Aug. 1, 1944. H. M. GILBERT ET AL. 2,354,990

CONVEYING AND ELEVATING MACHINE

Filed May 13, 1943 3 Sheets-Sheet 1

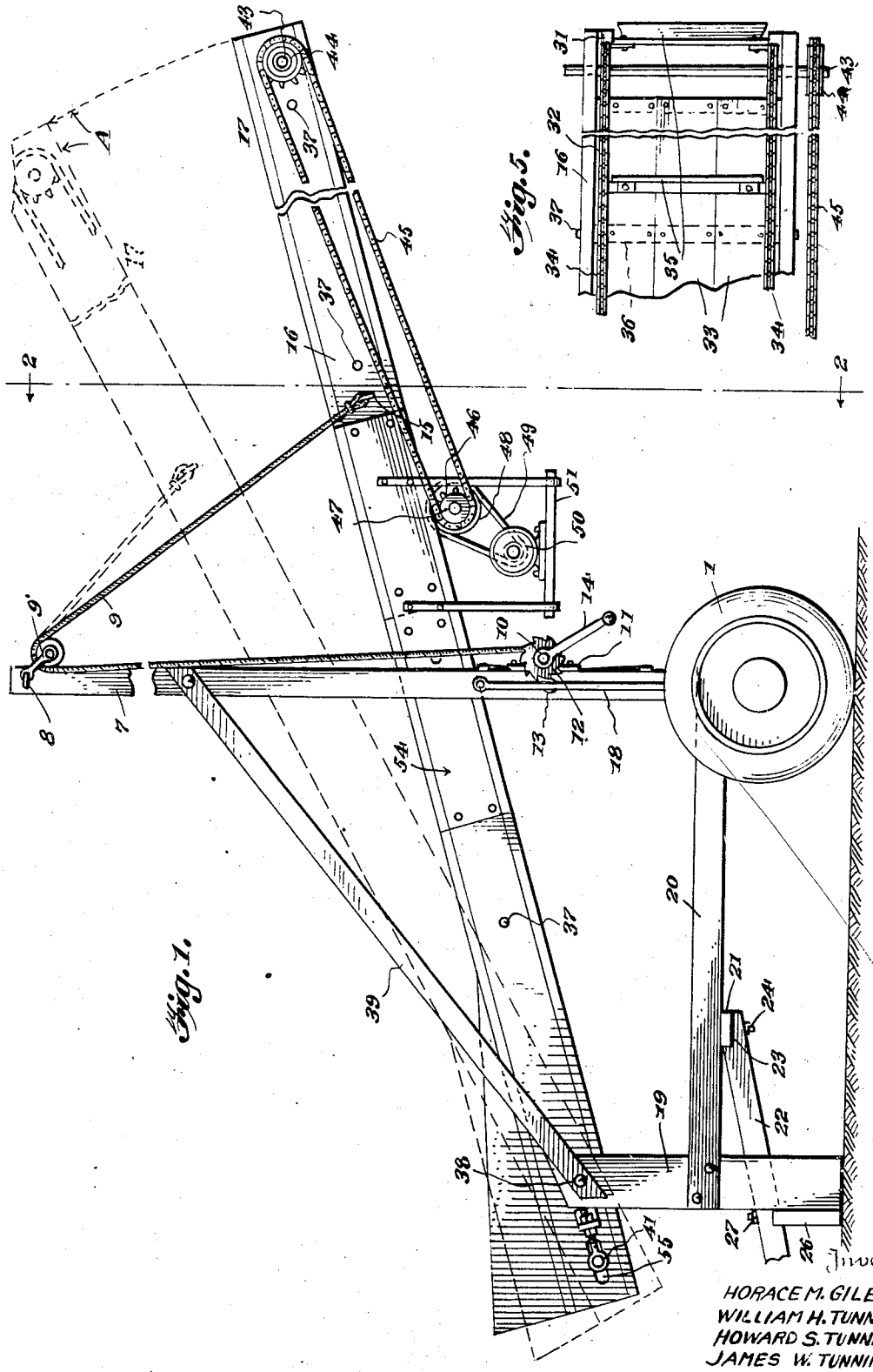


Fig. 1.

Fig. 5.

