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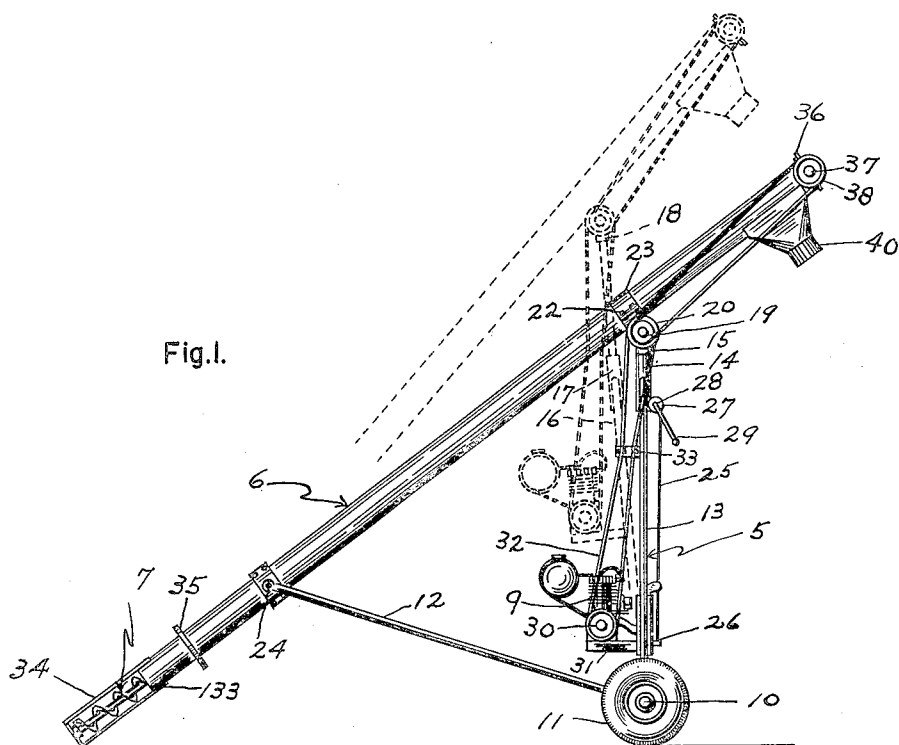
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2,533,261

ADJUSTABLE ELEVATION GRAIN LOADER

Filed Aug. 27, 1947

3 Sheets-Sheet 1



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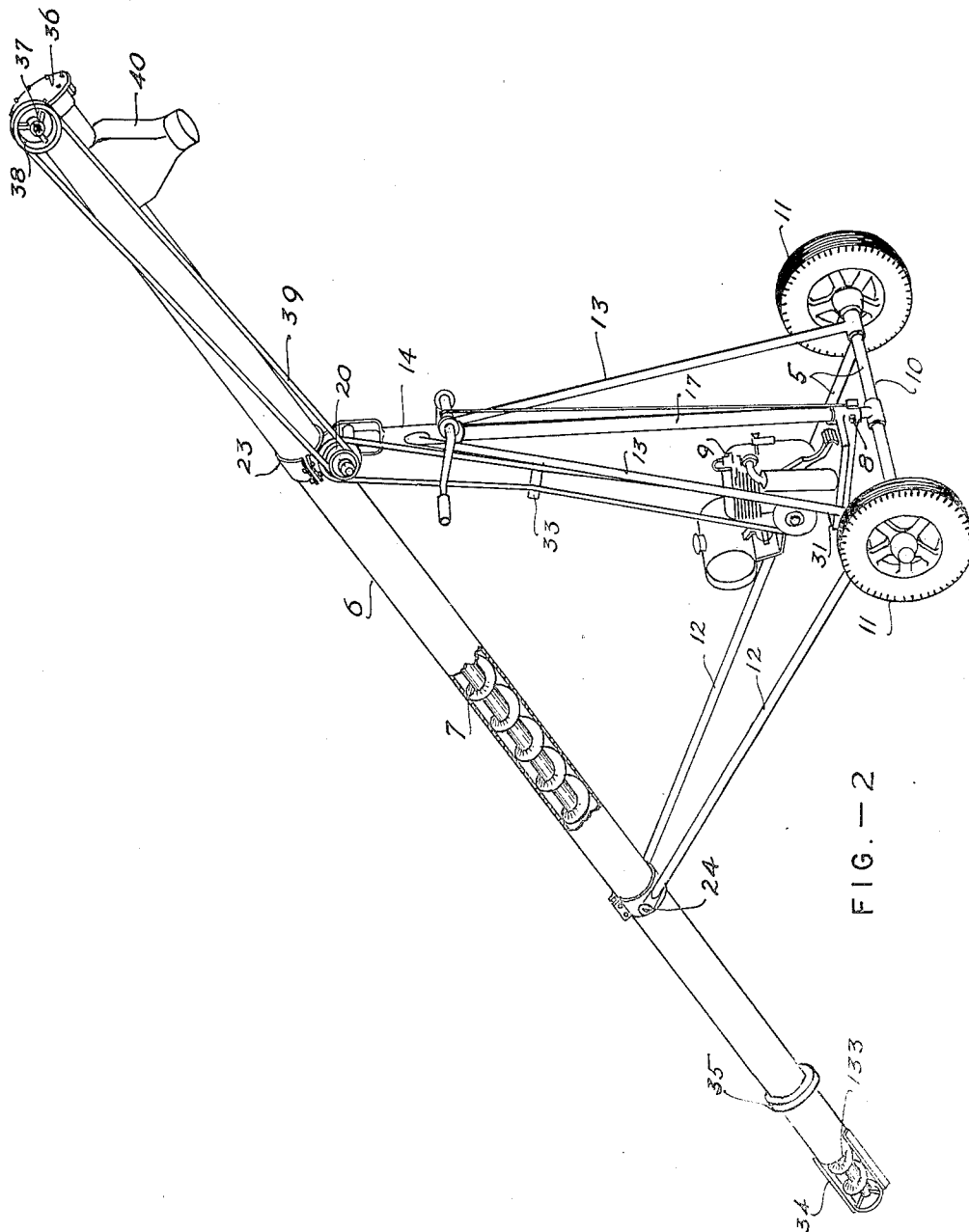
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ADJUSTABLE ELEVATION GRAIN LOADER

