

April 22, 1941.

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2,239,256

MOBILE CONVEYER-ELEVATOR

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2 Sheets-Sheet 1

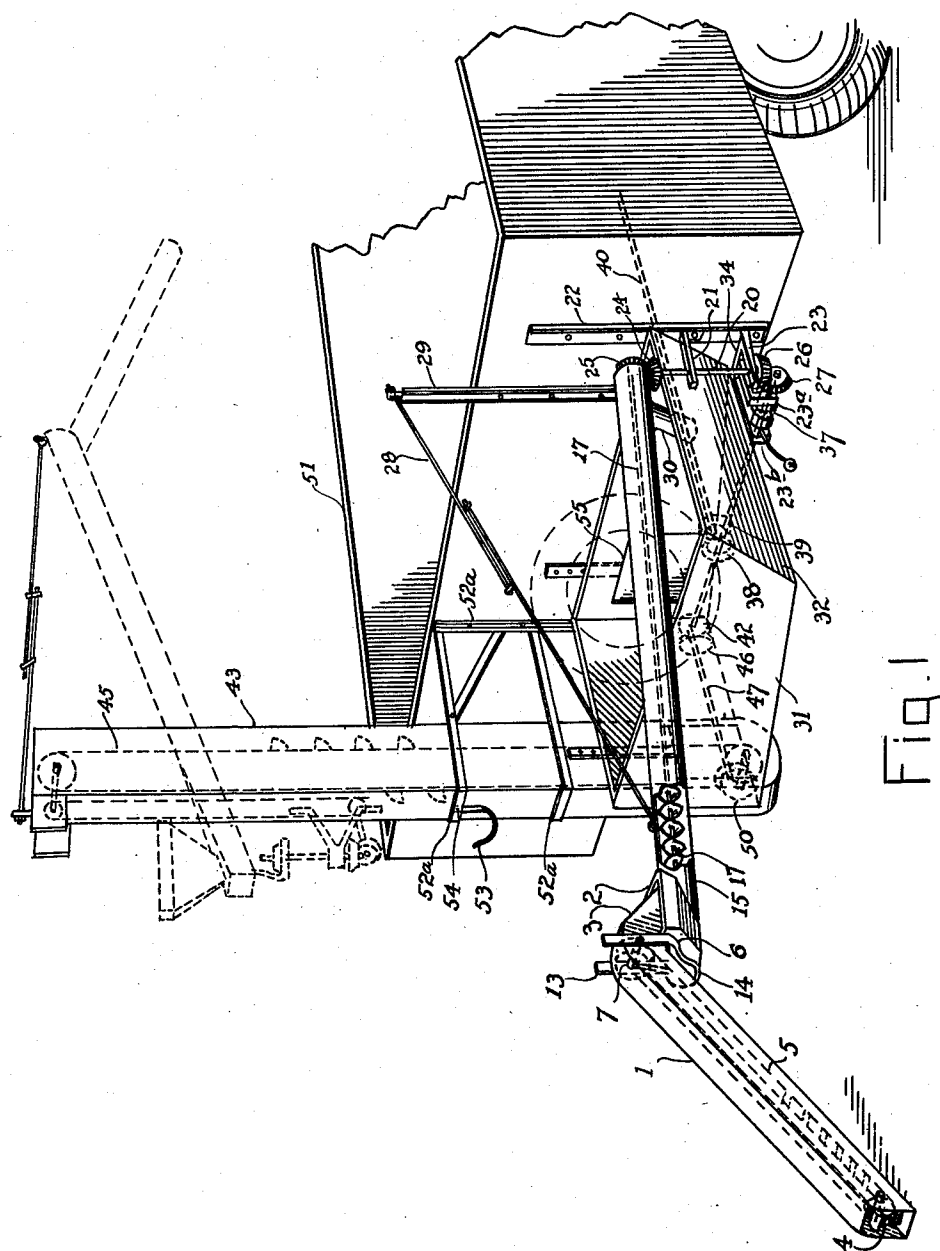


Fig. 1

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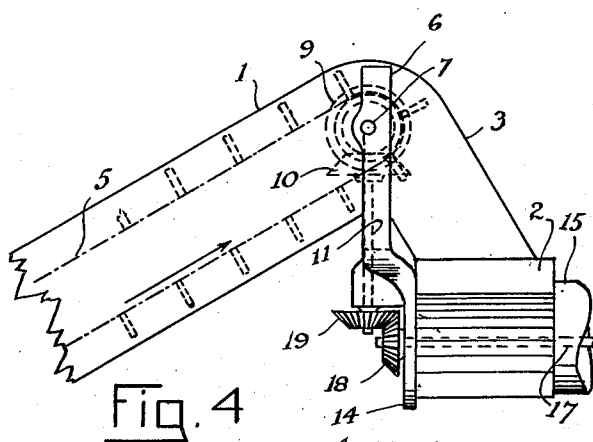
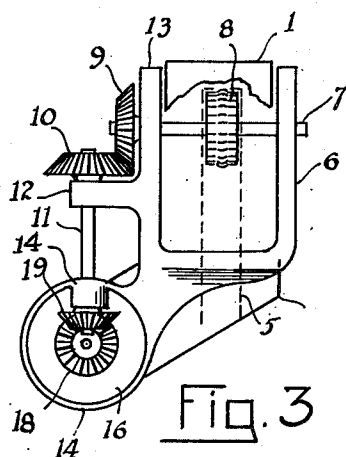
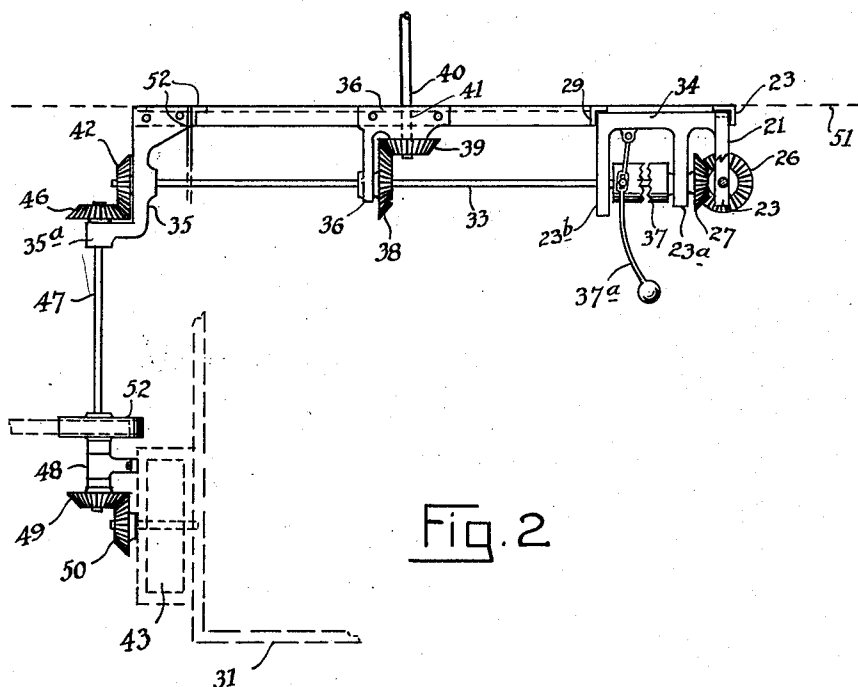
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## UNITED STATES PATENT OFFICE

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## MOBILE CONVEYER-ELEVATOR

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Application September 10, 1940, Serial No. 356,203  
In Canada March 4, 1939

2 Claims. (Cl. 214-83)

The invention relates to loading and unloading conveyer-elevators which are in use but which I claim to have improved upon in several respects.

The invention is more particularly designed to provide a mobile, complete, and self-contained device by means of which grain or other dry-flowing materials may be raised from one level to a higher level as in loading a truck box, or it may be used for unloading purposes from a truck box to any desired receptacle, the adaptation of these two functions in combination forming an essential object of my improved invention.