Inventors

HORACE M. GILBERT
WILLIAM H. TUNNINGLEY
HOWARD S. TUNNINGLEY
JAMES W. TUNNINGLEY

334 E. E. Crooman & Co.,

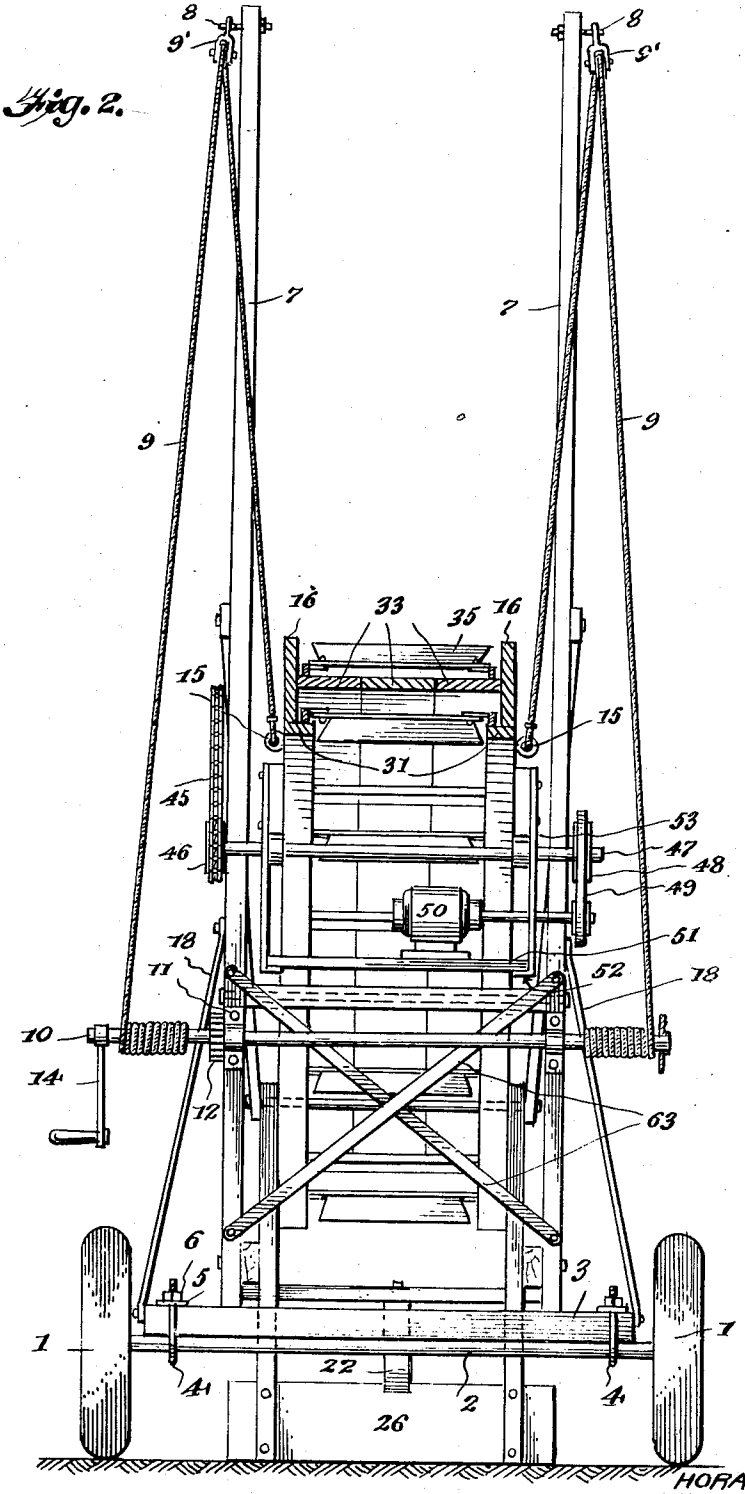
Attorneys.

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Fig. 2.



Inventors

HORACE M. GILBERT
WILLIAM H. TUNNINGLEY
HOWARD S. TUNNINGLEY
JAMES W. TUNNINGLEY.

By E. E. Vrooman & Co.,

Attorneys.

