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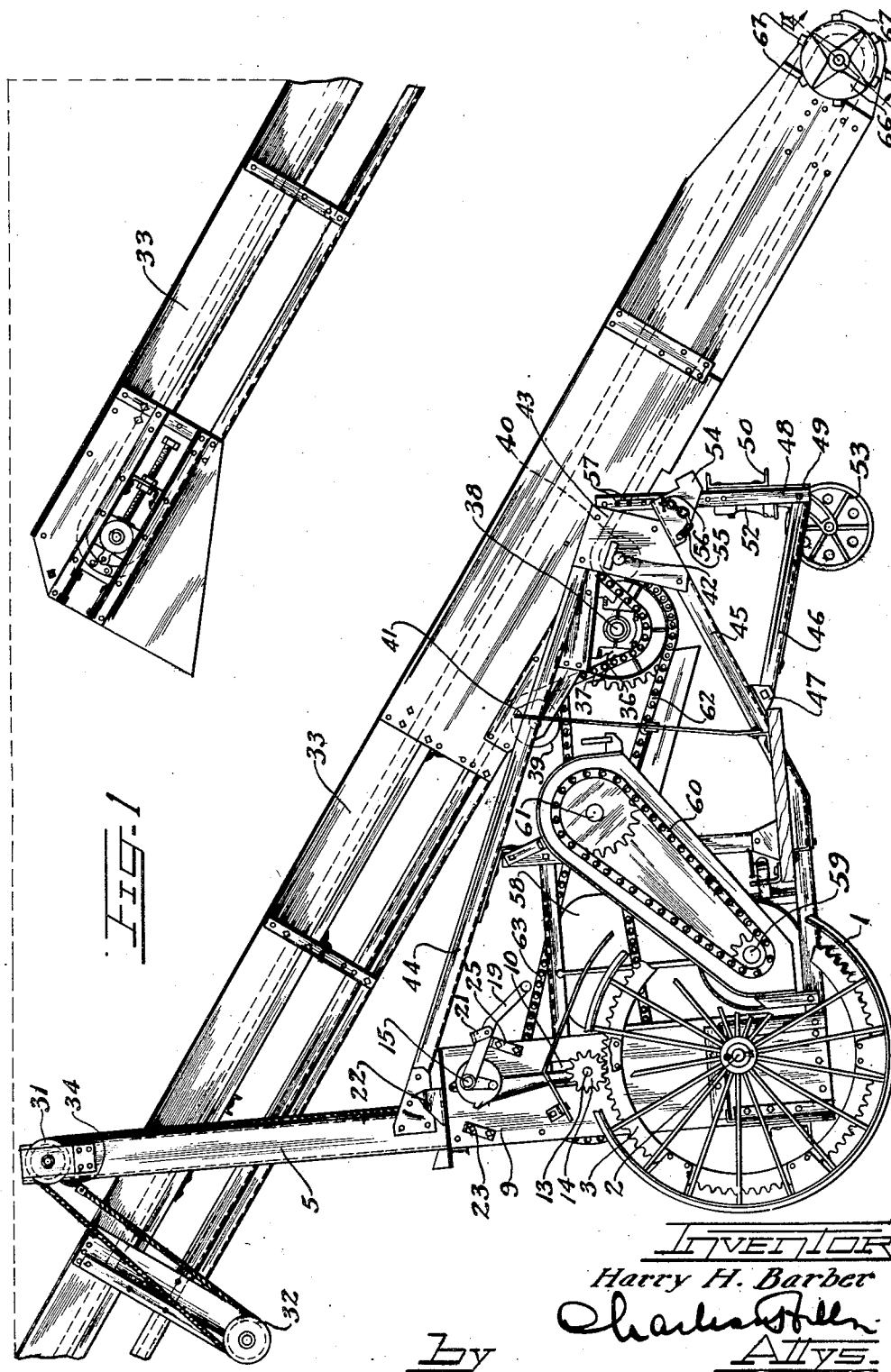
H. H. BARBER

1,836,003

SELECTIVE WHEEL DRIVE MECHANISM

Filed Jan. 20, 1928

5 Sheets-Sheet 1



Dec. 15, 1931.

