

1,054,645.

Patented Feb. 25, 1913.

4 SHEETS—SHEET 1.

Fig. 1.

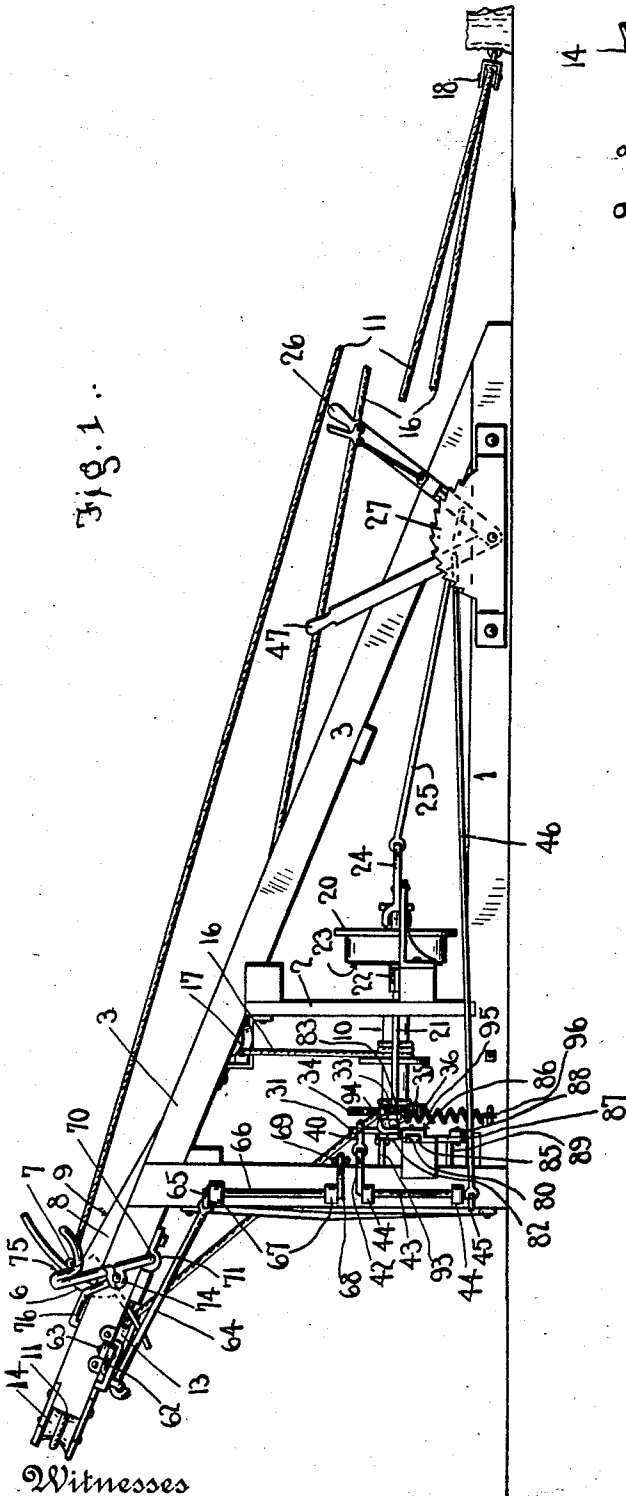
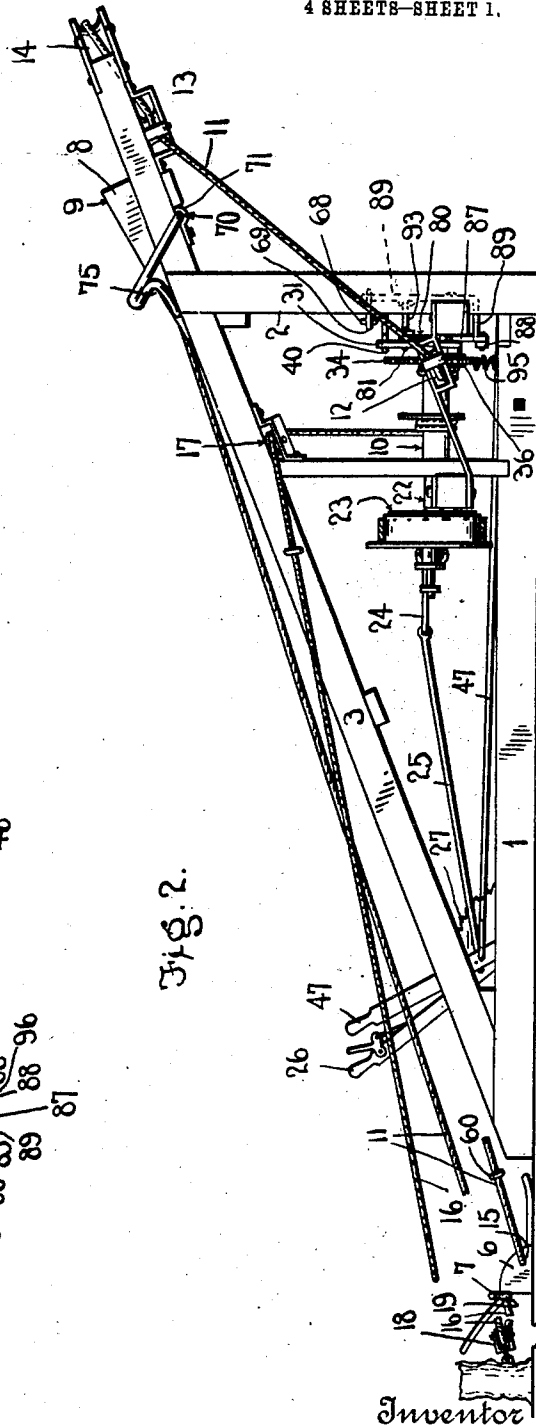


