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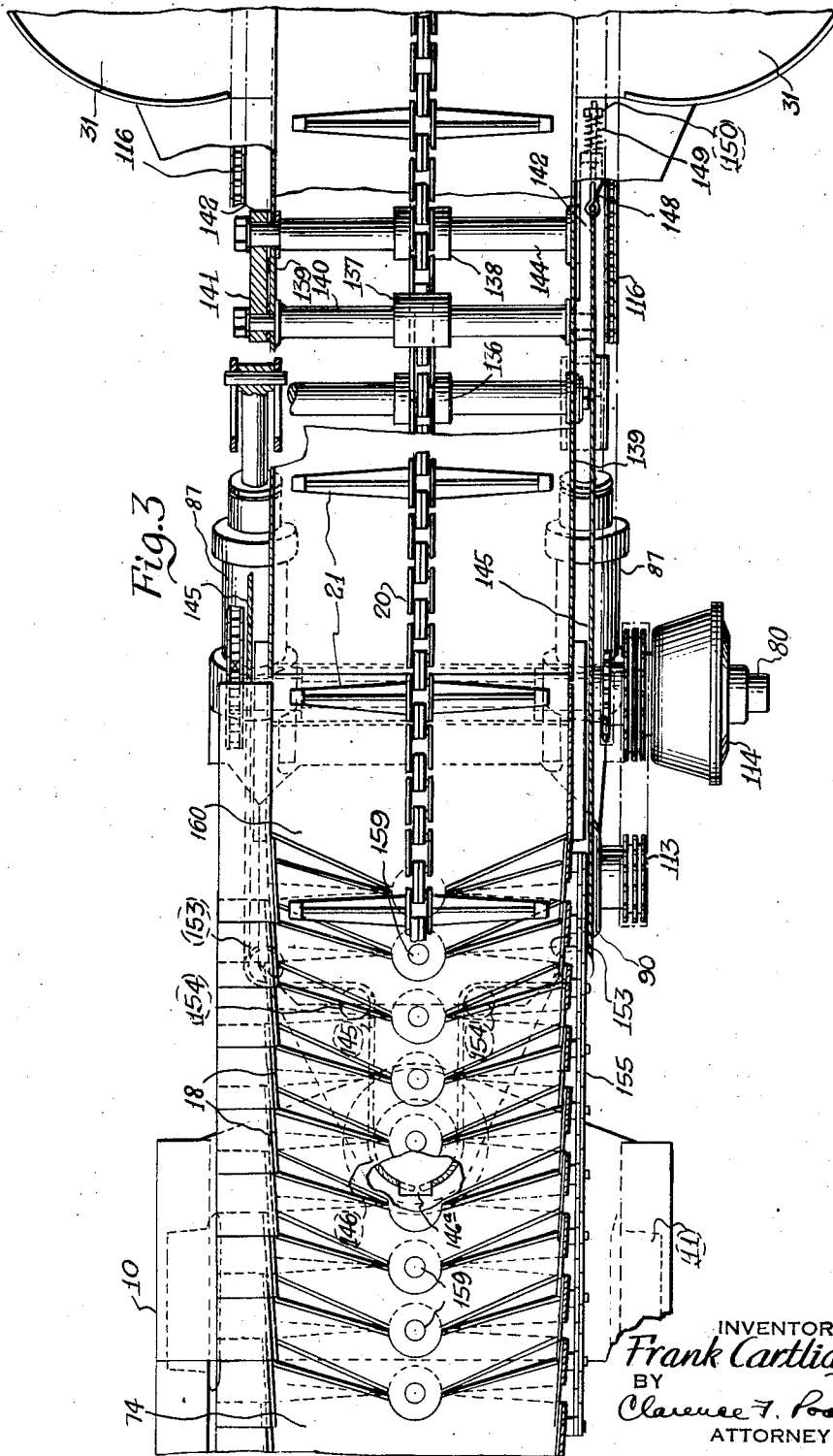
F. CARTLIDGE

