

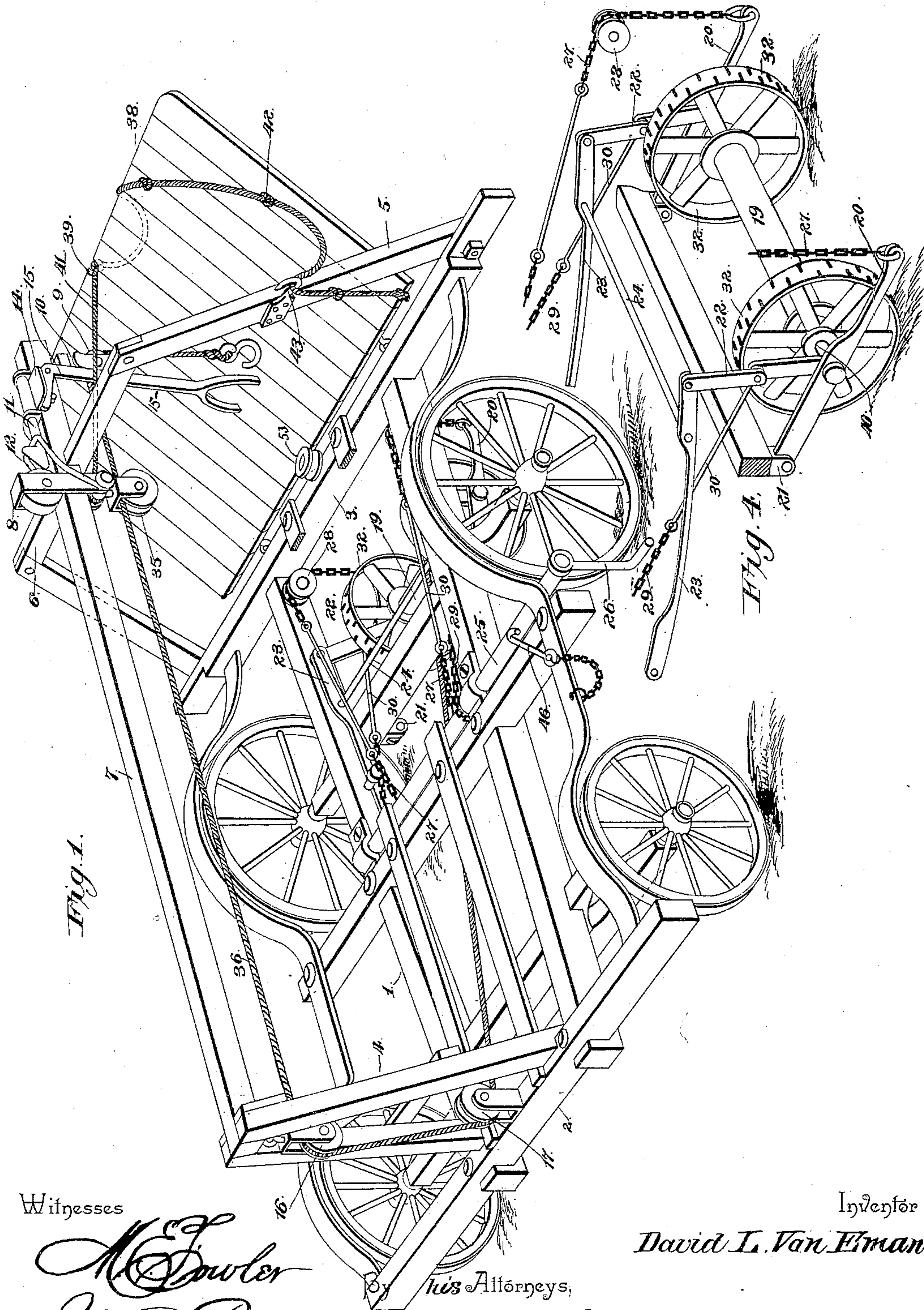
(No Model.)

2 Sheets—Sheet 1.

D. L. VAN EMAN.  
HOISTING AND LOADING APPARATUS.

No. 432,680.

Patented July 22, 1890.