Fig. 2.



Inventor

Witnesses

L. B. James  
W. L. Collamer.

George Hanslick

by *A. B. Wilson & Co.*  
Attorneys

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4 SHEETS—SHEET 2.

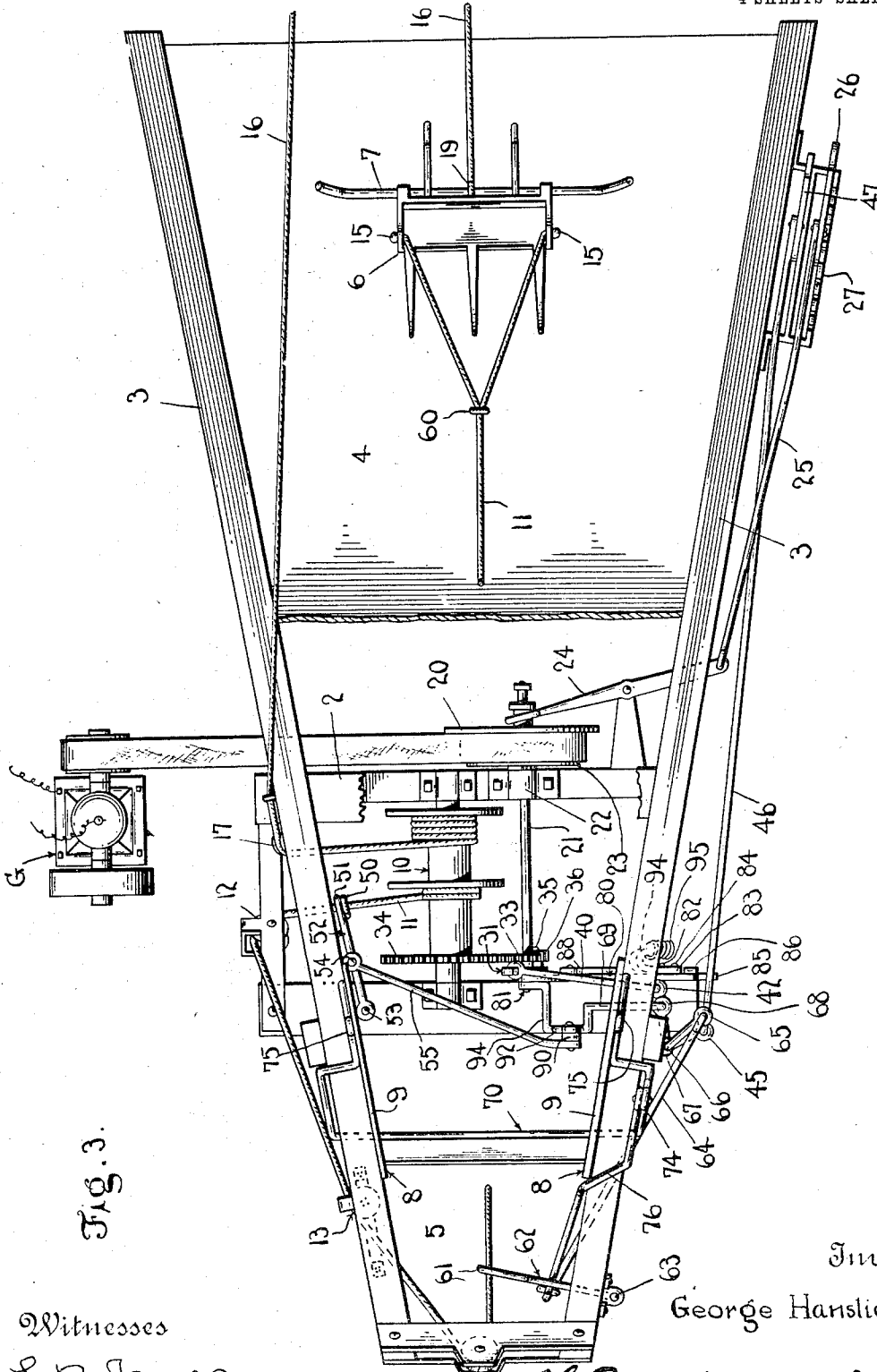


Fig. 3.

