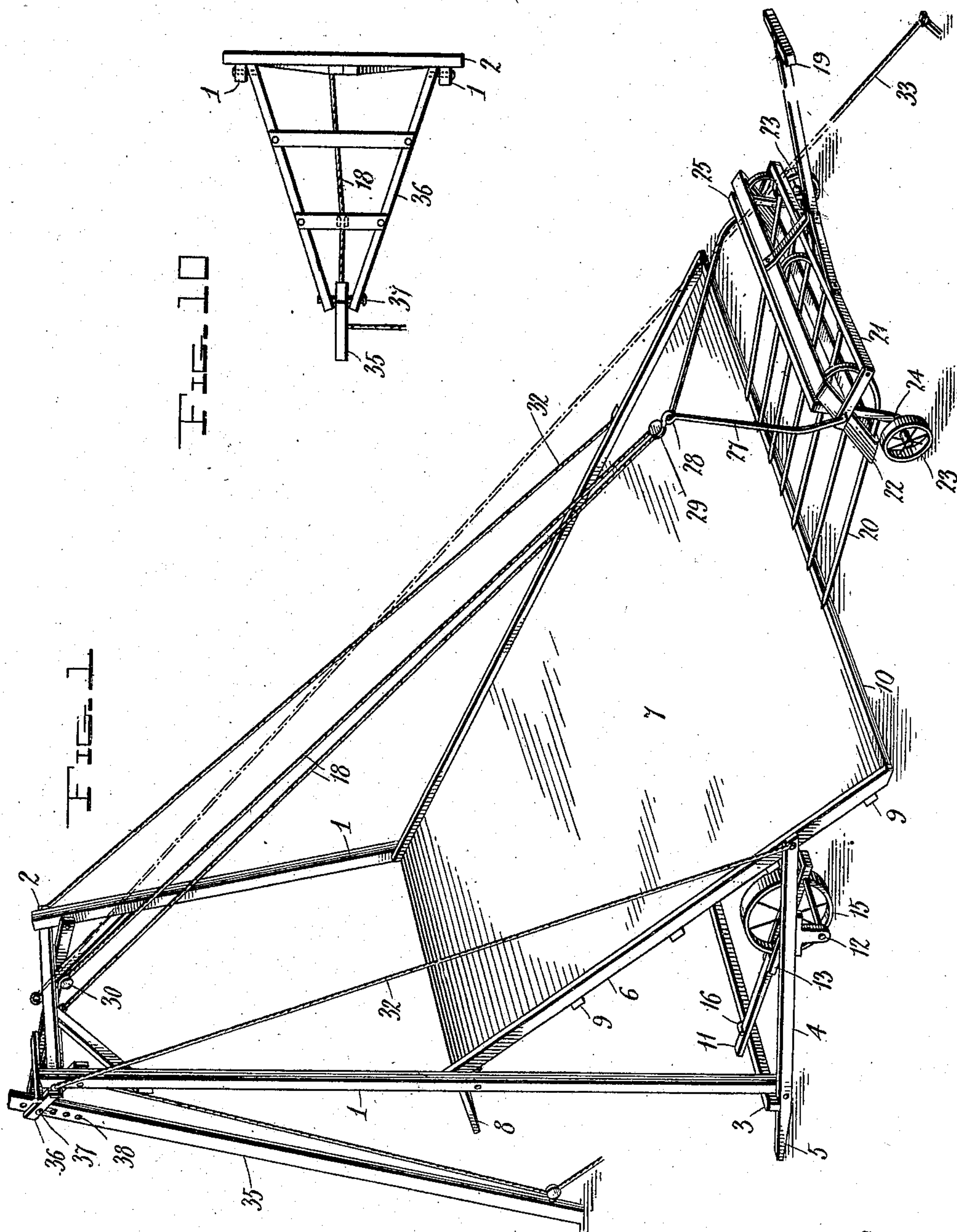


W. F. LENHARD.  
LOADING DEVICE.  
APPLICATION FILED JUNE 4, 1908.

919,733.

Patented Apr. 27, 1909.

4 SHEETS—SHEET 1.



Witnesses

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4 SHEETS--SHEET 2.

FIG. 4 is a perspective view of the mechanical device. It shows a rectangular frame with rollers at the bottom corners (13, 14, 15, 16). A central shaft (11) is supported by bearings (17) and has several blades (20) attached to it. The blades are positioned to sort or guide material. Various adjustment mechanisms are shown, including a handle (31) for adjusting the position of the blades, and a series of rollers (21, 22, 23, 24, 25) that support the central shaft. The entire device is mounted on a base (12) and has a top frame (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100).