Witnesses

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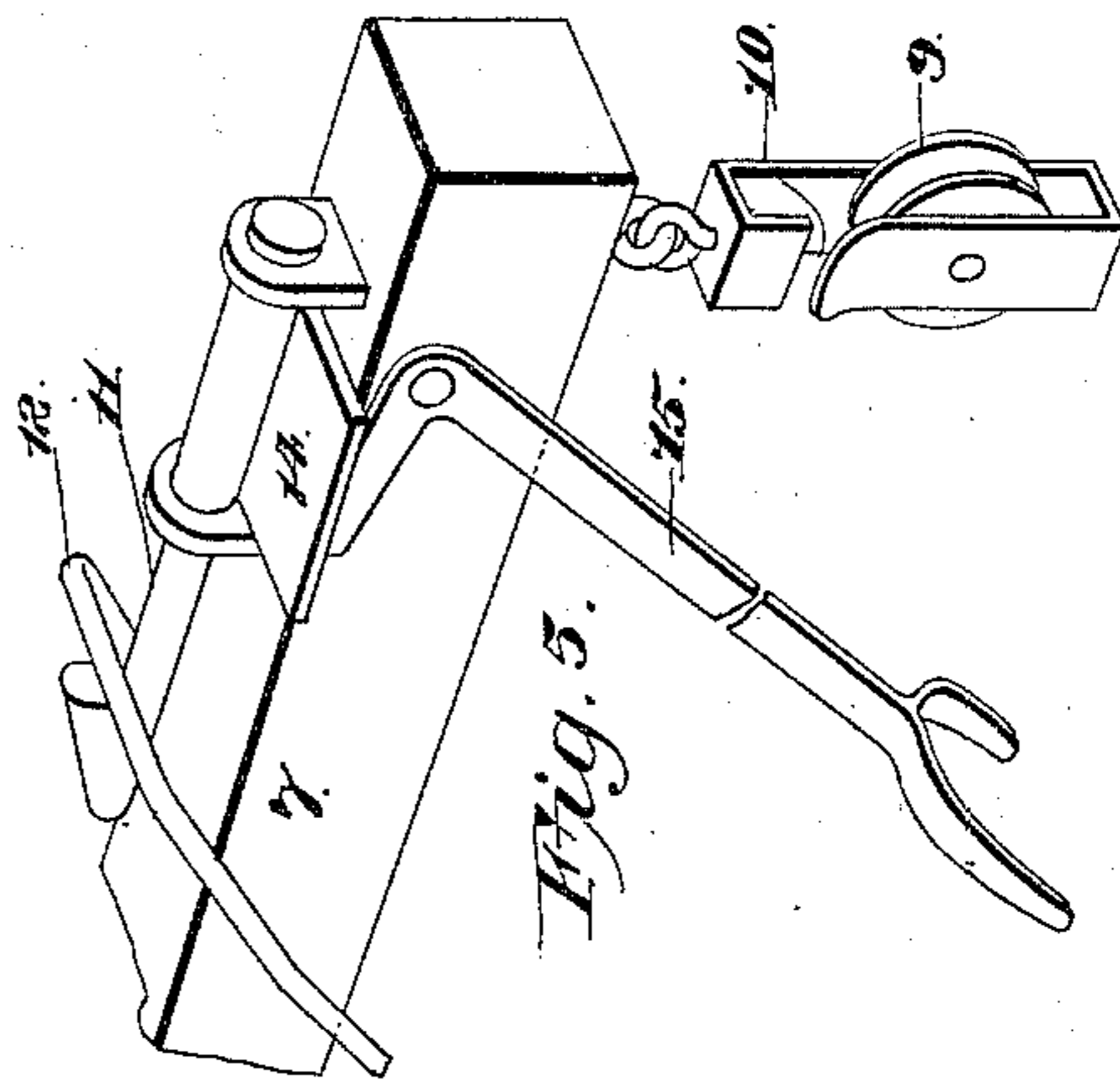
