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2,434,718

WAGON BOX CONVEYOR

Filed April 30, 1946

2 Sheets-Sheet 1

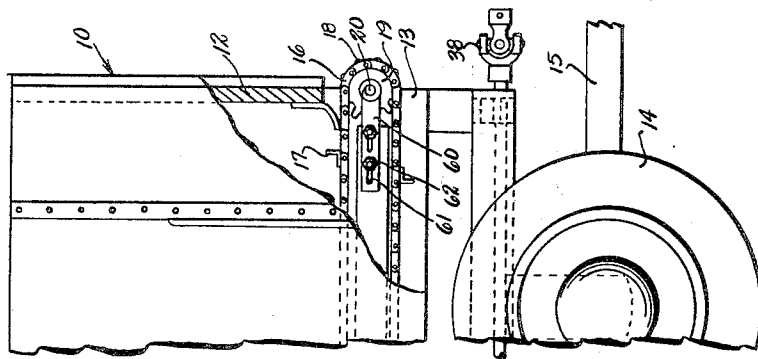
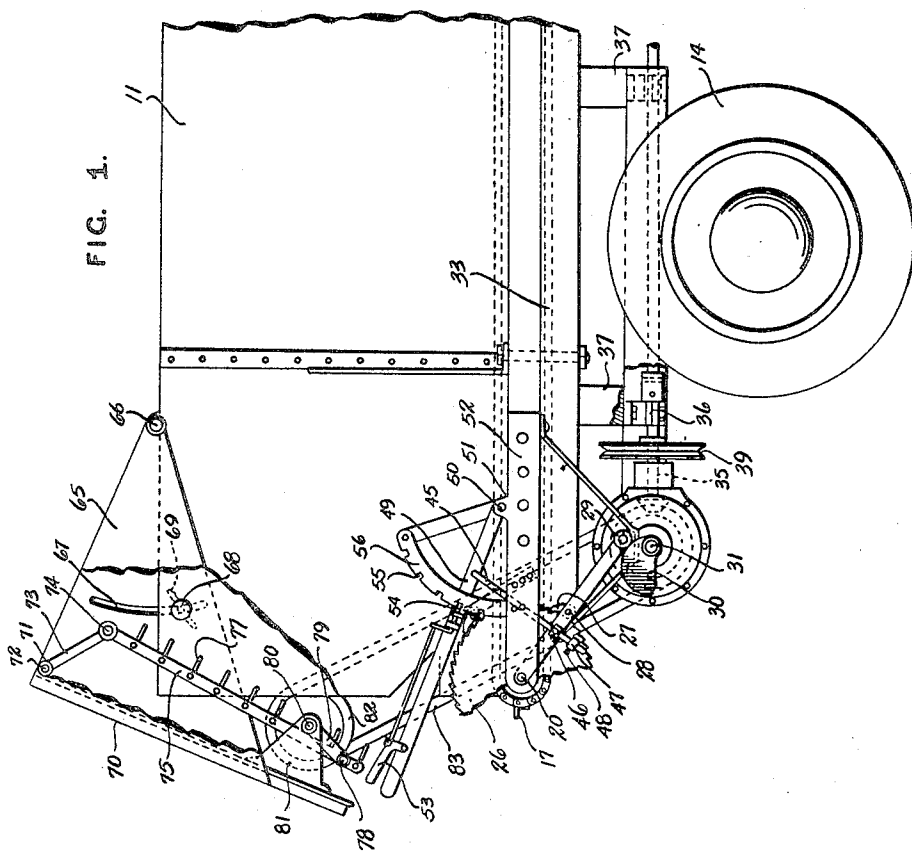


FIG. 1.



