April 11, 1933. A. HAUGE 1,903,675

LOADING MACHINE

Filed Dec. 16, 1929 3 Sheets-Sheet 1

Fig. 1.

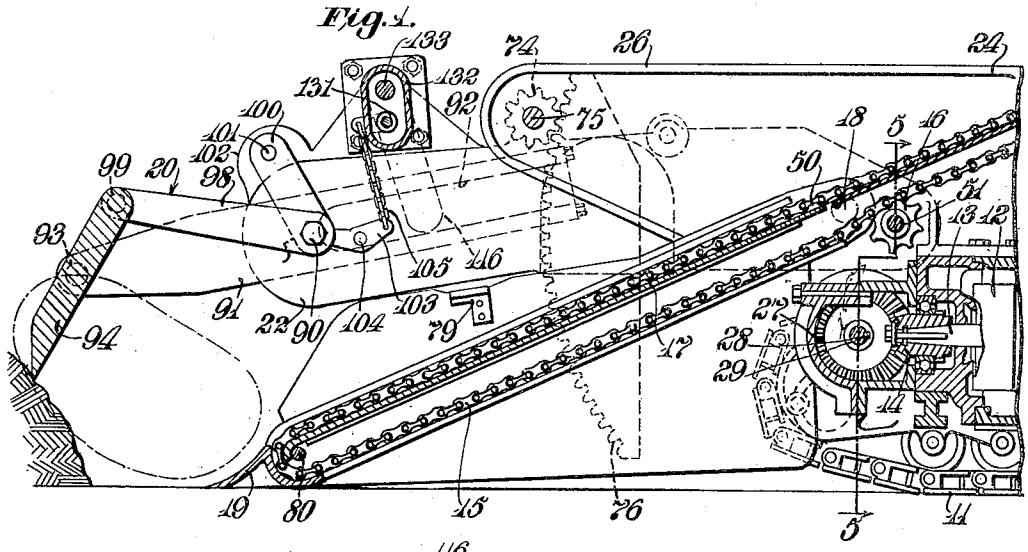
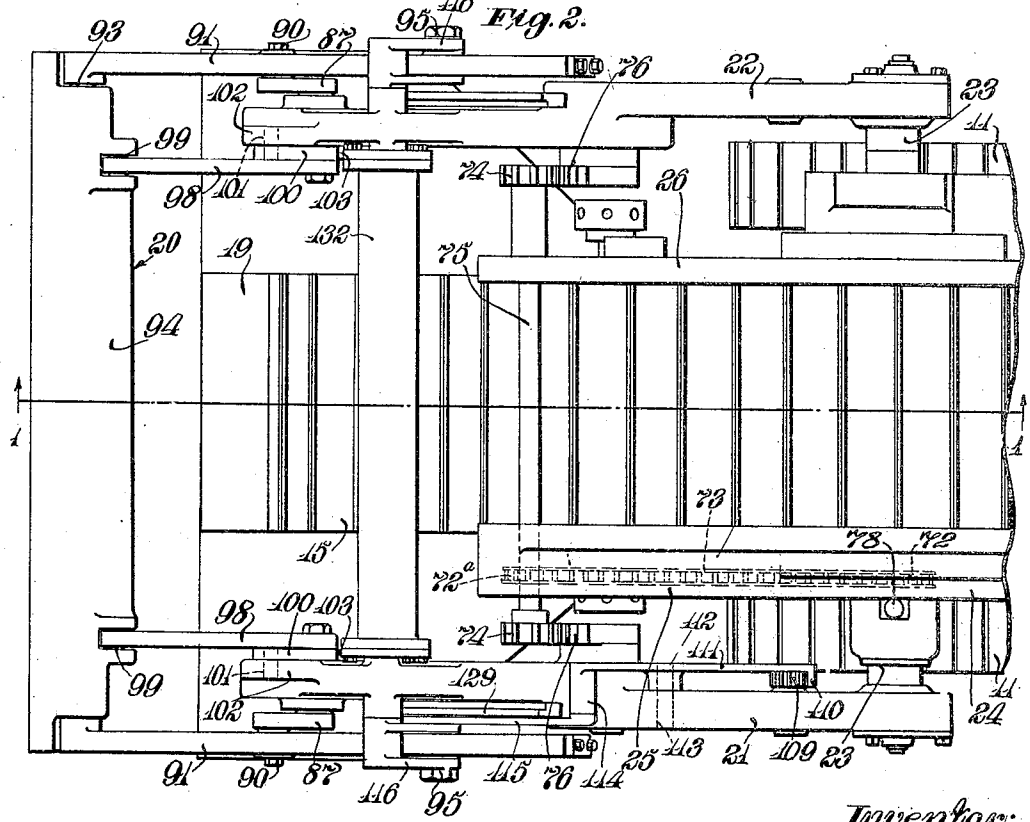


Fig. 2.