Witnesses

L. B. James

W. Kollamer.

Inventor

George Hanslick

By *H. B. Wilson & Co.*

Attorneys

G. HANSLICK.  
LOADING MACHINE.  
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4 SHEETS—SHEET 3.

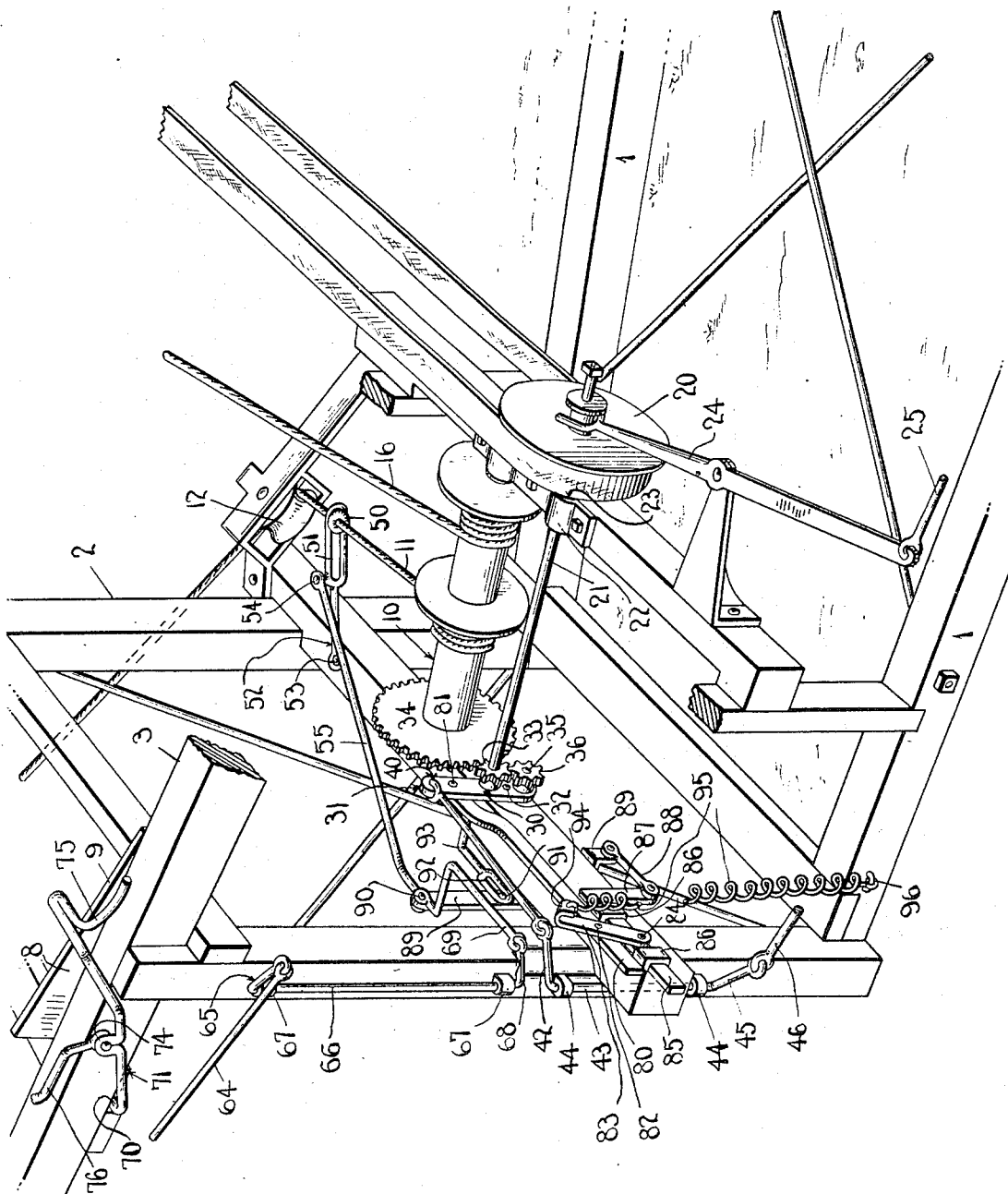


Fig. 5.

Witnesses

L. B. James

M. Collamer

Inventor

George Hanslick

by

H. B. Wilson & Co.

Attorneys

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4 SHEETS-SHEET 4.