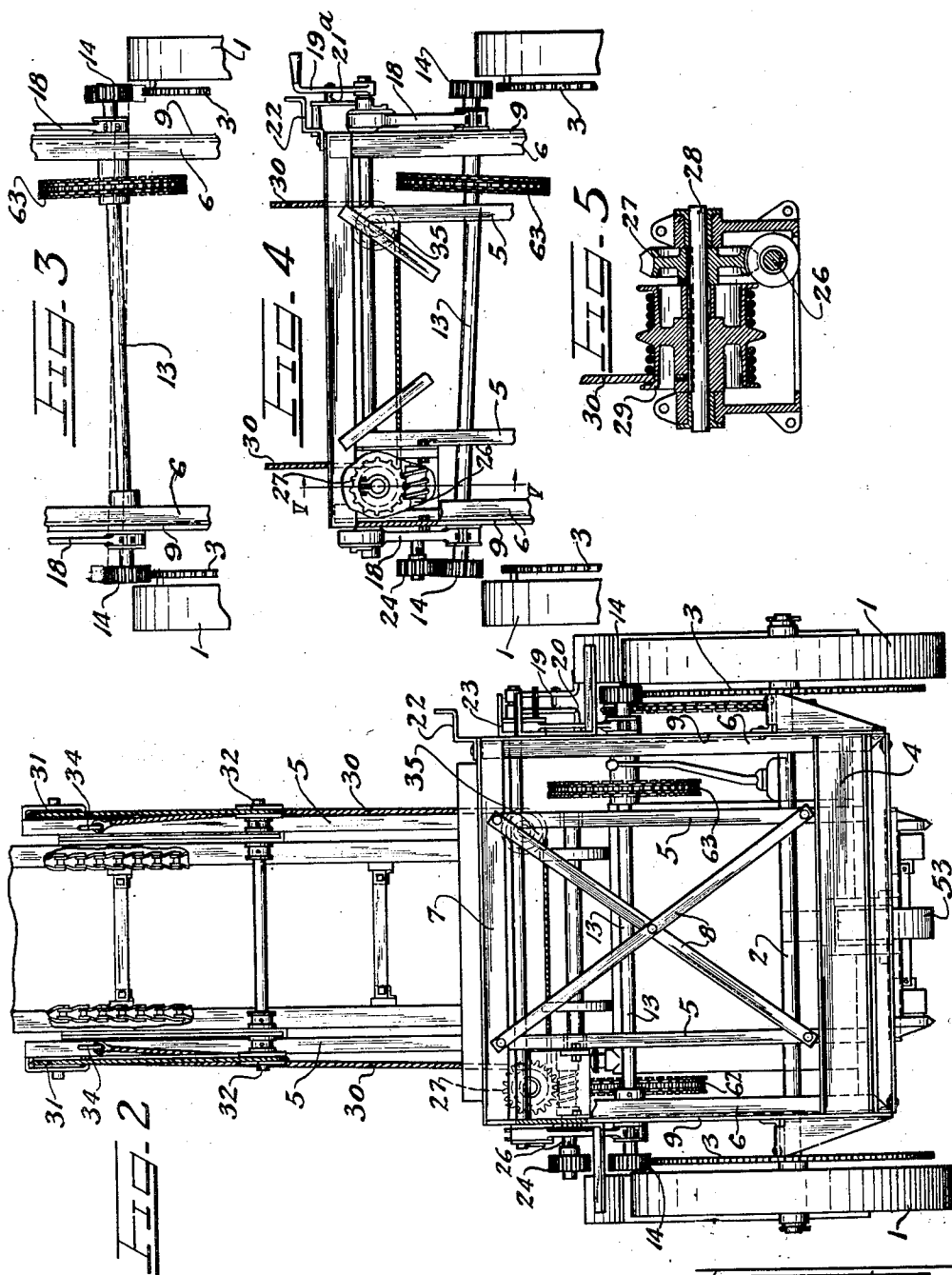
H. H. BARBER

1,836,003

SELECTIVE WHEEL DRIVE MECHANISM

Filed Jan. 20, 1928

5 Sheets-Sheet 2



INVENTOR
Harry H. Barber

Charles H. Miller
ATTYS.