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LOADING MACHINE

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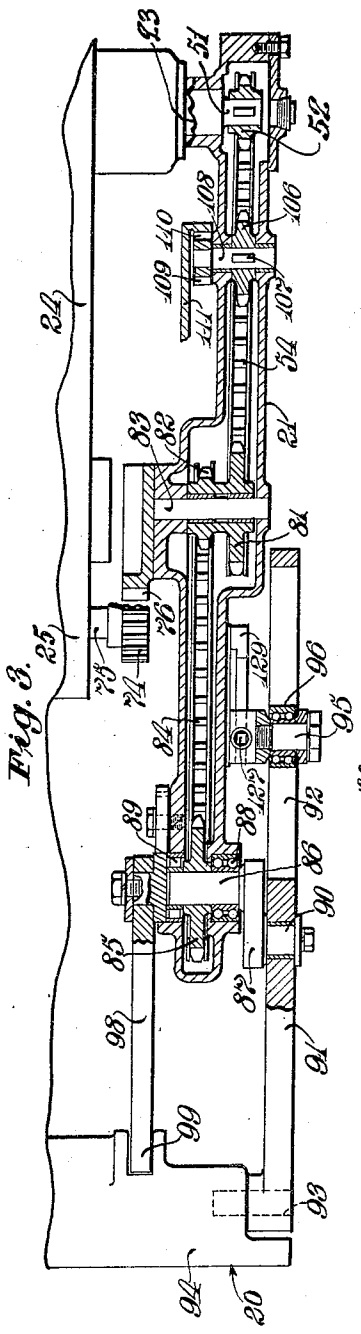

Fig. 3.

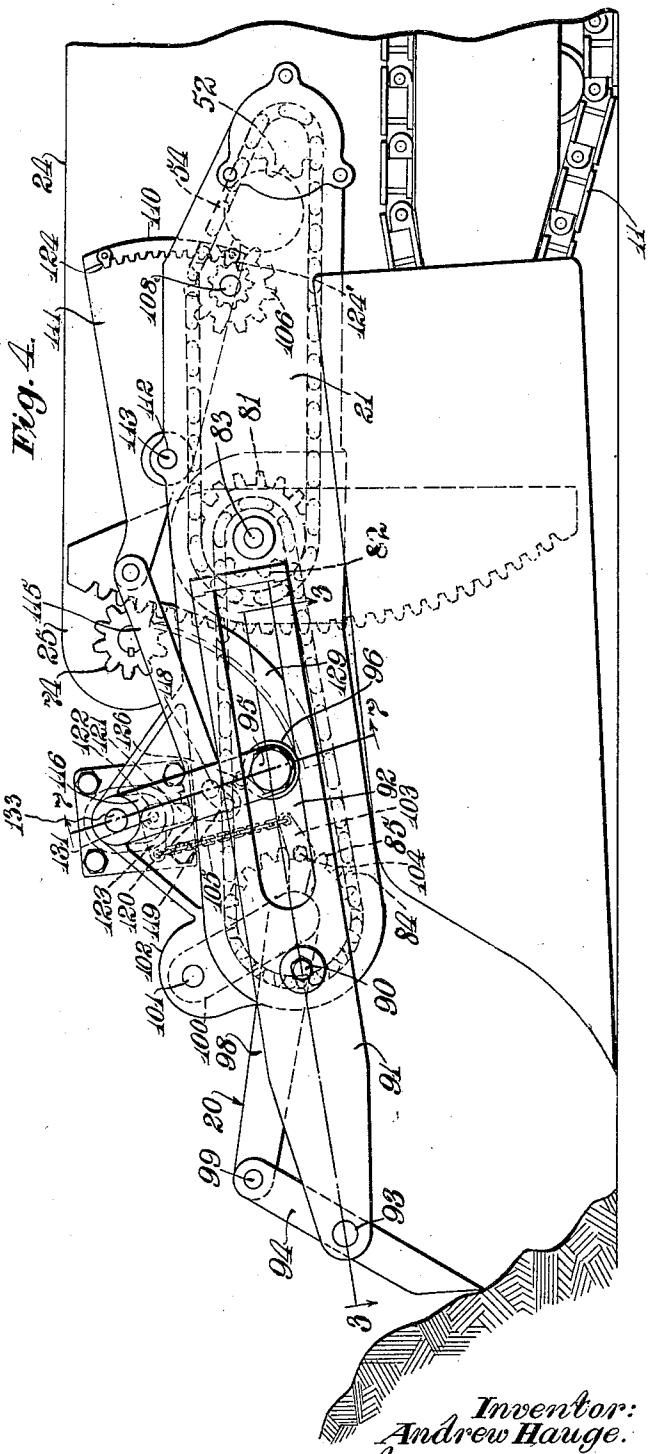

Fig. 4.

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LOADING MACHINE

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Fig. 5.

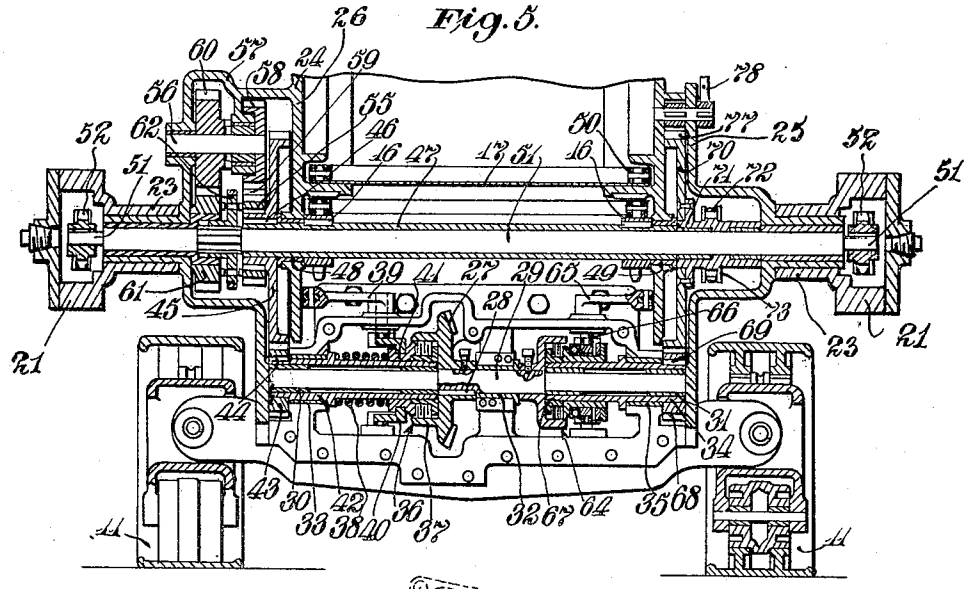


Fig. 6.

