July 14, 1925.

W. J. GEDDES

1,545,651

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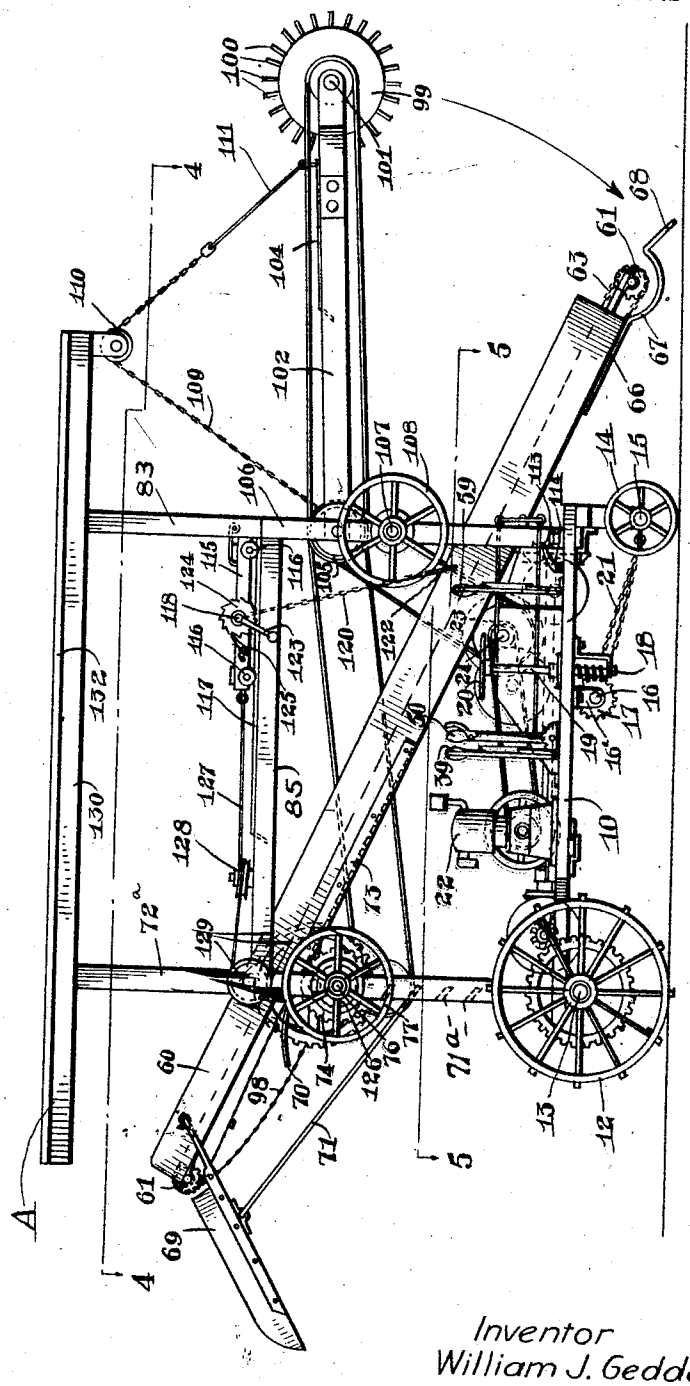


Fig. 1.