2,269,078

MATERIAL GATHERING AND LOADING MACHINE

Filed Dec. 11, 1939

5 Sheets-Sheet 2



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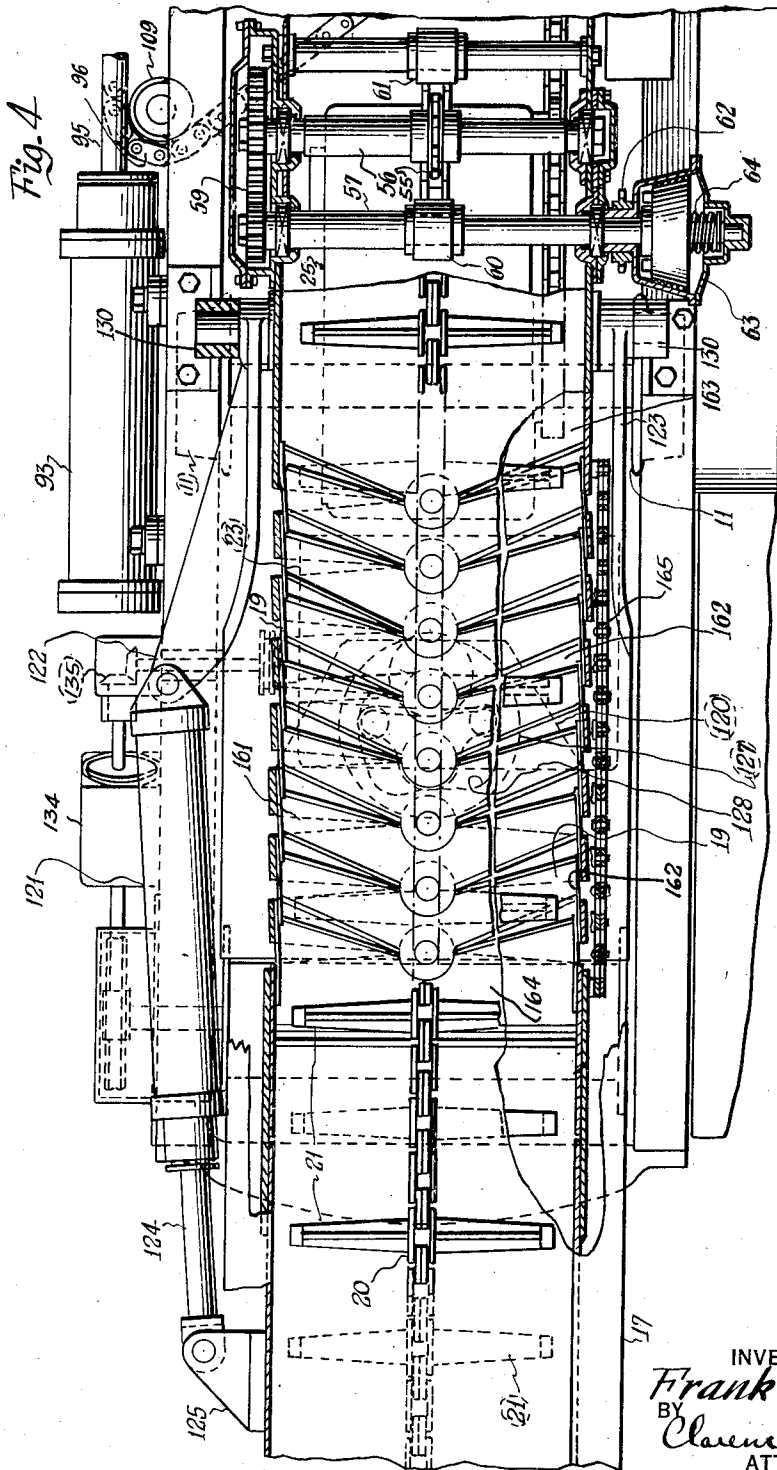
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MATERIAL GATHERING AND LOADING MACHINE

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5 Sheets-Sheet 3



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5 Sheets-Sheet 4

Fig. 6

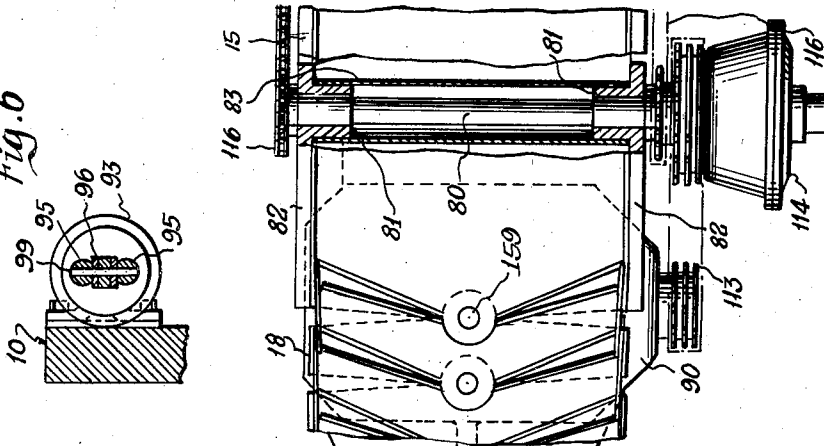
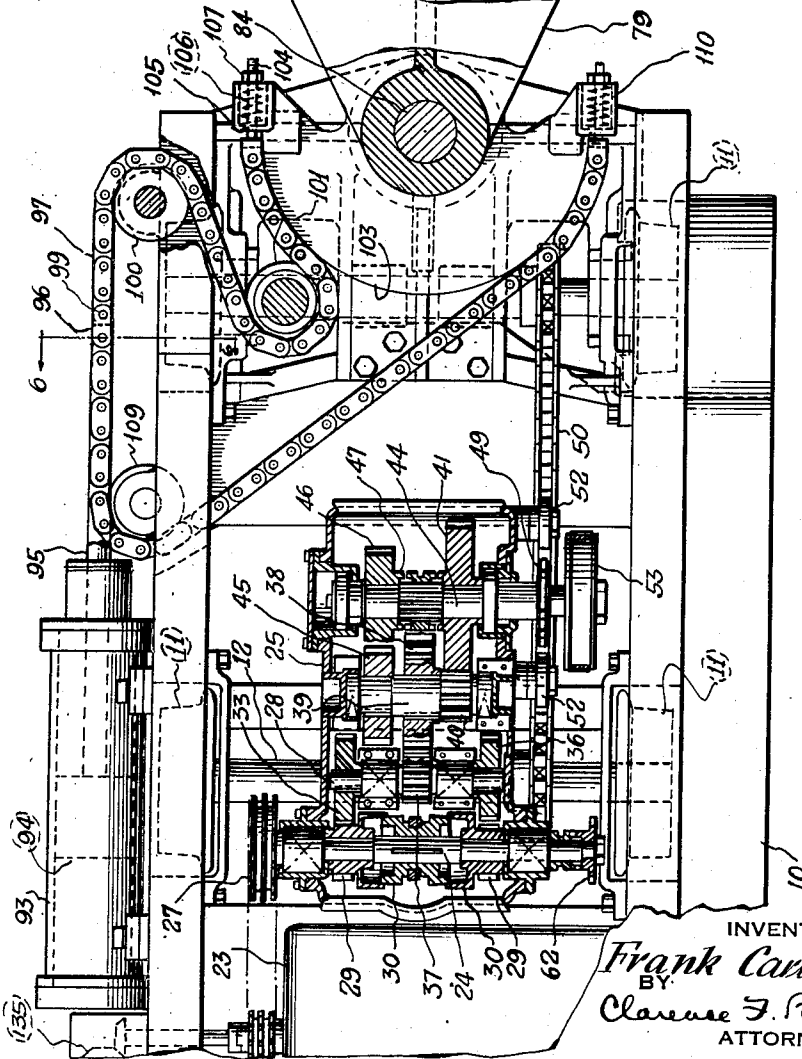


