

March 17, 1942.

A. B. WELTY

2,276,903

CONVEYER DRIVE

Filed April 12, 1940

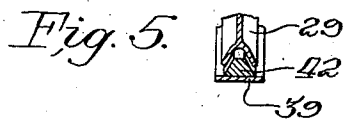


Fig. 1.

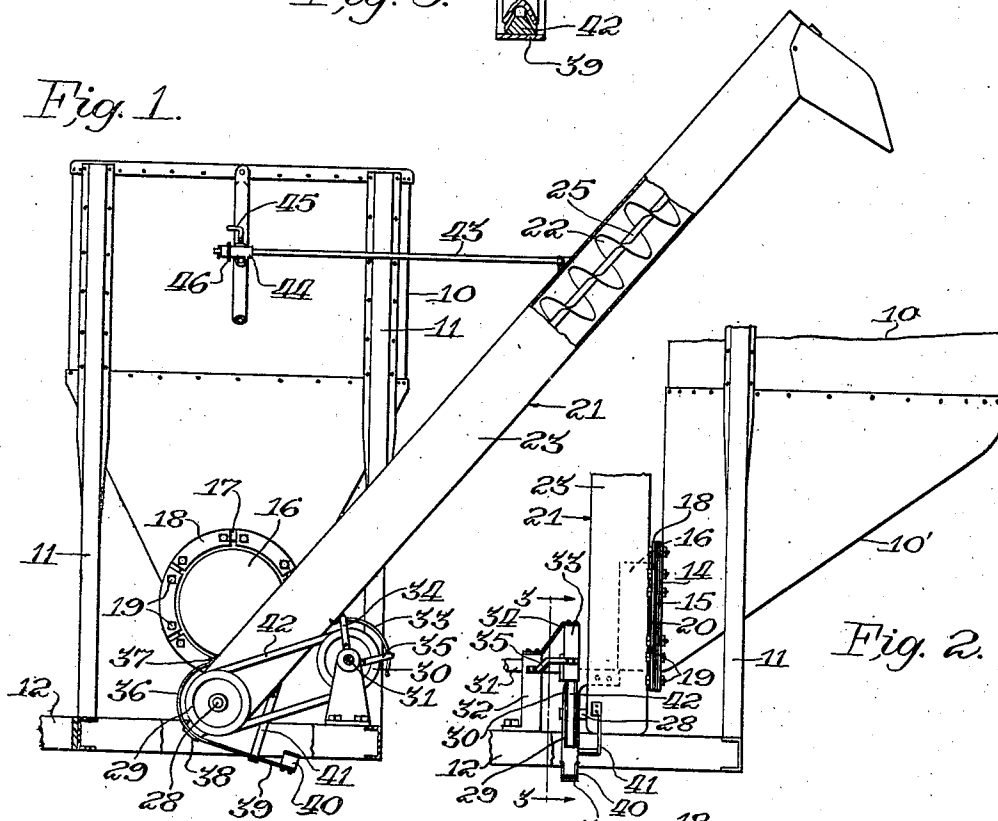


Fig. 2.

Fig. 3.

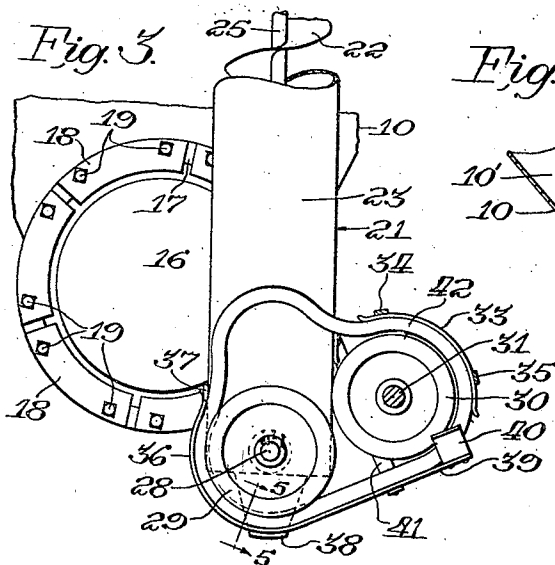
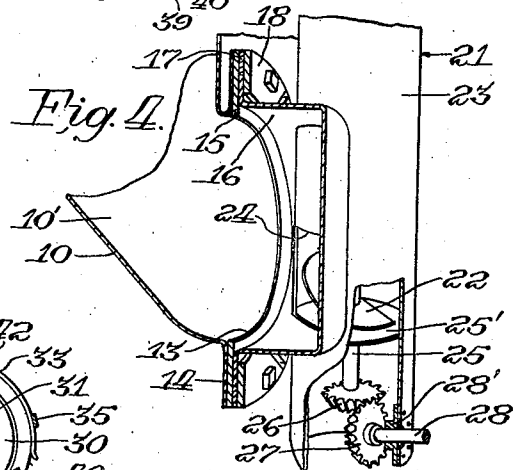