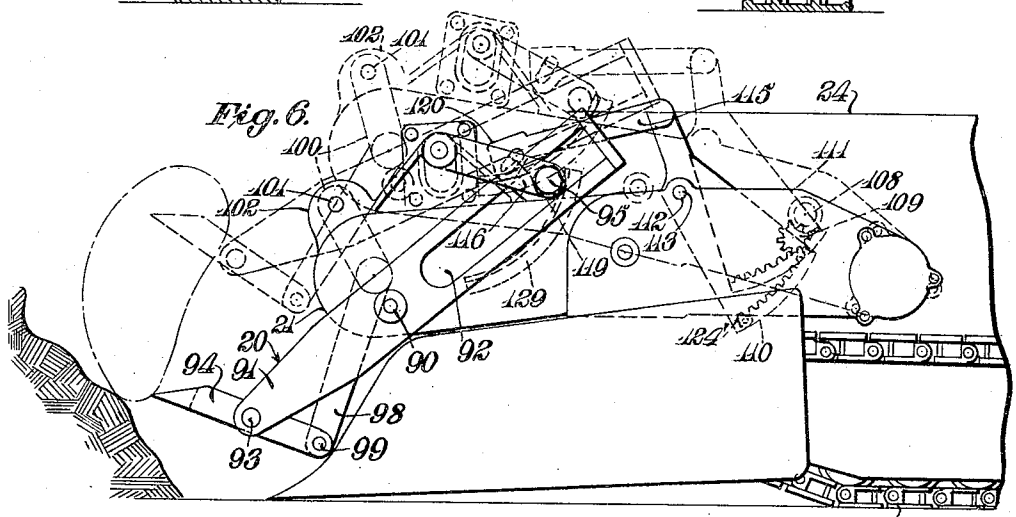


Fig. 7.

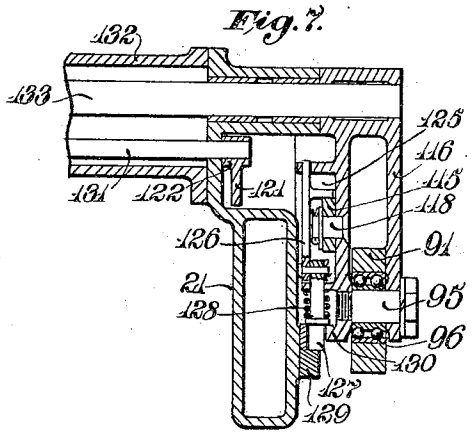
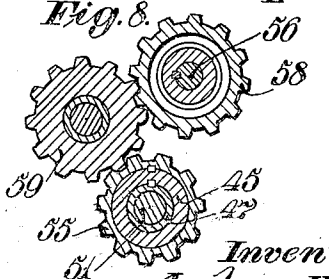


Fig. 8.



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UNITED STATES PATENT OFFICE

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LOADING MACHINE

Application filed December 16, 1929. Serial No. 414,612.

This invention relates to improved mechanism for loading loose material. More particularly, my invention relates to mechanism for raking or scraping loose material toward the conveying mechanism of a loading machine.

One object of my invention is to provide an improved loading machine for use in gathering loose materials and conveying the same toward a mine car or to a desired place of delivery. A further object of my invention is to provide improved gathering mechanism for a loading machine. A still further object of my invention is to provide an improved gathering mechanism which may be actuated in one position of its parts to move loose material toward a conveyor, and which may be actuated in another position of its parts so as to loosen up the material to facilitate gathering. A still further object of my invention is to provide gathering mechanism which is so supported that if, in moving the loose material toward the conveyor, the material does not readily yield, the gathering mechanism will give way so as not to be strained or broken. Other and more specific objects will become apparent in the course of the ensuing description, and will be more particularly pointed out in the claims.

In the accompanying drawings in which I have disclosed one illustrative embodiment of my invention,—

Fig. 1 is a vertical section of the loading machine on a line passing longitudinally along the middle of the front conveyor, this line being shown at 1—1 in Fig. 2. In Figs. 1 and 2 the rear conveyor and the rear portion of the truck are broken away.

Fig. 2 is a plan view of the portion of the machine which is shown in Fig. 1.

Fig. 3 is a detail sectional view through one of the side arms of the gathering mechanism; and is taken on the line 3—3 of Fig. 4.

Fig. 4 is a view in side elevation of the portion of the machine shown in Fig. 1.

Fig. 5 is a vertical transverse section on the line 5—5 of Fig. 1.

Fig. 6 is a side elevational view similar to Fig. 4 but showing the gathering mechanism in reversed relation so as to loosen the material to be gathered, and showing in dotted lines the same mechanism in an elevated position.

Fig. 7 is a detailed transverse vertical section through a portion of one of the side arms; and is taken on line 7—7 of Fig. 4.

Fig. 8 is a detail vertical sectional view of a set of intermeshing gears in the reversing mechanism of the drive for the gathering mechanism.

