(No Model.)

E. ADCOCK.

TURN TABLE EXTENSION LADDER TRUCK.

No. 383,681. Patented May 29, 1888.

Fig. 1.

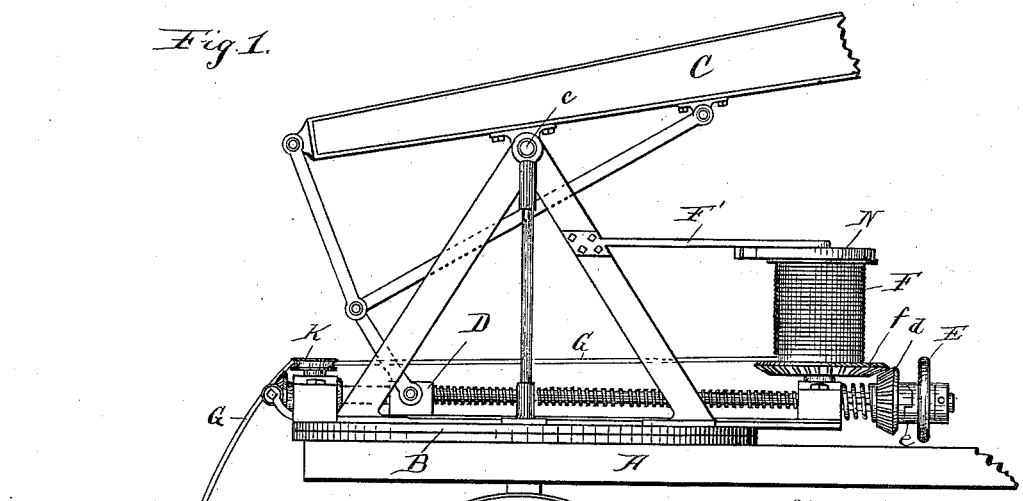


Fig. 5.

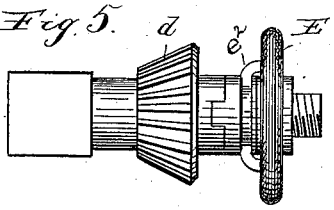


Fig. 3.

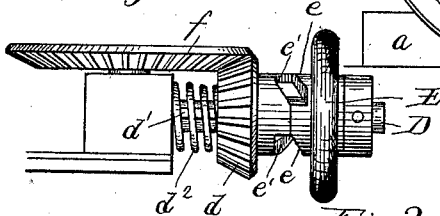


Fig. 4.

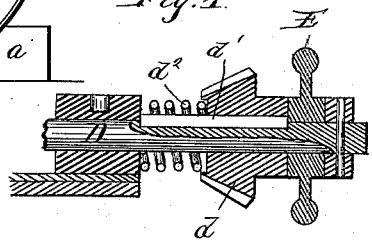
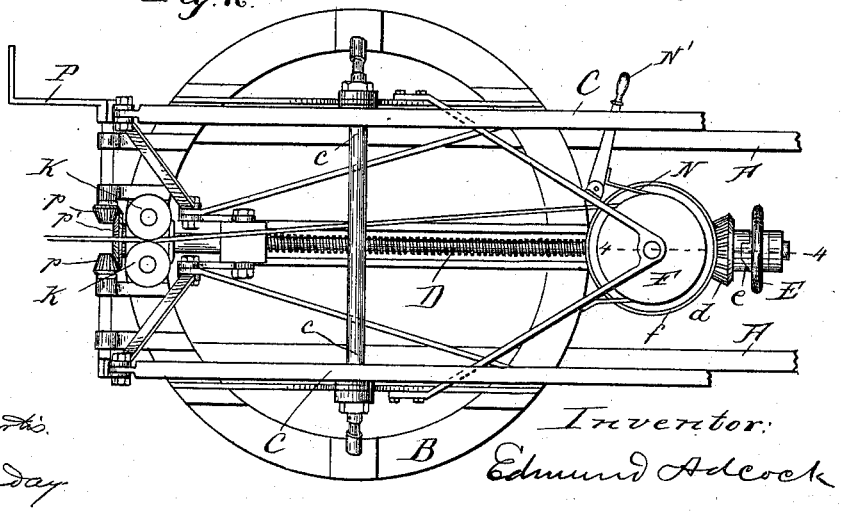


Fig. 2.



Witnesses:
Lew. C. Curtis.
W. W. Dunday

Inventor:
Edmund Adcock

UNITED STATES PATENT OFFICE.

EDMUND ADCOCK, OF CHICAGO, ILLINOIS, ASSIGNOR TO EVERETT B. PRESTON, OF SAME PLACE.