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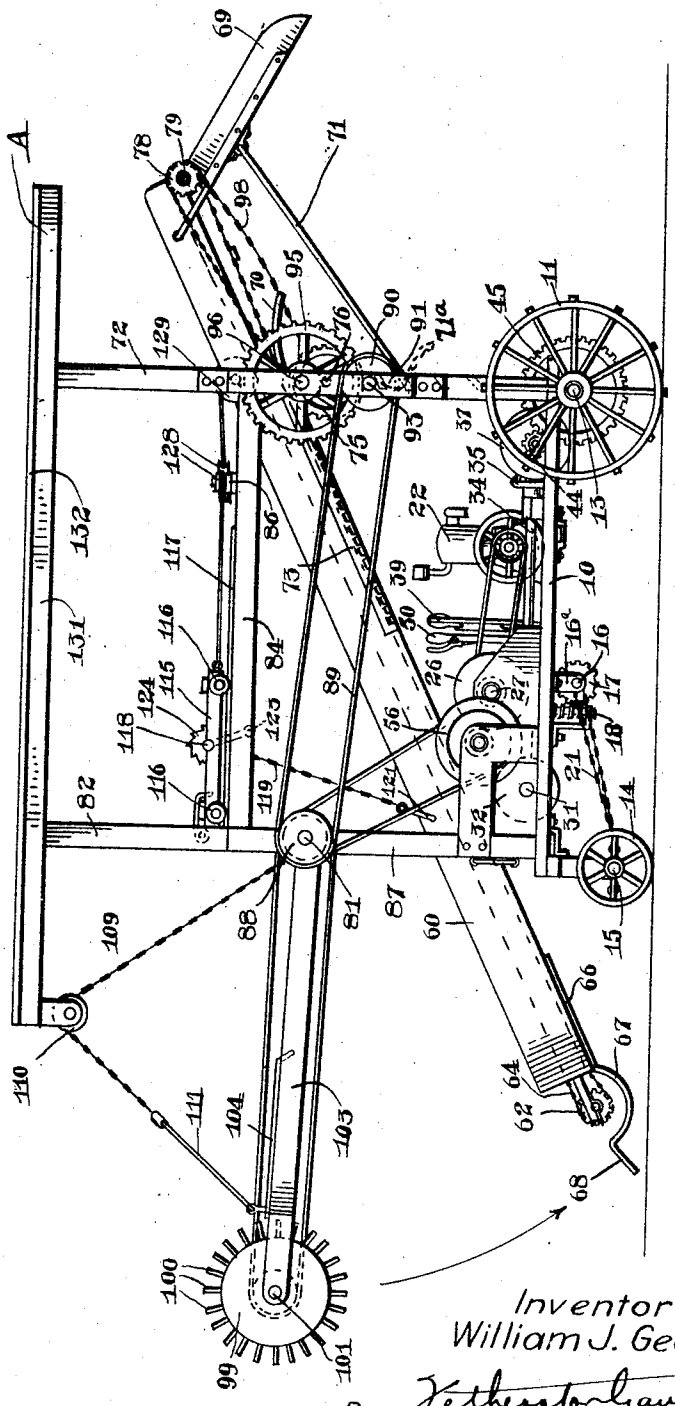


Fig. 2.

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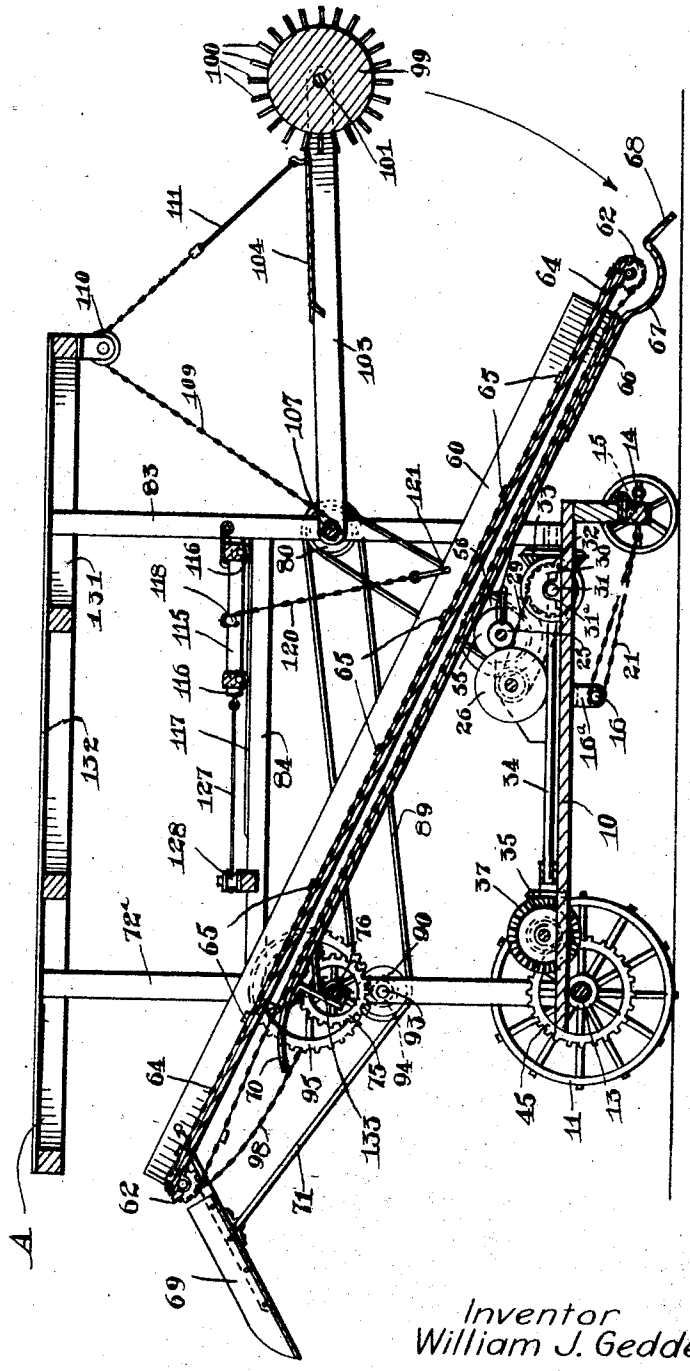