Since the type of loading machine with which the gathering mechanism cooperates is unimportant, the details of the same have not been disclosed herein, it being understood that my improved gathering mechanism may cooperate with the conveying means of various types of loading machines. It is to be noted, however, that in the present application, a portion of a loading machine which moves about on track laying tread mechanisms 11 is disclosed. These tread mechanisms may be driven from the rear end of the shaft 13 of a motor 12, the front end of the motor shaft 13 having secured thereto a motor pinion 14 for driving certain gearing which will be later described.

The loading machine may comprise a plurality of conveyors; and there is disclosed at 15 a gathering conveyor, which may be driven by sprockets 16, these sprockets being actuated by the above mentioned gearing, which is driven by the motor pinion 14. The flights of the gathering conveyor 15 move over a plate 17 to carry the material rearwardly and deliver the same either to a second conveyor mounted on the loading machine, or to a mine car, or to some desired point of delivery. The plate 17 forms part of a frame which is pivoted about the axis 18; and in accordance with certain aspects, this frame may be termed a shovel member. The front end of this frame or shovel member is formed as a nose piece 19, with which cooperates the gathering mechanism 20, which is later to be described. It will be noted that the nose piece 19 of the shovel member may be forced underneath the loose material, the latter passing up over the nose piece 19 and onto the conveyor 15 to be car-

ried rearwardly and upwardly. If a second conveyor is mounted on the loading machine, its front portion will be beneath the delivery end of the conveyor 15; and this second conveyor may be pivotally mounted to swing about a vertical axis, and may also be mounted for tilting about a horizontal axis in a manner well known in the art.

The gathering mechanism 20, as will be seen from Fig. 2, is carried by the side arms 21 and 22. Each arm is formed integrally with a sleeve member 23 which is pivoted with respect to the main frame 24 of the loading machine. This main frame 24 is, for the most part, constituted by the casing of the motor 12 and side frame members 25 and 26.

The gathering mechanism is driven from the motor pinion 14 through a bevel gear 27 keyed at 28 to a transverse shaft 29 mounted in suitable bearings 30, 31 and 32. The bearing 32 is provided by a portion of the main frame; but the bearing 30 is mounted in a rotatable sleeve 42 which is in turn mounted in a bearing 33; and the bearing 31 is mounted in a rotatable sleeve 34 which is in turn mounted in a bearing 35, the bearings 33 and 35 being afforded by the two sides of the main frame 24. A clutch mechanism 36 surrounds the shaft 29 within the hub 37 formed on the gear 27; and a spring 38 tends to apply or load the clutch. Clutch shifting mechanism 39 is provided for actuating the shipper yoke 40 so that the interleaved discs of the clutch mechanism 36 may be separated or allowed to be pressed into engagement with each other. The driven member 41 of the clutch is secured to the sleeve 42, which, it will be noted, is rotatable relative to the shaft 29. The other end of the sleeve 42 carries a pinion 43 which is secured thereto by a key 44. A spur gear 45 meshes with the pinion 43 and is keyed at 46 to a sleeve 47 extending transversely of the main frame of the loading machine and rotatably mounted in bearings 48 and 49. The sprockets 16 are keyed to the sleeve 47 at spaced points, so as to drive the side chains 50 of the conveyor 15. Only the lower flight of the conveyor is engaged by the sprockets 16, the upper flight traveling over the plate 17.

A shaft 51 extends through the sleeve 47 and carries at its outer ends a pair of sprockets 52, 52 keyed thereto at 53, 53. Chains 54, see Fig. 4, extend forwardly within the hollow arms 21 and 22 to drive the gathering mechanism 20. The shaft 51 is rotatable relative to the sleeve 47, and although it may be driven in one direction therewith from the spur gear 45, it may also be rotated in a direction opposite from sleeve 47 by reversing mechanism now to be described. A smaller gear 55 is keyed to the hub of the gear 45. A short shaft 56 is carried by the casing 57 which extends from and is herein formed integral with the side member 26 for enclosing the reversing gearing. A pair of gears 58 and 60 are mounted on shaft 56; and of this pair the gear 58 is driven through an intermediate gear 59 which meshes with the gear 55. The pair of gears 58 and 60 are locked together, and are rotated in the same direction as sleeve 47. The second gear of the pair, namely 60, meshes with a gear 61 which is journaled on shaft 51 and is driven by the train of gears 59, 58, 60 in the reverse direction to the gear 55. A dental clutch member 62 is splined to the shaft 51; and this clutch may be operated by suitable shipper mechanism (not shown) to alternatively connect gear 55 or gear 61 to the shaft 51 to drive the latter. Through this dental clutch member 62, the direction of drive of the gathering mechanism 20 may be reversed without reversing the motor shaft 13. A clutch mechanism 64 also surrounds the shaft 29 and is shown to the right of the gear 27 in Fig. 5. Mechanism 65 is provided for actuating the clutch by means of a shipper yoke 66. The driven member 67 of the clutch is secured to the sleeve 34, which, it will be noted, is rotatable relative to the shaft 29. The other end of this sleeve 34 carries a pinion 68, which is secured to the sleeve by a key 69. The pinion 68 meshes with a spur gear 70 rotatably mounted on the shaft 51. A hub member 71 has formed integrally therewith a sprocket 72, the hub member providing the mounting whereby the spur gear 70 may rotate relative to the shaft 51. As indicated in Fig. 2, a chain 73 extends from the sprocket 72 to a similar sprocket indicated at 72^a in Fig. 2. A pair of pinions 74 are mounted on a transverse shaft 75, and mesh with arcuate racks 76, one of which is secured to each of the arms 20 and 21. When the clutch mechanism 64 is loaded to cause rotation of the sleeve 34, the rack and pinion mechanisms 74 and 76 elevate the arms 20 and 21. A pawl or dog 77 is adapted to engage the teeth of the spur gear 70, when swung downwardly by the operating handle 78. By means of the pawl or dog, the arms 20 and 21 may be locked in different elevated positions. Brackets 79 are secured to the frame or shovel member to prevent the arms 20 and 21 from dropping so low that the pinions 74 run out of mesh with their racks. When the loading machine is on reasonably level ground, however, there is generally no possibility of the arms dropping low enough to bring the arms 20 and 21 into engagement with the brackets 79, since the gathering mechanism 20 generally rests on the material being gathered, or on the ground. A transverse shaft at the forward end of the conveying mechanism is indicated at 80; and this shaft carries a pair of idler sprockets