Fig. 5



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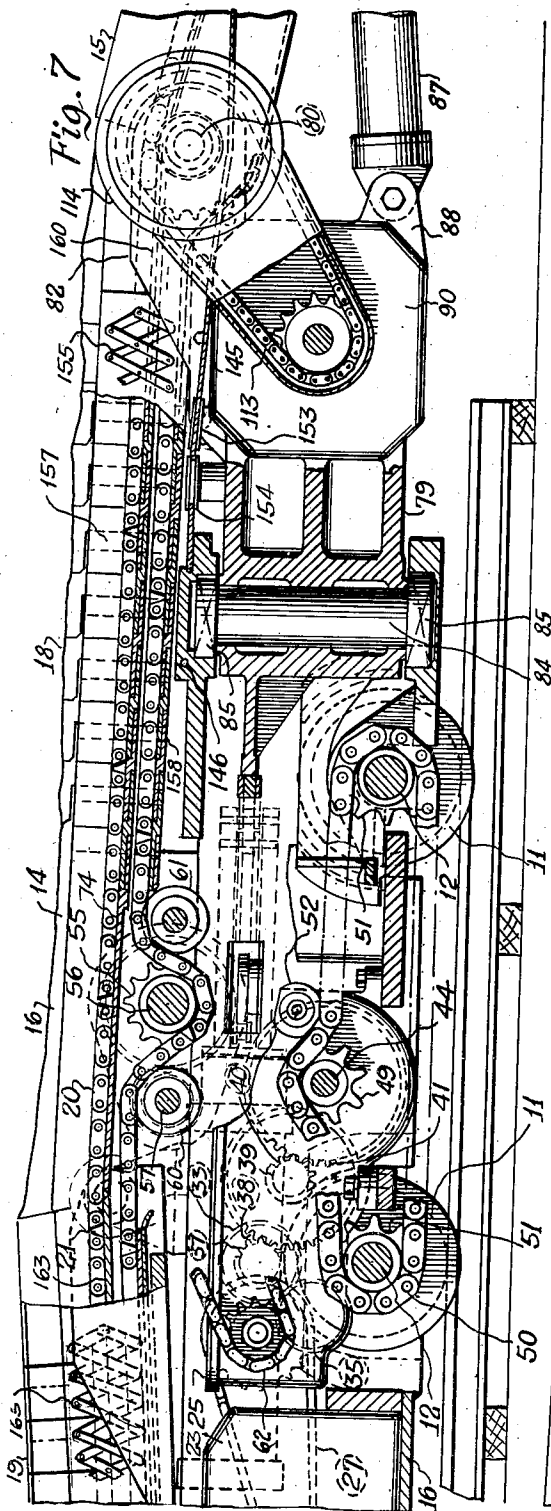
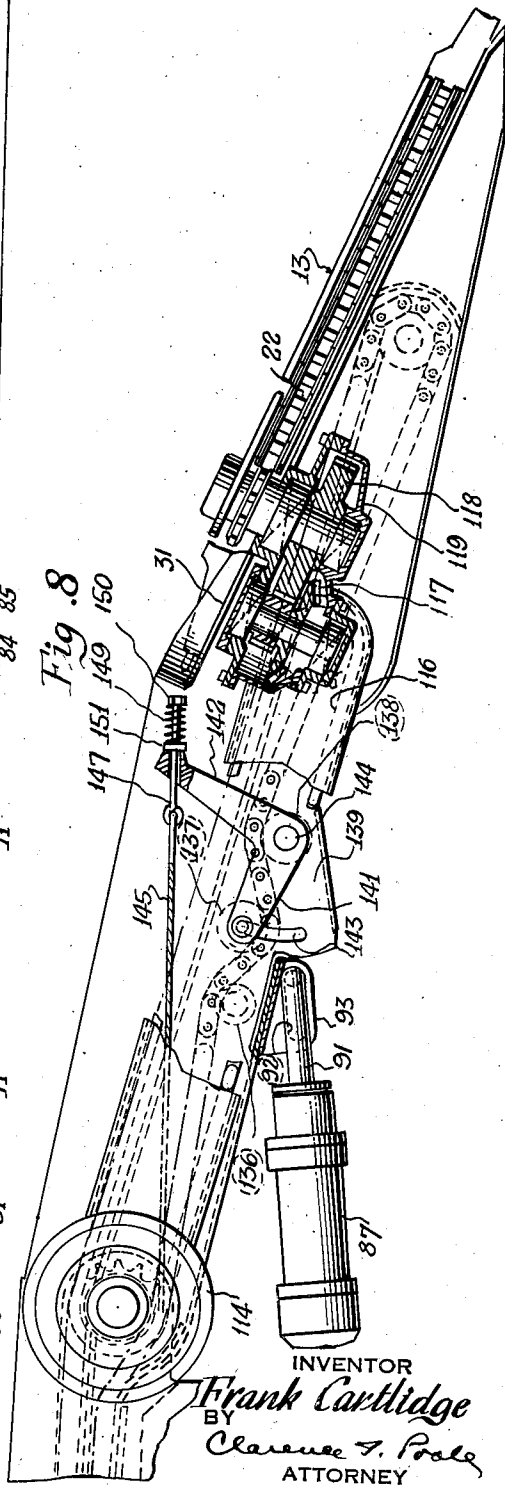
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MATERIAL GATHERING AND LOADING MACHINE