Fig. 4.



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UNITED STATES PATENT OFFICE

2,276,903

CONVEYER DRIVE

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Application April 12, 1940, Serial No. 329,328

7 Claims. (Cl. 214-17)

This invention relates to a conveyer. More specifically it relates to a conveyer which serves as an unloader for a grain tank.

An elevator for a grain tank is normally pivotally connected thereto and is shiftable from a position in which unloading is to take place, to another position suitable, for example, for transport in which unloading is not to take place. The present invention is concerned with driving means for the unloader which are disconnectable automatically upon shifting of the unloader from the unloading position to the transport position.

An object of the present invention is to provide an operating part carrying means which automatically interrupts drive of the part upon shifting thereof from an operating position to a non-operating position.

Another object is to provide a conveyer and drive means therefor automatically interrupted by shifting of the conveyer from an operative position to an inoperative position.

A further object is to provide an improved unloader for a grain tank.

Still another object is the provision of an improved mounting for a conveyer.

Another object is to provide an improved pivotal mounting for an elevator upon a grain tank.

A still further object is the provision of means for lifting a belt driven by a pulley out of engagement with the pulley as a way of interrupting drive between the pulley and the belt.

According to the present invention an elevator unloader is pivotally mounted adjacent its lower end upon a discharge spout at the lower end of a grain tank. The elevator carries at its lower end a driving pulley having its axis spaced from the pivotal mounting of the elevator upon the grain tank. There is also provided another pulley connected with a source of power, which pulley also has its axis of rotation spaced from the pivot axis of the elevator upon the tank. A belt transmits power from the last mentioned pulley to the driving pulley on the elevator. When the elevator is shifted from its normal operating position, in which it extends to one side of the grain tank to a non-operating position in which it extends upwardly alongside the grain tank, the pulley mounted upon the elevator moves toward the pulley connected with the source of power and thereby causes the belt to be taken out of driving engagement with the latter pulley so that no power is transmitted by the belt, and the elevator is not driven.

In the drawing:

Figure 1 is a side elevation showing a grain

tank and an elevator unloader pivotally connected thereto in accordance with the present invention;

Figure 2 is an elevation taken from another side of the grain tank and the unloader;

Figure 3 is a view taken along the line 3-3 of Figure 2 and shows the elevator in inoperative position;

Figure 4 is a perspective view partly in section showing the manner in which the elevator is mounted upon the grain tank; and,

Figure 5 is a section taken along the line 5-5 of Figure 3.

The reference character 10 designates a grain tank supported by uprights 11 upon a framework 12 which may form part of a harvester thresher, not otherwise shown. The tank has a sloping bottom 13 at the lower end of which is a circular outlet 13 surrounded by an outwardly extending radial flange 14. An annular plate 15 reinforces the flange 14. A cup-shaped member 16 has an outwardly extending radial flange 17 held against the reinforcing plate 15 by arcuate segments 18 connected to the plate 15 by bolts 19. A spacing ring 20 between the arcuate plates 18 and the reinforcing plate 15 allows the flange 17 of the cup-shaped member 16 to have a movement of rotation with respect to the reinforcing plate 15 and the flange 14.

