Nov. 26, 1935. S. F. OSSING 2,022,148

SELF PROPELLED LOADER

Original Filed June 25, 1931 2 Sheets-Sheet 1

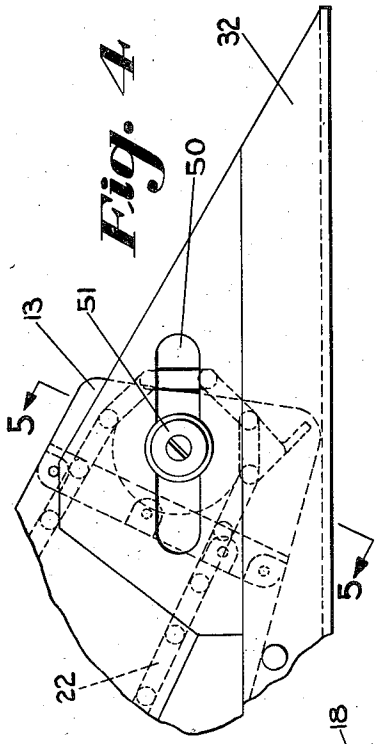

Fig. 4

Fig. 1

Fig. 5

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Fig. 2

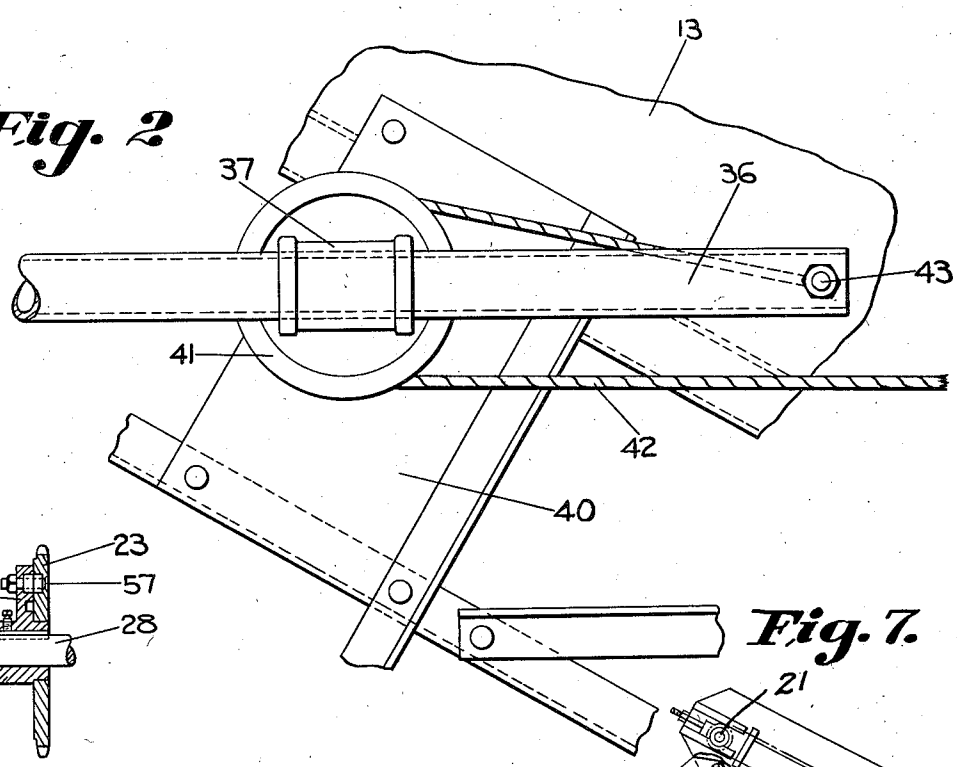
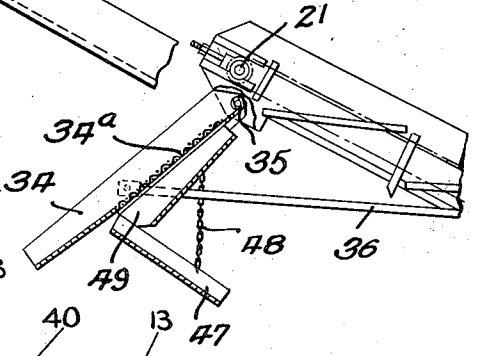


Fig. 6

Fig. 7.