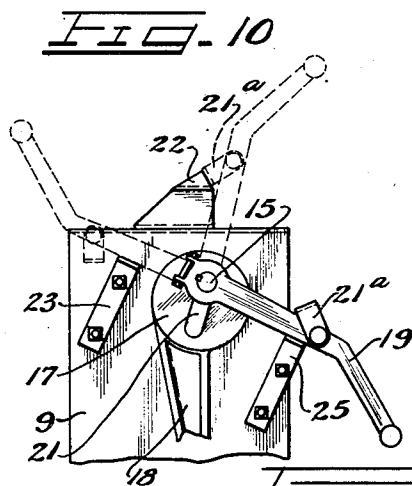
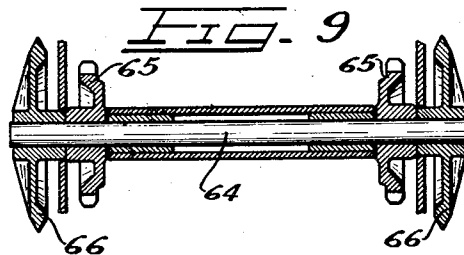
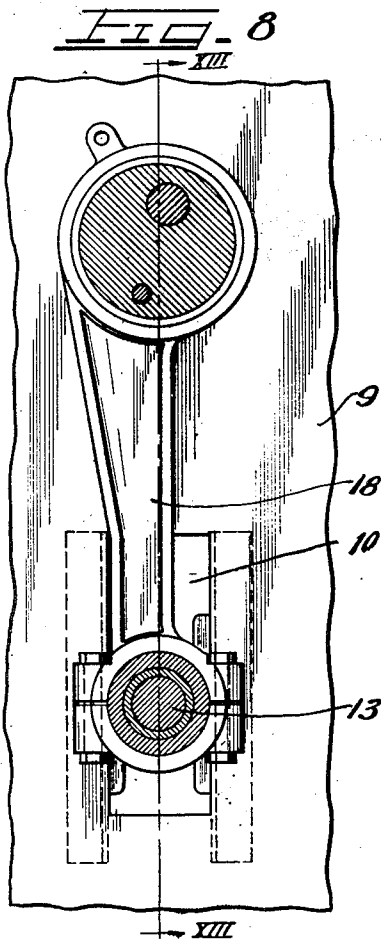
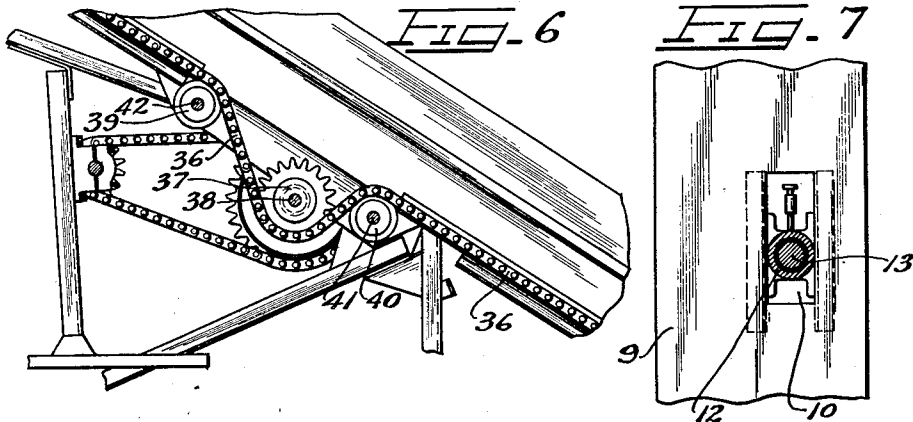
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H. H. BARBER

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SELECTIVE WHEEL DRIVE MECHANISM

Filed Jan. 20, 1928 5 Sheets-Sheet 3



INVENTOR
Harry H. Barber

By *Charles H. Hill*
Attys.

Dec. 15, 1931.