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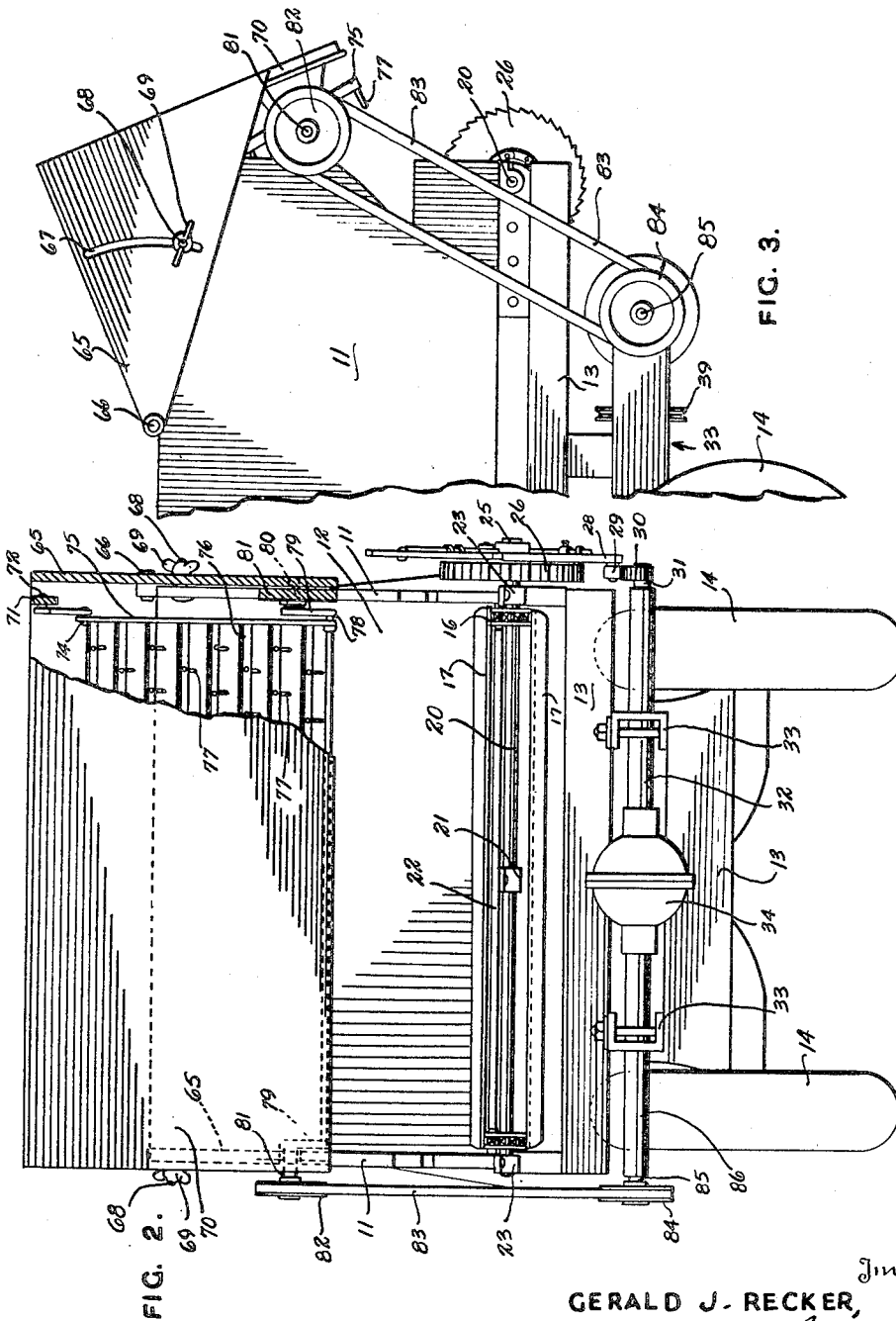
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2 Sheets-Sheet 2



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WAGON-BOX CONVEYOR

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This invention relates to a wagon box conveyor, and more particularly to a movable conveyor adapted to be utilized in conjunction with a wagon box body or the like for unloading the contents thereof.

A primary object of this invention is the provision of an improved conveyor bottom for a wagon box adapted to be moved toward the discharge end of the body in a step-by-step manner by a power drive.

An additional object of the invention is the provision of means in association with such a device whereby the step-by-step movement of the conveyor may be varied at the will of the operator.

Still another object of the invention is the provision of means in association with such a device for facilitating the unloading of the contents of a wagon body.

A further object of the invention is the provision of such a device which is sturdy and durable in construction, reliable and efficient in operation, and relatively simple and inexpensive to manufacture, assemble and utilize.

Still other objects will in part be obvious and in part be pointed out as the description of the invention proceeds, and shown in the accompanying drawings, wherein there is disclosed a preferred embodiment of this inventive concept.

In the drawings:

Figure 1 is a side elevational view, parts thereof being broken away and additional parts thereof being indicated in dotted lines, of a vehicle body incorporating features of the instant invention.

Figure 2 is a rear elevational view, partially broken away, of the construction shown in Figure 1.

Figure 3 is a fragmentary side elevational view of certain structural elements disclosed in Figure 1, as viewed from the opposite side.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Referring now to the drawings, there is generally indicated at 10 a wagon body of any desired general configuration, and of any desired size, including side walls 11 and a front wall 12. The rear of the body is preferably fully open. The body 10 is supported on a frame 13 mounted in any desired conventional manner on wheels 14, and provided with a tongue 15, whereby the device may be attached to any suitable towing vehicle, such as a tractor or a truck, or the like.