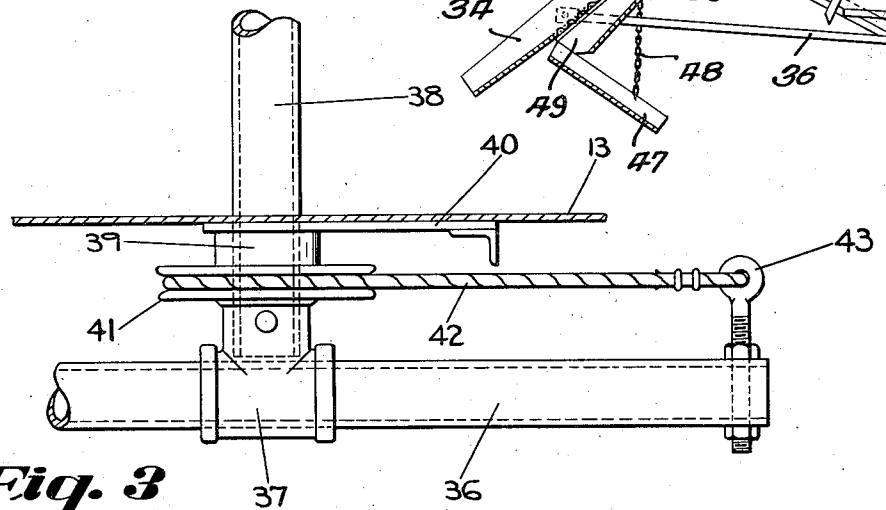


Fig. 3

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UNITED STATES PATENT OFFICE

2,022,148

SELF PROPELLED LOADER

Stanley F. Ossing, Columbus, Ohio, assignor to The Jeffrey Manufacturing Company, a corporation of Ohio

Original application June 25, 1931, Serial No. 546,851. Divided and this application June 9, 1933, Serial No. 675,085

4 Claims. (Cl. 198—73)

The present invention relates to loaders, and, as here described, is shown in connection with a loader of the scraper type, characterized by a conveyor boom on which the conveyor is mounted and a foot scraper adapted to be thrust into the pile of material to be elevated by the conveyor and gradually fed forward into the pile as the loading operation progresses.

Broadly, this type of loader is old and well-known, and the present invention has to do with means for adjusting and positioning, relative to the point of delivery, the skip or auxiliary chute which receives the material from the conveyor and directs it to the point of delivery.

It has also to do with a construction which permits the conveyor to be readily tilted from its operative loading position to its inoperative traveling position, without the necessity of uncoupling or dismantling the connected parts of the machine when it is to be transported from place to place.

In the drawings is illustrated one embodiment of the invention, but it will be obvious that mechanical expedients other than those disclosed may be adopted, and the illustration is not, therefore, to be taken as restrictive.

This application is a division of the co-pending application Ser. No. 546,851, filed June 25, 1931.

In the drawings:

Fig. 1 is a view in side elevation of the loader;

Fig. 2 is an enlarged view in elevation of a portion of the machine to illustrate the adjusting mechanism for the feeder chute;

Fig. 3 is a plan view of the parts shown in Fig. 2;

Fig. 4 is an enlarged view of the foot of the conveyor frame, showing the sliding adjustment of the conveyor proper relative to the scraper foot;

Fig. 5 is a view in section substantially upon the line 5—5 of Fig. 4, looking in the direction of the arrows;

Fig. 6 is a view in section of a detail; and

Fig. 7 is a sectional elevational view taken along the longitudinal center line of the chute.

Referring in detail to the drawings, 10 indicates a portable vehicle provided with a usual form of endless traction devices, upon which vehicle the conveyor is supported and by which it is transported, any suitable source of power, such as motor 11, being provided to drive the traction devices, and, through suitable connections, diagrammatically shown, to actuate the conveyor and raise and lower the conveyor frame.

Mounted on the vehicle frame is the derrick 12, which forms the support for the conveyor frame 13, the conveyor frame being suspended by means of a cable 14, passing from a suitable winding device 15 and guide sheave 15' on the vehicle frame over a sheave 16 at the top of the derrick 12, and thence over a sheave 17 on the conveyor frame 13, from which the end of the cable 14 passes to an anchor or holding device 18 on the derrick 12.

