

G. KRUSE.
LOADING MACHINE.
APPLICATION FILED DEC. 9, 1908.

946,514.

Patented Jan. 11, 1910.

3 SHEETS—SHEET 1.

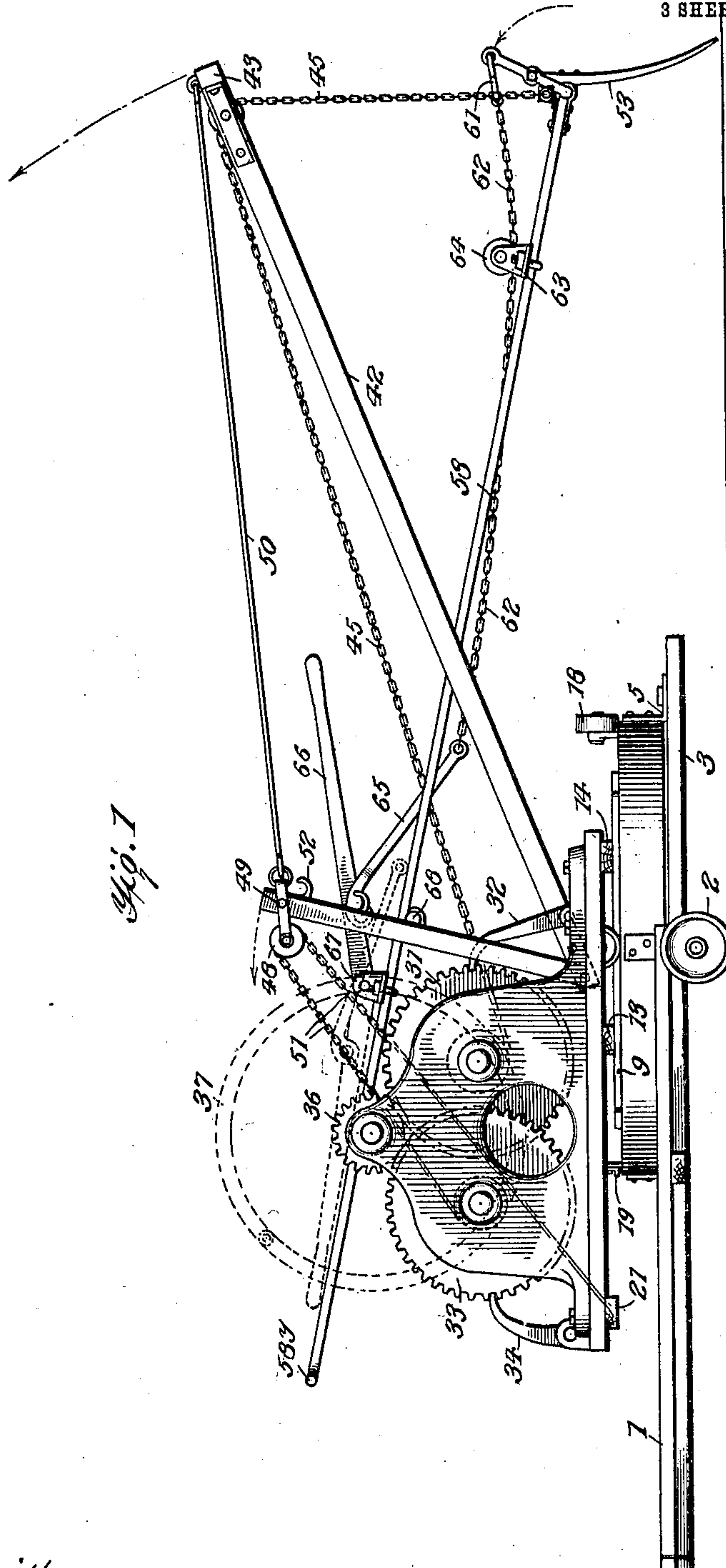


Fig. 1

WITNESSES

L. H. Schmidt.
L. A. Stanley

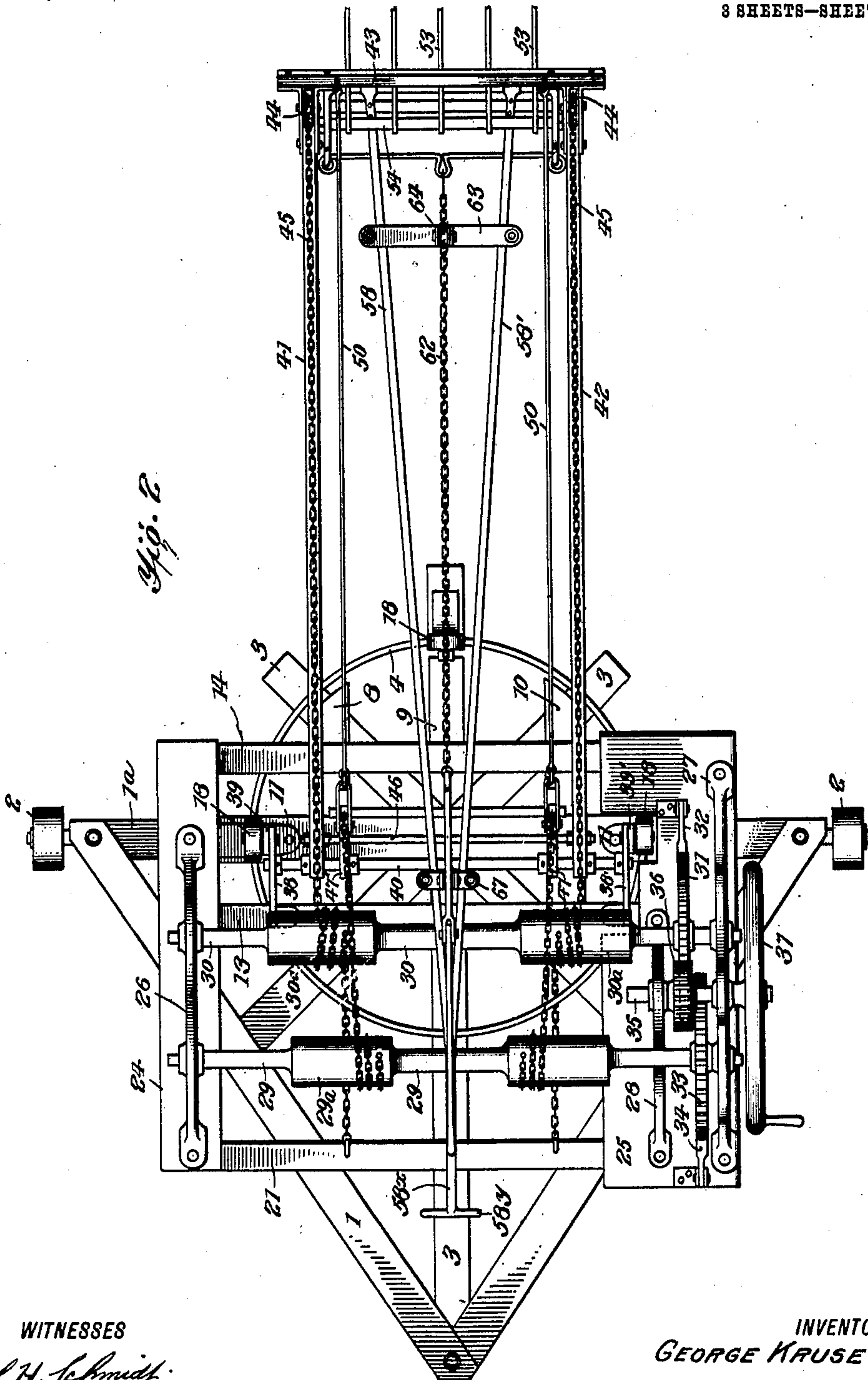
INVENTOR

BY GEORGE KRUSE,
Munn & Co.
ATTORNEYS

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8 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

GEORGE KRUSE, OF GEORGE, IOWA.

LOADING-MACHINE.

946,514.

Specification of Letters Patent,

Patented Jan. 11, 1910.

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To all whom it may concern:

Be it known that I, GEORGE KRUSE, a citizen of the United States, and a resident of George, in the county of Lyon and State of Iowa, have made certain new and useful Improvements in Loading-Machines, of which the following is a specification.

My invention relates to machines for loading commodities of various kinds onto wagons or other vehicles, and it consists in the constructions, combinations and arrangement of parts as will be described and claimed.

An object of my invention is to provide a loader which is especially adapted for loading manure into a wagon with comparatively little effort on the part of the operator.

A further object of my invention is to provide a device in which the various movements necessary to the loading operation can be easily effected by novel means under the direct control of the operator.

