May 21, 1957 G. E. ELDER 2,792,952

WAGON LOADER

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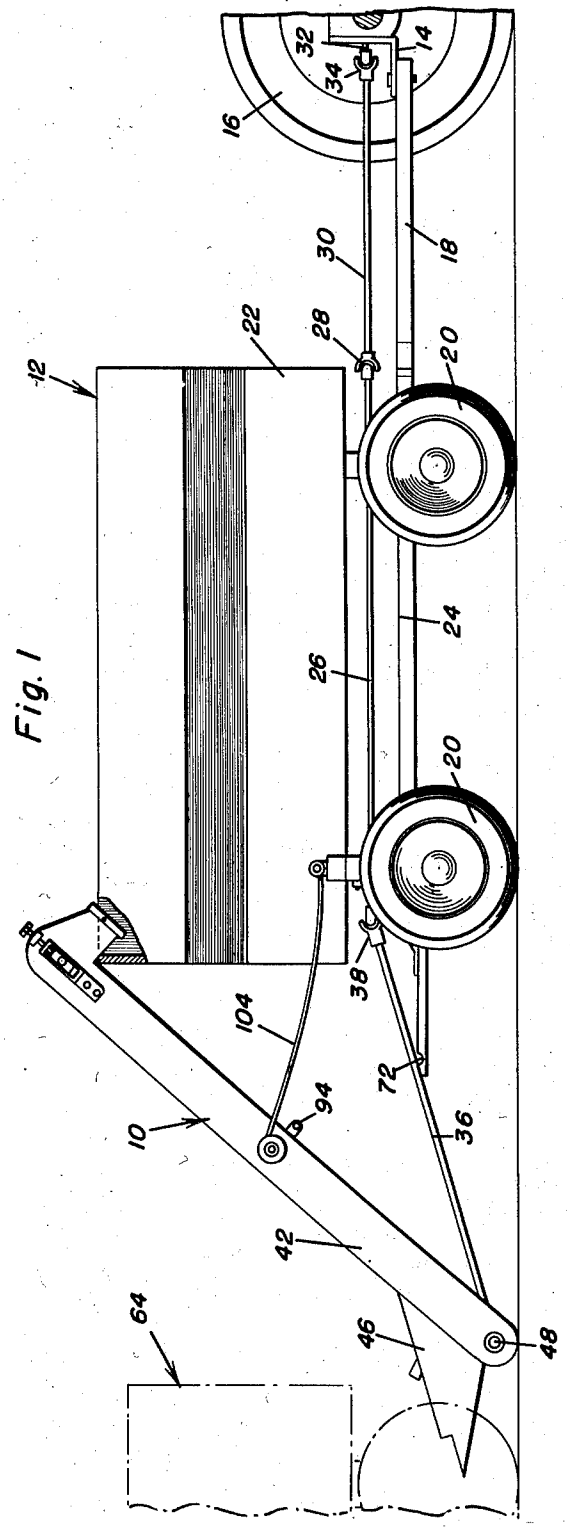