Suitable control devices, not shown in detail, are provided for actuating the winding mechanism 15 from the motor through any suitable connections, so that by paying out or hauling in the cable 14, the conveyor 13 may be lowered or raised to any desired inclination.

The conveyor frame 13 comprises a suitable trough structure made up of sides and bottom suitably braced to give a rigid construction, the conveyor frame 13 being provided at its lower end with a foot shaft 19, which carries chain sprockets 20, and at its upper end with an adjustable head shaft 21, provided also with chain sprockets similar to those on the foot shaft. The conveyor chain 22 may be of any usual construction adapted to carry the material along the trough and deliver it at the upper end, the chain being driven by sprockets as at 23', Fig. 1, which are fixed on a shaft 23 journaled in side plates as at 30. Shaft 23 is driven from a sprocket 23 mounted on a hub 55, fixed to the shaft, the hub having an integral arm 56 connected to sprocket 23 through a shearing pin 57. The motor 11 is coupled through suitable connections with a shaft 24 upon which is fixed a sprocket 25 connected by means of chain 26 with sprocket 23. Struts as at 27 are pivotally connected at their ends to the main frame and to the conveyor frame and normally lie substantially in a plane which includes the axes of shafts 24 and 23. The struts serve to maintain the proper spaced relation of the shafts so that chain 26 is always suitably tensioned.

The support 30 on the conveyor frame carrying the drive pulley 23 supports also the idlers 31 over which the conveyor chain 22 passes.

With the parts in the position shown in Fig. 1, with the conveyor frame elevated and positioned at the proper angle and the foot 32 thrust into the material, conveyor 22 will pick up and carry material along the conveyor trough and deliver it at the upper end. As the work progresses, the traction devices will move the conveyor forward, thrusting the foot further into the pile.

It is customary with this type of conveyor to provide a feeder chute 34 at the upper or delivery end so as to direct the material more cer-

tainly to a delivery point, and where the delivery is to trucks or cars, they may be positioned under the chute 34 so as to deliver the material brought up by the conveyor chain. It is frequently desirable to move this loading chute so as to give it different angles of inclination, such chute being pivoted at 35 to the conveyor frame. For example, it may be desirable to load at different points in a truck or car, and by changing the inclination of the feeder chute 34, the point of delivery can be changed without the necessity of either shifting the truck or car, or changing the angle of inclination of the feeder frame. It is also desirable that means be provided for conveniently shifting the angle of the feeder chute 34 without the necessity of loosening and tightening up any fixed adjusting devices by which the chute 34 is held. This is accomplished in the present invention in a very simple way, and by means of devices which may be manipulated readily from the ground and by the operator of the machine. The feeder chute 34, as stated, is freely pivoted at 35 on the upper end of the conveyor frame, and pivotally connected with the said feeder chute is a slide bar 36 of any suitable make-up, which slide bar traverses a sleeve 37 mounted on a cross shaft 38 rotatable in a bearing 39, carried by a plate 40 secured to the conveyor frame, the shaft 38 passing across, below the conveyor frame, to the other side, and being there provided with a similar sleeve 37, it being understood that the mechanism is duplicated on both sides of the frame. Mounted against each bearing member 39 on the shaft 38, is a sheave 41 freely rotatable and adapted to receive a rope 42, which is anchored in any suitable manner, as by the eye bolt 43, to the end of the sliding bar 36. The ropes 42 at opposite sides of the frame, after passing around the sheaves 41, extend longitudinally along the side of the conveyor trough, over supporting idlers 43' to a winding drum or shaft 44 provided with an operating handle 45, for manual manipulation, and a ratchet mechanism 46 by which the ropes may be held in any adjusted position.

The operator of the machine may shift, very quickly and very readily, the feeder chute by rotating the winding shaft 44, which, if driven in a direction to wind up the rope 42, will slide the bars 36 in an outward direction, tending to elevate the feeder chute 34 and change its point of delivery. When the proper inclination of the chute 34 is secured, the ratchet and pawl mechanism will maintain it in that position. If it be desired to lower the chute and cause it to move in a perpendicular position, the ratchet and pawl mechanism will be released and, due to the weight of the chute, the rope 42 will unwind from the winding drum or shaft 44 and allow the bars 36 to slide inwardly through the sleeves 37.