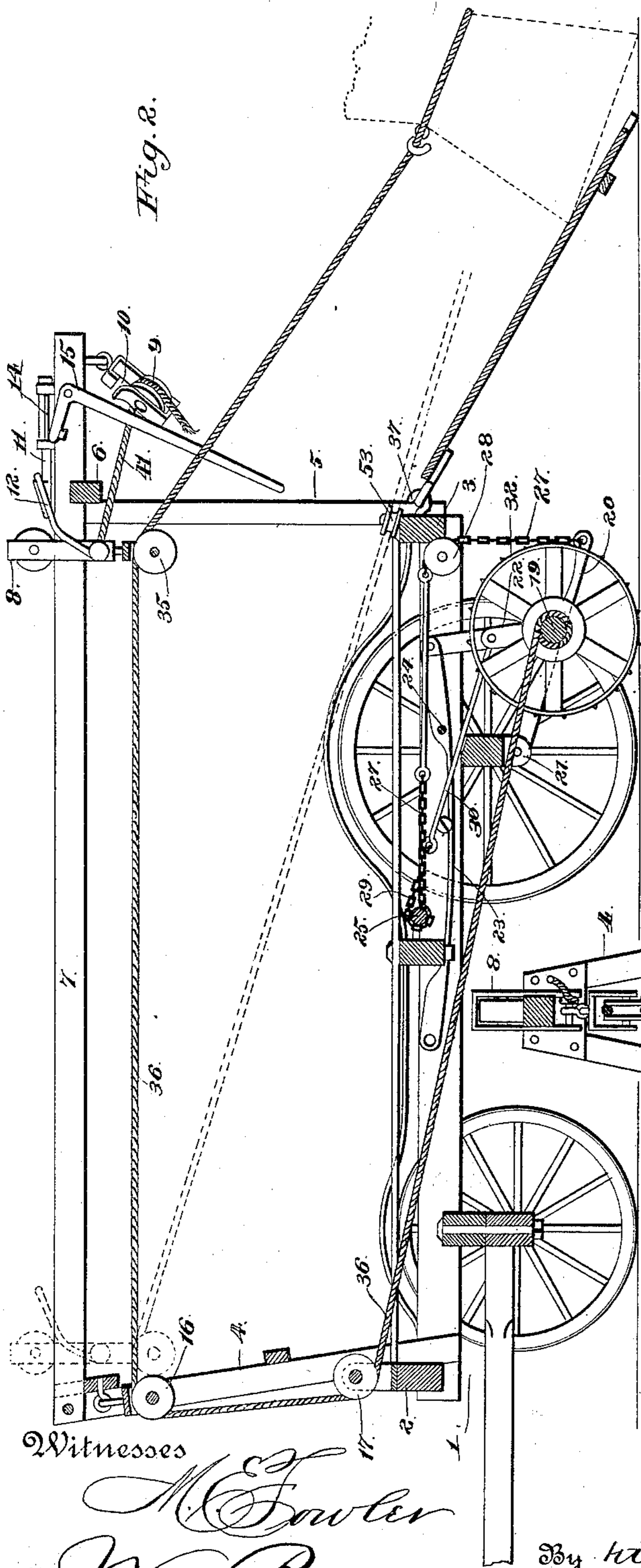
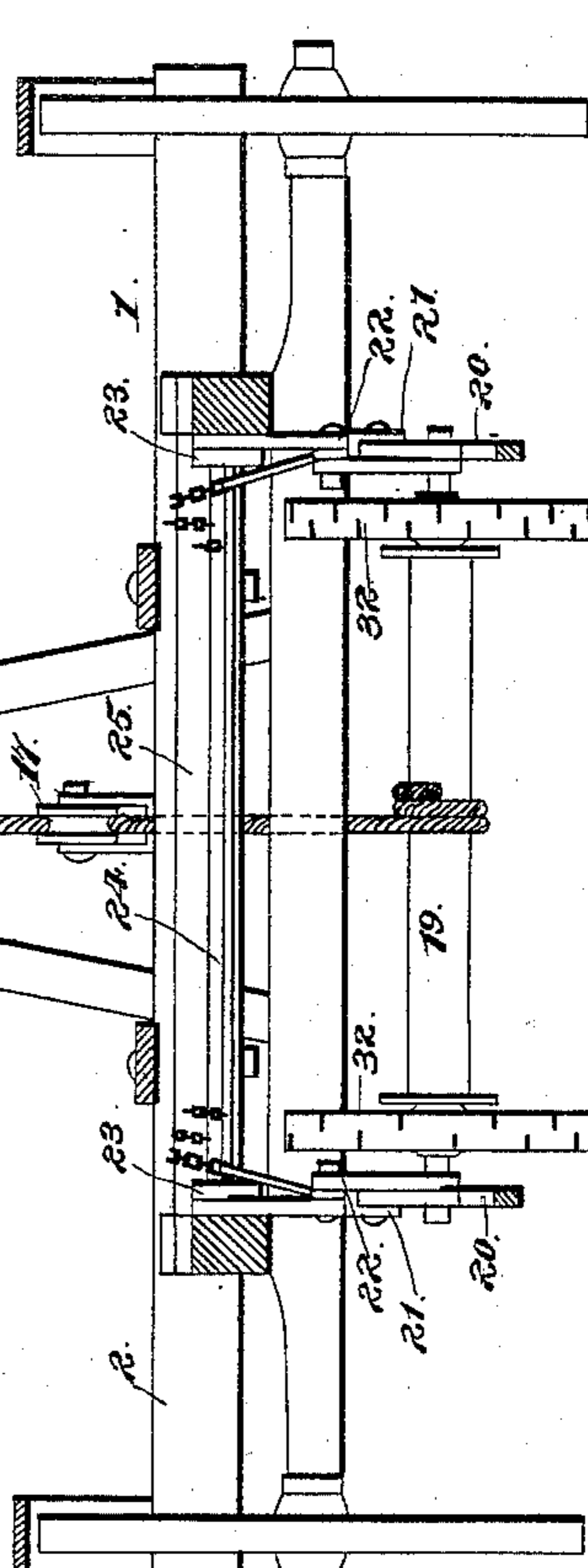