A further object of my invention is to provide a device capable of lifting large loads and of depositing them in a waiting vehicle without the use of engines or other power generators, the action of the machine depending entirely upon the power supplied by hand.

Other objects and advantages will appear in the following specification, and the novel features of the invention will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings forming a part of the specification in which similar reference characters designate like parts in the several views and in which,

Figure 1 is a side view showing one embodiment of my invention. Fig. 2 is a plan view thereof. Fig. 3 is a detail view, partly in section, showing the operating mechanism, and Fig. 4 is a bottom view of the fork supporting means.

In carrying out my invention I provide a frame 1, which may be of any convenient shape, but is preferably of a triangular form as clearly shown in Fig. 2. This frame is supported upon trunnions or wheels 2, at the corners of the frame, thus enabling the whole device to be transported.

Secured to the triangular frame and forming a part thereof are the cross members 3, bearing a circular track 4, which is secured to the cross members 3, by means of the angle irons 5, in the manner shown in Fig. 3.

The cross members 3 and the rear members 1^a of the frame 1 are held together at their common center by means of plates 6^a and 6^b on the bottoms and tops, respectively, of said cross pieces, as shown in Fig. 3. An inner ring 7 concentric with the track 4 is provided for furnishing an additional strengthening member for the cross pieces 3 and 1^a. Above the lower frame just described but within the circular track 4 is a frame which comprises three parallel strips 8, 9, and 10, see Fig. 2, secured together by a cross piece 11. This frame is held together between a plate 12, on the lower side, similar to the plate 6^b, and the cross strips 13, and 14, at the upper side by means of bolts 15, as clearly shown in Fig. 3. The extensions 6^c and 12^a on the plates 6^b and 12 respectively, form engaging surfaces upon which the upper frame may be turned, the pivot bolt 16 being arranged to pass through the lower frame, the plates 6^b and 12 and the cross piece 11, being secured above the latter by means of a nut 17.

At the ends of the members 9 and 11 are the rollers 18, which rest upon the track 4 and provide antifriction means upon which the upper part of the device may be rotated. On the opposite ends of the member 9 are the guide plates 19 for preventing the displacement of the rotating frame. Extending from the end of the member 9 opposite the roller 18 is a supporting piece 20, to which is secured a cross beam 21. Upon the ends of the cross beams 21 and 13, and 14 are the supports 24 and 25.

The construction thus far described provides a frame work which may be swung around the pivot 16, but which, as may be seen from Fig. 2, has its center at one side of said pivot.

Secured to the supports 24 and 25 are the uprights 26, at one end, and 27 and 28 at the other end, and journaled in these uprights are the parallel shafts 29 and 30. These shafts are both provided with enlarged portions 29^a and 30^a respectively, constituting drums upon which the hoisting chains may be wound in the manner hereafter described. Carried by the shaft 30 is the gear 31, which is provided with the retaining dog 32 to hold it in any position. The shaft 29 carries a gear 33, which is provided with a similar retaining dog 34. Journaled in the uprights 27 and 28 is a short shaft 35, which is provided with a gear 36, adapted to mesh with

either of the gears 31 or 33. On the outer end of the shaft 35 is a hand wheel 37. The shaft 35 is capable of being shifted longitudinally in its bearings so as to bring the gear 36 into mesh with either one of the gears 31 or 33.

Referring now to Fig. 3, it will be seen that a bar 38 is secured at one end to the frame member 13, and at the other end to an upright flange 39 on the member 11, a similar bar 38' is secured to the flange 39' at the opposite side of the machine. The spindle 40, is secured between the bars 38 and 38', and on the spindle 40 is pivoted the frame which carries the loading fork. This consists of the beams 41 and 42, which are connected by an end piece 43. The beams 41 and 42 are each provided with a pulley 44 near their ends. The chains 45 are arranged to pass these pulleys, being fastened at one end to the fork, and at the opposite end to the enlarged drum portions 30^a of the shaft 30. The frame members 41 and 42 are braced near their inner pivoted ends by the rods 46.

Pivoted on the rod 40 are the arms 47 and 47', bearing at their upper ends the pulleys 48, which are pivoted at 49 to the arms as clearly shown in Fig. 3. The arms 47 and 47' are connected with the frame pieces 43 by means of the rods 50, while the pulleys 48 are arranged to receive the chains 51 which pass over said pulleys and are fastened on the lower sides to the rear beam 21 and on the upper side to the drum portions 29^a of the shaft 29. The arms 47 and 47' are provided with the hooks 52 for the purpose hereafter explained.