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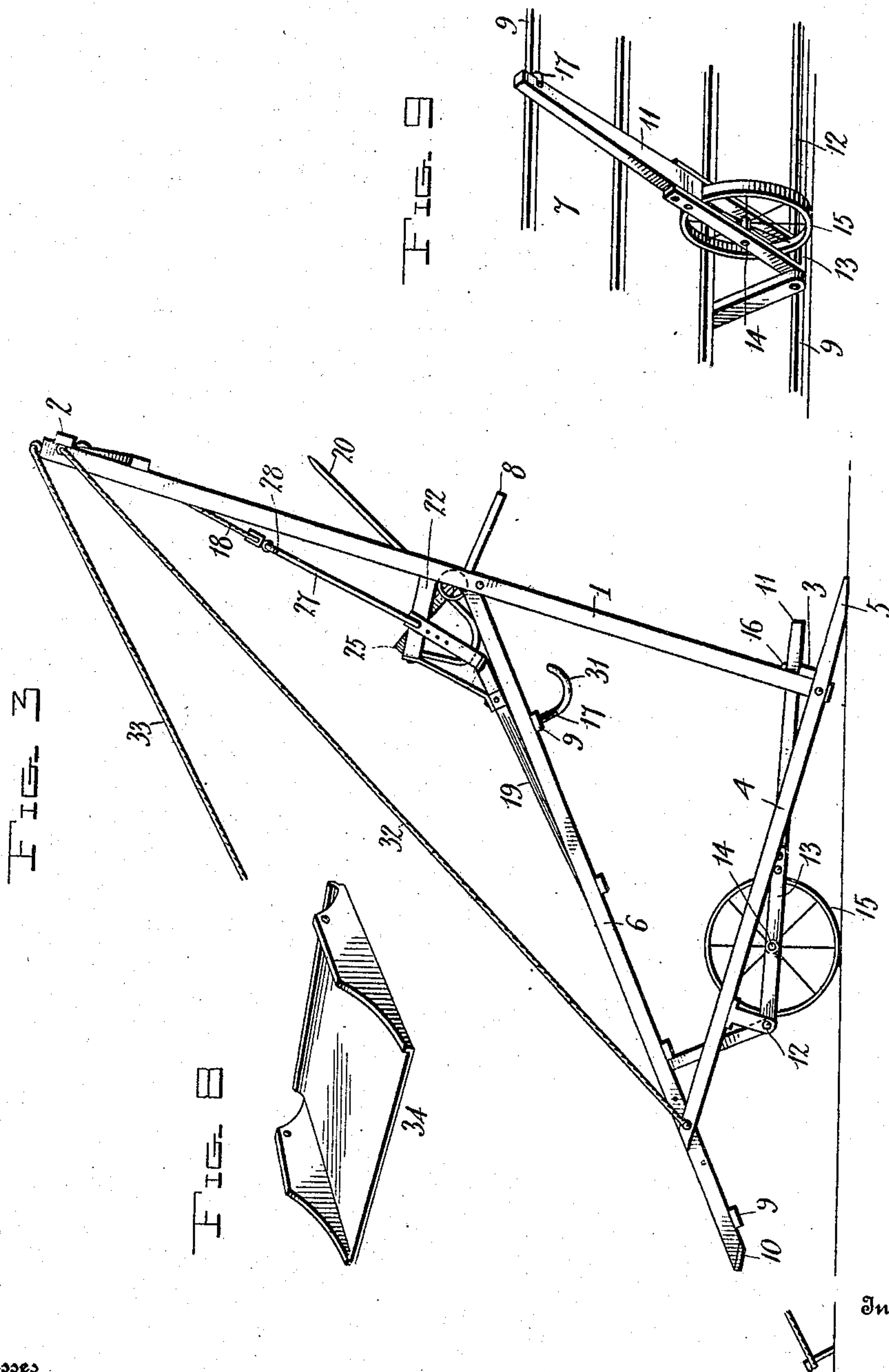
L. McQuarrie -



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4 SHEETS—SHEET 3.



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# UNITED STATES PATENT OFFICE.

WILLIAM F. LENHARD, OF DARWIN, MINNESOTA.

## LOADING DEVICE.

No. 919,733.

Specification of Letters Patent.

Patented April 27, 1909.

Application filed June 4, 1908. Serial No. 436,703.