An elevator unloader 21 has a spiral feed element 22 and a cylindrical casing 23 which is secured in the wall of the cup-shaped member 16. There is an opening 24 in the wall of the shell 23, so that passage is provided for grain from the tank 10 through the opening 13, the cup-shaped member 16 and the opening 24 into the elevator 21. The cup-shaped member 16 also supports the elevator 21 and by reason of the rotative engagement of the flange 17 with the reinforcing plate 15 abutting the annular flange 14 on the tank 10, the elevator 21 may pivot on the tank 10 about the center of the cup-shaped member as an axis.

The spiral feed element 22 of the elevator shaft 21 includes a shaft 25 extending downwardly through a plate 25' secured to the shell 23. At its lower end said shaft carries a bevel gear 26 meshing with a bevel gear 27 connected to a horizontally disposed shaft 28 to which is secured a V-pulley 29 outside the shell 23. Said shaft 28 is rotatably supported in a bearing 28' secured to the shell. A pulley 30 is secured to the end of a drive shaft 31 carried in a bearing bracket 32 mounted upon the framework 12. An arcuate guard 33 partially surrounds the side of the pul-

ley 30 away from the pulley 29. The guard 33 is supported in spaced relation to the pulley 30 by means of members 34 and 35 connected to the bearing bracket 32. An arcuate guard 36 partially surrounds the pulley 29 in spaced relation to the side of the pulley 29 away from the pulley 30. It is connected at one end at 37 to the shell 23. A member 38 connects an intermediate portion of the arcuate guard 36 to the lower end of the shell 23. The guard has a straight extension 39 which carries a U-shaped member 40 at its end and is connected to the shell 23 by means of a member 41.

Figure 1 shows the unloader elevator 21 in its normal operating position in which position the elevator discharges grain to one side of the tank. A V-belt 42 connects the pulleys 29 and 30 and thereby transmits power originating with a source of power connected to the drive shaft 31 through the pulleys 30 and 29 to the spiral feed 22. Shifting of the elevator from the position of Figure 1 to the position of Figure 3, in which the elevator extends upwardly rather than to one side of the tank 10, moves the pulley 29 toward pulley 30, and consequently the belt 42 is taken out of driving engagement with the pulley 30 and drive of the elevator 21 is interrupted. The arcuate guard 36 with the straight extension 39 and U-shaped member 40 and the arcuate guard 33 cause shifting of the pulley 29 toward the pulley 30 to take the belt 42 out of engagement with the pulley 30 as is to be observed from Figure 3. The extension 39 and the U-shaped member 40 on the guard 36 keep the lower portion of the belt between pulleys from drooping, and the guard 33 is spaced sufficiently from the pulley 30 to permit the belt 42 to move out of engagement with the pulley 30. The arcuate guard 36 is close enough to the pulley 29 to prevent the belt 42 from moving out of engagement with the pulley 29 sufficiently to shift laterally between the flanges of the pulley and the guard. A U-shaped member 40 prevents the portion of the belt 42 adjacent the pulley 30 from moving axially with respect to the pulley 30. Consequently, when the elevator 21 is moved back to its operating position the belt 42 is brought into driving engagement with the pulley 30 and driving of the elevator is resumed.

The elevator 21 is held in the vertical non-operating position of Figure 3, or any position intermediate the vertical position and the operative position of Figure 1 by means of a rod 43 pivotally connected to the elevator, a sleeve 44 through which the rod passes, and a tightening screw 45. A collar 46 on the end of the rod 43 determines the operating position of Figure 1. In any intermediate position the rod 43 is held in the sleeve 44 against movement by the tightening screw 45.

It will be seen from the above description that a new and novel drive for an elevator unloader has been provided by which interruption of the drive is effected automatically by shifting of the elevator from an operating position to a non-operating position. It will be obvious the invention may also be applied to other types of conveyers which may be shiftable by pivoting or in some other way and that the invention is also applicable to operating parts other than conveyers or elevators. By the present invention there has also been provided novel means by which a belt is lifted out of engagement with a driving pulley upon shifting of a drive pulley toward

the driving pulley. There has further been provided a novel pivotal mounting for a conveyer.

It is the intention to limit the invention only within the scope of the appended claims.

