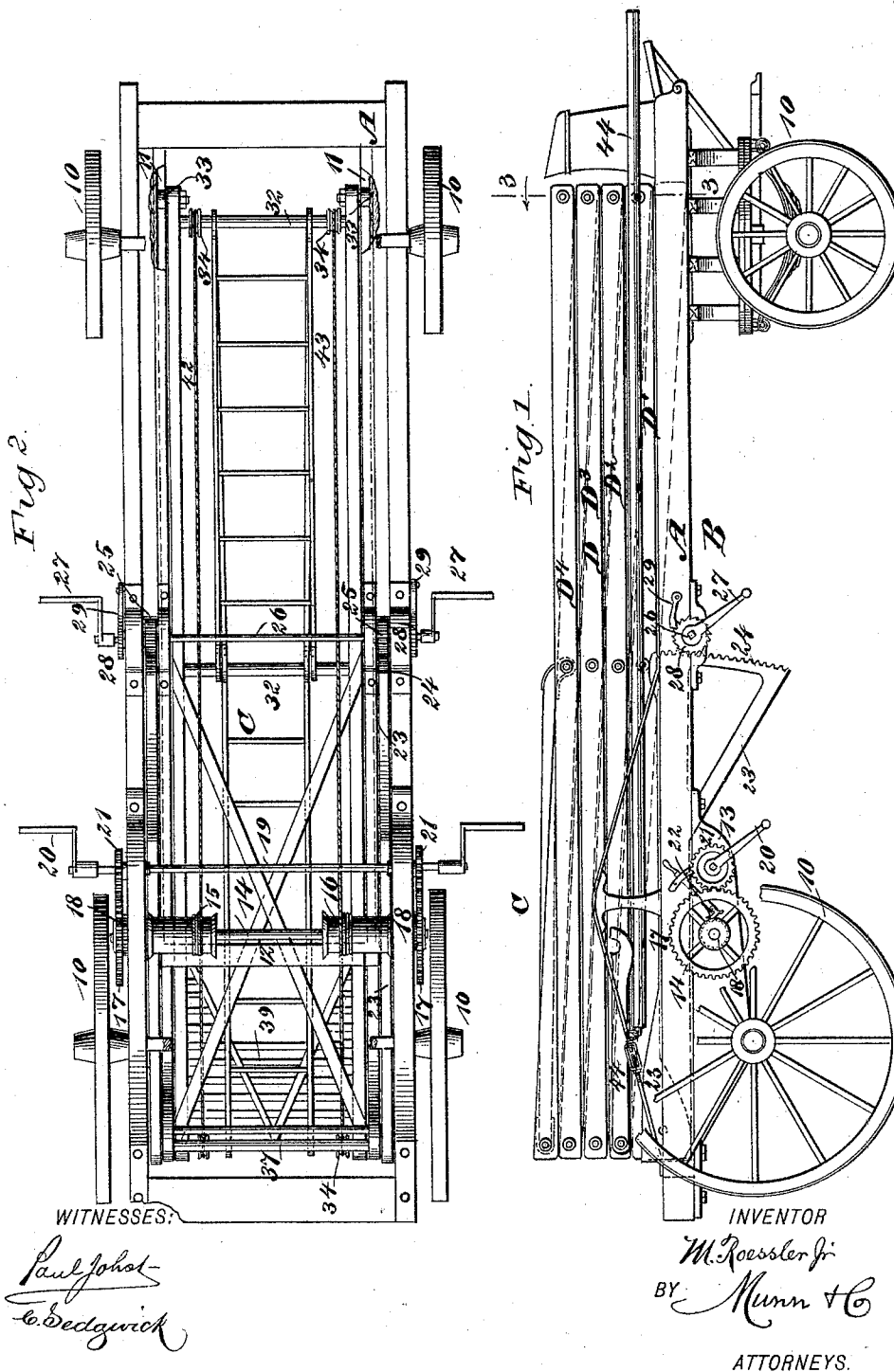
(No Model.)

2 Sheets—Sheet 1.

M. ROESSLER, Jr.
LADDER AND TRUCK.

No. 497,131.