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5 Sheets-Sheet 5



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UNITED STATES PATENT OFFICE

2,269,078

MATERIAL GATHERING AND LOADING
MACHINE

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Application December 11, 1939, Serial No. 308,565

8 Claims. (Cl. 198—11)

This invention relates to improvements in material gathering and loading machines particularly adapted for loading coal at the working face of a mine.

The principal objects of my invention are to provide a simple and efficient machine of the character described, of a low overall height, suitable for operation in thin seams of coal and having a novel form of continuous conveyer extending from one end of the machine to the other, arranged so as to reduce the height of the machine and provide utmost flexibility for the receiving and discharge ends of the conveyer by eliminating a plurality of conveyers arranged in cascade relationship with respect to each other, and providing laterally flexible and vertically adjustable gathering and discharge ends for the conveyer.

A more specific object of my invention is to provide a loading machine of the character described having one continuous conveyer extending from one end of the machine to the other, with a novel form of pivotal supporting connection for the front end of the conveyer, together with a novel arrangement of parts for the conveyer, to permit independent lateral swinging movement and elevation of the front and rear parts of the conveyer, and to render the use of hold-down guides unnecessary when the front and rear ends of the conveyer are in various positions of vertical adjustment with respect to the central part of the conveyer.

Other objects of my invention will appear from time to time as the following specification proceeds and with reference to the accompanying drawings wherein:

Figure 1 is a plan view of a loading machine constructed in accordance with my invention;

Figure 2 is a view in side elevation of the machine shown in Figure 1;

Figure 3 is an enlarged fragmentary plan view of the forward portion of the machine, with certain parts broken away and certain other parts shown in horizontal section;

Figure 4 is a fragmentary plan view of the rear part of the machine, drawn to the same scale as Figure 3 and with certain parts broken away and certain other parts shown in horizontal section;

Figure 5 is a fragmentary detail view of the central part of the machine, with certain parts broken away and certain other parts shown in horizontal section;

Figure 6 is an enlarged sectional view taken substantially along line 6—6 of Figure 5;

Figure 7 is a view in side elevation of the central part of the machine, with certain parts broken away and certain other parts shown in longitudinal section; and

Figure 8 is a view in side elevation of the forward end of the machine, with certain parts broken away and certain other parts shown in longitudinal section.

Referring now in particular to Figures 1 and 2 of the drawings and the general arrangement of the machine embodying my invention, a main frame 10 is provided which is mounted on track wheels 11, 11 and axles 12, 12. A conveyer 14 is mounted on said main frame and extends over and beyond the rear end of said frame from a point disposed adjacent the ground in advance of the forward end thereof.

The conveyer 14 is of the continuous center strand endless chain and flight type and includes a laterally and vertically movable inclined elevating trough section 15, laterally swingable to permit the gathering of material from either side of the track and vertically adjustable about an axis disposed adjacent its rear end, to permit a gathering element 13 on its forward end to pick up material along the ground or break down and pick up material from a substantial distance below the track or from various elevations with respect to the ground. Said conveyer also includes a stationary central trough section 16 spaced from said elevating section, and a vertically adjustable and laterally movable discharge trough section 17 having a receiving end spaced from said central portion.

The elevating trough section 15 of the conveyer is connected with the stationary central trough section 16, by means of an articulated trough construction including a plurality of interconnected trough segments 18, 18, and said central trough section is connected with said rear discharge trough section, by means of a similar articulated trough construction including a plurality of interconnected trough segments 19, 19. The articulated connection between said forward and central and central and rear portions of said conveyer is the same as that shown and described in application Serial No. 308,564, filed herewith, so will not herein be described in detail.

The conveying elements of the conveyer include an endless chain 20 of the laterally flexible type having flights 21, 21 projecting laterally therefrom at suitable intervals. Said chain extends along the central portion of said conveyer from the forward end of said inclined ele-

vating section to the discharge end of said discharge section of the conveyer, and is guided along said conveyer on the ends of said flights, engaging the side walls of the trough sections of said conveyer.

The gathering element 13 on the forward end of the inclined elevating section 15 of the conveyer includes a pair of spaced orbitally guided endless chains having gathering arms projecting laterally therefrom and generally indicated by reference character 22. Said endless chains are guided for movement along opposite sides of the forward end of said conveyer from a point disposed forwardly of the forward end thereof, for progressing coal upwardly along an inclined apron 31 onto said conveyer.