The floor of the body 10 is comprised of an

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endless flexible track 16 having spaced upstanding lugs 17 at suitable spaced intervals therealong, and including on its outer face chain links 18 adapted to be engaged by sprockets 19 carried by axles 20 positioned at opposite ends of the body.

As best shown in Figure 2, each axle 20 is supported as by a bracket 21 affixed to a transversely extending member 22 extending across the bottom of the body between the upper and lower surfaces of the endless belt 16.

The extremities of each axle 20 are journaled for rotation in suitable brackets 23 mounted on the frame 14 in any desired conventional manner.

Referring particularly to the rear axle 20, it will be seen that an end of the same extends outwardly, as at 25, of the truck body and carries a ratchet wheel 26. The ratchet wheel 26 is adapted to be engaged by a pawl 27 pivotally mounted on an arm 28, one extremity of which is pivotally mounted on the extremity of the axle 20. The other extremity of the arm 28 carries a roller 29 adapted to ride on the surface of an eccentric or cam 30 mounted for rotation on a shaft 31. The shaft 31 extends inwardly through

a sleeve 32 supported by the longitudinal main frame members 33 of the frame 14 into a gear box 34 the shaft terminating in a suitable bevel gear engaging an additional bevel gear carried at the extremity of a longitudinally extending shaft 35. The arrangement of the bevel gears is conventional and the gears are not shown. The shaft 35 is journaled for rotation in suitable bearings carried by depending brackets 36 mounted on transverse frame members 37 beneath the longitudinal frame members 33 and terminates adjacent the forward end of the frame in a universal joint 38 of any desired conventional type, whereby the shaft 35 may be rotated in any desired manner, as from the power take-off of a conventional tractor or the like.

If desired, the shaft 35 may carry a pulley 39 adapted to be engaged by a belt, whereby the mechanism may be driven from an auxiliary source of power, such as an electric motor or the like (not shown) if desired.

A link 45 passing through a suitable lug 46 on the lever or arm 28 and provided with a collar 47 held in position as by a set screw 48 to permit relative adjustment of the position thereof terminates in an inwardly extending portion engaging in a suitable aperture in a lever 49 pivotally mounted, as on a pivot 50, in a lug 51 comprising a portion of a side plate 52 adapted to be secured to one of the frame members 33 of the frame. The lever 49 carries a conventional han-

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dle arrangement 53 at its outer extremity adapted to operate a latch 54 selectively engageable in grooves 55 carried by a segmental member 56 extending upwardly adjacent the plate 52.

Thus, it will be seen that by means of the lever 49 and its relative adjustment with respect to the segmental member 56, the position of the arm 28 and hence the roller 29 with respect to the eccentric 30 may be varied.

It will be seen that with the lever in the position indicated in Figure 1, and the roller 29 in close engagement with the cam 30, that each rotation of the cam causes a pivotal movement of the arm 28, and hence through the pawl 37 a movement of the ratchet 26, which in turn is imparted through the axle 20 and the gears 19 to the conveyor belt 16. The degree of movement may be readily varied by positioning the roller at varying distances from the cam by means of the lever 49, and when the lever 49 is in its uppermost position, the cam 30 may rotate freely without affecting the roller 29, and hence without moving the conveyor.

Means are provided for adjusting the tension of the conveyor 16 and include a pair of plates 60 provided with spaced slotted apertures 61 serving to mount the forward axle 20. The plates 60 are suitably secured, as by bolts 62 to side members of the frame 14, and by loosening the bolts, the plates may be adjusted longitudinally within the limits of the slots 61 in such manner as to vary the tension of the conveyor belt.

It will now be seen that a wagon box or the like embodying the conveyor of the instant invention may be readily unloaded at varying speeds, as desired, by the previously described mechanism causing movement of the conveyor 16 towards the open rear end of the box body, thus moving the contents thereof rearwardly in such manner as to unload the same from the open end, whether the vehicle is stationary or in motion.

Means are also provided for agitating the material at the top of the body and thus insuring a relatively even disposition of the material unloaded from the body. Such means take the form of a pair of opposed triangular plates 65 pivotally mounted on stub shafts 66 carried by the tops of the side walls 11. Each of the triangular plates 65 is provided with an arcuate slot 67 through which passes a bolt 68 engaging in a suitable aperture in the adjacent side wall 11 and having at its outer extremity a wing nut 69, whereby the relative position of the plates with respect to the top of the body about the pivot 66 may be varied as desired.

Connecting the rear extremities of the plates 65 is a transverse end plate 70.