about which the chains 50 of the conveyor 15 is directed.

As shown in Figs. 3 and 7, the arm 21 is hollow; and the arm 22 is likewise hollow. The chains 54 which are directed about the sprockets 52 extend forwardly within the arms 21 and 22 to drive sprockets 81. Each sprocket 81 has secured thereto a sprocket 82; and both are mounted on a stub shaft 83 mounted in the arm 21. A chain 84 is driven by each sprocket 82, and in turn drives a sprocket 85 secured to a crank shaft 86 having a crank 87. The crank shaft is mounted in bearings 88 and 89 carried by the two sides of the respective arm. The crank 87 is journaled at 90 in an actuating arm 91 formed with a slot 92. Each arm 91 is provided at its forward end with a pivot 93, and between these pivots is hung the gathering tool or blade 94. This tool is formed as a sharpened plate which extends substantially equally to either side of the axis passing through the pivots 93. A pin 95 is provided with a roller 96 which cooperates with the slot 92. The pin 95 may be adjusted to various positions; but during normal operation of the gathering mechanism, the pin 95 is fixed at a predetermined station. As the crank 87 rotates, the pivot 93 is given an orbital movement, this orbit being determined by the position of the pin 95.

In order to give the tool 94 a swinging movement about its pivots 93, a pair of guiding elements 98 are pivotally connected to the top of the tool at 99. The inner end of each guiding element or link 98 is pivoted to a depending member 100 which swings about a pivot 101, being hung from a lug 102 on its respective arm 21 or 22. In order to maintain the depending member 100 in position during normal operation, a dog 103 is provided which pivots about an axis 104. The dog 103 may be swung about this axis by means of a chain 105 so as to permit the member 100 to swing about its axis 101.

The purpose of pivoting the guiding elements or links 98 to swinging members 100, instead of pivoting these links or guiding elements to a fixed pivot, is to permit the gathering mechanism to be reversed, so that the parts may assume the relation shown in Fig. 6. The swinging of the member 100 is necessary in order to permit the pivot 99 between the tool 94 and the guiding element or link 98 to move past dead center. When the parts have assumed the relation shown in Fig. 6 the dog 103 swings back into position again, and the depending member 100 is again fixed relative to the arm 21, 22 as the case may be.

It is desirable, upon reversing the position of the tool 94, to change the position of the roller 96, so as to depress the outer end of the actuating arm 91. In accordance with one aspect of my invention, this change in the position of the roller 96 may take place automatically. It will be noted from Figs. 3 and 4 that the chain 54, which is housed in the arm 21, passes over a sprocket 106 keyed at 107 to a stub shaft 108 rotatably mounted in the arm 21. The stub shaft 108 projects through the arm 21 and carries on its projecting end a pinion 109 which is in mesh with an arcuate rack 110 formed at one end of a lever 111 which is pivoted at 112 to a pin 113 mounted in the arm 21. The forward end of the lever 111 carries a laterally projecting lug 114 which is pivoted at its outer end to a link 115. This link 115 is connected by a pin and slot connection to the depending pivoted arm 116 which carries the roller 96. The pin and slot connection, as will be noted from Fig. 7, includes a pin 118 projecting through a slot 119 in the link 115. The upper portion of the forward end of the link 115 is formed as a cam surface 120 which cooperates with one arm 121 of a bell crank lever 122, the other arm 123 of the bell crank lever being connected to the upper end of the chain 105.

The arcuate rack 110 is provided at its upper end with a pivoted tooth 124 and at its lower end with a pivoted tooth 124′, each tooth being adapted to swing in only one direction from its normal position, so that the pinion 109 may move the lever to one extreme position or the other and continue to rotate in contact with the respective pivoted tooth, maintaining the lever in extreme position. In order to actuate the digging tool 94 when in the relation shown in Fig. 6, the chains 54 are driven in the reverse direction. Upon reversal of the direction of rotation of the pinion 109, the respective pivoted tooth is adapted to cooperate with the pinion 109 so as to move the lever 111 in the opposite direction. It will be noted, therefore, that whenever the direction of the chain 54 is reversed, which happens whenever the mechanism is to be shifted into the position shown in Fig. 7, the lever 111 is automatically swung through an arc corresponding to the arcuate rack 110. The slot 119 is slanted as will be noted from Fig. 4; and, therefore, the first action of the cam surface 120 is to rotate the bell crank lever 122 in a clockwise direction, thereby releasing the dog 103 and permitting the member 100 to swing back. As will be noted from Fig. 7, the top portion of the cam surface 120 lies beneath a lug 125 on a locking member 126. The locking member 126 comprises a bolt 127 which is pressed downwardly by a spring 128, so as to enter one or another of spaced openings in an arcuate guide 129 which is carried by the arm 21. Since the bolt 127 passes through a projecting portion 130 of the depending pivoted arm 116, this arm may be secured in different positions, according to which opening in the guide 129 is engaged by the bolt 127.