Fig. 3.



Inventor

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# UNITED STATES PATENT OFFICE.

DAVID L. VAN EMAN, OF OTTUMWA, KANSAS.

## HOISTING AND LOADING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 432,680, dated July 22, 1890.

Application filed April 4, 1890. Serial No. 346,523. (No model.)

*To all whom it may concern:*

Be it known that I, DAVID L. VAN EMAN, a citizen of the United States, residing at Ottumwa, in the county of Coffey and State of Kansas, have invented a new and useful Hoisting and Loading Apparatus, of which the following is a specification.

This invention relates to devices for loading shocks of corn-fodder and the like upon the rack or wagon in the field in a simple and convenient manner and in less time than it will be possible to perform the same labor by hand; and it has for its object to provide a simple and convenient attachment for grain-wagons, whereby materials such as have been referred to may be loaded in bulk without other power than that which is derived from the progress of the wagon over the field.

The invention consists in the improved construction, arrangement, and combination of parts, which will be hereinafter fully described, and particularly pointed out in the claims.

In the drawings, Figure 1 is a perspective view of a grain-wagon to which my invention has been applied. Fig. 2 is a longitudinal sectional view of the same. Fig. 3 is a vertical transverse sectional view. Fig. 4 is a detail view of the windlass-drum and the mechanism for adjusting the latter. Fig. 5 is a detail view of the latch mechanism.

Like numerals of reference indicate like parts in all the figures.

Upon an ordinary wagon-gear is mounted the bed-frame 1, the front and rear ends of which have cross-pieces 2 and 3, supporting the upright frames 4 and 5, the latter of which is at its lower end of a width equal to the length of the cross-piece 3, which latter should be at least eight or nine feet long. The said frame 5 is also made sufficiently high to admit of the passage under its cap-beam 6 of an entire shock of fodder. A ridge-beam 7 connects the cap-beam of the frame 5 with the upper end of the frame 4, and said ridge-beam is extended, as shown, some distance beyond the rear frame 5.

The ridge-beam 7 forms a track for a car or carriage 8, arranged to travel longitudinally upon said track and carrying a pulley 9, over which passes one end of the hoisting-rope 36. Suspended underneath the projecting end of

the ridge-beam 7 is a pulley 9, the block of which has a slot or notch 10 to admit of the insertion therein or removal therefrom of the hoisting-rope. This pulley is used only in unloading, as will be hereinafter described. Mounted in suitable bearings longitudinally upon the projecting end of the ridge-beam is a hook-shaped catch 11, adapted to engage a loop or bail 12, pivoted to and extending forwardly from the car or carriage 8. Said hook-shaped catch 11 is provided with a laterally-extending wing 14, adapted to be engaged by the short arm of a bell-crank lever 15, which is pivoted to one side of the projecting end of the ridge-beam, and the long arm of which extends downwardly in the path of the material which is to be hoisted and loaded.

The rear end of the frame is provided with hooks 37 for the attachment of an apron 38, the lower edge of which, when it is in use, rests upon the ground. Said apron forms an inclined plane to guide the material which is to be hoisted onto the bed of the wagon. The rear edge of said apron is provided with a notch 39, the purpose of which will be hereinafter described.

Guide-pulleys 16 and 17 are arranged at the upper and lower ends of the frame 4 at the front end of the wagon for the passage of the hoisting-rope 36, which passes over said guide-pulleys and thence in a rearward direction to the winding-drum 19. The latter is arranged under the rear end of the bed-frame of the wagon, and its shaft 40 is journaled in a pair of arms 20, which are hinged or pivotally connected to lugs 21, extending downwardly from the rear axle or from the bed-frame of the wagon in proximity to the rear axle. The shaft of the windlass is also connected by means of toggle-joints 22 with springs 23, secured to the sides of the bed-frame and serving to normally press downwardly upon the said toggle-joints. The springs 23 are connected by a cross-bar 24.