The plate 70 is provided at its upper extremity with inwardly extending lugs 71 carrying pivots 72 to which are secured the extremities of links 73, the opposite ends of which are secured, as by pivots 74 to the upper extremities of vertical members 75 between which extend spaced horizontal bars 76 provided with agitating fingers 77. The lower extremities of the members 75 are pivotally secured, as by pivots 78, to arms 79, carried by stub axles 80 mounted in lugs 81 extending inwardly from the plates 75. One of the axles 81 extends outwardly beyond the adjacent member 65, and has fixed thereto a pulley 82 connected by a belt 83 to a second pulley 84 carried by a shaft 85 mounted in a sleeve 86 corresponding to the sleeve 32 and engaging the gear box 34. The shaft 85 also terminates in a bevel gear

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within the gear box, whereby the same may be driven by the shaft 35.

From the foregoing it will now be seen that when the pulley 82 is driven through the belt 83, rotation of the arm 79 which is fixed to the axle 80 causes reciprocatory movement of the members 75 and hence the associated transverse members 76 and the agitating fingers 77, such movement consisting of a withdrawal towards the plate 70 of the assembly comprised of the members 75, 76 and 77 during upward movement thereof, and, during the downward movement thereof an inward motion towards the vehicle body and the contents thereof, thus effecting a downward raking action to unload the contents.

Obviously, the opening between the lower extremity of the plate 70 and the top of the conveyor 16 may be readily varied, as may the angle of operation of the members 75, 76 and 77, by suitable adjustment of the plates 65 within the limits defined by the arcuate slots 67.

From the foregoing it will now be seen that there is herein provided an improved device accomplishing all the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made in the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

1. A vehicle including a frame, a body carried by said frame including side walls, an end wall and an open end, an endless conveyor forming a floor for said body, axles for said conveyor mounted on said frame, a ratchet carried by one of said axles, an arm pivoted adjacent said one of said axles, a pawl carried by said arm engageable with said ratchet, means for moving said arm and hence said pawl to rotate said one axle and advance said conveyor towards the open end of said body, said means comprising a transverse shaft, and a cam on said transverse shaft operatively engaging said arm, an agitator mounted on said body adjacent said open end, a second transverse shaft drivingly connected with said agitator, and common drive means for said transverse shafts including a shaft extending longitudinally of said body, and gear means connecting said longitudinal shaft with said transverse shafts.

2. A vehicle including a frame, a body carried by said frame including side walls, an end wall and an open end, an endless conveyor forming a floor for said body, axles for said conveyor mounted on said frame, a ratchet carried by one of said axles, an arm pivoted adjacent said one of said axles, a pawl carried by said arm engageable with said ratchet, means for moving said arm and hence said pawl to rotate said one axle and advance said conveyor towards the open end of said body, and an agitator mounted on said body adjacent said open end, said agitator including side plates and an end plate, a frame having agitating fingers thereon carried by said end plate, and means for reciprocating said frame.

3. A vehicle including a frame, a body carried by said frame including side walls, an end wall and an open end, an endless conveyor forming a floor for said body, axles for said conveyor mounted on said frame, a ratchet carried by one of said axles, an arm pivoted adjacent said one of said axles, a pawl carried by said arm engageable with said ratchet, means for moving said arm and

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hence said pawl to rotate said one axle and advance said conveyor towards the open end of said body, and an agitator mounted on said body adjacent said open end, said agitator including side plates and an end plate, a frame having agitating fingers thereon carried by said end plate, and means for reciprocating said frame, said last-mentioned means including a rotatable axle, an arm carried thereby, pivotally connected to said frame at one end thereof, and a pivotal connection between the other end of said frame and said end plate.

4. A vehicle including a frame, a body carried by said frame including side walls, an end wall and an open end, an endless conveyor forming a floor for said body, axles for said conveyor mounted on said frame, a ratchet carried by one of said axles, an arm pivoted adjacent said one of said axles, a pawl carried by said arm engageable with said ratchet, means for moving said arm and hence said pawl to rotate said one axle and advance said conveyor towards the open end of said body, an agitator mounted on said body adjacent said open end, said agitator including side plates and an end plate, a frame having agitating fingers thereon carried by said end plate, means for reciprocating said frame, said last-mentioned means including a rotatable axle, an arm carried thereby, pivotally connected to said frame at one end thereof, a pivotal connection between the other end of said frame and said end plate, and means for varying the position of said end plate with respect to said body to vary the angular relation of said frame.