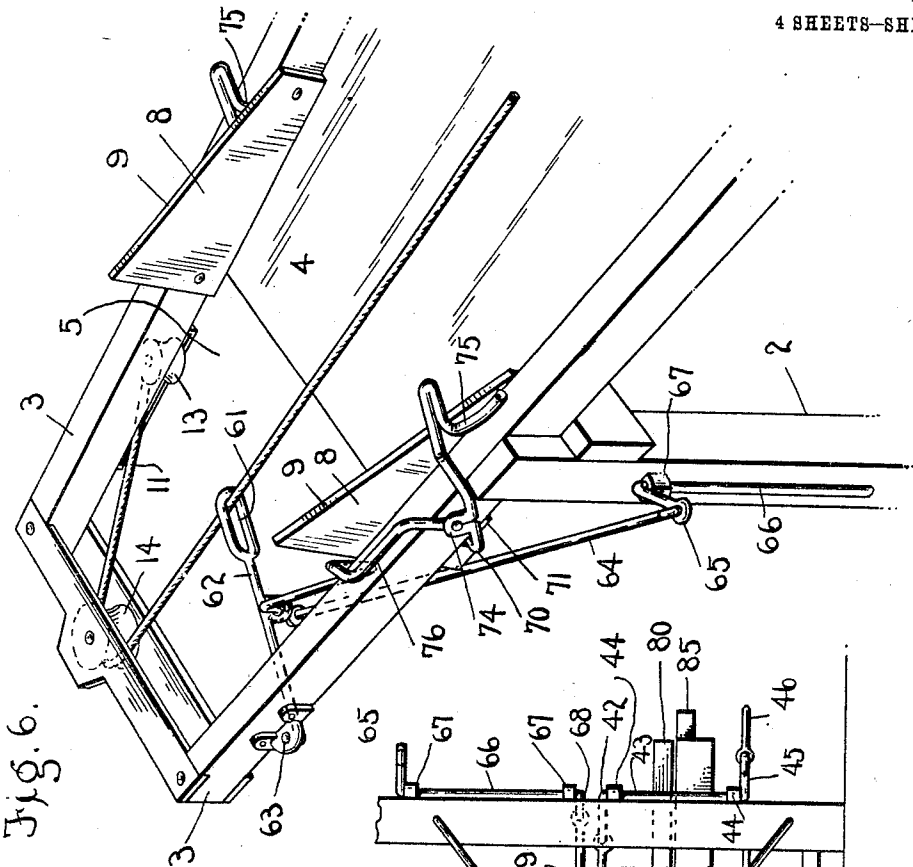


Fig. 4.

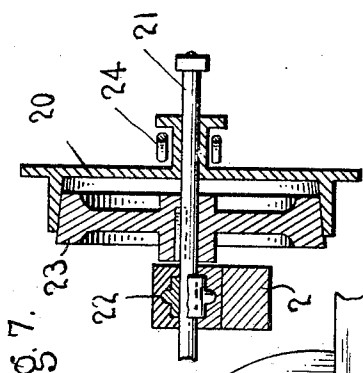
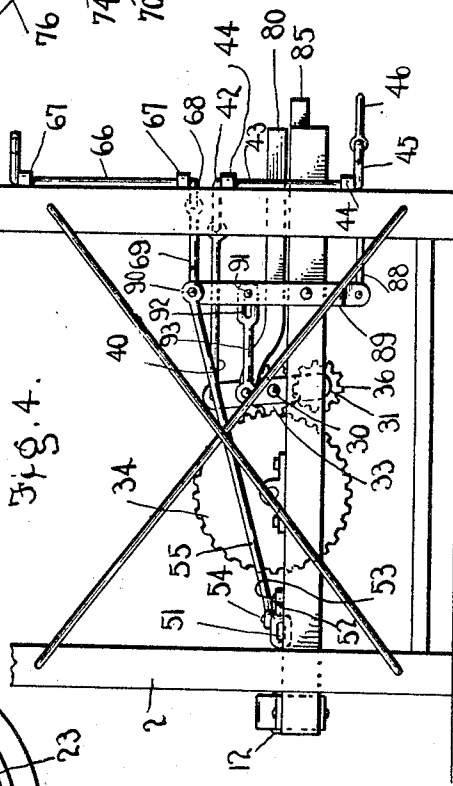
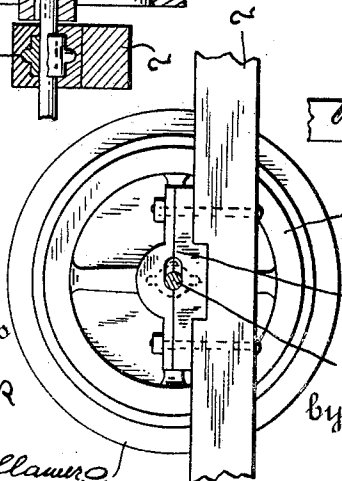


Fig. 8.