The bell crank lever 122 is fixed to a transverse shaft 131 which extends across the front

of the loader within a bracing member 132. A similar bell crank lever is secured to the other end of the shaft 131, this lever actuating a dog similar to the dog 103 which controls the link 98 and depending member 100 on that side of the machine. The member 132 braces the two arms 21 and 22; and a shaft 133 extends through this member and assists in tying the two arms 21, 22 together. The depending arms 116 are fixedly secured on the outer ends of this shaft 133; and, therefore, when the depending arm 116, which has just been described, is moved rearwardly, the corresponding depending arm 116 on the other side of the machine is likewise moved rearwardly.

The operation of the reversing mechanism is clearly apparent from the above description. When the direction of drive of the chains 54 is reversed, the lever 111 is moved through an arc, so as to swing the lug 114 upwardly, thereby moving the link 115 rearwardly. The first movement of this link consists of a sliding movement on the pin 118, due to the angular disposition of the slot 119. The cam surface 120 moves the bell crank 122 in a clockwise direction, as above described. This releases the depending arms 100. The remainder of the movement of the link 115 carries the depending arms 116 rearwardly. It will be noted that the cam surface 120 has lifted the lug 125 during the sliding of the link 115 relative to the pin 118. This has lifted the bolt 127, so that the same may slide on the arcuate guide 129. When the rack has reached its extreme position, the depending arms 116 have been drawn rearwardly to their rearmost position, and the bolt 127 has dropped into an opening which secures these arms 116 in this position. Due to the altered position of the parts, the end of the arm 121 has slid down the forward portion of the cam surface 120, and the latch 103 is freed to move into locking position again. The parts are now in the relation shown in Fig. 6, and the roller 96 is elevated so as to depress the forward end of the arm 91.

When it is desired to change the gathering mechanism back into its normal gathering relation, the direction of drive of the chains 54 is reversed, whereupon the pivoted tooth 124 engages the pinion 109, and the rack 110 moves upwardly, forcing the link 115 forwardly. The first movement of this link 115 is to slide relative to the pin 118. This causes the cam surface 120 to release the bolt 127. The link 115 now engages the pin 118 and moves the depending arms 116 forwardly to the position illustrated in Fig. 4. The bolt 127 thereupon drops into the forward opening in the slide 129, locking the arms 116 in their forward position. As the link 115 makes the latter part of its forward movement, the nose of the cam portion 120 engages the arm 121, causing the bell crank lever 122 to be again moved in a clockwise direction so as to lift the latches 103 from locking position. The tool 94 now moves into the position shown in Fig 1, the pivot 99 passing dead center. The end of the arm 121 rides over the nose of the cam portion 120 as the parts assume the position shown in Fig 4, and the chains 105 are released so as to permit the dogs 103 to secure the depending arms 116 in operative position. The rollers 96 are now in lowered position, and the forward ends of the arms 91 are elevated so that the normal gathering operation of the tool may take place.

It will be noted that I have provided a gathering device which is mounted on a pivoted support, so that in case the coal or other material being gathered does not yield, the gathering mechanism will rise over the unyielding material, and the frame will not be distorted, nor will parts be broken. It will furthermore be noted that not only will the tool 94 gather the material and move it onto the conveyer 15; but by reversing the relative position of the tool 94, the same can be used as a digging element so as to bring down standing coal, or other material which has lodged, or become difficult to loosen. The edge of the gathering tool 94 moves in the orbital path shown in Fig. 1 during gathering and operates to engage and move rearwardly the material being gathered during a portion of this orbital movement, the tool 94 being substantially free from the material during the return portion of the orbit. My improved loading mechanism is therefore adapted to a wide variety of uses; and obviously operates to gather the material in a most efficient manner.

While there is in this application specifically described one form which this invention may assume in practice, it will be understood that this form of the same is shown for purposes of illustration and that the invention may be modified and embodied in various other forms without departing from its spirit or the scope of the appended claims.

What I claim as new and desire to secure by Letters Patent is:

1. In a loading mechanism, the combination of a support, a pair of rotatable members carried by said support for rotation on a common axis, means for rotating said members, gathering means, supporting members for said gathering means supported by said rotatable members, supplemental means cooperating with said supporting members for controlling the movement thereof during actuation by said rotatable members, said gathering means being pivoted to each of said gathering means supporting members on a second axis parallel to but offset from the first mentioned axis, and a guiding element pivotally connected to said gathering means

and normally pivotally connected to said support.

2. In a loading mechanism, the combination with a support, of a pair of arms, a pair of crank pins one cooperating with each arm, said crank pins being spaced apart, structurally distinct and independently journaled, means supported by said support for orbitally moving said crank pins, a gathering tool supported transversely of said support by said arms, and means cooperating with said arms for directing the portions thereof cooperating with said gathering means in an ovate path upon movement of said crank pins in their orbital paths.