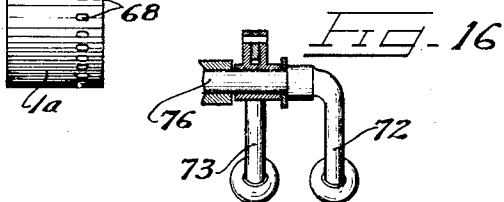
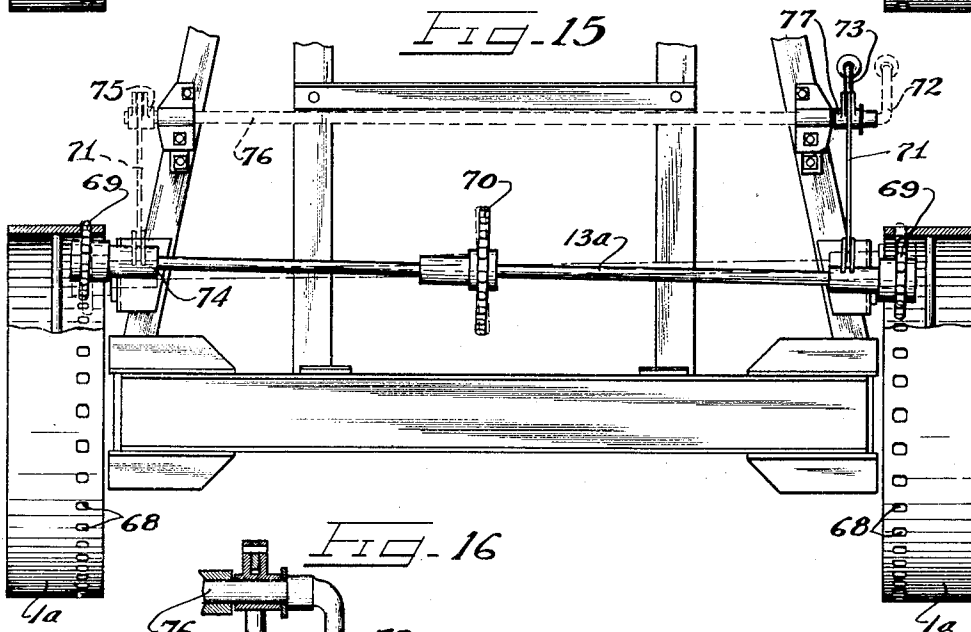
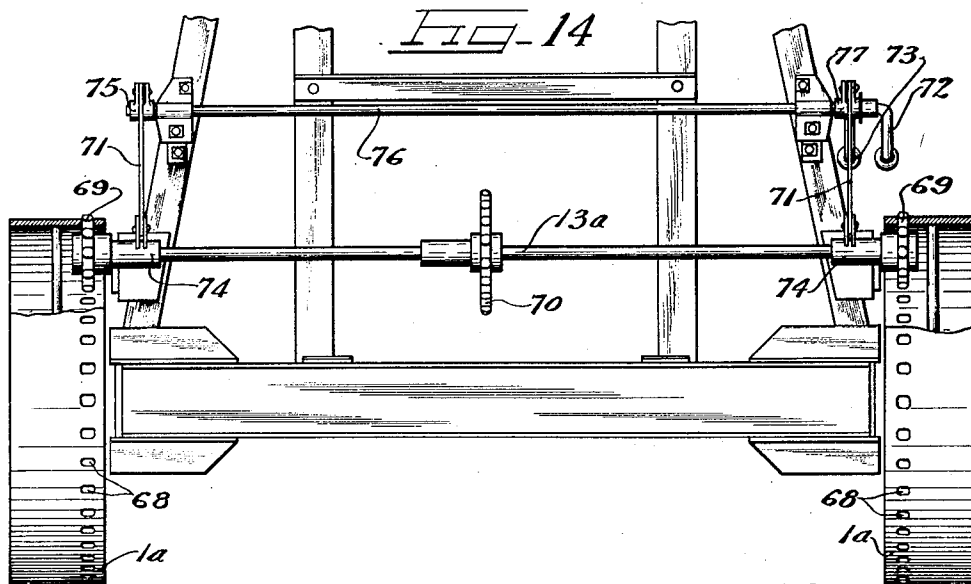
H. H. BARBER

1,836,003

SELECTIVE WHEEL DRIVE MECHANISM

Filed Jan. 20, 1928

5 Sheets-Sheet 5



INVENTOR

Harry H. Barber

Charles Allen

By

Attys.

UNITED STATES PATENT OFFICE

HARRY H. BARBER, OF AURORA, ILLINOIS, ASSIGNOR TO BARBER-GREENE CO., A CORPORATION OF ILLINOIS

SELECTIVE WHEEL DRIVE MECHANISM

Application filed January 20, 1928. Serial No. 248,031.

This invention relates to a portable conveyor, and it is among the objects of this invention to provide an improved drive and control therefor, an adjustable support for the nose of the boom which also prevents tipping of the conveyor frame, and material crushing and agitating means on the nose of the boom.