Inventor

George Hanslick

by *A. B. Wilson & Co.*

Attorneys

Witnesses  
*L. B. James*  
*W. C. Collins*

# UNITED STATES PATENT OFFICE

GEORGE HANSLICK, OF LAFAYETTE, MINNESOTA.

## LOADING-MACHINE.

1,054,645.

Specification of Letters Patent.

Patented Feb. 25, 1913.

Application filed May 27, 1912. Serial No. 699,995.

*To all whom it may concern:*

Be it known that I, GEORGE HANSLICK, a citizen of the United States, residing at Lafayette, in the county of Nicollet and State of Minnesota, have invented certain new and useful Improvements in Loading-Machines; and I do 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.

This invention relates to the class of loading and unloading, and more especially to those devices having a raised or inclined track or platform and dumping means at the upper end thereof; and the object of the invention, broadly speaking, may be said to be to provide improved means actuated automatically or manually whereby the windlass is reversed when the scoop is dumped and the latter is retracted to the point of starting. In the following specification and claims I have described this invention as adapted more particularly for loading manure onto wagons, although it will be clear that dirt, gravel, or other material could be brought from a distant point by and in the scoop, carried up the platform, and dropped into a car or any other suitable receptacle which was disposed beneath the rear end of the framework and platform.

The invention is typically illustrated in the accompanying drawings wherein—

Figure 1 is a side elevation of this machine complete, showing the scoop in the act of being dumped; Fig. 2 is an elevation from the opposite side, showing the scoop as drawn off the platform; Fig. 3 is a plan view with the upper end of the platform omitted; Fig. 4 is an end elevation; Fig. 5 is a perspective detail showing most of the working parts of this machine; Fig. 6 is a perspective detail of the upper end of the framework and platform, illustrating the automatic dumping mechanism and its connection with the automatic reversing mechanism; Fig. 7 is an enlarged sectional detail of the driving pulley and clutch, and Fig. 8 is an end elevation thereof.

In the drawings a pair of sills 1 support an upright framework 2 which carries obliquely disposed converging side strips 3 between which is an inclined platform 4 leading from the level of the earth upward but terminating short of the upper ends of the

strips 3 so as to leave between them an opening 5 for dumping purposes. Coacting with this platform is a scoop 6 which does not differ essentially from those now in common use excepting that it has a cross bar 7 adapted to ride onto the upper edges of the strips 3 when the scoop nears their upper ends, and at a proper point just in advance (below) said opening 5 the strips carry plates 8 on their inner faces whose upper edges 9 are inclined more steeply than the upper edges of the strips so that in effect they act as cams to lift the extremities of the cross bar on the scoop and to tip the latter and cause it to dump through the opening 5 while also preventing the scoop itself from falling through that opening.

The scoop-actuating mechanism includes a windlass 10 (preferably made double as shown) journaled in the framework, and from one drum of which leads a rope 11 passing over guide pulleys 12 and 13 and finally over a main pulley 14 at the upper end of the side bars and branched and connected as at 15 with the scoop; and this may be said to be the drawing rope. Another rope 16 leads from the other drum of the windlass over a guide pulley 17, along over the platform and to a distant point where it passes around a pulley 18 attached to a stump or other fixed object, whence it returns to and is attached at 19 to the back of the scoop; and this may be said to be the retracting rope. Obviously when the windlass is turned in one direction the scoop will be drawn up the incline because of the direction in which the drawing rope is wound around the windlass, and when the latter is turned in the opposite direction the retracting rope will draw the scoop back down the incline and over the earth's surface to a point remote from the machine as far as the pulley 18 may be disposed. Here the scoop may be filled by hand, or it may be guided on its return movement toward the platform so that it will automatically scrape up the manure or other substance being treated, all as will be clearly understood without further description.

The driving mechanism for the windlass comprises a source of power (a gasoline engine G will answer, as indicated in the drawings) belted to a pulley 20 which is loose on the main shaft 21 journaled as at 22 in the framework and having a clutch 23 adapted

to be engaged with said pulley by means of a lever 24 from which a link 25 leads to a hand lever 26 operating over and in conjunction with a toothed segment 27 secured to one of the sills adjacent the front end of the platform, and it is obvious that an operator standing there can manipulate the lever so as to throw the clutch into or out of engagement and therefore connect the main shaft with the source of power at will.

The other end of the main shaft is journaled as at 30 in a movable bearing consisting of a plate 31 pivotally mounted at 32 in the framework at a point below the journal 30, and adjacent the latter the main shaft carries a gear pinion 33 meshing with a gear wheel 34 on the windlass when the plate 31 is swung in one direction but thrown out of mesh therewith when the plate is swung in the opposite direction.