*To all whom it may concern:*

Be it known that I, WILLIAM F. LENHARD, a citizen of the United States, residing at Darwin, in the county of Meeker, State of Minnesota, have invented certain new and useful Improvements in Loading Devices; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention has reference to loading devices, and it aims, generally, to provide an exceedingly simple, durable and efficient device of that nature designed especially for loading manure.

To this end, the invention briefly described, comprises a portable derrick provided with an inclined runway, whose upper end is extended rearwardly, and a fork arranged to travel upon the runway and adapted to be tilted when it reaches the extended end thereof, to dump its contents into a wagon or upon the ground at a particular spot, as the case may be.

The invention resides more especially however, in the particular construction of the derrick and the runway carried thereby and in the attachment to the derrick frame of a pair of levers arranged for swinging movement in parallel vertical planes, so as to move the ground wheels with which they are provided into and out of engagement with the ground, said wheels occupying the former position when the loading device is in operation, and the latter position during its movement from place to place.

The invention further resides in the particular construction of the fork, in the provision of rollers for facilitating the downward movement of the fork upon the runway, and in the particular devices employed for effecting the movement of the fork.

The preferred embodiment of the invention is illustrated in the accompanying drawings, in which corresponding parts are designated by the same reference numerals throughout the several views, wherein:

Figure 1 is a perspective view of the loader, showing the fork in position at the foot of the runway. Fig. 2 is a vertical section, showing the fork at the top of the runway in the position which it assumes at the completion of its tilting movement. Fig. 3 is a side elevation of the loader in position

for transportation. Fig. 4 is a rear elevation of Fig. 2. Fig. 5 is an enlarged plan view of the fork. Fig. 6 is a transverse vertical section therethrough. Fig. 7 is a front elevation of the fork. Fig. 8 is a detail view of a scraper adapted for use in connection with the fork. Fig. 9 is a detail view of the wheel-carrying levers. Fig. 10 is a plan view of the supplemental brace illustrated in Fig. 1.

Referring more particularly to the drawings, 1, 1, designate the converging vertical beams of the derrick frame whose upper and lower ends are connected together by the cross-beams 2 and 3, the beam 3 having its opposite ends resting upon and secured to the side beams 4 of the derrick frame, to which beams the beams 1 are likewise attached at their lower ends. The rear ends of the beams 4 project beyond the beams 1 and are rounded or beveled upwardly at such points, to form runners 5, while their front ends are fastened to the side beams 6 of the upwardly-inclined runway 7, whose upper end is secured to the beams 1 intermediate their ends, extending therebetween, as shown in Figs. 2 and 3, to form a platform 8, said runway tapering gradually in width from its lower to its upper end. The runway is strengthened by a series of parallel horizontal braces 9 which are secured to its under face, while the lower portion of its outer face has fastened thereto, a metal wear plate 10, as shown in Fig. 1, the lower edges of the plate and runway being moved into and out of contact with the ground by means of a pair of rearwardly-extending levers 11 which are pivoted to a transverse shaft 12 journaled at its opposite ends in bearings carried by the side beams 4 of the derrick frame, each lever including a handle portion to the inner end of which a U-shaped frame 13 is secured, said frame being provided with a transverse pin 14 carrying a ground wheel 15, the ends of the pin being journaled in openings formed through the arms of the frame, said arms being further provided at their ends with alining openings through which the shaft 12 passes.

Owing to their attachment to the shaft 12, the levers 11 are capable of a swinging movement in parallel vertical planes, carrying with them the ground wheels, as will be apparent. When, therefore, said levers are swung upwardly toward the runway, the



wheels will be raised from the ground, while the lower edge of the runway will be brought into contact therewith, and when the levers are moved in the opposite direction, or toward the cross-beam 3, the wheels will be brought into contact with the ground and the runway edge raised thereabove. To retain the levers in either position, the beam 3 and one of the braces 9 are provided respectively with swinging catches 16 and 17 which are movable into and out of engagement with the levers.

The fork which is adapted to travel upon the runway and is operated by a cable 18, as hereinafter described, comprises a handle 19 and a series of tines 20 whose up-turned rear ends are bolted to a cross-piece 21 to which the lower end of the handle is rigidly secured. In the present instance, seven tines are shown, the two outer tines and the central tine projecting some distance beyond the cross-piece 21 and having their curved extremities secured to the top member of an open rectangular frame 22, whose lower member is disposed beneath the several tines, which latter are riveted thereto. During its downward movement upon the runway, the rear end of the fork is supported upon a pair of rollers 23 rotatably mounted upon the free ends of the legs 24 of an inverted U-shaped frame 25, formed of strap iron. Intermediate their ends, the legs 24 are provided with perforations 26 in which are pivotally engaged the hooked ends of a wire bail 27 provided intermediate its ends with an eye 28, the lower portions of said legs being bent so as to extend outwardly of the tines and below the same, as shown.