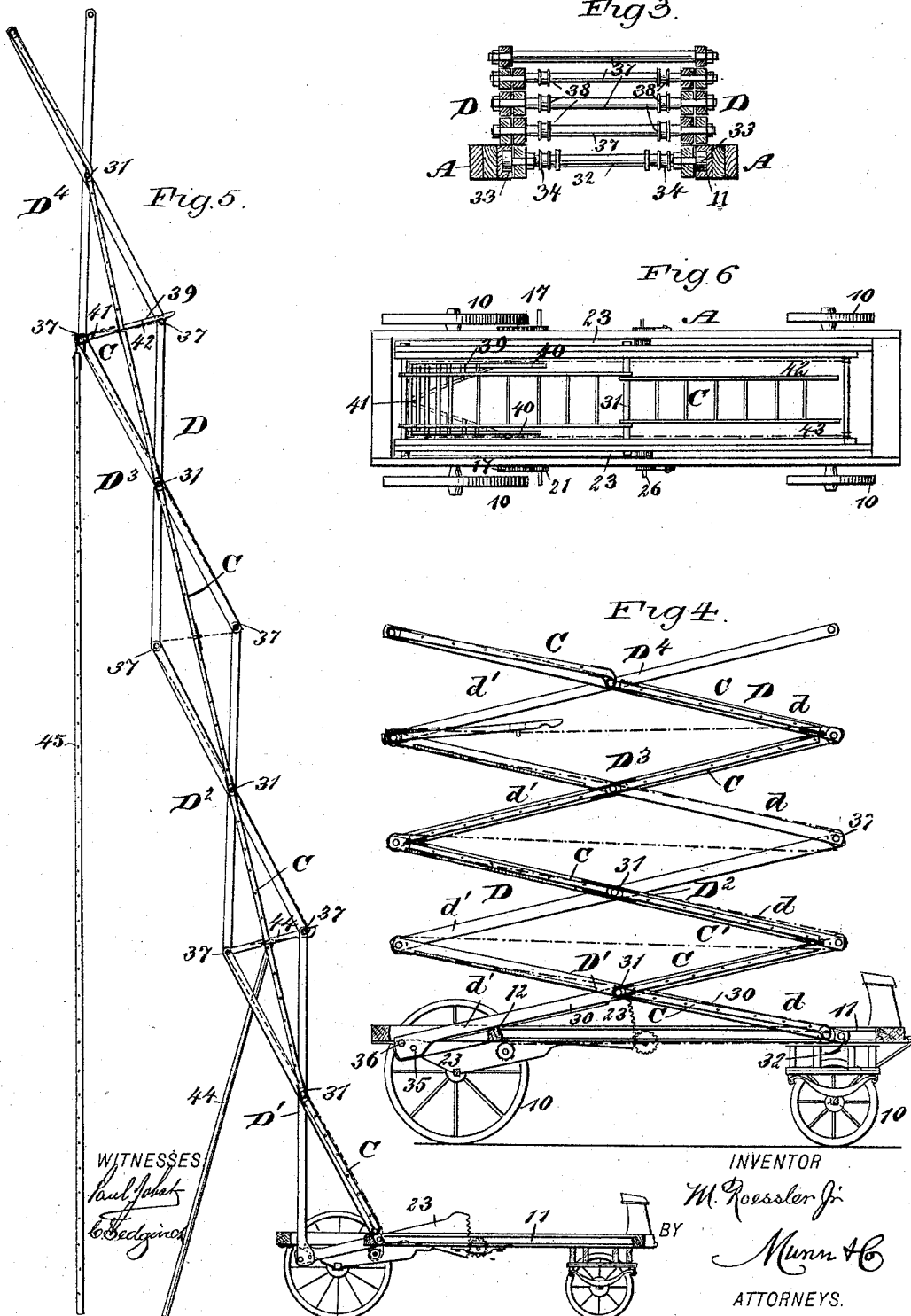
Patented May 9, 1893.



M. ROESSLER, Jr.
LADDER AND TRUCK.

No. 497,131.