Fig. 3.

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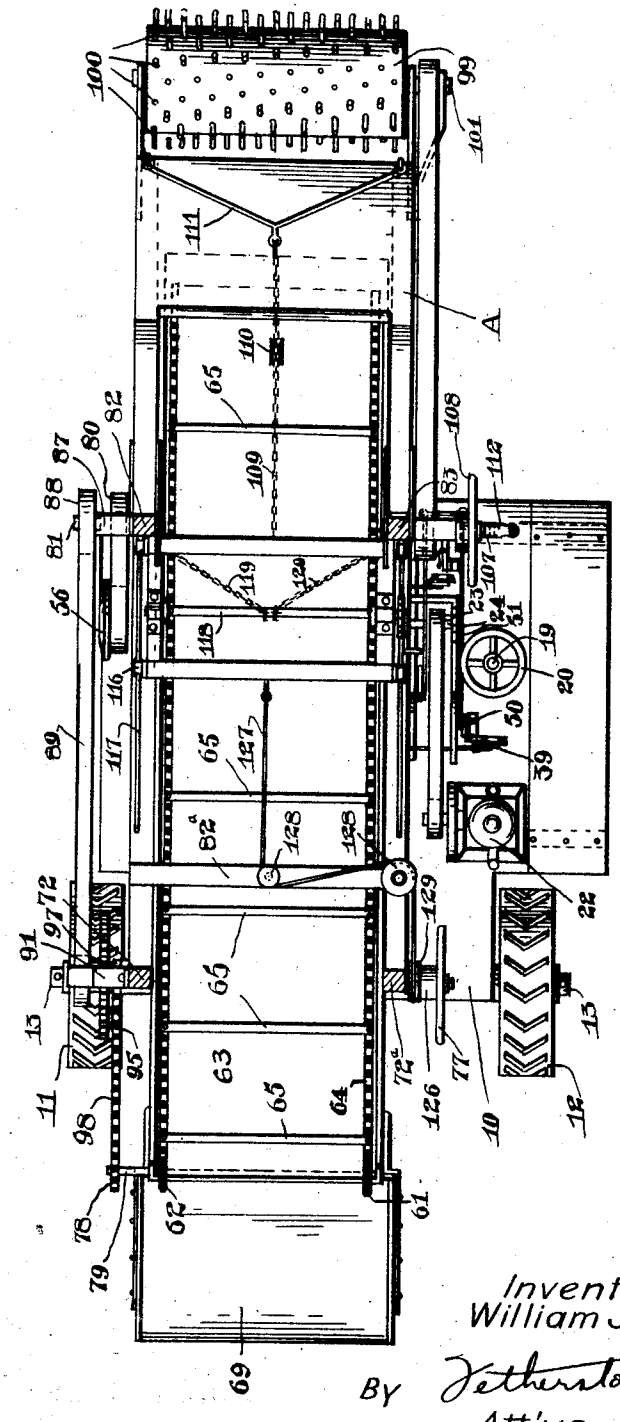


Fig. 4.