5. A vehicle including a frame, a body carried by said frame including side walls, an end wall and an open end, an endless conveyor forming a floor for said body, axles for said conveyor mounted on said frame, a ratchet carried by one of said axles, an arm pivoted adjacent said one of said axles, a pawl carried by said arm engageable with said ratchet, means for moving said arm and hence said pawl to rotate said one axle and advance said conveyor towards the open end of said body, an agitator mounted on said body adjacent said open end, said agitator including side plates and an end plate, a frame having agitating fingers thereon carried by said end plate, means for reciprocating said frame, said last-mentioned means including a rotatable axle, an arm carried thereby, pivotally connected to said frame at one end thereof, a pivotal connection between the other end of said frame and said end plate, and means for varying the position of said side plates with respect to said body to vary the angular relation of said frame, said last-mentioned means including a pivotal mounting for said side plates on said body.

6. A vehicle including a frame, a body carried by said frame including side walls, an end wall and an open end, an endless conveyor forming a floor for said body, axles for said conveyor mounted on said frame, a ratchet carried by one of said axles, an arm pivoted adjacent said one of said axles, a pawl carried by said arm engageable with said ratchet, means for moving said arm and hence said pawl to rotate said one axle and advance said conveyor towards the open end of said body, an agitator mounted on said body adjacent said open end, said agitator including side plates and an end plate, a frame having agitating fingers thereon carried by said end plate, means for reciprocating said frame, said last-mentioned means including a rotatable axle, an arm carried thereby, pivotally connected to said frame at one

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end thereof, a pivotal connection between the other end of said frame and said end plate, and means for varying the position of said side plates with respect to said body to vary the angular relation of said frame, said last-mentioned means including a pivotal mounting for said side plates on said body, said side plates having arcuate slots therein and bolts secured to said side walls engaging in said slots.

7. The combination with a vehicle having a wheel supported frame and a body carried by said frame and having an open end; of power-operated unloading means for said body comprising transverse axles journaled on said frame, one at each end of said body, an endless conveyor carried by said axles and constituting a floor for said body, a ratchet wheel secured on one of said axles, a transverse shaft carried by said frame adjacent said one axle, a cam secured on said shaft, an arm pivoted at one end of said one axle and having its opposite end in operative engagement with said cam, a pawl carried by said arm engageable with said ratchet wheel to advance said conveyor toward the open end of said body upon movement of said arm by said cam, and power actuated means drivingly connected with said shaft.

8. The combination with a vehicle having a wheel supported frame and a body carried by said frame and having an open end; of power-operated unloading means for said body comprising transverse axles journaled on said frame, one at each end of said body, an endless conveyor carried by said axles and constituting a floor for said body, a ratchet wheel secured on one of said axles, a transverse shaft carried by said frame adjacent said one axle, a cam secured on said shaft, an arm pivoted at one end on said one axle and having its opposite end in operative engagement with said cam, a pawl carried by said arm engageable with said ratchet wheel to advance said conveyor toward the open end of said body upon movement of said arm by said cam, and power actuated means drivingly connected with said shaft comprising a shaft extending longitudinally of said body from said transverse shaft to a position beyond the other of said axles, and gear means drivingly connecting said longitudinal shaft to said transverse shaft.

9. The combination with a vehicle having a wheel supported frame, a body carried by said frame and having an open end, a pair of axles supported one at each end of said body, and an endless conveyor carried by said axles and constituting a movable floor for said body; of means for imparting a step-by-step movement to said conveyor toward the open end of said body to unload the same, said means comprising a ratchet wheel on one of said axles, a power driven shaft adjacent said one axle, a cam on said shaft, an arm pivotally supported at one end on said one axle and having its opposite end in operative engagement with said cam, and a pawl carried by said arm and engaging said ratchet wheel to turn said ratchet wheel upon movement of said arm by said cam.

10. The combination with a vehicle having a wheel supported frame, a body carried by said frame and having an open end, a pair of axles supported one at each end of said body, and an endless conveyor carried by said axles and constituting a movable floor for said body; of means for imparting a step-by-step movement to said conveyor toward the open end of said body to unload the same, said means comprising a ratchet

wheel on one of said axles, a power driven shaft adjacent said one axle, a cam on said shaft, an arm pivotally supported at one end on said one axle and having its opposite end in operative engagement with said cam, and a pawl carried by said arm and engaging said ratchet wheel to turn said ratchet wheel upon movement of said arm by said cam, and means operative to adjust the rate of movement of said ratchet wheel comprising a hand lever pivotally mounted on said frame adjacent to said arm, link means connecting said arm with said lever to move said arm toward or away from said cam upon movement of said lever, and frame supported means operative to release-

bly hold said lever in various positions of adjustment.

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