Fig. 1

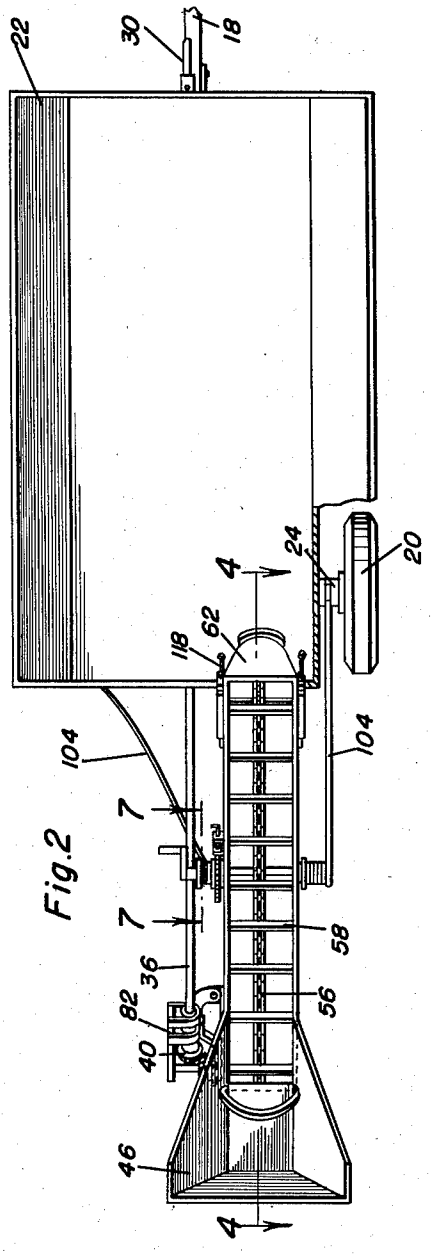


Fig. 2

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Fig. 3

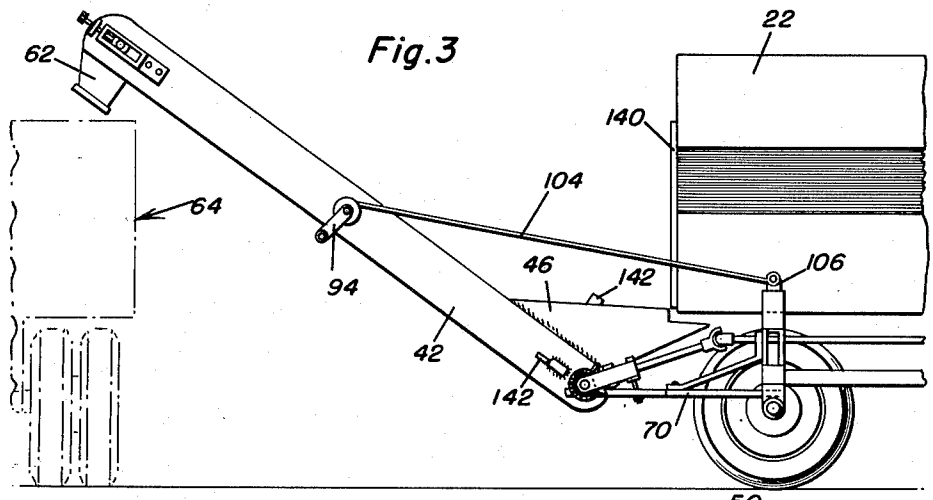
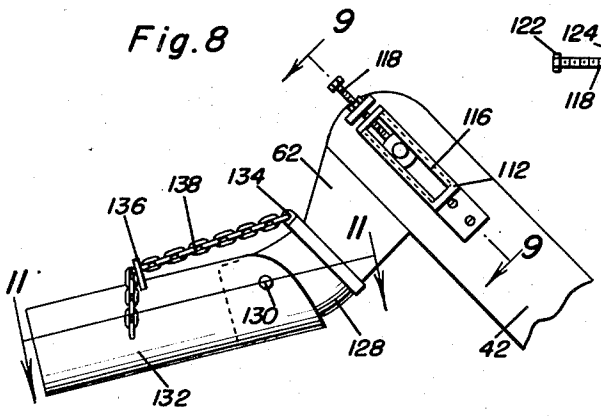


Fig. 8



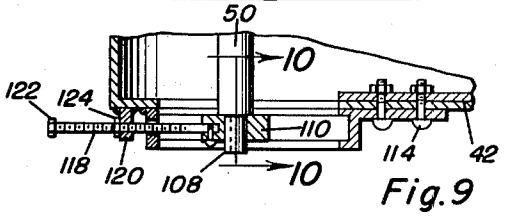


Fig. 9

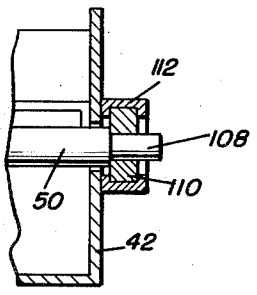
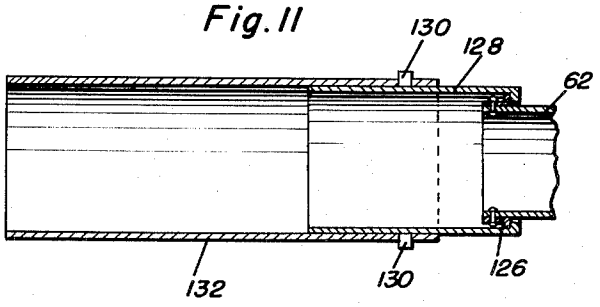