Patented May 9, 1893.



UNITED STATES PATENT OFFICE.

MORITZ ROESSLER, JR., OF COLLEGE POINT, NEW YORK.

LADDER AND TRUCK.

SPECIFICATION forming part of Letters Patent No. 497,131, dated May 9, 1893.

Application filed July 22, 1892. Serial No. 440,875. (No model.)

To all whom it may concern:

Be it known that I, MORITZ ROESSLER, Jr., of College Point, in the county of Queens and State of New York, have invented a new and
5 Improved Ladder and Truck, of which the following is a full, clear, and exact description.

My invention relates to an improvement in truck ladders, and has for its object to provide a truck capable of carrying a ladder
10 which may be erected to a great height; and the invention further relates to the construction of a ladder which may be carried upward expeditiously and conveniently, the base resting upon the truck in such manner that the
15 ladder will be effectually braced from top to bottom thereof.

Another object of the invention is to provide at a proper point in the length of the ladder a platform whereon parties ascending or
20 descending may rest.

Another feature of the invention consists in the elevating mechanism carried by the truck and by means of which the ladder may
25 be expeditiously raised and lowered.

Another feature of the invention is in providing means whereby the ladder when it is elevated, may be made to assume a vertical position, or stand at any desired inclination
30 with relation to the truck.

The invention consists in the novel construction and combination of the several parts, as will be hereinafter fully set forth and pointed out in the claims.

35 Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views.

40 Figure 1 is a side elevation of the truck, the ladders being in their folded position and resting thereon. Fig. 2 is a bottom plan view of the truck and the ladders thereon. Fig. 3 is a vertical section taken on the line 3—3 of Fig. 1 through one set of end joints. Fig. 4
45 is a vertical section taken through the truck and ladders, the ladders being shown as partially elevated. Fig. 5 is a sectional view through the truck and through the ladders, the latter being shown as elevated to their
50

highest position; and Fig. 6 is a plan view of the truck and the ladders thereon.

The body A of the truck B, is supported upon suitable wheels 10, and the running gear may be of any approved construction. In the
55 inner face of the side beams of the truck a longitudinal groove 11, is produced, which extends from a point near the front to a point near the back, the rear portion of the groove being immediately opposite the stop block 12,
60 as shown in Fig. 4. Near the rear portion of the truck the side beams of the body are usually provided with an extension 13, and in this extension a drum shaft 14, is journaled, the said shaft carrying two drums 15 and 16,
65 as shown in Fig. 2, the drums being located between the side beams of the truck body, and preferably near said beams.

The drum shaft extends through the side beams of the truck, and at each outer end is
70 provided with a gear wheel 17; and the shaft is likewise provided near each outer extremity with ratchet wheels 18, or these ratchet wheels may be formed integral with or attached to the hubs of the gear wheels 17.
75

In front of the drum shaft a drive shaft 19, is journaled in the sides of the body of the truck, and this shaft is fitted at its outer end to receive crank arms 20. The drive shaft carries near each end a pinion 21, and these
80 pinions mesh with the gears 17 on the drum shaft; and the ratchet wheels 18 on the drum shaft are engaged by detents or pawls 22, as shown best in Fig. 1.

An adjusting arm 23, is pivoted at or near
85 its center within the side pieces of the bed of the truck. The forward portions of the arms are located back of the slide-ways 11, and the forward extremities of said arms are segmental and provided with teeth 24, whereby racks
90 are formed, said racks being engaged by pinions 25 fast upon a shaft 26 journaled upon the bed of the truck and provided at its extremities with attached crank arms 27 and ratchet wheels 28, the latter being engaged by
95 pawls 29, located upon the truck.

The ladder C, is carried by supporting frames D, and through the medium of the latter the ladder is elevated. Each frame comprises two sections *d* and *d'*, and each section
100

consists of two side bars 30, connected at their ends in a manner hereinafter described, and the two sections of each frame are pivotally connected at their centers, each by a rod 31, one section fitting in the other.