Journalled on a sub-shaft 35 at the lower end of the plate 31 (or movable bearing) is a long gear pinion 36 which is in constant mesh with the gear pinion 33 and rotated thereby, and the long pinion is moved away from the gear wheel 34 when the pinion 33 is in mesh therein, and vice versa, so that the swinging of the movable bearing 31 alternately engages the pinions 33 and 36 with the gear 34 on the windlass and consequently rotates the latter in opposite directions. This detail might well be called the shifting or reversing mechanism. The manual control for said reversing mechanism consists of a rod 40 connected with the upper end of the movable bearing 31 and leading thence to an arm 42 at the upper extremity of an upright rock shaft 43 mounted in bearings 44 on the frame and having a second arm 45 at its lower end, and this arm is connected by a rod 46 with a hand lever 47 which is by preference mounted in the framework adjacent to the segment 27 so as to be within reach of the same operator. By moving this hand lever in one direction he swings the movable bearing in one direction, and vice versa; and hence he has control of the reversing mechanism above described.

The automatic control for the reversing mechanism is constructed as follows: The drawing rope, near its point of attachment to the windlass, has a knot 50 too large to pass through an eye or loop 51 through which the rope passes between the windlass and the pulley 12, this loop being formed at the inner end of a lever 52 pivoted at 53 on the framework, and to said lever is linked as at 54 a rod 55 whose other end is either directly attached to the upper extremity of the movable bearing 31 or connected therewith through the instrumentality of the mechanism described below. Therefore when the drawing rope is nearly unwound the knot 50 moves the loop lever 52 which, through the connection described, causes the

movable bearing 31 to swing on its pivot 32 and reverses the direction of rotation of the windlass automatically. Near its point of attachment to the scoop the drawing rope has another knot 60 too large to move through an eye or loop 61 through which this rope passes between the scoop and the pulley 14, the loop being carried by a lever 62 pivoted at 63 in one of the side bars 3, and this lever is connected by a rod 64 to the outturned upper end 65 of a rock shaft 66 journaled in bearings 67 on an upright of the framework and having a second arm 68 at its lower extremity connected by a link 69 with the movable bearings 31 either directly or through the instrumentality of mechanism described below. Therefore when the scoop reaches a dumping position the knot 60 moves the loop lever 62 which, through the connections described, causes the movable bearing 31 to swing on its pivot 32 with the result that the direction of rotation of the windlass is automatically reversed. The operation of so much of my machine as has been described is as follows: The parts being set up as shown in the drawings and the driving pulley 20 connected with a source of power such as the gasoline engine, for instance, when the operator closes the clutch the power shaft begins to revolve in the direction of the arrow. The hand lever 47 will at first stand upright to hold the reversing mechanism at a neutral point with both pinions 33 and 36 out of engagement with the gear wheel 34, so that the power shaft does not at first rotate the windlass at all. Assuming now that the scoop lies upon the platform. When the operator draws this hand lever forward the pinion 36 is engaged with the gear 34 on the windlass and the latter is rotated in a direction to draw upon the retracting rope so that the scoop moves down the platform and out over the ground toward the pulley 18. Having reached that point, unless the operator again throws the reversing mechanism to a neutral position the knot 50 will automatically reverse the mechanism and the scoop will return to the platform; and this occurs where the scoop is used to gather up material such as sand or gravel. If however, the material being handled is in a distant pile and it is desired that the scoop remain stationary while it is filled, the operator will throw the reversing mechanism to a neutral position at this time until the scoop is filled, and then move his hand lever in the opposite direction to engage the pinion 33 with the windlass gear 34, when the windlass will rotate in the other direction and the drawing rope will cause the scoop to be moved over the ground and up the platform. As it reaches its highest point its cross bar moves over the cams 8 and the scoop is automatically dumped through the

opening 5 at the upper end of the platform and into a wagon or whatever vehicle stands beneath. Here, again, if the operator does not interfere, the other knot 60 will automatically throw the reversing mechanism so that as soon as the scoop has been dumped the windlass will commence rotating in the opposite direction and the scoop will again be drawn outward toward the pulley 18 for a renewal of the operation.