Fig. 10

Fig. 11



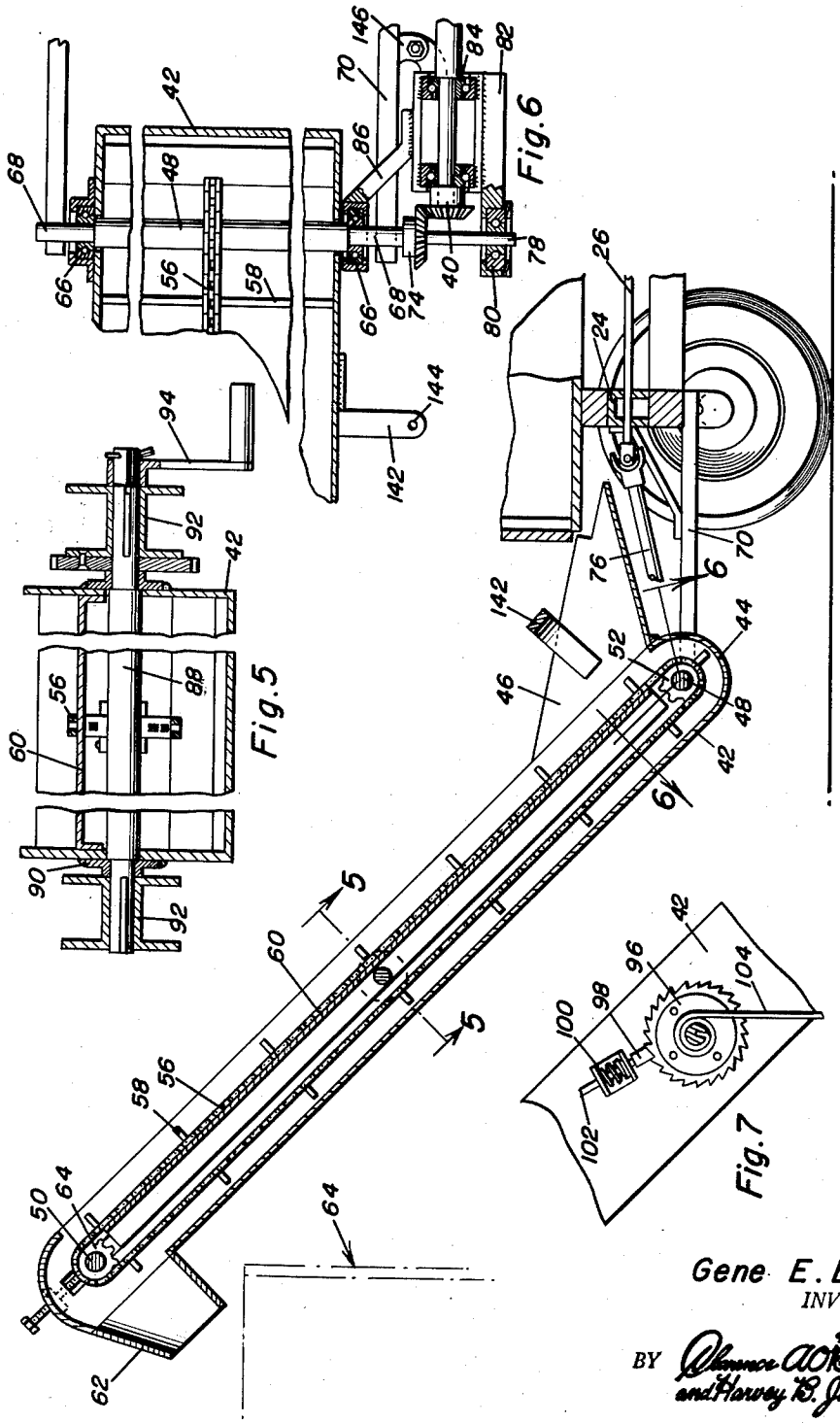
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WAGON LOADER