A motor 23 is mounted on the main frame 10 adjacent the rear end thereof, for driving the conveyer 14 and the track wheels 11, 11. The drive from said motor to said track wheels includes a transverse shaft 24 mounted in a gear housing 25 and driven from said motor by a chain and sprocket drive generally indicated by reference character 27 (see Figure 5). A pair of spaced apart spur gears 29, 29 is freely mounted on the shaft 24. One of said spur gears meshes with a spur gear 33 keyed on a transversely extending shaft 28. The other of said spur gears meshes with an idler gear 35, which meshes with a spur gear 36 keyed on said transverse shaft (see Figure 7). A pair of oppositely facing friction cone clutches generally indicated by reference character 30 is provided to connect one of said gears with said shaft at a time (see Figure 5), for reversely driving the shaft 28 without reversal of the motor 23. A pinion 37, keyed on said last mentioned transverse shaft, meshes with and drives a spur gear 38 keyed on a transverse shaft 39. A spur pinion 40, keyed on the transverse shaft 39, meshes with and drives a spur gear 41, freely mounted on a transversely extending shaft 44. Said spur gear is adapted to be connected with said last mentioned transverse shaft, for driving said shaft and the track wheels at a relatively low feeding speed. A spur gear 45 is keyed on the transverse shaft 39 and meshes with a spur gear 46 freely mounted on the transverse shaft 44. Said spur gear is likewise adapted to be connected with said transverse shaft, for driving said shaft and the track wheels 11, 11 at a higher tramming speed. Either one of the spur gears 41 or 46 may be connected with the shaft 44, for driving said shaft, by any suitable clutch arrangement. The clutch arrangement herein shown is a jaw clutch arrangement of an ordinary construction, and is generally indicated by reference character 47.

A sprocket 49 is keyed on the transverse shaft 44 outside of the gear casing 25, and meshes with an endless drive chain 50. Said drive chain is trained around sprockets 51, 51 on the front and rear axles 12, 12, for driving said axles and the wheels 11, 11. Said chain is held in engagement with the sprocket 49 by means of idler rollers 52, 52, disposed on opposite sides of said sprocket. The loading machine may thus be driven in reverse directions at a high tramming speed or low feeding speed.

A suitable band brake generally indicated by reference character 53 is provided on the shaft 44, to serve as a braking means for the machine (see Figure 5).

The drive from the motor 23 to the conveyer 14 includes a sprocket 55 keyed on a transversely

extending shaft 56, which meshes with the endless chain 20 (see Figures 4 and 6). Said shaft is driven from a transversely extending shaft 57 by means of a pair of meshing spur gears, generally indicated by reference character 59. The shaft 57 has a roller 60 freely mounted thereon, which serves as a tension idler for said endless chain. A tension idler 61 is mounted on the opposite side of said sprocket.

10 The transverse shaft 57 is driven from the motor 23 by means of a chain and sprocket drive generally indicated by reference character 62 and an overload release clutch generally indicated by reference character 63. Said clutch, as herein shown, is of the friction cone type and is held in an engaged position by means of a compression spring 64. The details of said clutch will not herein be shown or described since they are no part of my present invention.

20 Referring now to the novel form of mounting for the inclined elevating section 15 of the conveyer, a laterally swinging frame 79 is provided. Said frame projects forwardly of the forward end of the main frame 10 and has said elevating section of the conveyer mounted thereon, adjacent its rear end, for vertical adjustment about the axis of a transverse shaft 80 (see Figures 5 and 7). Said transverse shaft is mounted at its ends in inwardly extending bosses 81, 81 of spaced apart support brackets 82, 82, projecting forwardly from opposite sides of said frame. Said bosses form a pivotal support for a frame 83 of said forwardly inclined elevating portion of the conveyer. Said swinging frame is mounted adjacent its rear end on a vertical shaft 84, which is journaled in said main frame at its upper and lower ends on vertically spaced ball bearings 85, 85, mounted at the forward end of said main frame.

40 The means for elevating or lowering the forward end of said inclined elevating portion of the conveyer about the axis of the transverse shaft 80 includes a pair of laterally spaced fluid pressure cylinders 87, 87, transversely pivoted adjacent their rear ends on the forward end of said frame, on forwardly projecting support brackets 88, 88. Said support brackets are herein shown as being formed integral with and projecting forwardly from the casing of a motor 90, which motor serves to drive the gathering chains and arms 22, 22. Suitable pistons (not shown) are mounted within said cylinders and have piston rods 91, 91 projecting therefrom, which are slidably mounted at their ends in slots 92, 92 formed in brackets 98, 98 depending from the frame of said conveyer (see Figure 8). The purpose of said slots is to permit a certain amount of freedom of movement of the conveyer in an upward direction, to enable it to move upwardly when engaging an obstruction. Said piston rods, when engaging the rear ends of said slots, may positively pivot said elevating section in a downward direction against the ground to elevate or lower the forward end of the truck frame. Said cylinders and pistons may thus serve as jacks to aid in putting the machine on the track, in cases where it has been derailed.

The swinging frame 79 and forward end of the conveyer are swung about the axis of the vertical shaft 84 by means of a fluid pressure cylinder 93, having a piston 94 therein. Said cylinder is mounted on one of the side frame members of the main frame 10, and, as herein shown, projects laterally therefrom and extends along

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said main frame. Said piston is provided with a pair of vertically spaced piston rods 95, 95, projecting forwardly from said cylinder.