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

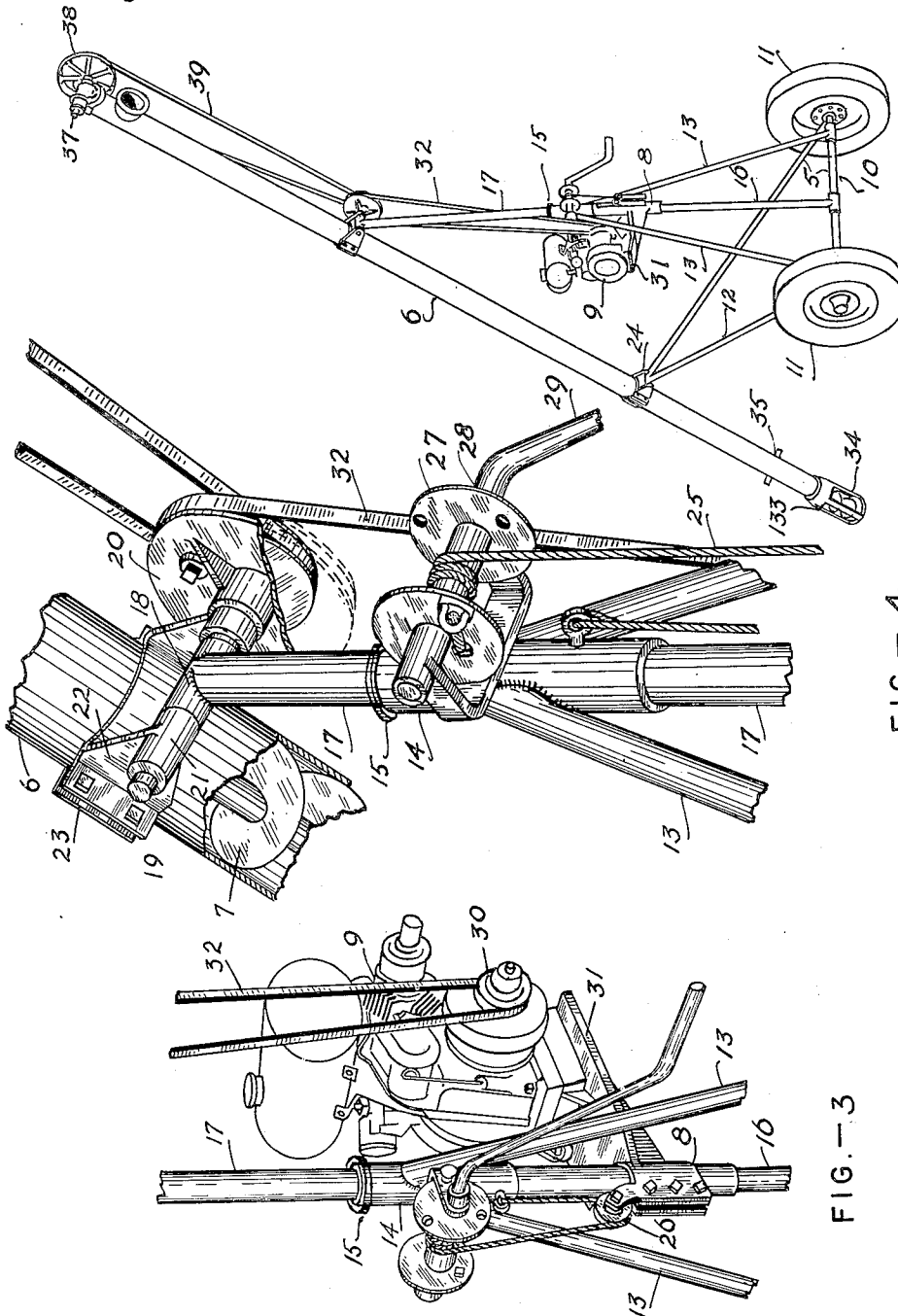


FIG. - 5

FIG. - 4

FIG. - 3

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ADJUSTABLE ELEVATION GRAIN LOADER