The invention comprises the novel structure and combination of parts hereinafter described and more particularly pointed out and defined in the appended claims.

In the accompanying drawings, which illustrate a preferred form of this invention and in which similar reference numerals refer to similar features in the different views:

Figure 1 is a side elevational view of a portable conveyor involving this invention.

Figure 2 is a rear end elevational view of the conveyor.

Figure 3 is a fragmentary elevational view of the selective drive showing one driving position.

Figure 4 is a fragmentary elevational view of the selective drive and appurtenant parts illustrating a different driving position.

Figure 5 is a sectional view upon the line V—V of Figure 4.

Figure 6 is an enlarged fragmentary elevational view of the drive for the conveyor chain.

Figure 7 is a sectional view taken upon the line VII—VII of Figure 13.

Figure 8 is an enlarged sectional view taken upon the line VIII—VIII of Figure 13.

Figure 9 is an enlarged sectional view taken upon the line IX—IX of Figure 1.

Figure 10 is an enlarged elevational view of the control levers and stops for the selective drive.

Figure 11 is a fragmentary front and enlarged elevational view of the adjustable frame for the front end of the boom.

Figure 12 is a side elevational view of said adjustable frame.

Figure 13 is an enlarged sectional view taken upon the line XIII—XIII of Figure 8.

Figure 14 is a fragmentary elevational view of a modified form of selective drive for the

conveyor showing parts in section and in one operating position.

Figure 15 is a view similar to Figure 14 illustrating the parts in a different position.

Figure 16 is a fragmentary sectional view thru the manual control for the selective drive.

The portable conveyor is mounted upon a pair of wheels 1 upon an axle 2, which carries the frame of the conveyor. Each wheel 1 has a gear 3 on its hub. The gears 3 are of slightly less circumference than the rims of the wheels.

The frame of the conveyor truck consists of a transverse member 4 (Fig. 3) attached to the axle 2. A pair of spaced standards 5 rise from the frame member 4 for supporting the hoisting cables for the conveyor boom. A pair of upright angle members 6 (Fig. 2) are also supported by the transverse frame member 4. The members 4 and 5 are connected by an upper transverse member 7 which is braced by the cross members 8.

Each angle member 6 has a plate 9 attached to its forwardly extending flange. Each plate 9 has a slot 10, and along the vertical margins of these slots extend the outstanding flanges 11 (Fig. 13) of angle members secured to said plates. The slots 10 in connection with the flanges 11 provide guide-ways for slidably receiving shaft bearings 12. The selector drive or power shaft 13 is mounted in these bearings. It will be noted that each end of the selector drive shaft 13 carries a pinion 14 located in the plane of a gear 3.

Due to the slidable feature of the bearings 12, the selector shaft 13 may be elevated or tilted as shown in Figures 3 and 4 for propelling or steering the conveyor truck. Suitable mechanism has been provided for controlling the adjustments of the shaft 13. The illustrated embodiment of this mechanism consists of a shaft 15 journaled in the upper portions of the plates 9 and an eccentric 16 fixedly secured upon said shaft, and an eccentric 17 loose upon said shaft, said eccentrics being connected by suitable hangers 18 with the bearings 12 of the shaft 13. It will be noted that each hanger 18 has a cylin-

drical bearing hub at each end. One bearing hub of each hanger rotatively receives one eccentric while the other hub receives one of the bearings 12.

5 A lever or crank arm 19 is rigidly attached upon one end of the shaft 15 whereby said shaft may be rotated for rotating the eccentric 16 fixed thereon. A second crank or lever 20 is loosely mounted upon said shaft and is connected to the eccentric 17 as indicated at 21. A stop lug 21a (Fig. 10) is pivoted upon the lever 19 and is adapted to strike a stop 22 when said lever is swung upwardly, as shown in dotted lines, to limit its movement. This position of lever 19 will shift the left hand gear on shaft 13 to neutral position. The lug 21a may then be swung upwardly and the lever 19 may then be swung further until it strikes a stop 23, in which position the left hand pinion 14 will mesh with a gear 24 (Fig. 4) for operating the hoisting cable, as will later more fully appear.