The operating cable 18 above referred to, is secured at one end to the cross-beam 2, is led downwardly and passed around a pulley 29 whose block is connected with the eye 28, and is finally led upwardly and passed over a pulley 30 carried by a block suspended from said cross-beam, the free end of the cable being then led downwardly to permit its attachment to a whiffle-tree, (not shown).

In the operation of the device the wheel carrying levers 11 are raised and engaged with the upper catches 17 after which the manure is collected upon the fork in the usual manner and the draft animals hitched to the whiffle-tree. As the animals move away from the derrick, the fork will be caused to travel upwardly along the runway, the tines of the fork being held in approximately horizontal position by means of the rollers 23, which latter are secured to the legs of the frame 25 located toward the rear ends of the tines. As the fork reaches the platform 8, the fork is tilted, as shown in Fig. 2, under the tension of the operating cable, the rear ends of the tines being raised and their front ends lowered, thus dumping

the manure upon the ground at the particular spot selected, or into a wagon, as the case may be, it being understood that the wagon, when used, is backed up sufficiently close to the derrick frame to permit the fork to discharge its contents thereinto. When a sufficient quantity has been collected either upon the ground or in the wagon, the fork is raised into the position shown in Fig. 3, and its operating cable wound around an upwardly bent U-shaped frame 31 secured to one of the braces 9 at the back of the runways, the fork being thus retained in its raised position. The levers 11 are then lowered and engaged with the catches 16 on the cross-beam 3, bringing the ground wheels 15 into operative position in contact with the ground and raising the lower edge of the runway above the ground, as shown in the last mentioned figure. The derrick is then moved to another spot, the draft chains (not shown) being connected to the lower ends of the beams 1 or to the side beams 4. As the manner of effecting the bodily movement of the derrick, however, forms no part of the present invention, illustration thereof is accordingly omitted. During the time that the device is actually in operation, it is held against movement by a guy rope 32 which is fastened to the ends of the cross-beam 2, this rope being wound around the beams 1 when the derrick is moved from one place to another. The derrick frame is preferably provided with a pair of wire cables 32 which are fastened at their upper ends to the top beam 2 and at their lower ends to the front ends of the side beams 4, the cables tending to strengthen the derrick frame, as will be apparent.

It is to be understood that the machine may be used with equal facility in loading the manure into a wagon instead of at a particular spot upon the ground, as the wagon may be backed up sufficiently close to the derrick frame to enable the fork to dump its contents thereinto.

Where it is desired to load dirt, gravel, or the like, which is fine enough to pass between the tines of the fork, the latter may be provided with a shield 34, which is fitted over the tines and is held in place by straps secured thereto, the side edges of the shield having openings, in which hooks secured to the arms of the brace 16 are engaged. The forward edge is provided with a steel scraper.

During the time that the apparatus is actually in operation, it may be further supported and held against displacement by the supplemental brace illustrated in Fig. 1, said brace comprising a beam 35 whose upper end is connected with the upper ends of the beams 1, 1, by means of a V-shaped frame 36, the sides of which receive the



beam 35 between their rear ends, the connection between the latter beam and the frame being effected by a bolt 37 arranged for interchangeable engagement in one of a series of openings 38 formed through said beam 35.

What is claimed is:

1. In a portable loading device, the combination, with a derrick and an inclined runway secured thereto, of a carrier arranged for movement upon the runway; means for operating the carrier; a pair of wheel-carrying members pivotally connected with the derrick and movable in parallel vertical planes, for raising and lowering the lower edge of the runway; and separate means for retaining said members in raised and lowered position.

2. In a portable loading device, the combination, with a derrick, comprising a pair of spaced vertical beams, upper and lower cross-beams connecting the ends of the vertical beams, and a forwardly-extending side beam secured to the lower end of each vertical beam, of an inclined runway secured at its upper end to said vertical beams and at its lower end to the forward ends of said side beams; a carrier arranged for movement upon said runway; means for operating said carrier; a transverse shaft carried by said side beams; and a pair of rearwardly-extending members connected at their inner ends to said shaft and arranged for movement in parallel vertical planes, each member being provided adjacent its inner end with a ground wheel, whereby the movement of said members in one direction will raise the lower edge of the runway above the ground, and in the other direction will lower said edge into contact with the ground.