TURN-TABLE EXTENSION-LADDER TRUCK.

SPECIFICATION forming part of Letters Patent No. 383,681, dated May 29, 1888.

Application filed March 5, 1888. Serial No. 266,212. (No model.)

To all whom it may concern:

Be it known that I, EDMUND ADCOCK, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Turn-Table Extension-Ladder Trucks, of which the following is a specification.

My invention relates to the mechanism for raising the main ladder on the turn-table extension-ladder trucks which are now commonly used by city fire-departments. In these ladders it is frequently of the utmost importance, in order to save life or property endangered by fire, that the main ladder should be capable of being easily and quickly raised and by the aid of as few of the firemen as possible. As heretofore constructed, these turn-table extension-ladders are raised by hand through screws or other mechanical powers, and usually require from eight to ten men to raise them in one minute.

It is the object of my invention to provide means for raising the ladder more quickly, and at the same time dispense with a number of the men, whose services may be urgently required in other matters at the fire.

To this end the invention consists, in connection with a turn-table extension-ladder truck and the mechanism for raising the main ladder, which may be of any well-known construction, of a draft line or cable and a winding-drum combined therewith, whereby the draft-horses of the truck may be made to raise or assist in raising the ladder.

It also consists in the novel devices and novel combinations of devices or parts herein shown and described, and more particularly pointed out in the claims.

In the accompanying drawings, which form a part of this specification, I have shown my invention as applied to the particular turn-table extension-ladder truck shown and described in Patent No. 319,047, of June 2, 1885, or Patent No. 336,519, of February 16, 1886; but my invention may be readily applied by those skilled in the art to other well-known forms of turn-table extension-ladder trucks having other forms of raising mechanism—as, for example, that shown and described in Patent No. 202,169, of April 14, 1878, or those shown in other patents of the United States heretofore granted.

In the drawings, Figure 1 is a side elevation of a device embodying my invention. Fig. 2 is a plan view. Fig. 3 is an enlarged detail side elevation, and Fig. 4 is a partial central vertical longitudinal section. Fig. 5 shows a modified construction of the clutch.

In said drawings, A represents the truck; A′, its wheels; B, the turn-table; C, the main ladder, pivoted at *c* to suitable supports on the turn-table; and D, the raising mechanism, mounted on the turn-table and connected with the pivoted ladder C.

The raising mechanism preferably consists of a screw, though other suitable equivalent mechanical powers may of course be used. The screw raising mechanism may be connected with the pivoted ladder in any suitable manner. That shown in the drawings is the manner I prefer, and it is fully shown and described in the prior patent, No. 319,047, before referred to. The screw D is provided with a gear, *d*, which meshes with a gear, *f*, on the winding-drum F. The drum F is journaled on and braced by the bracket or brace arms F′ at its upper end.

G is a draft line, rope, or chain—preferably a wire cable—wound around and secured at one end to the drum F. This cable is connected, by a hook, *g*, or other suitable means, with the doubletree H of the truck. The cable F is preferably left normally connected to the doubletree H, so that the instant the doubletree is disconnected from the tongue of the truck by pulling the bolt *h* the team or teams of horses may begin to raise the main ladder by pulling on the cable and drum. If disconnected from the doubletree, it may, however, of course be very quickly hooked thereto. To guide the cable, as well as also to enable the horses to pull or be driven in any desired direction from the truck, I provide the turn-table, near the front end of the screw D, with a pair of guide-pulleys, K.

The drum F is adapted to be connected or disconnected with the screw or raising mechanism D by a clutch or other equivalent device. This clutch or connecting and disconnecting device may be of any well-known con-

struction. It preferably consists of a spline, d', on the screw-shaft, the gear d having a corresponding groove, so that said gear may slide on the screw-shaft into and out of engagement with the bevel-gear f. A spring, d^2, holds the gear d normally out of engagement with the bevel-gear f. It is thrown into engagement with said gear f by a hand-wheel, E, having cam-teeth e, which fit against similar inclines, e', on the gear d.

To hold the truck A stationary while the team of horses is pulling on the cable and drum to raise the ladder, the wheels of the truck, or two or more of them, are furnished with shoes a, the upper faces of which are curved to about the periphery of the wheel, so that the wheels cannot turn. This same result—the holding of the truck stationary during the raising of the ladder by pulling on the cable F—may be accomplished by turning the tongue and front wheels of the truck at right angles to the direction of pull; but the preferable way is to employ the shoes a or other equivalent means for holding the wheels from revolving, as the front axle of the truck should always remain at right angles to the truck-frame, in order to prevent danger of the truck rocking or tipping over transversely, as it might do if the front axle were turned parallel to the length of the truck-frame.

