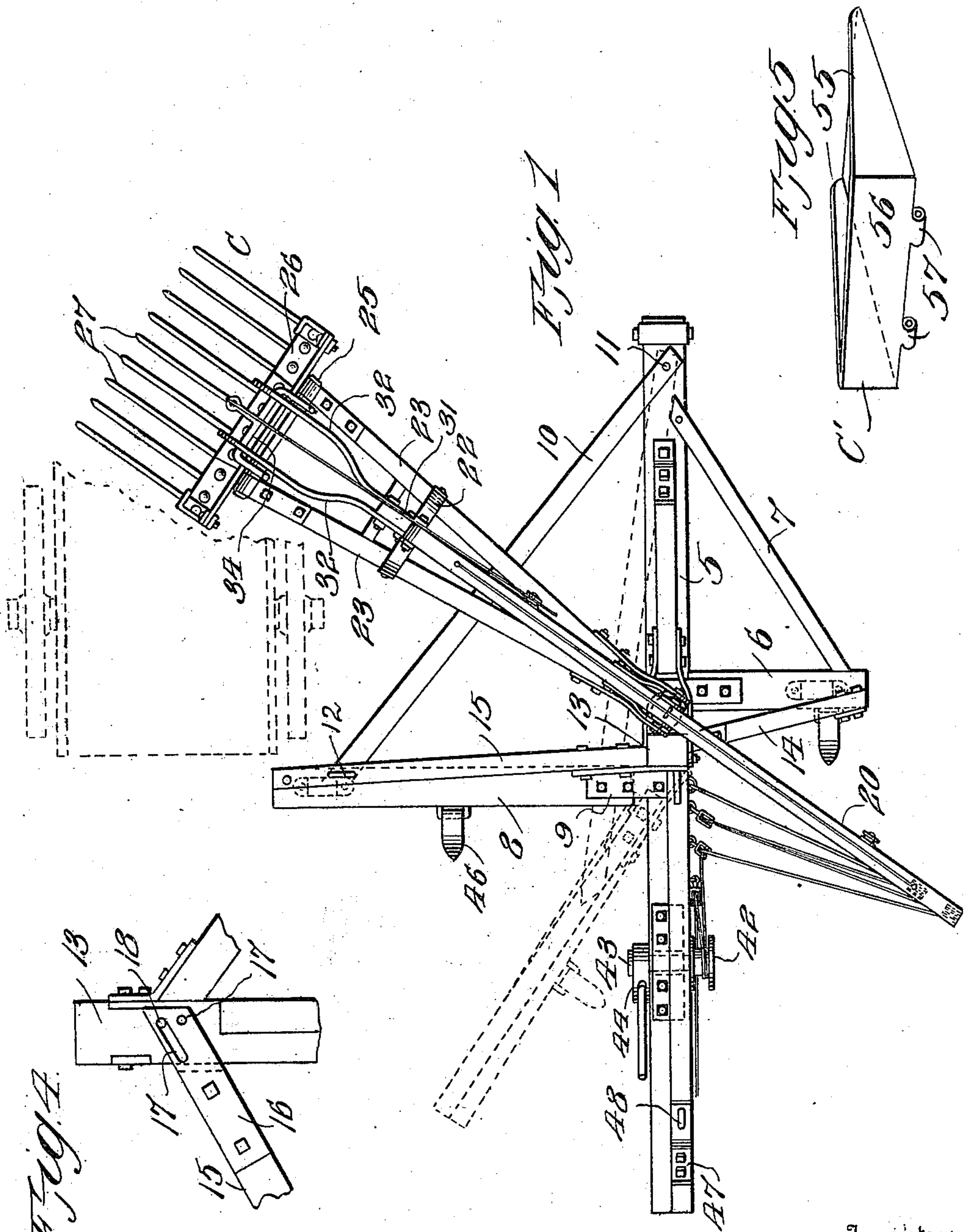


## LOADING APPARATUS.

Patented Nov. 15, 1910.

2 SHEETS—SHEET 1.

975,917.