What is claimed is:

1. In combination, a support, a tank mounted thereon, a spiral elevator pivotally mounted at its lower end at the base of the storage tank and adapted to extend vertically upwardly in a non-operating position and to extend upwardly at an angle to the vertical in an operating position, a source of power including a pulley rotatably mounted on the support on an axis spaced from the pivot axis of the elevator on the storage tank, a pulley rotatably mounted on the elevator on an axis spaced from the pivot axis of the elevator for driving the same and spaced from the pulley included in the source of power a greater distance with the elevator in its operating position than with the elevator in its non-operating position, and a belt connecting the pulleys and operative to transmit power therebetween with the elevator in its operating position.

2. In combination, a tank having a discharge outlet at its lower end, an elevator pivotally mounted adjacent its discharge end upon the discharge outlet of the tank and adapted to extend vertically upwardly in a non-operating position and upwardly at an angle to the vertical in an operating position, a source of power including a pulley rotatably mounted on an axis spaced from the pivot axis of the elevator on the discharge outlet of the tank, a pulley for driving the elevator rotatably mounted thereon below the mounting of the elevator on the discharge outlet of the tank and adapted to move toward the pulley included in the source of power with movement of the elevator from operating to non-operating position, and a belt connecting the pulleys and operative to transmit power therebetween only with the elevator in operating position.

3. In combination, a storage tank having an opening having a radially extending flange integral therewith, a conveyer, a cup-shaped member supporting the conveyer and serving as a passage for material between the conveyer and the tank and having a radially extending flange in engagement with the radially extending flange of the tank opening, and means rotatably securing the flange on the member to the flange on the tank opening.

4. The combination specified in claim 3, the flanges on the tank opening and on the cup-shaped member extending radially outwardly.

5. In combination, a tank having a discharge outlet at its lower end comprising a circular opening surrounded by a radially outwardly extending annular flange, an elevator, a first means pivotally supporting the elevator adjacent its lower end for pivotal movement about the axis of the circular opening in the tank and including an annular radially extending flange in engagement with the flange surrounding the circular opening, a second means holding the flange of the first means against the flange surrounding the opening in the tank for relative movement of rotation between the flanges, driving means for the elevator connected thereto and positioned below the said first means spaced from the axis of the opening in the tank, a source of power spaced from the axis of the opening in the tank, power-transmitting means connecting the source of power and the driving means, whereby power is

transmitted between the source of power and the driving means in one angular position of the elevator with respect to the tank and is not transmitted in another angular position.

6. In combination, a conveyer shiftable from a first position in which material is to be conveyed to a second position in which material is not to be conveyed, a source of power including a first pulley mounted on a horizontal axis, a second pulley mounted on the conveyer on a horizontal axis for driving the same and movable toward the first pulley upon shifting of the conveyer from its first position to its second position, a belt connecting the pulleys, the belt being of substantial thickness and having upper and lower portions extending between the pulleys, a first arcuate guard partially surrounding the first pulley in spaced relation thereto on the side away from the second pulley, a second arcuate guard partially surrounding the second pulley in spaced relation thereto on the side away from the first pulley, and means for supporting the lower portion of the belt extending between the pulleys, whereby, upon movement of the second pulley toward the first pulley with shifting of the conveyer from its first position to its second position, the belt

is forced out of contact with the first pulley and against the first arcuate guard, and the upper portion of the belt buckles outwardly between the arcuate guards because of the inherent resistance of the belt to bending due to its substantial thickness and because of the support of the lower portion of the belt on the supporting means.

7. In combination, a support, a tank mounted thereon, a conveyer for removing material from the tank pivotally mounted on the tank and adapted to extend in one direction in non-operating position and in another direction in operating position, a source of power including a pulley rotatably mounted on the support on an axis spaced from the pivot axis of the elevator on the storage tank, a pulley rotatably mounted on the elevator on an axis spaced from the pivot axis of the elevator for driving the same and spaced from the pulley included in the source of power a greater distance with the elevator in its operating position than with its elevator in its non-operating position, and a belt connecting the pulleys and operative to transmit power therebetween with the elevator in its operating position.

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