The length of the cable G in relation to the drum F and raising mechanism of the ladder should be always somewhat shorter than that necessary to raise the ladder to the vertical point, so that the horse-power raising device may thus automatically disconnect itself, so to speak, before the raising of the ladder is quite completed. After the ladder is raised nearly to the vertical, it is very easily manipulated or further raised by hand, and if the cable is made too short to fully raise the ladder all danger of accident from the horses pulling on the mechanism when the ladder is in a nearly-vertical position is avoided. For this reason, also, if desired, the cable may be so secured to the drum that it will completely disconnect itself from the drum when entirely unwound therefrom. To keep the ladder also entirely under the control of the operator when it is being raised by the horse-power drum, and to enable the operator to fully control the speed at which the ladder is raised, I provide the drum or some other moving part of the ladder-raising mechanism with a brake-shoe, N, and brake-lever N'. The hand raising-cranks P, which are connected with the screw-shaft by bevel-gears $p\,p'$, also serve to control the upward movement of the ladder under the action of the horses. These cranks will ordinarily be operated by two or more men, especially when the raising of the ladder from its horizontal position is commenced and the greatest power required to move it. By this means the main ladder may be very quickly and easily raised, and but few men are necessarily required to raise the heaviest and longest ladders now in use, and the horse-power drum may be almost instantly connected or disconnected from the raising mechanism of the ladder, so that it may be operated entirely by hand, as heretofore, when desired.

Besides ladders, my invention may be used for raising other pivoted structures mounted on wheeled trucks—such, for example, as water-pipe towers.

In Fig. 5 the clutch is somewhat differently constructed, the gear d having no sliding movement and being loose to revolve on the screw-shaft, except when the sliding splined clutch is engaged with the clutch-face of the gear. The clutch is operated by a hand-nut, E, threaded on the screw-shaft D. The clutch has an annular groove, in which overhanging lugs e^2 on the hand-wheel fit.

I claim—

1. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith and a draft line or cable whereby horse-power may be applied for raising the ladder, substantially as specified.

2. The combination, with a turn-table extension-ladder truck, its pivoted main ladder, and screw raising mechanism, of a winding-drum geared to said screw and a draft-cable, substantially as specified.

3. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith, and a draft line or cable whereby horse-power may be applied for raising the ladder, and shoes for blocking the wheels of the truck, substantially as specified.

4. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith, and a draft line or cable whereby horse-power may be applied for raising the ladder, and a brake for controlling the motion of the ladder, substantially as specified.

5. The combination, with a turn-table extension-ladder truck, its pivoted main ladder, and screw raising mechanism, of a winding-drum geared to said screw, a draft-cable, and guide-pulleys for said cable, substantially as specified.

6. The combination, with a turn-table extension-ladder truck and its pivoted main ladder and raising mechanism, of a winding-drum connected therewith, and a draft line or cable whereby horse-power may be applied for raising the ladder, and a clutch device for connecting and disconnecting said winding-drum with said raising mechanism, substantially as specified.

7. The combination, with a wheeled truck, of a pivoted structure mounted thereon, a screw raising mechanism mounted on said truck and connected to said pivoted structure, a winding-drum geared to said raising-screw, and a draft line or cable wound around said drum for revolving the same, and thus operating the raising-screw, substantially as specified.

8. The combination, with a wheeled truck,

of a pivoted structure mounted thereon, a screw for raising the same, a winding-drum geared to said screw, a clutch, and a draft line or cable, substantially as specified.

9. The combination, with a wheeled truck, of a pivoted structure mounted thereon, screw raising mechanism, a winding-drum geared to said screw, and a draft-line and guide-pulleys, substantially as specified.

10. The combination, with a wheeled truck, of a pivoted structure mounted thereon, screw raising mechanism, a winding-drum connected with said screw, a draft line or cable, and a brake, substantially as specified.

11. The combination, with a wheeled truck, of a pivoted structure mounted thereon, screw raising mechanism, a winding-drum connected with said raising-screw, a draft line or cable, and devices for blocking the wheels of the truck, substantially as specified.

12. The combination, with a wheeled truck, of a turn-table, a pivoted ladder, screw raising mechanism, a winding-drum, a draft-cable, gears connecting said winding-drum and screw, a brake-shoe, and brake-lever, substantially as specified.

13. The combination, with truck A, of turn-table B, ladder C, screw D, having splined sliding gear *d*, spring d^2, hand cam-wheel E, winding-drum F, having gear *f*, draft-cable G, and brace arm F′, substantially as specified.

EDMUND ADCOCK.

Witnesses:
H. M. MUNDAY,
R. H. MUNDAY.