7624

Witnesses

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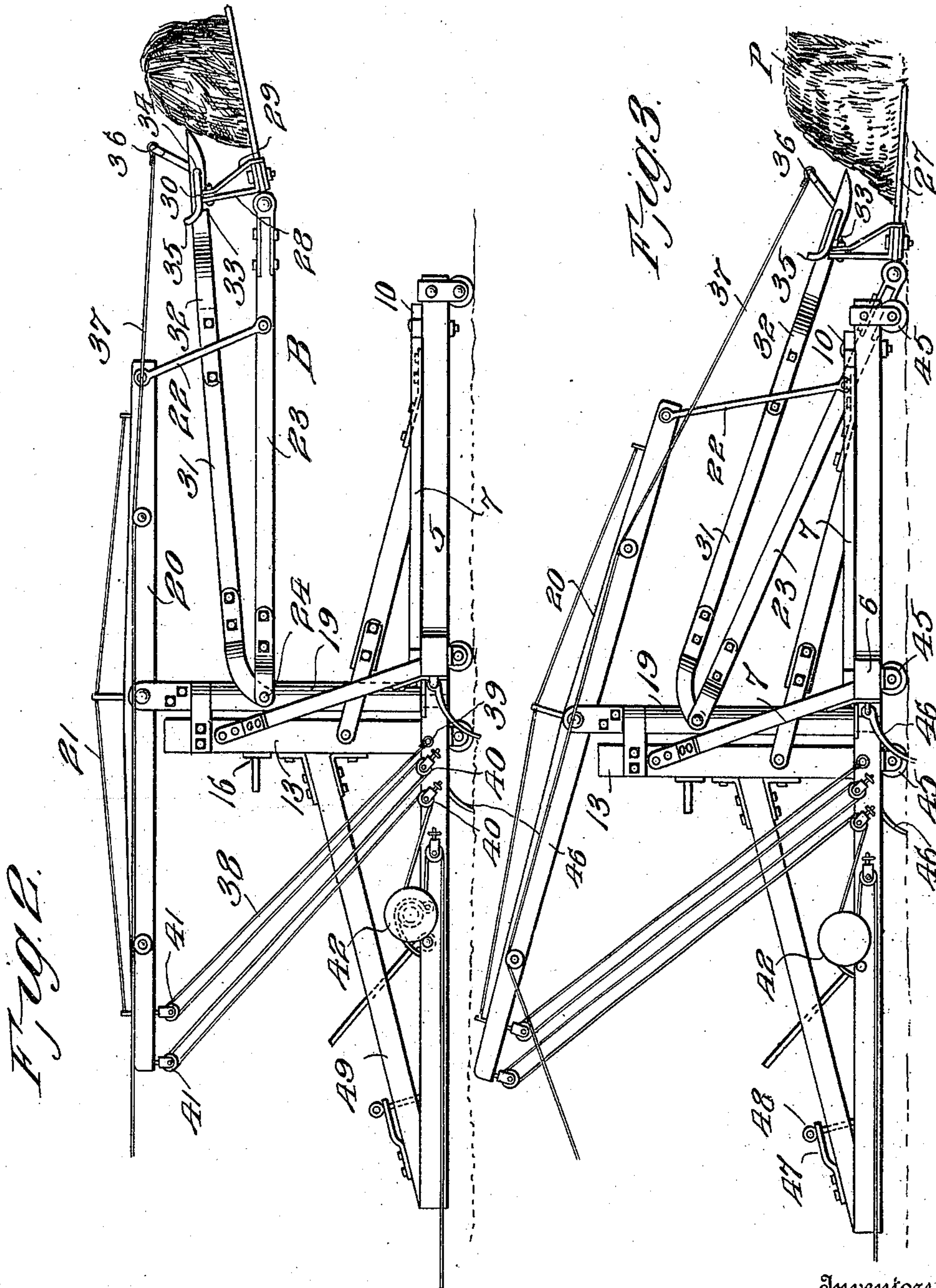
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APPLICATION FILED DEC. 7, 1909.

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# UNITED STATES PATENT OFFICE.

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## LOADING APPARATUS.

975,917.

Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed December 7, 1909. Serial No. 531,773.

*To all whom it may concern:*

Be it known that we, JOHN E. WOODS and EDWIN L. HARDING, citizens of the United States of America, residing at Sibley, in the county of Osceola and State of Iowa, have invented new and useful Improvements in Loading Apparatus, of which the following is a specification.

This invention relates to loading apparatus, and it has for its object to provide a device for loading manure and the like, whereby the material to be loaded may be taken from a pile, elevated and dumped or discharged into a receptacle such as the box or body of a wagon or a manure spreader.