Another object of the invention is to provide a readily available mechanical means for operation by utilizing the power of an automotive vehicle by attachment of the driving mechanism of the device to the conventional power transmission gearing of the automotive vehicle being loaded. Other driving means may readily be adopted in lieu of the above preferred transmission drive means, which latter may be entirely apart from the truck or such other vehicle drive.

The invention further consists of the several improved features in combination hereinafter set forth.

Referring to the drawings in which similar numerals of reference indicate similar parts in all of the views:

Fig. 1 is a perspective view of the complete unit as attached to the rear end of a truck box.

Fig. 2 is a plan of the drive assembly of the truck transmission for driving the screw conveyer and the inclined and vertical elevator mechanisms.

Fig. 3 is a detail of the carrier frame for the pick-up inclined elevator-conveyer.

Fig. 4 is a side elevation in part of pick-up elevator and receiving chute with elevator drive.

An inclined bucket elevator 1 of conventional type is adapted to receive material and deliver same into a chute 2 through the discharge spout 3 at its elevated end. At the intake end a sprocket wheel 4 is mounted within the mouth of the elevator to carry the elevator bucket chain 5. In order to provide for a variation in the pick-up level at the intake end this element of the device is pivotally supported at its elevated end on a U-shaped bracket 6, in the upright arms of which a horizontally disposed pivotal shaft 7 is bearably mounted. This shaft 7 carries a fixed driven elevator chain sprocket wheel 8, on one outboard end of which shaft is mounted a bevel gear wheel 9, with which is engaged a bevel gear wheel 10 angularly disposed as regards axial alignment, and mounted on a shaft 11, said shaft 11 being

bearably mounted within a bracket 12 projecting from one arm 13 of the bracket member 6, and also bearably disposed within a supporting frame 14 extending in an offset manner from the cross member of the U-shaped bracket 6. This frame 14 is the supporting member for a radially operable screw conveyer casing 15 having a circular disc 16 for the support of said casing 15. This disc 16 bearably supports the screw conveyer shaft 17 and connects with the screw conveyer casing 15, on which shaft 17 is mounted a bevel gear wheel 18 which meshes with a bevel gear wheel 19 affixed to the outboard end of the said shaft 11 for driving same.

The chute 2 guides the elevated material from the said delivery spout 3 into this screw conveyer casing 15, the said conveyer casing being pivotally supported on a vertical shaft 20, which shaft 20 is bearably mounted by brackets 21 and 22 and 23 to the rear end of a truck body or box. This mounting includes a system of meshed angularly disposed bevel gear wheels 24 and 25 driving the conveyer shaft 17, together with a system of meshed angularly disposed gear wheels 26 and 27 driving the said shaft 20. The conveyer casing 15 is swingably suspended by means of a tie rod 28 in regular jib style from a vertical post member 29 attached to the truck. The discharge from the said conveyer casing 15 is guided through a spout 30 into a hopper-bottomed receiving bin 31 attached to the rear wall of the truck on its outer face. This bin has a sloping wall 32 at its intake side.

The bevel gear driving wheel 27 is mounted on a shaft 33, which shaft is bearably supported on a bracket 34 attached to the rear of the truck, and is also supported on an end bracket 35 and a centrally disposed bracket 36. This bracket 34 is shaped with bearing arms 23a and 23b to enclose a conventionally designed clutch element 37 for the periodic operation of the conveyer shaft 17 and the elevator 1 as manipulated by the lever 37a.

A bevel gear wheel 38 is keyed to the said shaft 33 which wheel angularly engages with a bevel gear wheel 39 to form the main driving couple of the drive system. This gear wheel 39 is attached to the truck transmission extension shaft 40, which shaft bears at 41 in the said bracket 35.

The shaft 33 has a bevel gear wheel 42 bearably outboarded at the bracket 35. The floor of the bin 31 declines from the feed spout 30 end towards the base of a vertically operated and disposed elevator 43 of the bucket type to allow the contents of the said bin to discharge through

an aperture in its wall adjacent to this elevator 43 into the boot of this elevator through a slidable hand regulated discharge gate of conventional type. The gear wheel 42 drives the travelling chain 45 of this elevator through a system of bevel gears, wheel 42 meshing with a perpendicularly disposed bevel gear wheel 46 mounted on a shaft 47 to bear perpendicularly in an extension arm 35a of the bracket 35.