The fork mechanism comprises the tines 53, which are secured together at their rear ends by the common bolt 54, which passes through the arm 55 of the U-shaped frame, the central part 56 of which is pivoted at 57 and 57' to the ends of the rods 58 and 58' respectively. A connecting piece 59 is provided with reduced end portions 60, to which the chains 45 are connected. A bail 61 extends between the arms 55, and is attached to a rearwardly extending chain 62. A cross brace 63 is provided for strengthening the arms 58 and 58', and this brace bears an idler 64 over which the chain 62 passes. The latter is attached at its rear end to a link 65, pivotally attached to a hand lever 66, which is fulcrumed at the center of a cross member 67. The rods 58 and 58' converge toward their rear ends and are continued on in one common rod 58^x, which is provided with a handle piece 58^y. Secured to the rods 58 and 58' is a cross rod 68, which is adapted to rest in the hooks 52 as clearly shown in Fig. 1.

From the foregoing description of the various parts of the device the operation thereof may be readily understood. In using the

loader it is drawn to the place where the commodity is to be loaded and is placed in a convenient position. The device is then swung around until the inclined frame is over the pile to be removed. By throwing back the dog 32, the gear 31 and the hand shaft 30 will be free to move, and the weight of the fork will unwind the chain 45 and permit the fork to descend. The handle 58^y is then drawn back and the fork is thrust forward beneath the load, the lever 66 in the meantime being thrown backwardly into its rear position, shown in dotted lines in Fig. 1. The cross bar 68 attached to the rods 58 and 58' is then placed in one of the hooks 52 on the arms 47, which serves as a support for the fork handle during its manipulation and which may serve as a fulcrum for the fork in forcing it into position beneath the load. The movable shaft 35 is now pushed inwardly and the gear 36 comes in mesh with the gear 31. The load may now be raised by winding up chain 45 upon the drums 30^a of the shaft 30, by means of the hand wheel 37. If the load is to be raised to a still further height the shaft 35 may be pulled outwardly until the gear 36 meshes with the gear 33 when the chains 51 will be wound up, thereby swinging the frame members 41 and 42 upwardly through the medium of the rods 50 to any desired height. The load may be then swung around until it is over the wagon. Now by pushing forward on the lever 66 the fork is tilted downwardly and the load is deposited.

Owing to the fact that the gears transmit great power a large load is easily lifted by means of this loading device, and the loading may be accomplished rapidly and with comparatively little effort. The apparatus is of a comparatively simple nature, and therefore is not liable to get out of order. The mechanism is comparatively light in weight and can be easily transported from place to place.

I am aware that other forms of the device based upon the same general idea might be made, but I consider as my own and desire to claim all such modifications as fall fairly within the spirit and scope of the invention.

I claim—

1. In a loading machine, a base provided with a circular track, a frame arranged to turn upon said track, inclined supports pivoted to said frame, a rod suspended from said inclined supports, a fork pivotally secured to said rod, a lever carried by the rod and connections between the lever and the fork for moving the tines of the latter relatively to the rod.

2. In a loading machine, a base provided with a circular track, a frame arranged to turn upon said track, inclined supports pivoted to said frame, means for adjusting said inclined supports at different inclinations,

hooks carried by said inclined supports, a rod suspended from certain of said inclined supports at one end, the other end of the rod terminating in a handle, a lever pivoted on said rod, connections between said lever and said fork for moving the tines of the frame relatively to the rod and a fulcrum bar secured to said rod and arranged to engage the hooks on the inclined supports, the latter serving as fulcrum points for raising a load engaged by the fork.

3. In a loading machine, a base provided with a circular track, a frame arranged to turn upon said track, inclined supports pivoted to said frame, certain of said supports being provided with hooks arranged in pairs, means for adjusting said inclined supports at different inclinations, an operating handle suspended from said inclined supports at

one end thereof, said operating handle comprising a pair of diverging rods secured together at one end and being pivotally attached to a fork at the other end, a pivoted lever secured between said diverging rods, a cross brace secured between the diverging arms near one end thereof, a pulley carried by said brace, a chain secured to said pivoted fork at one end and at the other end to said pivoted lever, said chain passing underneath the pulley on said cross brace, a fulcrum bar secured to said handle rod and arranged to rest on any pair of opposed hooks carried by said inclined supports.

GEORGE KRUSE.

Witnesses:

HENRY D. AYKINS,
LOUIS BODMER.