3. In a portable loading device, the combination, with a derrick, comprising a pair of spaced vertical beams, upper and lower cross-beams connecting the ends of the vertical beams, and a forwardly-extending side beam secured to the lower end of each vertical beam, of an inclined runway secured at its upper end to said vertical beams and at its lower end to the forward ends of said side beams; a carrier arranged for movement upon said runway; means for operating said carrier; a transverse shaft carried by said side beams; a pair of rearwardly-extending members connected at their inner ends to said shaft and arranged for movement in parallel vertical planes, each member being provided adjacent its inner end with a ground wheel, whereby the movement of said members in one direction will raise the lower edge of the runway above the ground, and in the other direction will lower said edge into contact with the ground; means carried by the runway for engagement with said members when the latter are in their vertical position; and separate

means carried by the lower cross-beam for engagement with said members when the latter are in their horizontal position.

4. In a portable loading device, the combination, with a derrick, comprising a pair of spaced vertical beams, upper and lower cross-beams connecting the ends of the vertical beams, and a side beam secured intermediate its ends to the lower end of the vertical beam, the rear end of each side beam being rounded to form a runner, of an inclined runway secured at its upper end to said vertical beams and at its lower end to the forward ends of said side beams; a carrier arranged for movement upon said runway; means for operating said carrier; a series of braces secured to the under face of said runway; a transverse shaft carried by said side beams; a pair of levers connected at their inner ends to said shaft and arranged for movement in parallel vertical planes, each lever being provided adjacent its inner end with a rotatable ground wheel, whereby the movement of said levers in one direction will raise the lower edge of the runway above the ground, and in the other direction will lower said edge into contact with the ground; a pair of catches secured to one of said braces and adapted for engagement with said levers when the latter are in their vertical position; and a pair of catches secured to the lower cross-beam and adapted for engagement with said levers when the latter are in their horizontal position.

5. In a loading device, the combination, with a derrick, and an inclined runway secured thereto, of a fork arranged for travel upon the runway and including a series of tines, a cross-piece to which the rear ends of the tines are secured, an inverted U-shaped frame connected with the tines intermediate their ends, and a roller secured to the free end of each leg of the frame; and means for operating the fork.

6. In a loading device, the combination, with a derrick, and an inclined runway secured thereto, of a fork arranged for travel upon the runway and including a series of tines, a cross-piece to which the rear ends of the tines are secured, an open rectangular frame to whose lower member the tines are secured intermediate their ends, an inverted U-shaped frame having its legs bent outwardly beyond the outer tines, and a pair of rollers secured to the free ends of the legs of said frame; and means for operating the fork.

7. In a loading device, the combination, with a derrick, and an inclined runway secured thereto, of a fork arranged for travel upon the runway and including a series of tines, a cross-piece to which the rear ends of the tines are secured, an open rectangular frame to whose lower member the tines are secured intermediate their ends, an inverted



U-shaped frame having its legs perforated intermediate their ends, the lower portions of said legs bent outwardly beyond the outer tines, and a pair of rollers secured to the free ends of said legs; a bail having its ends pivotally engaged in the perforations in said legs; and an operating cable having one end thereof secured to said bail.

8. In a loading device, the combination, with a derrick and an inclined runway secured thereto, of a fork arranged to travel upon the runway and including a series of tines, a cross-piece to which the rear ends of the tines are secured, an inverted U-shaped frame connected with the tines intermediate their ends, and a roller secured to the free end of each leg of the frame; means for operating the fork; and a pair of wheel-carrying members pivotally connected with the derrick and movable in parallel vertical planes, for raising and lowering the lower edge of the runway.

9. In a portable loading device, the combination, with a derrick, comprising a pair of spaced vertical beams, upper and lower cross-beams connecting the ends of the vertical beams, and a forwardly-extending side beam secured to the lower end of the verti-

cal beam, of an inclined runway secured at its upper end to said vertical beam and at its lower end to the forward ends of said side beams; a fork arranged to travel upon the runway and including a series of tines, a cross-piece to which the rear ends of the tines are secured, an inverted U-shaped frame connected with the tines intermediate their ends, and a roller secured to the free end of each leg of the frame; means for operating the fork; a transverse shaft carried by said side beams; and a pair of rearwardly-extending members connected at their inner ends to said shaft and arranged for movement in parallel vertical planes, each member being provided adjacent its inner end with a ground wheel, whereby the movement of said members in one direction will raise the lower edge of the runway above the ground, and in the other direction will lower said edge into contact with the ground.

In testimony whereof, I affix my signature, in presence of two witnesses.

WILLIAM F. LENHARD.

Witnesses.

OLE. BENSON,

BENN G. BENSON.