A flexible member or endless chain 97 is connected between the piston rods 95, 95, for horizontally swinging the forward end of the conveyer, upon rectilinear movement of said piston rods. Said piston rods are pivotally connected at their forward ends with a link 96 of said chain by means of a pivotal pin 99, mounted at its ends in said piston rod (see Figure 6). One portion of said endless chain is trained forwardly from said piston rods around an idler roller 100 and angularly rearwardly and inwardly from said roller around an idler roller 101. Said portion of said chain then extends forwardly of said roller around a portion of the outside of a rearwardly projecting semi-circular engaging portion 103 of said swinging frame. The end of said portion of said chain is yieldably connected with said engaging portion of said frame by means of a rod 104 extending through a bracket 105. A compression spring 106 encircles said rod and is interposed between said bracket and a nut 107 on the end of said rod, to yieldably connect said rod to said bracket.

The other portion of said chain is trained rearwardly from the pivotal pin 99, to and around an idler roller 109 and diagonally across the machine frame, where it engages the rearwardly projecting engaging portion 103 of the frame 79. Said portion of said chain is yieldably connected at its end to the end of said rearwardly projecting portion of said frame, opposite from the bracket 105, on a support bracket 110, in a manner similar to the manner in which the opposite end of said chain is connected to the support bracket 105.

The motor 90 on the forward end of the swinging frame 79 serves to drive the gathering chains and arms 22, 22. The drive from said motor to said gathering chains and arms includes a chain and sprocket drive 113, which has driving connection with an overload release clutch generally indicated by reference character 114. Said overload release clutch has connection with the transversely extending shaft 80, which is coaxial with and journaled in the inwardly extending bosses 81, 81 of said swinging frame. Chain and sprocket drives generally indicated by reference character 116, 116 are provided to drive said gathering elements from opposite ends of said shaft. The drive from each of said chain and sprocket drives includes a pair of meshing bevel gears generally indicated by reference character 117 and a pair of meshing spur gears generally indicated by reference character 118, driven by said meshing bevel gears. Said bevel and spur gear reductions are journaled in casings 119, 119 mounted beneath the apron 31, adjacent opposite sides of the conveyer.

The discharge trough section 17 is supported on a laterally swingable arm 120 and is swung laterally with respect to the frame 10 by means of a fluid pressure cylinder 121, pivotally mounted at its head end on a bracket 122, projecting outwardly from a support bracket 123 (see Figures 1 and 4). Said support bracket is transversely pivoted on a pair of upright supports 130, 130 and serves as a trunnion support for said discharge trough section, to permit vertical adjustable movement of the rear end thereof. Said cylinder has a suitable piston (not shown) mounted therein. A piston rod 124, extensible from said piston, has pivotal connection at its

end with a bracket 125, projecting outwardly from a side wall of said discharge trough section.

The supporting connection between the arm 120 and the support bracket 123 for supporting the discharge trough section for lateral swinging movement, is the same as that disclosed in application Serial No. 308,564, filed herewith, so will only be described in so far as is necessary to make my present invention clearly understandable. A cam-shaped rocking member 127 depends from the arm 120 and is adapted to extend within a guide 128, formed in the bracket 123. Said guide and rocking member are each of an irregular formation so that as the cylinder 121 and piston rod 124 engage said rocking member with said guide, during swinging movement of said trough section, said guide will extend or retract said discharge trough section during swinging movement thereof, to compensate for increases in the length of the path of travel of the chain 20, as said trough section is swung to one extreme side or the other of the conveyer.

The support bracket 123 and discharge end of the conveyer are vertically adjusted about the axis of pivotal connection of said support bracket to the trunnion supports 130, 130 by means of a pair of laterally spaced cylinders and pistons, generally indicated by reference character 131 (see Figure 2).

The admission of fluid under pressure to the cylinders 87, 87, 93, 121 and 131, 131 may be controlled by a suitable system of valves (not shown), in an ordinary manner. Pressure in the system is effected by means of a fluid pressure pump generally indicated by reference character 134. Said pump is driven from a gear train generally indicated by reference character 135, which is operatively connected with the motor 23. Said valves, pump and gear train may be of any ordinary construction and are not herein shown or described in detail, since they form no part of my present invention.

Referring now in particular to the novel form of connection for taking care of increases or decreases in the length of the path of travel of the endless chain 20, as the inclined elevating portion of the conveyer is swung laterally about the axis of the vertical shaft 84, said endless chain is trained over an idler 136, under an adjustable tension idler 137 and over an idler 138 (see Figure 8). Said idlers are mounted in side frame members 139, 139 of the elevating portion of the conveyer, just rearwardly of the apron 31. The tension idler 137 is journaled on a transversely extending shaft 140 (see Figure 3). Said shaft is mounted at its ends on lever arms 141, 141 of bell crank members 142, 142. Said shaft extends through slots 143, 143 formed in the side frame members 139, 139. Said bell cranks are secured to opposite ends of a shaft 144, which has the idler roller 138 journaled thereon. Said tension idler is held in engagement with said endless chain by means of a pair of flexible cables 145, 145 having yieldable connection with the other lever arms of said bell cranks. Said cables are guided around guides 146, 146 formed in the stationary part of the truck frame 10 and the ends thereof are anchored to the truck frame at the rear end of said guide at 146a (see Figure 3). Rods 147, 147, secured to the ends of said cables opposite from said guides, extend through apertured portions of said lever arms and have yieldable engagement therewith through compression springs 149, 149 encircling said rods.

Said springs are interposed between nuts 150, 150, threaded on the ends of said rods, and collars 151, 151, abutting said lever arms. Said cables are trained rearwardly from bell cranks around sheaves 153, 153, and inwardly to and around sheaves 154, 154. From said sheaves said cables extend rearwardly and are trained around the guides 146, 146, and are anchored at the rear ends of said guides.