3. In a loading mechanism, the combination with a support, of a pair of arms, one near either side of said support, a pair of structurally distinct crank pins one cooperating with each arm, means supported by said support for orbitally moving said crank pins, a gathering tool rotatably supported transversely of said support by said arms, said tool occupying substantially the full width of the space between said arms, means cooperating with said arms for directing the portions thereof cooperating with said gathering tool in an ovate path upon movement of said crank pins in their orbital paths, and means cooperating with said gathering tool for oscillating said tool about its axis of rotation upon movement of said crank pins in their orbital paths.

4. In a loading mechanism, the combination with a portable base, conveying mechanism carried by said base, and a support pivoted for tilting movement vertically relative to said base, of a pair of arms, means carried by said support for actuating said arms comprising a pair of members one connected with each arm, the connections between said members and arms being moved orbitally during actuation of said arms, gathering means hung transversely of said conveying mechanism from said arms, said gathering means being rotatably supported by said arms, means cooperating with said arms for directing the portions thereof cooperating with said gathering means in an ovate path, and means for controlling the positioning of said gathering means during movement of said arms operatively connected with said gathering means at a point between said arms.

5. In a loading mechanism, the combination with a base and conveying mechanism supported on said base, of a frame pivotally mounted on said base on a horizontal axis, means for swinging said frame about said axis, and gathering mechanism supported by said frame comprising a gathering element disposed transversely of said conveying mechanism to cooperate therewith, and means for actuating and controlling the movements of said gathering element including a pair of arms arranged one at either side of said frame and cooperating in carrying said gathering element, and rotatable means supported by said frame for actuating said arms, said rotatable means including a pair of bearings disposed on a common axis offset from the axis of rotation of said actuating means, one of said arms being swiveled on each of said bearings.

6. In a loading mechanism, the combination with a base and conveying mechanism supported on said base, of a frame pivotally mounted on said base on a horizontal axis, means for swinging said frame about said axis, and gathering mechanism supported by said frame comprising a gathering element disposed transversely of said conveying mechanism and extending substantially for the full width of the latter to cooperate therewith, and means for actuating and controlling the movements of said gathering element including a pair of arms carrying said gathering element and arranged respectively at opposite sides of said frame, said gathering element being pivotally mounted at the outer ends of said arms, and rotatable means supported by said frame for actuating said arms, said rotatable means including a pair of bearings disposed on a common axis offset from the axis of rotation of said actuating means, one of said arms being swiveled on each of said bearings.

7. In a loading mechanism, the combination with a base and conveying mechanism supported on said base, of a frame pivoted to said base on a horizontal axis, means for swinging said frame about said axis, and gathering mechanism supported by said frame comprising a gathering element disposed transversely of said conveying mechanism to cooperate therewith, and means for actuating and controlling the movements of said gathering elements including a pair of arms carrying said gathering element, means cooperating with said frame for oscillating said gathering element upon transmission of movement thereto by said arms, and rotatable means supported by said frame for actuating said arms, said rotatable means including a pair of bearings disposed on a common axis offset from the axis of rotation of said actuating means, one of said arms being swiveled on each of said bearings.

8. In a loading mechanism, the combination with a base and conveying mechanism supported on said base, of a frame pivoted to said base on a horizontal axis, means for swinging said frame about said axis, and gathering mechanism supported by said frame comprising a gathering element disposed transversely of said conveying mechanism to cooperate therewith, and means for actuating and controlling the movements of said gathering element including a pair of arms carrying said gathering element, means cooperating with said frame for oscillating

said gathering element upon transmission of movement thereto by said arms, rotatable means supported by said frame for actuating said arms, said rotatable means including a pair of bearings disposed on a common axis offset from the axis of rotation of said actuating means, one of said arms being swiveled on each of said bearings, and means carried by said frame affording a sliding connection with said arms.

9. In a loading mechanism, the combination with a base and conveying mechanism supported on said base, of a frame pivoted to said base on a horizontal axis, means for swinging said frame about said axis, and gathering mechanism supported by said frame comprising a gathering element disposed transversely of said conveying mechanism to cooperate therewith, and means for actuating and controlling the movements of said gathering element including a pair of arms carrying said gathering element, rotatable means supported by said frame for actuating said arms, said rotatable means including a pair of bearings disposed on a common axis offset from the axis of rotation of said actuating means, one of said arms being swiveled on each of said bearings, and means for guiding said gathering element comprising means cooperating with said frame for oscillating said gathering element about the axis of said bearings upon transmission of movement thereto by said arms and means for determining the orbit of said axis comprising a member fixed relative to said fame having sliding engagement with said arms.

10. In a loading mechanism, the combination with a portable base, conveying mechanism carried by said base, and a support pivoted for tilting movement vertically relative to said base, of a gathering device, actuating means mounted on said support and movable relative thereto for carrying said gathering device and bodily moving the same to act on the material to be gathered, said gathering device being pivotally connected to said actuating means, means for linking said gathering device to said support, including a link pivotally connected at one end to said gathering device and having its other end mounted for pivoting upon an axis which is stationary relative to said support during gathering whereby said gathering device is oscillated about the axis of its pivotal connection with said actuating means during its orbital movement, and means for vertically tilting said support.

11. In a loading mechanism, the combination with a support, of gathering mechanisms mounted on the support comprising a gathering element and actuating means for carrying and bodily moving said element, said element being pivotally connected to said actuating means and said actuating means being movable relative to said support, a pivot element mounted on said support, means for locking said pivot element in a position fixed relative to said support, said locking means being releasable to permit movement of said pivot element relative to said support, a link pivoted on said pivot element and pivotally connected to said gathering element on an axis offset from the axis of pivoting of the latter, reversible driving means for said actuating means, and mechanism automatically actuated upon reversal of said driving means for releasing said locking means.