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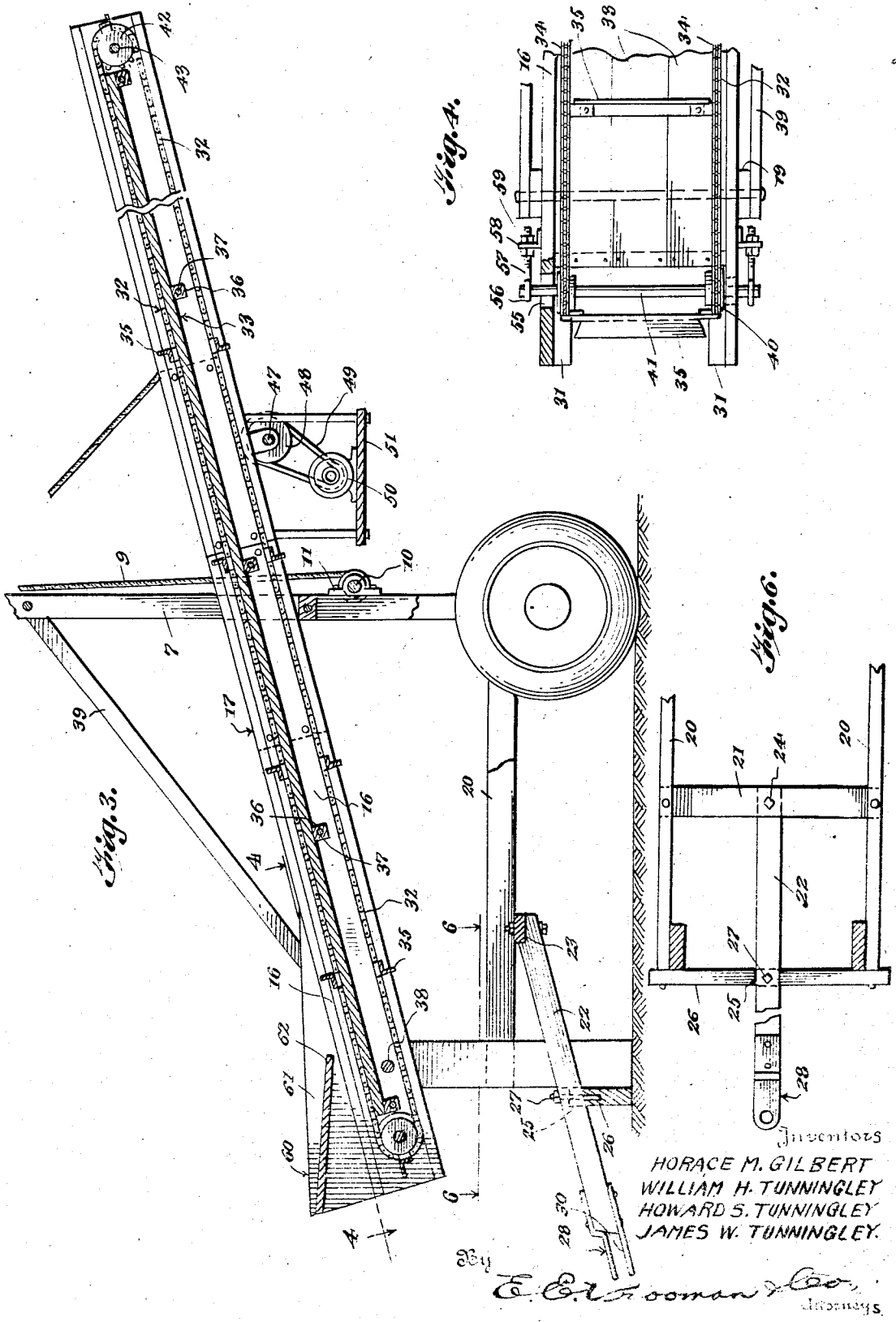


Fig. 3.

Fig. 4.

Fig. 6.

Inventors
HORACE M. GILBERT
WILLIAM H. TUNNINGLEY
HOWARD S. TUNNINGLEY
JAMES W. TUNNINGLEY.