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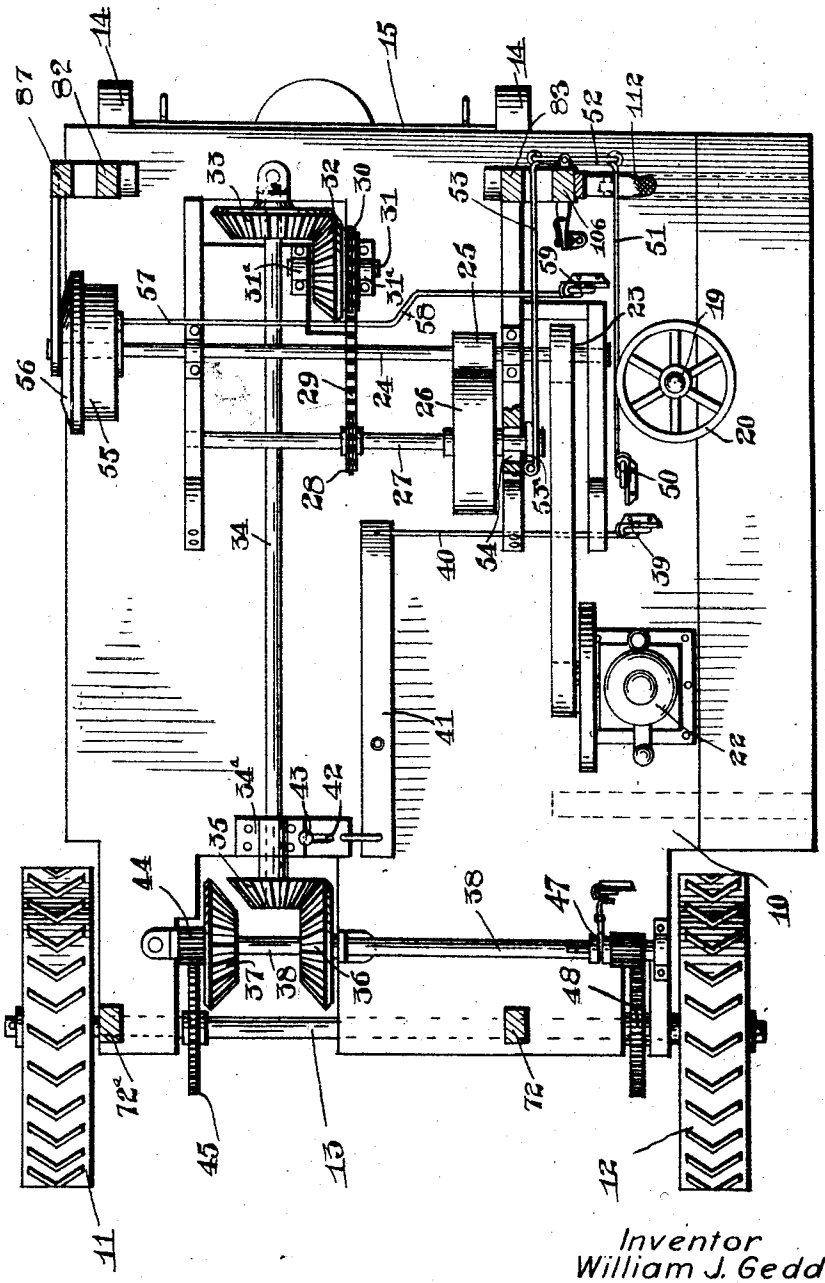


Fig. 5.

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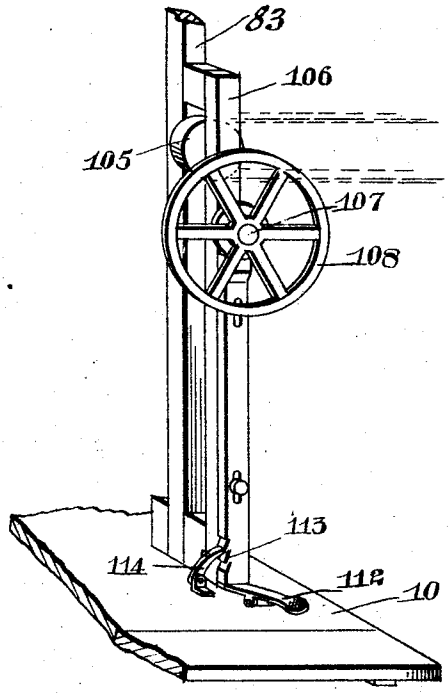


Fig. 6.