12. In a loading mechanism, the combination with a support, of gathering mechanism mounted on the support comprising a gathering element and actuating means for carrying and bodily moving said element, said element being pivotally connected to said actuating means, means including a link member for normally linking said gathering element to said support, latch means for normally preventing bodily movement of said link member relative to said support but releasable to permit such bodily movement to permit rearrangement of said gathering element, reversible driving means for said actuating means, and mechanism automatically actuated upon reversal of said driving means for releasing said latch means.

13. In a loading mechanism, the combination with a support, of a gathering device, actuating means mounted on said support and movable relative thereto for carrying said gathering device and bodily moving the same to act on the material to be gathered, said gathering device being pivotally connected to said actuating means, and mechanism for oscillating said gathering device about the axis of its pivotal connection with said actuating means including a pivot element, supporting means for said pivot element arranged selectively to maintain said pivot element stationary relative to said first mentioned support or to release said pivot element for movement relative to said first mentioned support, and a link element pivoted to said pivot element and pivotally connected to said gathering device on an axis offset from the axis of oscillation of said gathering device.

14. In a loading mechanism, the combination with a support, of a gathering device, actuating means mounted on said support and movable relative thereto for carrying said gathering device and bodily moving the same to act on the material to be gathered, said gathering device being pivotally connected to said actuating means, and mechanism including a link pivotally connected to said gathering device adapted to normally maintain the pivotal connection between said link and said gathering device at a constant

distance from a predetermined axis fixed relative to said support, said mechanism including further a releasing device for releasing said link for movement bodily relative to said predetermined fixed axis.

15. In a loading mechanism, the combination with a support of a gathering blade, actuating means movable relative to said support for carrying said gathering blade and bodily moving the same to act on the material to be gathered, and guiding means pivotally connected to said gathering blade for normally maintaining the pivotal connection between said guiding means and said gathering blade at a constant distance from a predetermined axis fixed relative to said support.

16. In a loading mechanism, the combination with a support of a gathering blade, actuating means movable relative to said support for carrying said gathering blade and bodily moving the same to act on the material to be gathered, and guiding means pivotally connected to said gathering blade for normally maintaining the pivotal connection between said guiding means and said gathering blade at a constant distance from a predetermined axis fixed relative to said support, said gathering blade being pivotally connected to said actuating means.

17. In a loading mechanism, the combination with a support, of a gathering device, actuating means mounted on said support and movable relative thereto for carrying said gathering device and bodily moving the same to act on the material to be gathered, said gathering device being pivotally connected to said actuating means, an element mounted on said support, means for normally locking said element in a position fixed relative to said support, said locking means being releasable to permit movement of said element relative to said support, and a link pivoted on said element and pivotally connected to said gathering device on an axis offset from the axis of pivoting of the latter.

18. In a loading mechanism, the combination with a support, of a gathering device, actuating means mounted on said support and movable relative thereto for carrying said gathering device and bodily moving the same to act on the material to be gathered, said gathering device being pivotally connected to said actuating means, means for normally linking said gathering device to said support, and latch means for normally preventing bodily movement of said link means relative to said support but releasable to permit rearrangement of said gathering device.

19. In a loading mechanism, the combination with a support, of gathering mechanism mounted on the support comprising a gathering element and actuating means for carrying and bodily moving said element, said element being pivotally connected to said actuating means and said actuating means being movable relative to said support, mechanism for oscillating said gathering element about the axis of its pivotal connection with said actuating means during actuation thereof comprising a pivot element, supporting means for said pivot element arranged, when held, to maintain said pivot element stationary relative to said first mentioned support and, when released, to permit movement of said pivot element relative to said first mentioned support, and a link element pivoted to said pivot element and pivotally connected to said gathering device on an axis offset from the axis of oscillation of said gathering device, reversible driving means for said actuating means, and mechanism automatically actuated upon reversal of said driving means for releasing said supporting means for said pivot element.

20. In a loading mechanism, the combination with a support, of gathering mechanism mounted on the support comprising a gathering element and actuating means for carrying and bodily moving said element, said element being pivotally connected to said actuating means, guiding means pivotally connected to said gathering element and arranged, when held, to maintain the pivotal connection between said guiding means and said gathering element at a constant distance from a predetermined axis fixed relative to said support and, when released, to permit movement of said pivotal connection toward said predetermined axis, reversible driving means for said actuating means, and mechanism automatically actuated upon reversal of said driving means for releasing said guiding means.

21. In a loading machine having a gathering tool, mechanism for orbitally moving a tool including supporting arms each having a tool support at one end, the tool being supported between the arms upon the tool supports thereof, means for transmitting motion to said arms including orbitally movable drive members connected with said arms at points spaced from their tool supports, and means having guiding cooperation with another portion of said arms and adjustable to different fixed positions relative to the arm actuating means whereby the paths of movement of the tool carrying portions of said arms may be generically varied.

22. In a loading machine having a gathering tool, mechanism for orbitally moving a tool including supporting arms each having a tool support at one end, the tool extending between and being supported by said arms upon the tool supports thereof, means for transmitting motion to said arms including orbitally movable drive members connected with said arms at points spaced from their tool supports, and means having guiding cooperation with another portion of said arms

and arcuately adjustable to different fixed positions relative to the arm actuating means whereby the paths of movement of the tool carrying portions of said arms may be varied.

In testimony whereof I affix my signature.

ANDREW HAUGE.