By E. G. Crooman & Co.
Attorneys

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CONVEYING AND ELEVATING MACHINE

Horace M. Gilbert, William H. Tunningley, Howard S. Tunningley, and James W. Tunningley, Gaines, Mich.

Application May 13, 1943, Serial No. 486,874

4 Claims. (Cl. 198—233)

This invention relates to a conveying and elevating machine.

An object of the invention is the production of an efficient conveyor to be used to convey and elevate baled hay, ear corn, and grain, or similar products from a wagon, platform, or the ground to a barn or other place of elevation.

Another object of the invention is the construction of an efficient and novel machine which will aid in the unloading of grain, baled hay, or ear corn, and other such farm products, to allow the placing of the material to be unloaded on a conveyor to the height of a wagon and platform, and to have the same conveyed on an endless conveyor by power up to the place where it is desired to store or place the same, and the material can be conveyed from a position of about two and one-half feet off the ground for a distance upwardly of twenty-seven and one-half feet, with the length total distance of the conveyor being as far as a thirty-two foot track will carry it.

With the foregoing and other objects in view, our invention comprises certain novel constructions, combinations, and arrangements of parts as will be hereinafter fully described, illustrated in the accompanying drawings, and more particularly pointed out in the appended claims.

In the drawings:

Figure 1 is a view in side elevation of a machine constructed in accordance with the present invention.

Figure 2 is a sectional view taken on line 2—2, Figure 1, and looking in the direction of the arrows.

Figure 3 is a vertical, longitudinal sectional view of the machine, part of the base including the wheel being shown in elevation.

Figure 4 is a sectional view taken on line 4—4, Figure 3, and looking in the direction of the arrows.

Figure 5 is a fragmentary plan view of the tilting frame and conveyor thereon.

Figure 6 is a horizontal sectional view taken on line 6—6, Figure 3 and looking in the direction of the arrows.

Referring to the drawings, in which the preferred embodiment of this invention is illustrated, 1 designates the wheels, of any desired type, that are mounted upon the axle 2, Fig. 2. Resting on axle 2 is an axle beam 3. U-shape couplings 4 surround a portion of the axle 2 and beam 3, and extend through plates 5, with nuts 6 engaging said plates, whereby beam 3 is securely held upon axle 2.

A pair of vertical hoist posts 7 rests upon beam 3 and are secured in any ordinary manner fixedly upon said beam. At the upper end of hoist posts 7 are horizontal eye-bolts 8. Each eye-bolt has it eye on the outside of the hoist post 7. This gives an excellent clearance for the pulley device 9 to be mounted on the eye-bolt, with a free movement of cable 9 upon the pulley device. A drum shaft 10 is mounted upon brackets 11, which brackets are fixedly secured to one of the vertical surfaces of the hoist posts 7. A ratchet wheel 12 (Fig. 2) is fixedly secured to drum shaft 11, and a pivoted pawl 13, Fig. 1, is employed for engaging the bracket 12 to prevent unwinding of drum shaft 10. A manually operated handle 14 is fixedly secured to one end of the drum shaft 10, whereby the cables 9 can be wound upon said shaft 10. One end of each cable 9 is secured to an eye-bolt 15, which eye-bolt is secured to a side section 16 of the tilting frame 17. Therefore, by manipulating the drum shaft 10, tilting frame 17 can be raised and lowered at its outer end at the will of the operator; this raising and lowering is illustrated by dotted lines "A," Fig. 1.

Vertical braces 18 are secured at their lower ends to the ends of axle beam 3, while the upper ends are fixedly secured to the side faces of the hoist posts 7. This produces a very substantial structure.

A pair of legs 19 is employed, which are connected to the hoist posts 7 by means of reach bars 20. A cross bar 21 is fastened securely to the under edges of the reach bars 20. A draw bar 22 is notched at 23, and into this notch is fitted the cross bar 21. A bolt 24 securely fastens the upper end of the draw bar 22 to the cross bar 21, although the notch 23 doubly insures of an excellent assembly. The draw bar 22 fits into a notch 25 of a broad anchor bar 26; said notch produces a saddle for the draw bar, and said draw bar 22 is fixedly secured in said notch or saddle by a bolt 27. The broad anchor bar 26 is capable of engaging the ground throughout its length and when so doing it admirably supports the greater part of the load. The draw bar 22 is in an inclined position, and on its outer lower end is a coupling device 28. This coupling device comprises an upper angle plate 29 and a lower straight plate 30. The coupler device 28, together with the draw bar 22, and its assembled parts, performs a dual function, in that not only may the machine through the coupling device 28 be attached to a suitable conveying means, such as a tractor (not shown), but this coupling