A further object of the invention is to provide an apparatus of the character described having a load-receiving and elevating fork and adapted to be forcibly projected by suitable power such as a team of horses to insert the fork beneath the load.

A still further object of the invention is to provide an improved construction whereby the frame of the apparatus may be partially collapsed or folded to enable it to pass through openings, such as gates too narrow to admit the full width of the machine.

Still further objects of the invention are to simplify the general construction and operation of an apparatus of the character described.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the invention may be resorted to when desired.

In the drawings,—Figure 1 is a top plan view of a machine constructed in accordance with the invention. Fig. 2 is a side elevation, showing a load in position upon the fork and partly elevated. Fig. 3 is a side elevation, showing the fork in load-receiving position. Fig. 4 is a detail view in elevation of the upper end of the upright 13. Fig. 5 is a perspective detail

view of a shovel which may be used as a substitute for the fork.

Corresponding parts in the several figures are denoted by like characters of reference.

The base of the machine includes a longitudinal sill 5 having a laterally extending arm 6 firmly connected therewith, said arm being connected with the sill 5 by means of a forwardly extending inclined brace 7. The arm 8 extending in the opposite direction from the arm 6 is hingedly connected with the sill 5 by means of a strap hinge 9, and said arm is connected with the forward end of the sill by means of an inclined brace 10, the latter being pivotally connected with the sill by means of a pin 11, and said brace being detachably connected with the arm 8 by means of a pin or bolt 12.

The sill supports an upright 13 which is securely connected by inclined braces 14 and 15 with the arms 6 and 8, respectively; the upper end of the brace 15 being connected detachably with the upright 13 by means of a plate 16 which is firmly secured to the brace, while said plate is provided with apertures 17, one of which may be placed in engagement with a pin 18 projecting from the upright 13 with which the brace may thus be detachably connected.

It will be seen that owing to the construction set forth, by disengaging the upper end of the brace 15 from the upright 13 and by temporarily withdrawing the pin 12, the brace 10 and the arm 8, together with the brace 15, may be moved or swung in the direction of the sill to the position indicated in dotted lines in Fig. 1 of the drawings, thus enabling the frame structure to pass through openings, such as gates that would otherwise be too narrow to admit of the machine without disassembling the latter.

Supported for rotation upon the sill adjacent to the upright 13 is a mast 19 carrying at its upper end a derrick arm 20 reinforced by a truss 21. The front end of the derrick arm 20 is connected by a yoke 22 with a fork-carrying arm B composed of two divergent beams 23, the rear ends of which are hingedly connected with the mast by a pin 24, while the forward ends of said bars are connected by a rod 25 upon which the fork C is hingedly mounted, said fork being composed of a head bar 26 having forwardly extending load-receiving teeth 27 and uprights 28 reinforced by the braces 29



and connected by a cross piece 30. A latch bar 31, which is pivotally mounted upon the pin 24, is provided at its forward end with divergent latch members 32 having notches 5 33 adapted to engage the cross bar 30 of the fork, which latter may thus be retained in position and restrained from tilting upon the supporting rod 25. For the purpose of disengaging the latch members 32 from the 10 cross bar 30 there is provided a rock shaft which is supported for oscillation in the said latch members, said rock shaft being provided with arms 35 extending above and normally resting upon the cross bar when 15 the latter is in engagement with the notch 33; said rock shaft is also provided with an upwardly extending arm 36 from which a suitably guided flexible element 37 extends to a convenient point within the reach of the 20 operator who, by pulling upon said element, will oscillate the rock shaft 34, thus depressing the arms 35 and forcing the cross bar 30 out of engagement with the notches 33, thus enabling the fork to be tilted by the 25 gravity of the load which may thus be discharged. A suitably guided hoisting element 38 is connected at one end to the sill, as shown at 39, after which said hoisting element is guided over suitably arranged pulleys 40 and 41 upon the sill 5 and the derrick arm 20, respectively, said hoisting element being also guided over a drum 42 upon the sill. The drum 42 is mounted upon a shaft 43, and a friction brake 44 is suitably arranged to engage said shaft for the purpose 35 of retarding the movement of the same when the fork-carrying end of the derrick arm is lowered by gravity after the discharge of the load.

40 The sill 5, as well as the arms 6 and 8, are provided upon their undersides with suitably mounted supporting rollers or sills 45, whereby the machine may be conveniently transported. The arms 6 and 8 are also provided with earth-engaging pawls 46 for the purpose of obstructing rearward movement of the machine.