Filed Oct. 27, 1953 3 Sheets-Sheet 3



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2,792,952

WAGON LOADER

Gene E. Elder, Cherokee, Iowa

Application October 27, 1953, Serial No. 388,610

1 Claim. (Cl. 214—83.26)

This invention relates to a wagon loader, and more specifically provides an elevator for conveying material to or from a wagon, or other conveyance.

An object of this invention is to provide a wagon loader detachably secured to a conveyance and having a drive means extending beneath the conveyance and connected to a suitable power source for driving the elevator.

Another object of this invention is to provide a wagon loader comprising an elevator for removing and loading material from a wagon and more specifically provided with a hopper and an endless conveyor belt or chain for moving the material.

A further object of this invention is to provide a wagon loader specifically designed for detachable association with a wagon wherein the elevator may be disconnected and the wagon employed in its normal uses.

Yet another object of this invention is to provide a wagon loader which may be used for various loading and unloading purposes and which is simple in construction, easy and efficient in operation, sturdy in construction and comprising readily obtainable materials wherein the economic feasibility of the device is facilitated.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a side elevational view of the wagon loader of this invention in position for loading the wagon;

Figure 2 is a top plan view of the construction of Figure 1 showing a portion of the wagon body broken away;

Figure 3 is a side elevation showing the wagon loader in a position to unload material from the wagon and deposit it in a suitable receptacle;

Figure 4 is a longitudinal, vertical section taken substantially along section line 4—4 of Figure 2, showing details of the elevating conveyor and the drive means for the wagon loader;

Figure 5 is a transverse, vertical section taken substantially along section line 5—5 of Figure 4, showing details of the wagon loader hoist means wherein the angular relation of the wagon loader may be changed;

Figure 6 is a top plan section taken substantially along section line 6—6 of Figure 4, showing details of the conveyor drive means;

Figure 7 is a sectional view taken substantially along line 7—7 of Figure 2, showing details of the elevator hoist lock means;

Figure 8 is a detail side elevation of the discharge spout of the wagon loader;

Figure 9 is a longitudinal section taken substantially along section line 9—9 of Figure 8, showing details of the conveyor belt tightener;

Figure 10 is a detail section taken substantially along section line 10—10 of Figure 9, showing details of the slidable bearing block for the conveyor roller; and

Figure 11 is a longitudinal, top plan section taken substantially along section line 11—11 of Figure 8, showing details of the angularly adjustable discharge spout.

Referring now specifically to Figure 1, it will be seen that the numeral 10 generally designates the wagon loader of this invention for loading or unloading material from a wagon, generally indicated by the numeral 12, which is attached to a drawbar 14 of a tractor 16 by suitable hitching means 18. The wagon 12 includes a plurality of ground engaging wheels 20 supporting a wagon body 44 with a conventional frame generally indicated by the numeral 24 wherein the wagon 12 may be moved over a suitable surface when the tractor 16 is driven. As shown in Figure 4, the frame 24 includes aligned apertures forming a bearing for a rotatable shaft 26 positioned under the body 22 of the wagon 12 and projecting from each end of the frame 24. At the forward end of the shaft 26 is a universal joint 28 connecting a drive shaft 30 to the shaft 26 and the drive shaft 30 is connected to the power take-off shaft 32 by a suitable universal joint 34. It will be understood that the drive shaft 30 transmits rotational motion from the take-off shaft 32 to the shaft 26 thereby rotating the shaft 26 regardless of the angular direction of the tractor 16 in relation to the wagon 12. As shown in Figures 1 and 2, an elongated rotatable shaft 36 is secured to the rear end of the shaft 26 by a suitable universal joint 38 and the other end of the shaft 36 is provided with a bevel gear 40 thereon for a purpose described hereinafter.