In connection with the primary or essential features of my invention described above, I preferably make use of the following amplifications or refinements in order that the machine may be positive in its action and that the delays incident to accident may as far as possible be avoided: It sometimes occurs that the nature of the material being handled or the manner in which it is loaded into the scoop prevents the latter from dumping accurately even though its cross bar travels up the cams under the impulse of the drawing rope. The scoop will dump, but what I mean to say is that if the reversing mechanism be actuated automatically the scoop must dump quickly or else its direction of movement will be reversed before all of the material has been dropped through the opening 5. Therefore I preferably employ a bail 70 whose center is pivoted in eyes 71 beneath the upper ends of the side bars 3 and whose arms rise alongside the same, have eyes 74, and at their upper extremities hooks 75 so shaped that the ends of the cross bar 6 will move onto them as the scoop passes up the platform, and after engagement therewith the rear end of the scoop will be raised by the swinging of the arms of the bail. It is even possible to connect said arms or one of them by means of a link 76 leading from one or both the eyes 74 to the loop-lever 62, and when the knot 60 swings the latter this link will cause the movement of said bail around its pivot so that the scoop will be dumped in any event. A lock is by preference also employed for holding the movable bearing 31 in either of its extreme positions, for it will be remembered that at times this machine is subjected to great strain and there is considerable possibility that the teeth of the gear wheel 34 will disengage those of one or the other of the pinions 33 or 36 automatically or accidentally. This lock consists of a bar 80 having one end pivoted at 81 to the movable bearing 31 above its journal 30 and the other end pivoted at 82 to a rocking link 83 as best seen in Fig. 5. The lower end of this link 83 is in turn pivoted at 84 to a sliding bar 85 movable in guides 86 on the framework and having its inner end turned downward as at 87 and linked as at 88 to a rock lever 89 whose upper extremity is in turn pivotally connected as at 90 with the rods 55 and 19

which are respectively connected to the loop levers 52 and 62 in the manner described above. Below the point 90 the rock lever carries a headed pin 91 over which moves a loop 92 at one end of a short link 93 whose other end is pivoted to the movable bearing 31, preferably at the point 81. Finally, the upper end 94 of the locking link 83 is turned outward and perforated, and connected therewith is a spring 95 leading downward past the link and attached as at 96 to some point in the framework, so that the link may have the motions yet to be described as the spring will exert a constant pressure tending to hold the rocking link in either of its two inclined extreme positions. With this construction of parts, the movement of either loop lever as automatically caused by the knot in the rope is immediately communicated to the rock lever 89 and by the latter through the link 88 to the sliding bar 85 which forthwith commences to move; but the movement of the rock lever is, by reason of the loop 92 in the link 93 between it and the movable bearing 31, more tardily communicated to the latter, and by it to the bar 80 which is moved in the opposite direction to the bar 85, but at a later time. The result is that the two extremities 82 and 84 of the rocking link are moved in opposite directions but at different times, although finally the uppermost will move over the lowermost and will carry with it the upper end of the spring 95, so that once the lever does pass an upright or vertical position it quickly moves to its opposite inclined position and the reversing action is effected rather suddenly. By the use of this lock it is practically impossible for the reversing mechanism to stop on a dead center or neutral point, and when it is desired that the main shaft shall not drive the windlass in either direction the operator will be compelled to hold (or to set) the hand lever 47 to such position that both the movable bearing 31 and the rocking link 83 will stand strictly vertical. I consider the employment of this amplification or refinement of advantage to a machine of this character, not only because the spring-actuated rocking link when in either of its extreme inclined positions holds one of the driving pinions in reliable mesh with the driven gear, but because the reversing mechanism when set in motion by one of the knots engaging the proper loop-lever is moved by this mechanical detail in such a way that the change of direction of rotation is effected quickly. Furthermore, I consider it of advantage to make it difficult for the operator to set the reversing mechanism at a neutral point—rather would I prefer that he manipulate the other hand lever 26 to open the clutch and disconnect the driving shaft from the motor, when he desires that the operation

of this machine shall cease, for when it is in operation I prefer that the scoop be moving in either one direction or the other.

All parts of this machine are of the desired sizes, shapes, proportions and materials, and modifications and changes may be made in the details without departing from the principle of the invention. In some instances, as where a cheaper machine is desired, the auxiliary scoop-dumping mechanism or the lock for the reversing mechanism may be omitted, or perhaps both might be dispensed with if preferred. As suggested above, this machine is capable of use in a number of ways, and where I speak of a "scoop" throughout the specification it will be understood that any device for conveying the material to be handled might be employed, as the term "scoop" is used to conform with the typical illustration in the drawings.

What is claimed as new is:

1. In a loading machine, the combination with an inclined platform, raised converging strips along the edges and extending beyond the upper end thereof, and cam plates on the inner faces of said strips opposite the upper end of the platform and having their upper edges inclined more steeply than the strips; of a scoop, a cross bar secured across the rear of the same and adapted to contact with said plates, a bail pivoted across said strips and having hooks at the upper extremities of its arms adapted to engage said cross bar as the same rises along the inclined edges of said plates, and means for drawing the scoop up the platform.

2. In a loading machine, the combination with an inclined platform, raised converging strips along the edges and extending beyond the upper end thereof, and cam plates on the inner faces of said strips opposite the upper end of the platform and having their upper edges inclined more steeply than the strips; of a scoop, a cross bar secured across the rear of the same and adapted to contact with said plates, a rope for drawing the scoop up the platform, a knot in the rope adjacent the scoop, a pivoted lever having a loop larger than the rope but smaller than the knot, an auxiliary dumping device adapted to engage the extremities of said cross bar, and connections between said device and the lever.