The levers 19 and 20 may be operated so that both pinions 14 engage the driving gears 3 on the truck wheels 1, as shown in Figure 2. In such position the conveyor truck will be driven forwardly in a straight line. When it is desired to steer the truck, one of the levers 19 and 20 is swung upwardly until it strikes the stop 22, for elevating one of the gears. In Figure 3, the right hand pinion 14 is shown in such elevated position, the lever 20 having been swung upwardly against the stop 22. When both levers 19 and 20 are swung against the stop 22, both pinions 14 will be in neutral position. From this position, the swingable stop lug 21a on lever 19 may be swung out of the path of the lug 22, allowing lever 19 to be swung into engagement with the lug 23, for elevating pinion 14 into mesh with gear 24, as previously explained and as shown in Figure 4. If desirable, a stop lug 25 may be positioned upon plate 9 for limiting the downward movement of the two control levers and arresting the same when the pinions 14 are properly in mesh with the driving gears 3.

The aforementioned gear 24 is secured upon a shaft 26, which is provided with a worm that operates a worm gear 27 secured upon a shaft 28 journaled in a suitable bearing support on the frame of the truck. A suitable winding drum 29 is secured upon the shaft 28 and a cable 30 is wound around this drum, one reach or branch of the cable extending upwardly over a guide pulley 31 upon the top of a standard, then down around a guide pulley 32 secured upon the boom 33. From the pulley 32 this branch of the cable extends to the said standard 5, where it is anchored, as indicated at 34. The other branch of this cable extends transversely from the drum 29 to a guide pulley 35. From the guide pulley 35 this branch of the cable extends upwardly

along the other standard 5 and over a guide pulley 31 upon the top of such standard, thence around a guide pulley 32 on the boom, thence to the anchor 34 on the said standard 5. This single cable will always balance the boom as it is raised or lowered.

The boom 33, which may be of usual construction, supports an endless conveyor comprising the driving chains 36 which are trained over sprocket wheels 37 (only one of which is shown) upon a shaft 38 journaled in suitable bearings upon the bottom of the boom. It will be noted that the conveyor chains 36 are looped downwardly for passing around the sprockets 37, which are located intermediate the ends of the conveyor. Suitable guide pulleys 39 and 40 guide the chains to and from the sprockets 37. The guide pulleys 39 and 40 are respectively mounted upon shafts 41 and 42 journaled upon the bottom of the boom. The ends of the shaft 42 project beyond the pulleys 40 and extend thru gusset plates 43 on the frame, whereby the boom becomes pivoted to the frame upon the axis of shaft 42.

The gusset plates 43 are attached to frame members 44 and to frame members 45, which frame members comprise a part of the truck frame, as shown. Only one frame member 44 and one frame member 45 on one side of the machine can be seen. It will, however, be understood that the same are duplicated upon the other side of the machine. The frame members 45 are preferably connected by a transverse brace 45a, as shown in Figures 11 and 12.

An adjustable frame is pivoted to the frame members 45. This adjustable frame comprises braces 46 pivotally connected at one end to gusset plates 47 on the frame members 45. The free ends of the braces 46 are pivoted respectively to upright angle bars 48 (Figs. 11 and 12), which are rigidly connected by suitable cross members. To this end, gusset plates 49 are attached to the members 48, and a channel section 50 is riveted to the gussets and the upright members. The members 46 are also connected by cross braces 51, as shown in Figure 11. The channel section 50 supports a bearing socket 52 in which the yoke of a pilot wheel 53 is swivelled, upon which the adjustable frame is supported.

To the frame members 45, which are in the form of angle bars, are secured gusset plates 54, which overlap the upright members 48 of the adjustable frame. Each gusset plate 54 has a chain 55 attached thereto and each chain carries a coupling pin 56. Each upright 48 is provided with a series of holes 57 for receiving the coupling pins.

Obviously, as the boom is supported upon the main frame of the conveyor truck by means of the shaft 42, and as the elevation of the main frame is determined by the adjust-

ment of the adjustable frame, the front or nose end of the boom may be supported as desired. By raising or lowering the coupling pins, the nose of the boom may be adjusted to rest upon the ground or above the ground, as desired. Further, as the forward end of the boom is connected to the frame by the shaft 42, it will be impossible to tip the frame upwardly with respect to the axis of the wheels 1, on account of the weight of the boom.

The conveyor truck carries a power plant, which, in the present instance, is shown as an internal combustion engine 58, having a driving shaft 59, which is geared by sprocket gearing 60 to a driven shaft 61. The shaft 61 is geared by sprocket gearing 62 to shaft 38 for driving the endless conveyor. The shaft 61 is also geared by sprocket gearing 63 to the selector shaft 13 for driving the conveyor from place to place.