device and draw bar acts as an anchoring means, since, when a machine is uncoupled from the tractor, the coupling device normally rests on the surface, such as the ground, upon which the machine is located, with the lower straight plate 30 acting knife-like to enter the ground, if the surface happens to be of such nature, or the coupling device may have an object, as a stone placed against it, which keeps the machine from creeping, or otherwise moving out of position, when placed by the operator for the desired results. The broad anchor bar 26 also engages the ground, and assists in holding and supporting the machine comparatively rigid, for excellent operation. Therefore, it will be seen that this peculiar functioning of anchoring the machine entails the anchor bar 26, draw bar 22 and coupling device 28.

The tilting frame 17 comprises the two side sections 16 with track rails 31 secured to the bottom of said side sections 16 (Fig. 2) and extending inwardly thereon. The endless flight conveyor 32 travels in its upper run on bottom boards 33 (Fig. 2), and in its return or lower run it travels on the track rails 31. This endless flight conveyor 32 comprises sprocket chains 34 (Fig. 4) with transverse webs or flights 35 secured to said chains 34 for efficiently handling the load conveyed by the machine. It is to be noted that the boards 33 are secured in approximately the middle of the side sections 16, producing an excellent floor in the tilting frame 17, for the conveyor to travel on during part of its run, as hereinbefore specified. The floor is supported upon drilled transverse members 36, in each one of which is a horizontal bolt 37. This produces an efficient and strong support for the bottom boards.

A supporting rod 38 extends through the top portion of legs 19 and also through the side sections 16 near their lower ends, whereby the tilting frame is pivotally mounted upon legs 19. A pair of inclined braces 39 is mounted at their lower ends upon supporting rod 38 and their upper ends are securely fastened to the outer faces of the hoist posts 7. The lower portion of the sprocket chains 34 are mounted upon sprockets 40 (Fig. 4) which are secured to sprocket shaft 41. The upper portion or end of the sprocket chains are mounted upon sprockets 42, which last-mentioned sprockets are secured to shaft 43. On one end of shaft 43 is a sprocket 44 (Fig. 1). Mounted upon sprocket 44 is drive chain 45. Drive chain 45 is also mounted upon sprocket 46, which sprocket 46 is fixedly secured to shaft 47. Shaft 47 is provided with a belt wheel 48 (Fig. 3), around which belt wheel is positioned motor belt 49; said belt 49 being driven by motor 50. The motor 50 is mounted upon platform 51. The platform 51 rests upon inwardly-extending horizontal feet 52; said feet 52 being integral with the lower end of vertical bracket arms 53. The upper ends of bracket arms 53 are secured to the reinforcing plates 54; these plates are secured to the outside and at the middle of the side sections 16; this produces a very strong construction.

The lower sprocket shaft 41 is mounted in slots 55 (Fig. 4) and the outer ends of shaft 41 are mounted in the eyes 56 of eye-bolts 57. These eye-bolts are mounted in angle brackets 58, which brackets are secured to the side sections 16. Lock nuts 59 are secured upon the bolts 57 against the brackets 58, whereby the eye-bolts are retained against accidental movement after being adjusted. This structure of eye-bolts and angle brackets constitutes tightening devices for the endless sprocket conveyor.

On the top edge of the side section 16 is formed a hopper 60 (Fig. 3) which comprises a pair of tapering side portions 61; each portion 61 increases in height from its inner end to its outer end, producing a novel built-up unit on the lower end of the tilting frame. Secured between the side portions 61 is an inclined shelf 62; this shelf being highest at its outer end and lowest at its inner end, whereby the goods handled will be easily fed onto the endless conveyor from this hopper.

A pair of crossed braces 63 (Fig. 2) is secured to the hoist posts 7 near their lower ends; these braces 63 add material strength and durability to the structure by making the hoist posts more firm and rigid.