3. In a loading machine, the combination with an inclined platform, raised converging strips along the edges and extending beyond the upper end thereof, and cam plates on the inner faces of said strips opposite the upper end of the platform and having their upper edges inclined more steeply than the strips; of a scoop, a cross bar secured across the rear of the same and adapted to contact with said plates, a rope for drawing the scoop up the platform, a knot in the rope

adjacent the scoop, a pivoted lever having a loop larger than the rope but smaller than the knot, a bail pivoted across said strips and having hooks at the upper extremities of its arms adapted to engage said cross bar as the same rises along the inclined edges of said plates, an eye in one of said arms, and a link connecting said eye with said lever, for the purpose set forth.

4. In a loading machine, the combination with an inclined platform, a scoop, and scoop-actuating mechanism including a windlass and ropes reversely wound thereon and led to the front and rear of the scoop respectively, the drawing rope having a knot adjacent the scoop and the retracting rope having a knot adjacent the windlass; of reversing mechanism for changing the direction of the drive, two loop-levers through which said ropes respectively pass, and connections between these levers and the reversing mechanism, for the purpose set forth.

5. In a loading machine, the combination with an inclined platform, a scoop, and scoop-actuating mechanism including a windlass and ropes reversely wound thereon and led to the front and rear of the scoop respectively, the drawing rope having a knot adjacent the scoop and the retracting rope having a knot adjacent the windlass; of reversing mechanism for changing the direction of the drive, two loop-levers through which said ropes respectively pass, connections between these levers and the reversing mechanism, scoop-dumping mechanism carried by the upper end of the platform, and connections between this mechanism and the loop-lever whose movement starts the retraction of the scoop.

6. In a loading machine, the combination with an inclined platform, a scoop, and scoop-actuating mechanism including a windlass and ropes reversely wound thereon and led to the front and rear of the scoop respectively, the drawing rope having a knot adjacent the scoop and the retracting rope having a knot adjacent the windlass; of reversing mechanism for changing the direction of the drive, two loop-levers through which said ropes respectively pass, connections between these levers and the reversing mechanism, scoop-dumping mechanism carried by the upper end of the platform, connections between this mechanism and the loop-lever whose movement starts the retraction of the scoop, independent means for actuating said reversing mechanism at any point, a hand lever, and connections between the latter and said independent means, for the purpose set forth.

7. In a loading machine, the combination with an inclined platform, a scoop, and scoop-actuating mechanism including a windlass and ropes reversely wound there-



on and led to the front and rear of the scoop respectively, the drawing rope having a knot adjacent the scoop and the retracting rope having a knot adjacent the windlass; of reversing mechanism for changing the direction of the drive, two loop-levers through which said ropes respectively pass, connections between these levers and the reversing mechanism, independent means for actuating said reversing mechanism at any point, a hand lever, and connections between the latter and said independent means, for the purpose set forth.

8. In a loading machine, the combination with an inclined platform, a scoop, and scoop-actuating mechanism including a windlass and ropes reversely wound thereon and led to the front and rear of the scoop respectively; of mechanism for driving the windlass, reversing mechanism for changing the direction of the drive, means for automatically actuating the reversing mechanism, independent means for actuating said reversing mechanism, a hand lever, connections between the latter and said independent means, a clutch included in the windlass-driving mechanism, a second lever adjacent the first, and connections between this hand lever and the clutch, for the purpose set forth.

9. In a loading machine, the combination with an inclined platform, a scoop, and scoop-actuating mechanism including a windlass and ropes reversely wound thereon and led to the scoop, the drawing rope having a knot adjacent the scoop and the retracting rope having a knot adjacent the

windlass; of reversing mechanism for changing the direction of the drive, two loop-levers through which said ropes respectively pass, connections between these levers and the reversing mechanism, independent means for actuating said reversing mechanism at any point, a hand lever, connections between the latter and said independent means, a clutch included in the windlass-driving mechanism, a lever for controlling the opening and closing of the clutch, a second hand lever adjacent the first, and connections between this hand lever and the clutch lever, for the purpose set forth.

10. In a loading machine, the combination with an inclined platform, a scoop, and scoop-actuating mechanism including a windlass and ropes reversely wound thereon and led to the front and rear of the scoop respectively; of a power shaft, reversing mechanism for connecting said shaft with the windlass to rotate the latter in either direction, means for actuating said reversing mechanism, and a lock including a spring-pressed rocking link and connections between it and said reversing mechanism whereby the link is turned from one extreme angular position to the opposite position when the reversing mechanism is actuated.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

GEORGE HANSLICK.

Witnesses:

ALBERT D. FLOR,  
GEO. H. VETTER.