A clevis 47 and a hammer hold 48 are arranged adjacent to the rear end of the sill 5; in the drawings the hammer hold has been shown supported upon a brace 49 extending between the rear end of the sill and the upright 13, but the arrangement may be varied if preferred.

55 In the operation of this device the fork is lowered to the load-receiving position indicated in Fig. 3 of the drawings, and propulsion means, such as a team of horses, is attached adjacent to the rear end of the sill. 60 The attachment may by means of a double-tree be mounted upon the hammer bolt, as will be readily understood. The entire machine may now be pushed in a forward direction toward the pile of material which 65 is to be loaded and which has been shown

at P in Fig. 3; the teeth of the fork will thus be projected beneath the pile, a portion of which will thus be supported upon the fork. The draft means are now transported from the machine to the hoisting element, and the derrick beam will thereby be 70 rocked upon its fulcrum, thus elevating the engaging fork, movement of the machine in a rearward direction being prevented by the earth-engaging pawls 46. When the 75 load has been raised to the desired elevation, the mast may be rocked in its bearings by exercising the pull in the desired direction upon the derrick beam, thus transferring the fork to a suitable position above a 80 wagon, manure spreader or other receptacle which has been previously arranged adjacent to the side of the machine and into which the load may be dumped by pulling the trip rope 37. The derrick beam may 85 now be restored to its initial position in approximate alinement with the sill, after which the fork may be lowered by gravity, the movement being controlled by the brake 44 until the fork reaches the ground, when 90 the cross bar 30 will again be engaged by the notched latch members, and the machine will now be ready for repetition of the operation.

In Fig. 5 of the drawings has been shown 95 a load-receiving and carrying member which may be used as a substitute for the fork hereinbefore described. Said carrying member, which has here been designated C', consists of a shovel having upstanding sides 100 55 and an upstanding back member 56, which latter may in operation of the device be engaged by the notches 33 of the latch members 32; the shovel being adapted to be 105 hingedly connected with the beams 23 of the carrying arm B by means of a rod extending through hinge lugs 57 upon said shovel. When other material than manure, such as sand or gravel, is to be loaded, this may be conveniently and efficiently done by 110 simply substituting the shovel C' for the fork C. In the operation of the invention it will be readily understood that manure or other material may be gathered into any 115 available place, and that it is by no means necessary that such material should have been previously gathered into piles, since the entire machine may be propelled with the gathering and carrying member C or C' passing over the ground until a sufficient 120 load has been accumulated, after which such load may be elevated and dumped into the receiving wagon, which has been previously placed in proper position to receive the load. 125 It will thus be understood that this invention is available for the purpose of gathering and loading materials of various kinds in a very labor-saving and efficient manner.

Having thus described the invention, what is claimed as new, is:—



1. A loading apparatus comprising a base frame, an upright supported thereon, a mast supported for rotation adjacent to the upright, a derrick beam mounted upon the mast, carrying arms connected pivotally with the mast, a load-receiving member connected hingedly with the arms, a latch bar pivotally connected with the mast and having notched divergent members engaging the load-receiving member, a rock shaft supported by said members and having arms engaging the load-receiving member, and an upwardly extending arm, and a suitably guided flexible element connected with said upwardly extending arm and guided to a point within reach of the operator.

2. In a machine of the character described, a derrick, a load receiving member operable by the derrick, a supporting sill for said derrick having laterally extending arms, one of said arms being hingedly connected with the sill, and a brace pivotally connected with the sill and detachably connected with the hingedly supported arm.

3. In a machine of the character described, a sill, an upright on said sill, a

derrick-supporting mast supported for oscillation adjacent to the upright, a derrick, a load receiving member operable by the derrick, arms extending laterally from the sill, one of said arms being hingedly connected with the sill, and inclined braces connecting the sill with the arms and with the upright; one of said braces being detachably connected with the upright.

4. In a device of the character described, a sill having laterally extending arms, a derrick supported upon the sill, a load-receiving member operable by the derrick, rotary supporting means for the sill and for the laterally extending arms, earth-engaging pawls connected with the latter, and means for the attachment of power to force the sill in a forward direction.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN E. WOODS.

EDWIN LEWIS HARDING.

Witnesses:

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R. H. SIETSEMA.