The second support for the said shaft 47 is a bearing bracket member 48 attached to the wall of the said elevator 43. Overhanging from this bracket 48 is a bevel gear wheel 49 perpendicularly meshing with a bevel gear wheel 50 for conventionally driving the vertical chain 45 of this elevating element. A belt pulley 52 is mounted on this shaft 47 for the purpose of running the entire elevator mechanisms independently of the truck transmission gearing by a power unit separated therefrom, in which case the shaft 33 would be rotated to operate the machine after the truck transmission gearing had been disconnected.

The elevator tower 43 is attached to the truck box 51 by brackets as indicated at 52a.

The screw conveyer casing 15 and its supporting disc 16 and frame 14 may be conveniently suspended away from the said bin 31 when not in use by means of a suspension hook 53 conveniently disposed on the elevator at 54. Material to be transferred from the bin 31 to the truck box is bucket-elevated to the top of the tower 43, and is there tally-recorded and chute-directed into the truck, all of which is merely indicated and not referenced in detail, as such is necessarily conventional in style and in operation.

In the event that it is desired to unload the truck box the clutch 37 is thrown out of gear, the conveyer casing 15 is suspended on the hook 53, and a discharge gate 55, located in the rear wall of the truck box is opened to allow the contents of the truck to flow into the bin 31. From the bin 31 the procedure for delivery is the same as previously described, and may be radially made to any desired point within reach of the device.

What I claim is:

1. An elevator-conveyer of the type described for loading, transporting, and unloading grain and the like, mounted on a motor vehicle, in combination with a load receiving truck body, means driven from the truck transmission mechanism for operating this elevator-conveyer device, an auxiliary load receiving hopper bin attached to the rear of said truck body, a tilting

pickup conveyer of the travelling bucket type, a cased-in shaft-supported screw conveyer supporting said tilting conveyer and receiving the discharge from said tilting conveyer and distributing same to said auxiliary bin, a pivotal mechanical means including bevel gearing and shafting to rotate said screw conveyer by communication with the motor vehicle transmission mechanism and to support said screw conveyer in a pivotal manner, means comprising brackets to bearably support said bevel gear shafting, bevel gearing means and shafting to operate said tilting conveyer from the screw conveyer shaft, a manually operable clutch means associated with the screw conveyer drive means, a conventional type vertical bucket elevator for truck loading purposes and communicating at its boot end with a gate controlled inlet opening in the wall of said auxiliary bin, a countershaft drive with bevel gearing for operating said vertical elevator from the truck transmission mechanism, and a gate-controlled exterior outlet opening from said truck body communicating with said auxiliary bin for discharging the truck body contents thereto for outside distribution by said vertical bucket elevator.

2. In combination with the transmission mechanism of a motor vehicle, a truck body, a cased-in rotatable screw conveyer disposed on the outside of the vehicle, two operatively connected shafts with bevel gears driven from said transmission mechanism for driving said screw conveyer, an extension drive shaft connected with and operable from the said transmission mechanism for operating all rotatable parts of this device, a clutch means associated with the two said operatively connected shafts, a pickup tilting type bucket elevator actuated from the said rotatable screw conveyer gearing, an auxiliary load receiving bin for reception from either said screw conveyer for truck body loading or from the truck body through a controlled outlet opening therein for unloading the truck body, a vertical bucket type cased-in elevator disposed outside the truck body to receive loadings from said auxiliary bin for distribution either to the truck body or outside distribution, a countershaft coacting with said transmission mechanism drive shaft, bearably mounted on said auxiliary bin and operatively connected to said elevator, tie rod means for supporting the screw conveyer with the tilting elevator in a swingable manner, and means for supporting same on said cased-in elevator in an elevated position when travelling.

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