As best shown in Figures 2 and 4, it will be seen that the wagon loader 10 includes an elongated frame-like trough member 42 having a rounded lower end portion 44 with a hopper 46 positioned thereon forming an entrance to the wagon loader 10. A pair of transverse shafts 48 and 50 are located at the remote ends of the conveyor housing 42 with a spur gear 52 on the shaft 48 and a spur gear 54 on the shaft 50. The spur gears 52 and 54 are located adjacent the center of the shaft and along the longitudinal center line of the conveyor housing 42 for receiving an endless chain conveyor 56 thereover with projecting slats 58 thereon for elevating material along a conveyor bottom 60 in engagement with the under surface of the upper run of the endless chain 56. The upper end of the conveyor housing 42 is provided with a downwardly opening discharge spout 62 on the opposite side of the housing 42 from the inlet hopper 46 wherein the material may be discharged into a suitable bin or truck generally indicated by the numeral 54.

As shown in Figure 6, the transverse shaft 48 is journaled in suitable ballbearings 66 and projecting end portions 68 of the shaft are supported in rearwardly projecting brackets 70 secured to the lower portion of the transverse member of the wagon frame 24. The rearwardly projecting brackets 70 are provided with an arcuate recess 72 along their upper edge for receiving the end portion 68 of the rotatable shaft 48. A bevel gear 74 is secured to one end of the shaft 48 in meshing engagement with the bevel gear 40 on the end of the elongated shaft 36 or a shorter shaft 76 which is used when the wagon loader 10 is used in a position to unload the wagon 12. A projecting portion of the shaft 48, indicated by the numeral 78, is supported in suitable bearings 80 at its end portion and the bearing 80 is supported by a frame member 82 having guide bearings 84 for supporting the shaft 76 or 36 so that the bevel gears 40 and 74 are retained in alignment. It will be seen that one of the bearings 66 is supported on a projecting arm 86, carried by the bracket member 82 wherein the shaft 36 or 76 may be revolved in angular relation about the shaft 48 to permit the conveyor or wagon loader 10 to be moved in angular relation to the wagon 12.

As shown in Figures 5 and 6 in detail, a rotatable shaft **88** is positioned transversely of the conveyor housing **42** midway of the longitudinal length of the housing and is supported thereon by suitable bearing brackets **90** and the remote ends thereof are provided with a pair of cable-winding drums **92** and a handle member **94** is secured to one end of the shaft **88** at its outermost end. The ratchet gear **96** is secured to one of the drums **92** between the conveyor housing **42** and the drum **92** and a spring urged pawl **98** is secured to the conveyor housing **42** by suitable U-shaped bracket **100** and a handle **102** is positioned at the remote end of the pawl **98** wherein the pawl **98** may be released from the ratchet gear **96** permitting the winding drums **92** to be rotated by the handle **94**. A flexible cable **104** is attached to the winding drum **92** at one end and the other end thereof is attached to an upstanding lug **106** secured to an upstanding member on the frame **24** at the remote edges of the frame wherein the angular relationship of the housing **42** and the wagon **12** may be adjusted about the axis formed when the shaft **48** is positioned on the bracket **70** in the recess portion **72** and the short shaft **76** is used for operating the wagon loader **10**.

Referring now specifically to Figures 8–10, it will be seen that the upper rotatable shaft **50** includes end portions **108** journaled in bearing blocks **110** which are generally rectangular in nature and slidably mounted in an elongated channel member **112** secured to the housing **42** by suitable securing means **114**. As will be seen, the channel member **112** and the side of the housing **42** are provided with elongated slots **116** for sliding movement of the shaft **50**. A threaded member **118** is rotatably secured to the bearing block **110** and is threadably engaged with a projecting lug **120** and provided with a polygonal end portion **122** and a lock nut **124** wherein the bearing block **110** may be moved in the longitudinal slot **116** in the channel member **112** by manipulation of the screw threaded member **118**. The threaded engagement with the projecting lug **120** will cause the screw threaded member to move longitudinally of the housing **42** and thereby tightening the conveyor chain **56** to a desired degree of tautness. The setscrew **124** may be tightened against the outer edge of the projecting lug **120** to retain the screw threaded member **118** in its adjusted position. It will be understood that the adjustment means, as above described, is positioned on each side of the channel shaped housing **42** for simultaneously tightening the endless conveyor belt **56** by movement of the shaft **50**.