As the inclined elevating portion of the conveyer is swung laterally to one side of the machine, one cable 145 will wrap around the respective guide 146, while the other cable will unwrap from its guide 146 and tend to slacken. Slack in either of said cables will be taken up by the respective compression spring 149. The cable wrapping around its respective guide will pivot both bell cranks in a counterclockwise direction through the shaft 144, to take up any slack in the conveyer chain caused by the decrease in the length of its path of travel as the conveyer is swinging to an extreme position of articulation. As said elevating portion of the conveyer is swung to a central position, said bell cranks will pivot in an opposite direction, to compensate for the increasing path of travel of said chain.

Referring now in particular to the articulated trough construction between the inclined elevating portion 15 and the central portion 16 of the conveyer, and between the discharge portion 17 and said central portion, said articulated conveyer construction is the same as that shown and described in my application Serial No. 308,564, filed herewith, so will not herein be described in detail. The trough segments 18, 18 include an upper trough portion 157 and a lower chain guiding portion 158. Said upper and lower portions of said trough segments are pivotally connected together by pivotal pins 159, 159. The forward trough segment 18 has pivotal connection with a bottom plate 160 of the forward portion of the conveyer, and the rear trough segment 18 has pivotal connection with a bottom plate 161 of the central section of the conveyer. Movement of the trough segments 18, 18 with respect to each other during articulation of the forward end of the conveyer is equalized by means of a plurality of interconnected parallel links 155, 155. The extreme end links are pivotally connected to the trough sections 15 and 16 and alternate of said links are pivotally connected to said trough segments at the points of pivotal connection of said links together, intermediate their ends.

In a like manner the segments 19, 19 of the second articulated portion of the conveyer include an upper trough portion 161 and a lower chain guiding portion 162. The forward trough segment 19 has pivotal connection with a bottom plate 163 of the vertically swingable portion of said central portion of the conveyer, and the rear trough segment 19 has pivotal connection with the forward end of the bottom of a telescoping trough section 164. Said telescoping trough section is telescopically mounted in the forward end of the discharge trough section 17, to permit extension or retraction of said discharge trough section with respect to said trough segments. The gaps between the bottom and side walls of said trough segments are closed in a manner similar to that mentioned in my aforementioned application, so said closure means will not herein be described. A plurality of interconnected parallel links 165, 165 are provided

to equalize movement of said trough segments with respect to each other. Said links are pivotally connected to the trough sections 16 and 17 and to said trough segments in the same manner the links 155, 155 are pivotally connected to the trough sections 15 and 16 and the trough segments 18, 18.

It may be seen from the foregoing that the articulated trough construction just described enables the construction of a loading machine having a continuous articulated conveyer extending from one end of the machine to the other, which is so arranged as to permit independent lateral and vertical swinging movement of the forward and rear ends of the conveyer with respect to each other, to enable material to be picked up from opposite sides of the track upon which the machine is mounted and to be discharged to either side of the track. It may also be seen that the arrangement is such as to eliminate intermediate hoppers on the machine and thus enable the minimum vertical dimensions of the machine to be maintained.

Referring now to Figure 2 and the novel arrangement of the conveyer, to render the use of hold down guides for the conveyer chain unnecessary, during all positions of vertical adjustment of the front and rear portions of said conveyer, it will be noted that the discharge section 17 of the conveyer is inclined downwardly towards the rear of the machine, while the central section 16 is inclined downwardly towards the front of the machine. Likewise the angle of inclination of the elevating section of the conveyer is steeper than the angle of the central section of the conveyer. The limits of vertical adjustment of said discharge and elevating sections of the conveyer are such that when said sections are in extreme positions of vertical adjustment, all of said sections will be in horizontal alignment with the central section. Thus when the conveyer sections are positioned as shown in Figure 2, the tendency will be for the chain to be held in engagement with the bottom plates of the respective conveyer sections, due to the downwardly inclined angles of the forward and rear sections of the conveyer with respect to the central section thereof. Likewise, at no time will the front and rear sections be inclined at an angle which is less than 180 degrees. Thus the angular relation between the conveyer trough sections tends to pull the chain down on the bottom plates of the conveyer and can never be such as to cause the conveyer chain to rise above the bottom plates of said conveyer trough sections.

While I have herein shown and described one form in which my invention may be embodied, it will be understood that the construction thereof and the arrangement of the various parts may be altered without departing from the spirit and scope thereof. Furthermore, I do not wish to be construed as limiting my invention to the specific embodiment illustrated, excepting as it may be limited in the appended claims.

I claim as my invention:

1. A loading machine including a main frame mounted on track wheels and axles, a conveyer mounted on said main frame and extending from the ground in advance of said main frame over the top thereof and beyond the rear end thereof, an inclined elevating trough section mounted for lateral swinging movement with respect to said main frame and for vertical adjustment with respect thereto about a transverse axis, a cen-

tral trough section mounted on said frame and a rear discharge trough section mounted for lateral swinging movement with respect to said main frame and for vertical adjustment with respect thereto about a horizontal transverse axis, and articulated trough connections between said elevating section and central section and said central section and discharge section, forming a continuous flexible trough from one end of the conveyer to the other.