In speaking of the ladder-elevating frames hereinafter they will be designated, commencing at the bottom, as D' , D^2 , D^3 and D^4 . With reference to the bottom frame D' , the side bars at the lower end of the section d are connected by a rod 32, which extends beyond the side bars and carries at its extremities rollers 33, as shown in Fig. 3, the said rollers being adapted to travel in the truck slide-ways 11. When the ladder is folded down upon the truck the lower end of the section d of the said lower frame is very near the front of the truck bed, and upon the lower connecting bar of this section two grooved pulleys 34, are mounted to turn. The lower end of the section d' of the lower frame D' , is connected by a bar 35, or its equivalent, with the rear extremities of the adjusting arms 23, and this portion of the section is usually further connected by a cross bar 36, as shown in Fig. 4. Each of the ladder-supporting frames is of like construction with the exception that some of the frames may have the side bars of their inner section supported by cross braces, and when these cross braces are employed they are attached to the inner sections of the frames. The frames are arranged one above the other, and the lower ends of the sections of the second frame D^2 , are pivotally attached to the upper ends of the sections of the first or lower frame; and the lower ends of the sections of the third frame D^3 , are pivotally secured to the upper ends of the sections of the second frame, and in this manner the frames are connected, one with the other, so that one will be above the other and all will be elevated simultaneously. The pivotal connection between the frames is effected by passing rods 37 through the engaging extremities of the sections, the inner sections turning freely upon the rods, and likewise the outer sections. Each rod 37, is provided with two friction rollers, designated as 38, turning loosely on the rods, with the exception of the rods connecting the upper ends of the sections of the uppermost frame.

The ladder C employed is constructed in a series of sections, and the sections of the ladder are located upon the inner sections of the frames; the ladder-sections are distributed in the following manner: The lower end of the lower section of the ladder is attached to the cross bar at the forward lower end of the section d of the lower frame D' , and the upper end of the lower section of the ladder is attached to the pivot pin or rod 31 of the lower frame; the upper or forward end of the second section of the ladder has a hinged connection with the forward end of the third section of the ladder, this section being made to extend almost from end to end of the section d of the second ladder-supporting frame D^2 .

This third section of the ladder is pivoted at its center upon the pivot pin or rod 31 of the second ladder-supporting frame, and the rear end of the third section of the ladder has a hinged connection with the fourth ladder section, and this fourth ladder section is pivoted at its center upon the pivot pin or rod 31 of the third ladder-supporting frame D^3 , the ladder extending practically from end to end of the section d' of that frame. The ladder section carried by the frame D^3 , has a hinged connection with a ladder section carried by the inner section of the uppermost ladder-supporting frame D^4 , the upper ladder section being pivoted at its center upon the pivotal pin or bar of the upper frame; and the extreme upper end of the upper section of the ladder is attached to the upper cross bar of the section d of the upper frame. By this means it will be observed that when the frame sections are elevated in a manner to bring the ends of the sections somewhat close together, as shown in Fig. 5, a continuous straight ladder will be the result, as likewise shown in the said Fig. 5, the ladder departing from a straight line only at the bottom and at the top.

One of the ladder-supporting frames carries a platform 39, and this platform consists of two side pieces 40, connected at their outer ends by a series of cross strips 41, as shown in Fig. 6, the strips constituting the floor of the platform. The sides of the platform extend some distance inward beyond the flooring, and are provided near their inner extremities with notches adapted to enter one of the connecting or cross rods of the section to which the platform is secured. Usually this platform is pivotally attached to the upper cross bar of the inner section of the ladder-supporting frame D^3 , which frame is next to the top; and the platform, when the ladder has been erected engages with the opposite upper connecting rod of this section, whereby the platform is held in a horizontal position, and the ladder passes up between the side bars and in front of the flooring.

The ladder-supporting frames are elevated through the medium of two cables 42 and 43. These cables are attached one to the drum 15 and the other to the drum 16 upon the drum shaft, and they pass from their drums over the lower friction rolls 34 of the lower drum and thence upward over all of the friction rollers 38 upon the connecting rods 37 of all of the frames. The cables also pass through eyes projected downward from the bottom of the platform, and the upper ends of the cables are secured to the upper connecting rod with which the free ends of the platform are engaged.