In order to crush and agitate the material into which the nose of the boom is advanced, a rotary mechanism is provided upon the nose of the boom. This mechanism is best shown in Figures 1 and 9. It will be noted that the tail shaft 54, which carries the conveyor sprockets 65, supports a pair of disc wheels 66, which, in the present instance, are located in a plane outside of the sides of the conveyor. These disc wheels may be provided with teeth 67 for crushing and agitating the material.

In Figures 14 and 15 is illustrated a modified form of selector drive which may be desirable in some instances. In this modified form, each truck wheel 1a has a circular series of apertures 68 for receiving the teeth of driving cogs or gears 69 fixed upon the selector shaft 13a. The shaft 13a has a sprocket wheel 70, by means of which it may be driven.

The selector shaft is connected by a pair of hangers 71 with manually operated levers 72 and 73. The left hand hanger 71 is connected between crank arms on a bushing 74, secured to the selector shaft 13a, and between crank arms on a bushing 75 secured to an operating shaft 76 suitably journaled in the frame of the machine. The right hand hanger 71 is also connected to a bushing 74 fixed on the selector shaft and to the arms of a bushing 77 loosely mounted upon the operating shaft. The aforementioned lever 72 is fast upon the shaft 76 while the lever 73 extends from the loose bushing. Obviously, the hangers 71 may be independently operated for tilting the selector shaft, as shown in Figure 15, when it is desired to steer the wheels. When it is desired to drive straight, both pinions are shifted into engagement with the wheels 1a.

From the foregoing, it will be apparent that a greatly improved portable conveyor has been provided, which possesses a simple driving and steering mechanism, in which

the boom is pivoted to the frame, which is also adjustable and in which crushing means are provided on the boom.

I am aware that many changes may be made, and numerous details of construction may be varied through a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted hereon otherwise than necessitated by the prior art.

I claim as my invention:

1. In a conveyor truck, including a pair of ground wheels, each wheel having a gear, a power shaft, pinions upon said power shaft for meshing relation with the gears on said ground wheels, an operated shaft having a pair of eccentrics thereon, hangers connecting said eccentrics and power shaft, and means for selectively operating said eccentrics.

2. In a conveyor truck, including a pair of ground wheels, each wheel having a gear, a tiltable power shaft, pinions upon said power shaft for meshing relation with said gears, an operated shaft extending parallel to the power shaft, connections between said power shaft and operated shaft, and means for separately and selectively operating said connections.

3. In a conveyor truck, a pair of rotatable members, a tiltable power shaft, driving members upon said power shaft for rotating said rotatable members, an operated shaft extending parallel to said power shaft, connections between said power shaft and operated shaft, and means for separately and selectively operating said connections.

4. In a conveyor truck, including a pair of ground wheels, each wheel having a gear, a power shaft, pinions on said power shaft for meshing relation with said gears, an operated shaft, an eccentric fixed upon said operated shaft, an eccentric loose upon said operated shaft, connections between said eccentrics and power shaft, a lever rigidly secured to said operated shaft for operating one eccentric, and a second lever loose upon said operated shaft and connected to the other eccentric.

5. In a vehicle of the class described a pair of ground wheels having gear engaging means, a vertically tiltable power shaft, driving members thereon for engaging said gear means on said ground wheels, an operated shaft extending parallel to said power shaft, said operated shaft having a crank member rigidly mounted thereon, a second crank member rotatably mounted upon said operated shaft, connections between said power shaft and crank members, and means adjacent one end of said operated shaft for independently, and selectively operating said crank members.

6. In a vehicle of the class described, a pair of ground wheels, a tiltable power shaft,

driving members thereon for engaging said
ground wheels, an operated shaft extending
parallel to said power shaft and having a
crank member thereon, a connection between
said power shaft and crank member, a sec-
ond crank member relatively rotatable with
respect to said operated shaft, a connection
between said power shaft and second crank
member, a handle upon one end of said op-
erated shaft, and a handle upon said second
crank whereby said cranks may be separately
and independently operated.

In testimony whereof I have hereunto sub-
scribed my name at Aurora, Kane County,
Illinois.

HARRY H. BARBER.

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