2. A track mounted loading machine including a main frame, a conveyer mounted on said main frame and extending from the ground in advance of said main frame over the top thereof and beyond the rear end thereof, an inclined elevating trough section mounted for lateral swinging movement with respect to said truck and for vertical adjustment with respect thereto about a transverse axis and having endless chain gathering devices extending along opposite sides of the forward end thereof, a central trough section mounted on said frame and spaced from said elevating trough section, and a laterally swingable and vertically adjustable discharge trough section spaced from said central trough section, and flexible trough connections between said elevating and central trough sections and said central and discharge trough sections forming a continuous uninterrupted conveyer from one end thereof to the other when said elevating and rear sections are in various positions of articulation.

3. In a track mounted loading machine, a main frame, a conveyer, said conveyer extending from the ground in advance of said main frame, over the top of said main frame and laterally beyond the rear end thereof, gathering mechanism on the forward end of said conveyer, the forward end of said conveyer being laterally movable and also being vertically adjustable about a horizontal transverse axis, the rear end of said conveyer being laterally movable and also being vertically adjustable about a horizontal transverse axis and the central portion of said conveyer being fixed from lateral movement, a laterally flexible endless chain having spaced apart flights projecting laterally from opposite sides thereof, extending along the center of said conveyer from one end thereof to the other, and the planes of inclination of the material carrying surfaces of said forward and discharge portions of said conveyer being at angles with respect to the plane of the material carrying surface of said central portion, which will hold said chain in downward engagement with the material carrying surface of said conveyer from one end to the other when said forward and rear portions are in various positions of vertical adjustment with respect to said central portion, to render the use of guides to hold said chain flights to the bottom of said conveyer unnecessary.

4. In a track mounted loading machine, a main frame, a conveyer mounted on said main frame and extending from the ground in advance of said main frame, over said main frame to a position beyond the rear end thereof, said conveyer including a center strand endless chain extending from the forward to the rear end thereof and having a plurality of spaced apart laterally projecting flights, laterally flexible and vertically adjustable forward and rear trough sections and a central trough section, and flexible connections between said forward and rear trough sections forming a continuous trough from one end of the conveyer to the other, and the rear and forward

trough sections of said conveyer being so arranged with respect to said central trough section in vertical planes that the plane surfaces of the bottom thereof are at angles of 180 degrees or greater to said central portion, when in all positions of vertical adjustment with respect to said central trough section, to cause said chain to be positively engaged with the bottoms of said conveyer trough sections when in all positions of vertical adjustment with respect to each other.

5. In a track mounted loading machine, a main frame, a conveyer, said conveyer extending from the ground in advance of said main frame, over the top of said main frame and laterally beyond the rear end thereof, gathering mechanism on the forward end of said conveyer, the forward portion of said conveyer being laterally flexible, to permit the positioning of said gathering mechanism to either side of said main frame, and also being vertically adjustable about a horizontal transverse axis, the rear portion of said conveyer being laterally flexible and also being vertically adjustable about a horizontal transverse axis and the central portion of said conveyer being fixed from lateral movement, the material moving portion of said conveyer including a laterally flexible center strand endless chain having spaced apart flights projecting laterally from opposite sides thereof, movable along the bottom of said conveyer from one end thereof to the other, and the vertical angles between the material carrying surfaces of said forward and rear portions of said conveyer with respect to said central portion of said conveyer being 180 degrees or greater, when said portions are in various positions of vertical adjustment with respect to said central portion, to hold said chain in engagement with said material carrying surfaces and render the use of guides to hold said chain to the bottoms of said material carrying surfaces unnecessary.

6. In a loading machine of the class described, a track mounted truck, an inclined elevating conveyer projecting forwardly from the forward end of said truck, gathering mechanism extending along opposite sides of said conveyer adjacent the forward end thereof, and a supporting connection for said elevating conveyer on said truck including a vertical shaft journaled at its upper and lower ends on the forward end of said truck, a frame mounted on said shaft and projecting forwardly therefrom and having a motor mounted on the forward end thereof, for driving said gathering mechanism, a transverse pivotal supporting connection between said swinging frame and conveyer, said connection being disposed forwardly of and above said motor, and means for laterally swinging said frame and conveyer including a flexible chain engaging a rearwardly projecting portion of said frame and having connection therewith at opposite sides thereof.

7. In a loading machine of the class described, a track mounted truck, an inclined elevating conveyer projecting forwardly from the forward end of said truck, gathering mechanism extending along opposite sides of said conveyer adjacent the forward end thereof, and a supporting connection for said elevating conveyer on said truck including a vertical shaft journaled at its upper and lower ends on the forward end of said truck, a frame mounted on said shaft and projecting forwardly therefrom and having a motor mounted on the forward end thereof, for driving said gathering mechanism, and a transverse pivotal supporting connection between said swinging frame and conveyer, said connection being dis-

posed forwardly of and above said motor, and means for laterally swinging said frame and conveyer including a flexible chain engaging a rearwardly projecting portion of said frame and having connection therewith at opposite sides thereof, and a cylinder and piston extending along one side of said truck and having connection with said chain.

8. A loading machine including a main frame, an inclined trough section projecting forwardly from the forward end of said main frame and mounted thereon for lateral swinging movement with respect thereto and for vertical adjustment with respect thereto about a transverse axis, a central trough section mounted on and extending along said main frame and a rear trough section projecting rearwardly from the rear end of

5 said main frame and mounted thereon for lateral swinging movement with respect thereto and for vertical adjustment about a horizontal transverse axis, and flexible trough connections between said forward and central trough sections and said central and discharge trough sections, forming a continuous uninterrupted trough from the forward end of said forward trough section to the rear end of said rear trough section, in all positions of articulation of said trough sections with respect to each other, to permit a material moving means to move material from said forward to said central trough section and from said central to said rear trough section at the same level.

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