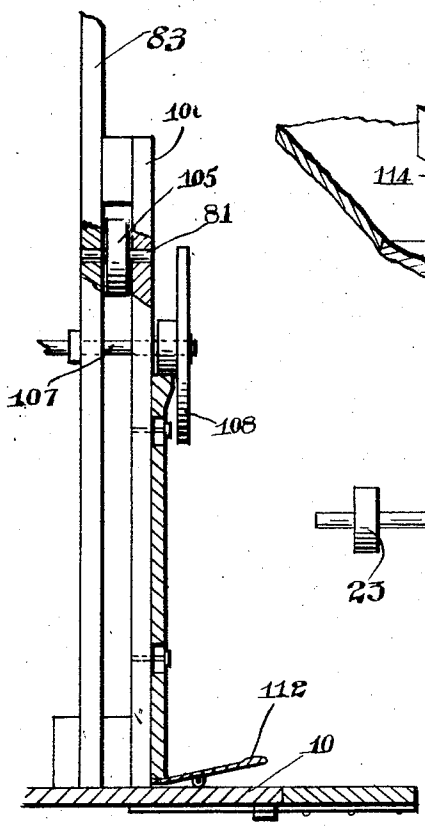


Fig. 7.

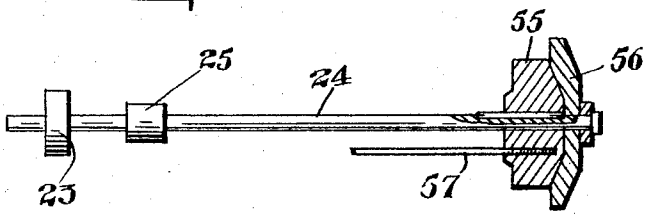


Fig. 8.

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Patented July 14, 1925. 1,545,651

UNITED STATES PATENT OFFICE.

WILLIAM JOHN GEDDES, OF WHITE HALL, ONTARIO, CANADA.

LOADER.

Application filed August 29, 1923. Serial No. 659,951.

To all whom it may concern:

Be it known that I, WILLIAM JOHN GEDDES, a subject of the King of Great Britain, and resident of White Hall, in the Province of Ontario and Dominion of Canada, have invented certain new and useful Improvements in Loaders, of which the following is a specification.

This invention relates to improvements in loaders and more particularly to loaders adapted for manure, and the objects of the invention are to provide an efficiently and economically constructed device of this character in which the several parts will more satisfactorily perform the various functions required of them.

Further objects are the provision of a manure loader provided with means for macerating the material to be loaded before it is transported to the loading means.

With the foregoing and other objects in view, reference is now had to the accompanying drawings in which like characters of reference indicate corresponding parts in each figure and in which—

Figure 1 is a side elevation of a complete embodiment of my device.

Figure 2 is a side elevation of the reverse side of the machine shown in Figure 1.

Figure 3 is a longitudinal section.

Figure 4 is a section on the line 4—4 of Figure 1.

Figure 5 is an enlarged section on the line 5—5 of Figure 1.

Figure 6 is a perspective detail of the mechanism for raising or lowering the cylinder and foot trip means for holding the cylinder at any required level.

Figure 7 is a sectional detail of Figure 6.

Figure 8 is a detail of the friction clutch mechanism for the driving shaft whereby the carrier is operated.

In the drawings, A designates an embodiment of my improved machine as a whole, comprising a platform 10 mounted on rear tractor wheels 11 and 12 provided with an axle 13, the wheel 11 being preferably keyed to the axle and the wheel 12 loosely mounted thereon.

The platform 10 is supported at the front by a pair of smaller wheels 14 loosely mounted on a restricted axle 15 which is centrally and pivotally secured to the underside of the frame to provide, in combination with the wheels 14, steering means for the machine. This steering gear is operated through a shaft 16 suitably mounted at 16ª transversely underneath the platform 10 and provided at one end with a gear 17 adapted to mesh with the worm-formed end 18 of a vertically-arranged steering rod 19 provided with a steering wheel 20.

The shaft 16 has wound thereon a chain 21, the loose ends of which are connected to the steering axle 15 in any suitable manner whereby on the steering rod 19 being operated through the wheel 20 the shaft 16 is rotated through the gear 17 to turn the wheels through the pivotally mounted axle 15 and chain 21 to steer the machine in the required direction by tightening one end of the chain 21 and slacking the other end and as both ends are connected to the pivotally mounted axle the latter is moved to the right or left, carrying the steering wheels with it, see Figures 1 and 2.