It is evident that the ladder may be erected expeditiously and conveniently by simply turning the drum shaft, which is done through the medium of the drive shaft 19, as shown in Fig. 2; and when the friction rollers 33,

traveling in the guides 11 of the truck engage with the stop bar 12 on the truck, the ladder will be in position for use, which position is shown in Fig. 5. At that time the
 5 pawls or detents 22, are made to engage with the ratchet wheels on the drum shaft. To lower the ladder the detents or pawls are disengaged from the ratchet wheels of the drum shaft, and the drive shaft is permitted to
 10 revolve when the ladder will fold itself down upon the truck in lazy-tongs style by reason of its own weight. In fact the ladder-supporting frames unitedly are virtually lazy-tongs. When the ladder has been elevated
 15 it may be given any desired inclination by the manipulation of the adjusting shaft 26, which acts upon the segmental ends of the adjusting arms 23, and according as the segment ends of the arms are raised or lowered
 20 the ladder will be given a greater or less elevation or inclination and will be made to depart from the perpendicular.

When the ladder is erected it is prevented from sagging and is supported by props 44,
 25 the said props being connected with any one of the sections of the ladder-supporting frames, and are pivotally connected with the frames to which they are attached; and if in practice it is found desirable, when the
 30 ladder is given an outward inclination, as shown in Fig. 5, a rope ladder 45, may be secured to an overhanging end of one of the ladder-supporting frames, as likewise shown in Fig. 5. By this means a rope ladder may be
 35 made to drop in front of any window desired.

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

1. In a truck ladder, the combination, with
 40 a truck having slide-ways produced therein, arms pivoted upon the truck and having one of their ends formed as a segmental rack, and an adjusting shaft carrying pinions engaging with the racks, of a series of lazy-tong frames,
 45 one lower end of the lower frame being held to travel in the slide-ways of the truck, the other end being attached to the adjusting arms carrying the racks, and a ladder constructed in a series of pivotally connected
 50 rigid sections, the sections of the ladder being supported by the sections of the lazy-tong frames, and pivoted to the said frames at the

points where the latter cross each other substantially as and for the purpose specified.

2. In a truck ladder, the combination, with
 55 the truck provided with a slide-way in its sides, a stop block at one end of the slide-ways, drums journaled upon the truck, a drive shaft carried by the truck and actuating the drums,
 60 arms pivoted upon the truck and having one of their ends formed as a segmental rack, and an adjusting shaft carrying pinions engaging with the racks of a series of connected lazy-tong frames, one lower end of the lower lazy-tong frame having guided movement in the
 65 slide-ways of the truck, the opposite lower end of the said lower frame being pivotally secured to the truck, a ladder constructed in a series of sections having hinged connections, the sections of the ladder being carried by
 70 the sections of the lazy-tong frames, and cables connected with the drums and passed over the end connecting rods of the lazy tong frames, the cables being securely attached to the connecting rod of one of the upper lazy-tong frames, substantially as shown and described.

3. In a truck ladder, the combination, with a truck provided with slide-ways 11, drums journaled upon the truck, a drive shaft carried
 80 by the truck and imparting movement to the drums, and a stop bar located at one end of the slide-ways, of a ladder-supporting frame consisting of a series of pivotally-connected lazy-tong frames, one lower end of the lower
 85 lazy-tong frame having guided movement in the slide-ways of the frame, and the other lower end being pivotally connected with the truck back of the stop bar, a ladder constructed in hinged sections and carried by
 90 the sections of the lazy-tong frames, a platform pivoted upon one of the connecting rods of one of the lazy-tong frames and adapted for locking engagement with the opposite connecting rod of that frame, and cables secured
 95 to the drums and passed over friction rollers carried by the connecting rods of the lazy-tong frames, the cables being secured to a connecting rod upon one of the uppermost frames, as and for the purpose set forth.

MORITZ ROESSLER, JR.

Witnesses:

ANDREW HOWARD,
 MORITZ ROESSLER, Sr.