The feeder chute 34 is equipped with a screening bottom 34a below which is positioned guide chute 49, and is provided with the auxiliary chute 47, directed rearwardly and adjustable by means of the chain support 48, so that fines can be directed rearwardly, and coarser material down the main chute 34.

The ends of the foot shaft 19 project beyond the sides of the conveyor frame and through slots 50 in the side plates of the foot 32 to connect pivotally and slidably the lower end of the conveyor frame in the foot for permissible relative movement. The ends of the shaft are capped by removable plates 51 secured to the shaft by screws as shown in Figs. 4 and 5. The slots 50 allow limited play between the foot 32 and the conveyor frame when the latter is raised or lowered. The foot 32 is provided with rearwardly projecting bars 52 as shown in Fig. 1, pivotally connected at their rear ends to the forward end of the tractor vehicle.

It has been explained that the conveyor frame and main frame are pivotally connected by bars 27, and in order to compensate for the different radii and the off-set pivotal centers of the bars 52, 27 when the parts are swung about these separated pivots, the compensating connection, formed by the slot 50 and the foot shaft 19 of the conveyor frame, is necessary. As the conveyor frame is tilted, together with the foot, they may move relative to one another, and the parts brought to transporting position without any danger of breakage.

When it is desired to use the screening bottom 34a, if necessary the chute 34 is adjusted in its position so that the slope of the chute 34 will enable fine light particles of the material being handled to pass readily through the screen bottom 34a. The adjustability of the chute 34 therefore may serve a double purpose, that is, to direct the material being discharged so as to guide such material to the desired place, but also to effect an efficient separation of fine from coarse particles of the materials being conveyed.

Obviously those skilled in the art may make various changes in the details and arrangement of parts without departing from the spirit and scope of the invention as defined by the claims hereto appended, and I wish therefore not to be restricted to the precise construction herein disclosed.

Having thus described and shown an embodiment of my invention, what I desire to secure by Letters Patent of the United States is:

1. In a loader, the combination with a supporting frame, of a conveyor thereon, an adjustable delivery chute connected to said frame in position to receive material from said conveyor, a support mounted on said frame for rocking movement on a transverse axis having a fixed relation to said frame, a slide bearing on said support, a rod pivotally connected to said delivery chute and mounted on said slide bearing, a direction pulley secured to said support to partake of the rocking movement thereof, and means comprising a flexible draft element associated with said pulley and connected to that end of said rod remote from said delivery chute for adjusting the inclination of said delivery chute.

2. In a loader, the combination with a supporting frame, of a conveyor thereon, a delivery chute pivotally connected to said frame in position to receive material from said conveyor, a support pivoted to said frame, a direction pulley secured to said support, a slide bearing secured to said support, a thrust rod connected to said delivery chute and associated with said slide bearing, a winding device, and a rope associated with said pulley and having one end connected to said rod and the other end connected to said winding device whereby a pulling force exerted on said rope by means of said winding device will effect the swinging of said delivery chute in a predetermined direction, the weight of said delivery chute acting to swing said chute in the opposite direction when the tension on said rope is released.

3. In a loader, the combination with a frame, of a conveyor on the frame, a delivery chute having a material receiving end and a material

discharge end and mounted on the frame to receive and direct material delivered thereto by the conveyor, chute shifting means comprising a rod attached to said chute intermediate the material receiving end and the material discharge end thereof, a guide for said rod including a shaft carried by said frame and having an opening to receive said rod, and means for sliding said rod through said opening thereby positioning said chute, said sliding means comprising a pulley journaled about said rod guide shaft, a cable attached to said rod and reeved about said pulley and means for operating said cable and securing it in any selected position.

4. In a loader, the combination with a frame, of a conveyor on the frame, a delivery chute having a material receiving end and a material discharge end and mounted on the frame to receive and direct material delivered thereto by the conveyor, chute shifting means comprising a rod attached to said chute intermediate the material receiving end and the material discharge end thereof, a guide for said rod including a shaft and a sleeve forming a slide bearing and carried by said frame to pivot with respect thereto, said rod passing through said sleeve, means for sliding said rod through said sleeve to position said chute comprising a pulley journaled on said shaft, a cable attached to said rod and reeved about said pulley, and means for operating said cable and securing it in any selected position.

STANLEY F. OSSING.