The novel arrangement of the eye-bolts 8 and the pulley devices 9 produces a very free movement, not only for winding the cables upon drum shaft 10 but also for raising and lowering the outer end of the tilting frame 17.

In operation, the machine is moved to substantially the right position for operation through the medium of a tractor or animal power, then the coupling device 28 is unhooked and the lower or loading end of the machine is lowered to the ground, whereupon the anchoring means engages the ground or supporting surface, preventing the machine from creeping or getting out of position. Then the material is delivered to the hopper 60, either directly from the ground or from a loaded conveyance, and then the material is discharged upon the upper run of the conveyor, whereupon it is engaged by one of the webs or flights and carried up the conveyor to its discharge end. Of course, it is understood that when the machine is moved to its desired position, such as close to a barn or loft, the operator rotates drum shaft 10, through the medium of handle 14, to position the discharge end of the tilting frame so that it will register with the opening in the barn or loft, whereby the handled material can be discharged through said opening into the barn or loft. Of course, if the opening is sufficiently large, the discharge end can be projected right into the loft, greatly facilitating the handling of the material, whether it be loose material, sacked material, or baled material. An accurate adjustment can be obtained by the pivoted operation of the tilting frame. This machine is a great labor saver, in these times of labor shortage. It can be easily operated, as well as positioned, which together with the amount of material that can be handled, greatly increases the merits of this machine.

While we have described the preferred embodiment of our invention and illustrated the same in the accompanying drawings, certain minor changes or alterations may appear to one skilled in the art to which this invention relates, during the extensive manufacture of the same, and we, therefore, reserve the right to make such alterations or changes as shall fairly fall within the scope of the appended claims.

What we claim is:

1. In a machine of the class described, the combination of a pair of vertical legs, reach bars fastened at their outer ends to said legs, a cross bar secured to the bottom edges of said reach bars, an anchor bar secured to the outer edges of said legs, said anchor bar being positioned

at the lower end of said legs, an inclined draw bar notched at its upper end, said cross bar seated in the notched upper end of said draw bar, said anchor bar provided with a saddle notch, said draw bar seated down in said saddle notch, and a coupling device on the outer lower end of said draw bar.

2. In a machine of the class described, a conveyor-carrying frame having vertical posts and vertical legs for supporting same; an axle beam supporting said vertical posts, reach bars fastened at their ends to said vertical posts and vertical legs, a cross bar fastened to said reach bars, a broad anchor bar fastened to the lower portions of said vertical legs, whereby it is capable of engaging the ground throughout its length and supporting the greater part of the load, a downwardly-extending draw bar fastened at its inner end to said cross bar, said draw bar extending across and being secured to said anchor bar, and coupling plates extending in spaced relation from the outer end of said draw bar, whereby said coupling plates may enter the ground knife-like or be used for attachment purpose.

3. In a machine of the class described, a conveyor-carrying frame having vertical posts and vertical legs for supporting same; an axle beam supporting said vertical posts, reach bars fastened at their inner ends to said vertical posts and fastened at their outer ends to said vertical legs, a cross bar fastened to said reach bars near their middle, a broad anchor bar secured in vertical position to the front edges of said vertical legs and at the lower ends of said legs whereby said broad anchor bar is capable of engaging the ground throughout its length and support the greater part of the load, said anchor bar provided near its middle with a saddle notch, a downwardly-extending draw bar fastened at its inner end against two portions of said cross bar, said draw bar seated in the saddle notch of said anchor bar, means fastening said draw bar in said saddle notch, a coupling device on the outer end of said draw bar, and said coupling device provided with a straight knife-like plate parallel throughout with the lower edge of said draw bar.

4. In a machine of the class described, a conveyor-carrying frame provided with only a pair of wheels, said frame including vertical legs, said legs provided at their lower ends with an anchor plate bridging the distance between said legs, a draw bar beneath said frame and fastened intermediate its ends to the top portion of said anchor bar, means fastening the inner end of said draw bar to said legs, and said draw bar provided with coupling means upon its outer end.

HORACE M. GILBERT.
WILLIAM H. TUNNINGLEY.
HOWARD S. TUNNINGLEY.
JAMES W. TUNNINGLEY.