Further reference to Figures 1 and 2 and to Figure 5, in which the mechanism for driving and operating the machine is more particularly illustrated, will disclose that it comprises a gasoline or other suitable engine 22 mounted on the platform 10 and belt-connected to a pulley 23 on a transversely extending driving shaft 24. This driving shaft is provided with a friction pulley 25 designed to engage with a similar and larger pulley 26 on a counter-shaft 27 arranged parallel to the shaft 24 whereby, in operation, the latter is rotated.

The shaft 27 is provided with a sprocket 28 chain-connected through a chain 29 with a sprocket 30 carried by a spindle 31 in suitable bearings 31ª on the platform 10, the spindle 31 having also thereon a beveled gear 32 designed to mesh with a similar gear 33 carried by a shaft 34 extending longitudinally of the frame 10 and at right angles to the shafts 24 and 27 and provided adjacent the end remote from the gear 33 with a slidable bearing 34ª.

35 is a beveled gear on the adjustably mounted end of the shaft 34 and is designed to alternately engage with a pair of beveled gears 36 and 37 mounted on a restricted shaft 38 to impart forward or backward movement to the tractor wheels, as hereinafter more fully described.

The shaft 38 is also provided with a plane gear 44 designed to mesh with a larger gear 45 keyed to the rear axle 13, on which, as

previously mentioned, is keyed the tractor wheel 11 and the loosely mounted tractor wheel 12.

As shown in Figure 5, the driving mechanism is set through the gear 35 being in engagement with the gear 36 to impart through the gear 44 and gear 45 a forward movement to the tractor wheels.

The loose mounting of the tractor wheel 12 enables the machine to be readily turned and this wheel can be, when desired, also fixedly mounted or keyed to the axle 13 by means of the shaft 38 provided with a clutch member 47 adapted to engage and disengage with a gear 48 similar to the gear 45 on the axle 13.

For locally controlling the engagement of the gear 35 with the gears 36 and 37, I provide a lever 39 connected through a link 40 with a pivotally mounted plate 41 in turn link-connected to the slidable bearing 34ª provided with a slot 42 adapted to engage with a securing pin 43, whereby, on the lever 39 being operated, the bearing 34ª is slidably operable, carrying with it the shaft 34 and the gear 35 to engage with the gears 36 and 37, respectively, as may be required. By operating this lever 39 to disengage the gear 35 with the gear 36 and to move it into engagement with the gear 37, the machine is moved backwards while, as shown in Figure 5, as already mentioned, the mechanism is set for the forward movement of the machine.

For controlling the operation of the driving mechanism generally, a lever 50 is provided on the platform 10. This, with the other levers, is adapted to be operated by the driver of the machine and is link-connected through links 51 and the pivotally mounted link 52 and link or rod 53 with a collar 53ª on the shaft 27 whereby the latter is moved backwards into a slot 54 in the bearing to disengage friction pulley 26 with the friction pulley 25 on the shaft 24.

Loosely mounted on the end of the shaft 24 is a pulley 55 provided with friction clutch 56, while 57 is a rod member connected to said pulley and extending across the platform 10 and bent at 58 and provided at its outer end with the lever arm 59 whereby the pulley 55 is moved into or withdrawn from engagement with the clutch 56.

The foregoing description deals essentially with the machine body or platform and the mechanism thereon for driving it in the required direction, turning it and moving it backwards.

Referring now more particularly to Figures 1, 2 and 3, we come to the disintegrating, carrying and discharging mechanism for the material to be loaded and which is mounted on the platform 10.

Dealing first with the carrier, which is designated by the number 60, this comprises a casing adapted to extend longitudinally of the frame 10 and formed with sides and a bottom portion and having the ends and top open. At each end of this casing member or carrier are mounted, respectively, a pair of sprocket wheels 61 and 62 designed to carry and operatively engage with a pair of endless chains 63 and 64 provided with a plurality of spaced and transversely extending slats 65.

The lower end of the carrier is provided with a receiving member 66 fixedly mounted thereon and preferably, as here shown, comprising a single sheet of metal secured at one end to the end of the carrier base and bent to form a trough portion 67 with an outwardly and downwardly extending flap 68 designed to be plunged into the material to be carried as the machine moves forward and adapted to operate in combination with disintegrating or drum means to transport the material to the conveyor means in the carrier 60.