25 designates a shaft, which is journaled transversely in the sides of the bed-frame in front of the windlass, and having at one end a crank 26, by means of which it may be conveniently manipulated. Chains 27, attached to the said shaft, are passed over guide-pulleys 28 at the rear corners of the bed-frame and connected to the outer ends of the arms

20. Additional chains 29 are secured to the shaft 25 and wound upon the latter in a direction opposite to the winding of the chains 27. The chains 29 are connected by links 30 with the joints of the toggles 22. It will be observed that by this mechanism by rotating the shaft 25 in one direction the chains 27 will be wound upon the said shaft and the free ends of the arms 20 will be raised, thus lifting the windlass. By rotating the shaft 25 in the opposite direction the chains 27 will be unwound, thus permitting the free ends of the arms 20 to drop. At the same time the chains 29 will be wound upon the shaft 25, and the toggles 22 will thus be straightened or stiffened, thereby holding the windlass-shaft securely in a lowered position, subject only to the flexibility of the supporting-springs 23. The ends of the windlass-shaft are provided with wheels 32, mounted rigidly upon said shaft and adapted to bear against the surface of the ground, thereby causing the windlass-shaft to be rotated by the passage of the wagon over the ground when the said windlass-shaft is in a lowered position.

Suitably attached to the car or carriage 8 is a rope 41, having a series of knots 42 formed thereon at equal distances apart. The said rope normally passes over the pulley 9 and around the frame 5 at the rear end of the wagon, which is provided with a hook or notch 43, adapted to receive the knotted rope 41, the knots upon the latter serving to prevent its displacement from the said hook or notch. This rope serves for three distinct purposes. First, it serves to retain the car or carriage 8 at any desired position upon the ridge-beam, the knots thereon engaging the hook 43, and thus preventing the car from moving forwardly beyond a certain point. The knots are formed at such distances apart that the length of rope between the individual knots shall be sufficient to give room for one shock of fodder upon the wagon-bed. Secondly, the rope 41 serves for pulling the car or carriage in a rearward direction upon the cap-beam for the purpose of placing the bail 12 of said car in engagement with the hook-shaped catch 11, and, thirdly, the said rope serves after the last shock has been hoisted to support the inclined apron 38 in a raised position, one of the knots of said rope being placed in engagement with the notch 39 at the rear edge of said apron. The latter will thus serve to support the last shock and prevent any portion thereof from getting under the running-gear of the wagon.

The operation and advantages of my invention will be readily understood from the foregoing description, taken in connection with the drawings hereto annexed. When the windlass-shaft is in a raised position, it may be freely rotated to unwind the hoisting-rope from the drum and to enable it to be carried over the several guide-pulleys in a rearward direction when the car is pulled toward the rear end of the ridge-beam. The loop or bail 12 of the car or carriage is now placed in en-

gagement with the catch 11 to retain the car in position for hoisting. The end of the hoisting-rope, which is provided with a suitable hook 45, is then lowered and passed around the shock which is to be hoisted. The shaft 25 is now manipulated to force the windlass-shaft in a downward direction and to place the wheel 32 in contact with the ground. When the wagon is drawn in a forward direction, the windlass will be rotated and the hoisting-rope wound thereon, thus hoisting the shock attached thereto or dragging it upward over the inclined plane formed by the apron 38 until it comes in contact with the long end of the bell-crank lever 15, which latter is swung upon its pivot and caused to engage the laterally-extending wing 14 of the hook-shaped catch 11. The latter is thus oscillated in its bearings and disengaged from the loop 12. The car 8 will now travel along the ridge-beam 7 in a forward direction until it reaches the limit of the knotted rope 41, which has been previously adjusted in the hook or notch 43. The wagon may now be stopped and the load lowered and detached from the hoisting-rope, after which the device is ready for a repetition of the operation.

The hook or catch 46 is suitably attached to the frame of the vehicle to engage the crank or handle 26 of the shaft 25 for the purpose of holding the latter securely at any desired adjustment.

When it is desired to unload, this may be done by passing the hoisting-rope over the guide-pulley 9, from which the rope 41 is first removed, and from thence back and around one of the shocks upon the wagon. When the wagon progresses over the ground in the manner before described, the winding of the hoisting-rope upon the drum or cylinder will cause the shock attached thereto to be dragged in a rearward direction off the wagon-bed and to be deposited upon the ground as before.