As shown in Figures 8 and 11, the depending spout **62** may be provided with outstanding peripheral flanges **126** for rotatably receiving an extension **128**. The extension **128** is provided with oppositely disposed extensions **130** and an extension member **132** is pivotally mounted on the projecting lugs **130** for limited angular movement thereabout. An upstanding eye member **134** is secured to the bottom end of the discharge spout **62** and an upstanding lug **136** is positioned on the extension **132** and a flexible chain **138** connects the lugs **134** and **136** wherein the distance between the lugs is adjustable and the angular relationship of the spout **132** and the discharge spout **62** may be adjusted by shortening the distance between the lugs **134** and **136** in an obvious manner.

As shown in the drawings, the wagon body **22** is provided with a discharge closure generally indicated by the numeral **140** and the hopper **46** is provided with a transverse member **142** forming a handle therefor and also preventing the hopper **46** from becoming overloaded in an obvious manner. As shown in Figure 6, the side of the housing **42** adjacent the bevel gears **74** and **40** is provided with a lug **142** having an aperture **144** therein and the bracket **82** is provided with a lug **146** which has an aperture therein for matching with the aperture **144** and the lug **142** when the wagon loader is placed in a position to load the wagon substantially as shown in Figures 1 and 2, wherein the bevel gears **74** and **40** are retained in their correct relative position.

The operation of the device will be readily understood. As shown in Figure 4, the shaft **48** is positioned on the bracket **70** with the hopper **46** under the discharge of the wagon and the discharge spout **62** is adjusted vertically by manipulation of the handle **94** thereby winding the supporting cable **104** thereabout and changing the angular relation between the wagon and the conveyor housing **42**. As will be understood, the tractor takeoff is operated thereby turning the shafts **26** and **76** and operating the conveyor in an obvious manner. When it is desired to move the wagon loader **10** to a position for loading the wagon, as shown in Figures 1 and 2, the hopper **46** is moved remote from the wagon and the short shaft **76** is replaced with the long shaft **36** after the bracket **82** had been swung about the axis of the shaft **48** and the lugs **142** and **146** have been secured in correct relation. The tension adjuster for the conveyor operates in an obvious manner, as does the various discharge spouts. The device may be specially utilized in connection with a dump-type wagon or thje like, and may be readily detachable therefrom, wherein the wagon may be readily usable for many purposes.

From the foregoing, the construction and operation of the device will be readily understood and further explanation is believed to be unnecessary. However, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the appended claim.

What is claimed as new is as follows:

In combination with a wheeled wagon having a frame and a body portion, a wagon loader disposed exteriorly of said body portion, said wagon loader comprising an inclined elevating conveyor, a hopper at the lower end of said conveyor, said conveyor including an endless chain, means for tensioning said chain, projections on said chain for transporting material, bracket means mounted on said frame for detachably supporting the lower end of the conveyor adjacent the body portion, a drive shaft journaled on said frame and adapted to be connected to a power source, and adjustable means for extending the drive shaft for driving the conveyor chain when the lower end of the conveyor is disposed adjacent to and remote from the body portion for selectively loading and unloading a wagon, said conveyor having a transverse end shaft, a bevel gear on the end shaft, a bracket rotatably journaled on said end shaft, a stub drive shaft journaled on said bracket, a bevel gear on said stub drive shaft in meshing engagement with the bevel gear on the end shaft whereby the end shaft and the conveyor may be driven with the stub drive shaft disposed in various angular positions when the drive shaft is connected to the stub drive shaft when the lower end of the conveyor is selectively disposed adjacent to and remote from the body portion.

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