It will be noted in Figure 1 that the end of the conveyor means is adapted to extend beyond the casing or carrier 60 into the trough-shaped portion 67 of the receiving member 66, there to come in contact with the material or manure to be conveyed.

The other or discharge end of the carrier 60 is provided with a swingingly mounted plate 69 designed, in combination with a curved metal sheet or plate 70 on the underside of the carrier, to form means for loading the material conveyed into wagons or the like and also in so doing to prevent it scattering or being blown back under the machine. 71 are suitable braces for the plate 69.

The carrier 60 is slidably mounted above the platform 10 between a pair of vertically spaced supports 72 and 72ª adjacent the rear end of the platform, the slidable movement backwards or forwards being given to the carrier 60 by means of ratchet-formed engaging strips or plates 73 fixedly secured on each side thereof and designed to engage with sprocket wheels 74 and 75 carried by a shaft 76 operable by a hand wheel thereon 77 to move the carrier 60 longitudinally.

The driving of the conveyor chains 63 and 64 is accomplished by means of a sprocket 78 mounted on the shaft 79 mounted in the end of the carrier. This sprocket 78 is driven from the main shaft 24 through the pulley 55 thereon belt-connected to a pulley 80 on a shaft 81 carried by a pair of forward and spaced vertical supports 82 and 83 similar to the supports 72 and 72ª and connected therewith by longitudinally extending cross bars 84 and 85, these cross bars being further reinforced by a transversely extending cross bar 86.

Returning to the pulley 80, this pulley

is mounted on the shaft 81 between the vertical support 82 and a reinforcing upright 87 spaced therefrom and through which the shaft 81 extends to carry adjacent the outer end another pulley 88 connected by a belt 89 with a pulley 90 operatively mounted in a bracket member 91 carried on the outside of the vertical support 72. This pulley 90 is mounted on a spindle 93 provided with a gear collar 94 adapted to mesh with a larger gear wheel 95 carried on a shaft 96 in the bracket member 91 and above the shaft 90.

On the upper shaft or spindle 96 is also mounted a sprocket wheel 97 which is connected by a chain 98 with the sprocket 78 and whereby through the mechanism just described the endless chains are designed to be operated.

It has been previously mentioned that to throw the carrier mechanism out of gear it is only necessary to operate the lever arm 59 to disengage the pulley 55 from the clutch 56.

Referring now to the operation of the cylinder member for disintegrating the material to be loaded and impel it into the trough receiving member 66, this cylinder is designated by the number 99 and comprises a cylindrical drum member provided with a plurality of teeth 100 rotatably mounted on a shaft 101 carried by a pair of spaced supporting arms 102 and 103 pivotally mounted on the forward vertical supports 82 and 83, respectively, and provided adjacent the drum with a plate 104 whereby, in operation and in combination with the drum, the material is delivered to the trough member 66.

This drum or cylinder is operated from the driving shaft 24 by means of a pulley 105 fixedly mounted on the shaft 81 between the vertical front support 83 and a reinforcing supporting member 106 in spaced relationship thereto.

As will be readily understood, this cylinder and the mechanism for driving it is controlled by the lever 59, the operation of which has been already described.

To raise and lower the drum a countershaft 107 is provided. This shaft is rotatably mounted between the front vertical supports 82 and 83 and is operated by a hand wheel 108.

The mode of operation is as follows: A chain 109 is attached at one end fixedly to the shaft 107 running counter to the shaft 81 and is extended through a pulley 110 mounted in the roof of the machine and is connected at its outer end through a forked link member 111 with the outer ends of the cylinder supporting braces 102 and 103.

To set the cylinder in any required position after the wheel 108 has been operated, I provide a foot lever 112, as more particularly illustrated in Figure 7, whereby through the ratchet member 113 and arm 114 the wheel is locked or released, as may be desired.

To raise or lower the carrier I provide a travelling platform 115 adapted to move backwards and forwards through wheels 116 on tracks 117 formed on the cross bars 84 and 85, respectively. This platform carries a shaft 118 rotatably mounted therein, to which is connected chains 119 and 120 in turn connected to the carrier at 121 and 122. On this shaft 118 being rotated the chains are wound therearound, causing the carrier to be drawn upwardly.