When, as is sometimes the case, the shock is frozen to the ground and difficulty would be experienced in hoisting it in the manner described, I avail myself of a small pulley 53, journaled to the rear cross-piece of the bed-frame. When this is to be used, the car or carriage 8 is drawn to the front end of the track or ridge-beam, and the hoisting-rope is then carried over the pulley 53 and round the shock. When the wagon proceeds, the inclined draft, to which the shock will be subjected, will effectively dislodge it from the ground and drag it into place upon the bed-frame.

What I claim is—

1. In a hoisting and loading apparatus, the combination, with the running-gear of a wagon, of a windlass or hoisting-drum connected adjustably to the same and having wheels adapted to bear upon the ground for the purpose of rotating the said drum, substantially as set forth.

2. In a hoisting and loading apparatus, the combination of a running-gear, the bed-frame, and the pivoted arms with the windlass, the

shaft of which is journaled in said arms and provided with wheels adapted to bear upon the ground, substantially as set forth.

3. The combination of the running-gear, the bed-frame, the pivoted arms, the windlass-shaft journaled in the latter and having wheels adapted to bear upon the ground, and the toggle-joints connecting said windlass-shaft with suitably-annexed springs, substantially as set forth.

4. The combination of the running-gear, the bed-frame, the pivoted arms, the windlass-shaft journaled in the latter and having wheels adapted to bear upon the ground, the toggle-joints connecting said windlass-shaft with suitable supporting-springs, and mechanism for adjusting the said pivoted arms and toggle-joints, substantially as set forth.

5. The combination of the running-gear, the bed-frame, the windlass-shaft mounted in pivoted arms and having wheels adapted to bear upon the ground, the toggle-joints connecting said windlass-shaft with suitable springs, a transversely-arranged shaft having an operating-crank, and chains wound in opposite directions upon said shaft and connected, respectively, with the pivoted supporting-arms and with the toggle-joints, substantially as set forth.

6. In a hoisting and loading apparatus, the combination of the running-gear, the bed-frame, the upright frames at the front and rear ends of said bed-frame, the ridge-beam or track having the projecting rear end, the pulley suspended from said cap-beam and having notched or slotted block, the car or carriage having a pivoted loop and oscillating hooked catch adapted to engage said loop, and having a laterally-extending wing, a bell-crank lever pivoted to the side of the cap-beam and adapted to engage the latter, the hoisting-rope, the guide-pulleys for the latter, and the vertically-adjustable winding-drum or windlass having wheels adapted to bear upon the ground, substantially as set forth.

7. In a hoisting or loading apparatus, the combination, with the running-gear and suitable frame-work, of a longitudinally-traveling carriage, a catch to engage the latter, mechanism for automatically releasing said

catch, a hoisting-rope, guide-pulleys for the latter, and a vertically-adjustable drum or windlass having wheels adapted to bear upon the ground, substantially as set forth.

8. In a hoisting and loading apparatus; the combination, with the running-gear, of a vertically-adjustable winding-drum or windlass having wheels adapted to bear upon the ground, and springs arranged to exert a tension in a downward direction upon the shaft of said windlass, substantially as set forth.

9. In a hoisting and loading apparatus, the combination, with the running-gear, of a vertically-adjustable drum or windlass having wheels adapted to bear upon the ground, springs adapted to exert tension in a downward direction upon the shaft of said windlass, toggle-joints connecting said springs with the said windlass-shaft, and adjusting mechanism, substantially as and for the purpose set forth.

10. In a hoisting and loading apparatus, the combination of the running-gear, the bed-frame, the apron hooked or hinged to the rear end of said bed-frame and having a notch in its rear edge, the hoisting mechanism, the car arranged to travel longitudinally upon the ridge-beam mounted upon frames at the front and rear ends of the bed-frame, a supporting-hook attached to the rear frame, and a rope attached to the longitudinally-movable car and having a series of knots formed equidistantly thereon, substantially as set forth.

11. The combination of the bed-frame having the upright frames at its front and rear ends, the ridge-beam, the longitudinally-movable car, the apron hinged to the rear end of the bed-frame and having a notch in its rear edge, and a rope attached to the car and having a series of knots formed thereon, any one of which may be placed in engagement with the notch at the rear edge of the hinged apron, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in presence of two witnesses.

DAVID L. VAN EMAN.

Witnesses:

JOHN W. MCCORMICK,  
HARDIN FUNK.