123 is a suitable handle for the shaft 118 and 124 is a sprocket wheel mounted thereon and adapted to engage with a locking bar 125 whereby on the height of the carrier being adjusted it can be locked at any required elevation.

To move the platform 115 backwards or forwards and as the carrier moves backwards or forwards, I provide a pulley 126 on the shaft 76 and operable by the hand wheel 77. This pulley is adapted to have wound thereon a cable 127 connected at its other end to the platform 115 and traveling intermediately on the pulleys 128 and 129. It will thus be seen that when the hand wheel 77 is turned to the left to move the carrier, as previously described, longitudinally upwards that the pulley 126 will be rotated to tighten the cable 127 and at the same time draw the platform 115 on the track backwards. Similarly when the carrier is moved forward by turning the wheel 77 to the right the cable 127 will slacken and, through the operation of the pulley 126 on which it is wound, will allow the platform to move forward. The pulley 126 is adjustable to lock the cable when required.

130 and 131 are spaced longitudinally extending members connecting the tops of the forward and rear vertical supporting members and adapted to form, with a plurality of transversely extending cross pieces at spaced intervals, a roof frame on which is secured in any suitable way suitable sheeting 132 adapted to form the top or roof of the machine whereby it is protected from rain or otherwise.

133 is a suitable stop on the underside of the carrier 60 adapted to contact with the shaft 76.

The foregoing, it is believed, describes fully the construction of the machine and the mechanism for operating it, taken not generally but, as the description proceeded, in various steps. It is only necessary to add, as a general resumé on the operation, that in loading manure, preferably in farm-yards, the machine as here illustrated is operated by a gasoline engine. It is placed in the

yard after being transported, if necessary, by horse power, the means in connection with which can be readily attached to the front axle, or it can be driven by its own power. In placing the machine for operation it is preferably worked from the right hand side of a manure pile so as to give the belt room to run. The cylinder or spreader 99 must be placed sufficiently close beneath the carrier 60 to allow the machine to move ahead the width of the former so as to enable the manure to be carried out as readily as possible and delivered to the conveyor means. From the carrier 60 the manure is dumped or loaded into wagons, so that the complete operation of macerating, carrying and loading the manure is continuous.

The means for adjusting the carrier and the cylinder upwardly and downwardly, forwardly or rearwardly, have been fully described, also the means whereby the driving mechanism is controlled to throw the carrier and cylinder operating mechanism out of gear with the driving mechanism and vice versa.

As many changes could be made in the above construction and many apparently widely different embodiments of my invention within the scope of the claims, constructed without departing from the spirit or scope thereof, it is intended that all matter contained in the accompanying specification and drawings shall be interpreted as illustrative and not in a limiting sense.

What I claim as my invention is:

1. A manure loader comprising a platform, an axle for the platform, a supporting frame on the platform and a cover for said frame, tractor wheels loosely mounted and keyed, respectively, on said axle whereby the platform is readily turnable, a pair of front steering wheels for the platform, and driving mechanism carried by the platform for operating the tractor wheels forward or backwards, and mechanism operable from the platform for working the steering wheels, a carrier slidably mounted in the platform frame, conveyor means in the carrier, a trough-shaped receiving member at one end of the carrier and a discharge chute at the other end of the carrier, and means for loading material into said trough-shaped member, comprising a cylindrical drum provided with a plurality of teeth and pivotally mounted on the frame above the carrier, and pulley and cable means operable from the driver's seat for raising and lowering the loader, whereby the latter can be swung upwardly and downwardly and retained in a predetermined position, means for operating the conveyor simultaneously with the loader, means for raising and lowering the carrier separate from the loader, and means for retaining the carrier in a predetermined position.

2. The loader as claimed in claim 1 in which the loading and disintegrating member is rotatably mounted on a shaft carried by a pair of spaced and pivotally mounted supporting arms on the frame, and means for operating the loading member, comprising a pulley keyed on the loader shaft and pulley and belt means connecting said pulley with the driving mechanism, and means for raising and lowering the loading member, including a counter-shaft, a chain connected at one end to said shaft and at the other end to the loader supporting members, a roof-supported pulley for said chain, and means on said shaft for winding the chain thereon.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM JOHN GEDDES.

Witnesses:
CORNELIUS O'CONNER FARRELL,
FREDRICK HENRY SUMMERWILL.