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6 Claims. (Cl. 198—233)

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This invention relates to improvements in loading devices for grain and the like, especially although not necessarily of the type employing a loading or elevator tube, within which operates a conveyor, preferably but not necessarily of the helical type, which takes up the grain or the like at the lower end of the tube and moves it to the upper end of the tube for discharge therefrom. A primary object of the invention is to provide a simplified but functionally adequate, and therefore highly practical, relatively inexpensive device of this character.

Another important object of the invention is to provide a loading device of the character indicated above whose loading tube is more readily adjustable to and maintained at different heights and inclinations.

Another important object of the invention is to provide a loading device of the above indicated character wherein the motor provided for driving the conveyor is operatively connected to the upper part of the conveyor by belt means, and the motor is mounted upon the frame of the device to move with the elevating tube and the conveyor, when the elevation and angulation of the elevating tube are adjusted, in such a way that the distances between the pulleys of the power transmission between the motor and the conveyor remain constant, and eliminate the need for compensatory adjustment of the power transmission whenever the elevating tube is adjusted.

Another important object of the invention is to provide a loading device of the character indicated above in which the elevating and lowering adjustment of the elevating tube is accomplished through manipulation of simple crank means operating a lift to which both the elevating tube and the driving motor are supportably connected.

Other important objects and advantageous features of the invention will be apparent from the following description and the drawings thereunto appended, wherein, for purposes of illustration only, a presently preferred embodiment of the invention is set forth in detail.

In the drawings:

Fig. 1 is a side elevation of said embodiment, partly broken away to show the helical conveyor, showing in full lines a lowered position and in dotted lines an elevated position of the device.

Fig. 2 is a perspective view in partial section showing the grain elevator of this invention in a lowered position.

Fig. 3 is an enlarged perspective view of a

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motor elevating mechanism showing the motor in a raised position.

Fig. 4 is an enlarged perspective view showing the arrangement of a motor elevating mechanism and the pulley arrangement for driving the helical conveyor.

Fig. 5 is a perspective view showing the motor and grain elevator in an elevated position.

Referring in detail to the drawings, wherein like numerals designate like parts throughout, the numeral 5 generally designates the wheeled frame of the illustrated loading device, the numeral 6 the elevating tube, the numeral 7 the helical conveyor enclosed therein, and the numeral 8 the slide upon which the motor 9 is mounted.

The frame 5, which may be constructed of tubing, comprises a transverse horizontal member 10 upon whose opposite ends pneumatic tired ground engaging wheels, 11, 11 are axially mounted. To the outer ends of frame member 10 rearwardly inclined and converging braces 12, 12 are rigidly connected, and also vertically extending upwardly converging side members 13, 13. The upper ends of frame side members 13, 13 are fixedly secured to opposite sides of vertical slide guide tube 14 which has a flanged abutment 15 on its upper end.

Rising perpendicularly from the middle of transverse frame member 10 in substantially the same plane as the side members 13, 13 is the slide guide member 16, upon which is slidably telescoped the tubular slide 17, whose upper part is in turn slidably telescoped through the slide guide tube 14.

The upper part of the slide 17 above the guide tube 14 has a yoke 18 whose arms support the horizontal transverse pulley shaft 19 having on one end the dual V-belt pulley 20. Pivoted on the pulley shaft housing 21 are ears 22 depending from a ring clamp 23 constricted upon the elevating tube 6, at a point below its upper end, whereby the elevating tube 6 is afforded its main support from the frame 5, and can swing relatively thereto on a horizontal axis.

The rear ends of the braces 12, 12, are pivoted as indicated at 24, 24, to opposite sides of the elevating tube 6, whereby alignment of the elevating tube and the frame 5 is maintained without impairing the freedom of the elevating tube to pivot upon the upper part of the frame 5.

The slide 17 is raised and lowered by means of a cable 25 having its lower end attached to the lower part of the slide, as indicated at 26, the upper part of the cable being wound upon a drum

27 fixed on a horizontal transverse shaft 28 mounted on the slide guide tube 14 and operable by a crank handle 29, suitable conventional means (not shown) being provided to maintain the drum in selected positions achieved by operating the crank handle.

The conveyor driving motor 9 may be of any suitable type, here shown as a conventional gasoline engine, including clutch means, in connection with a V-belt pulley 30. The motor 9 is fastened upon a bracket 31, secured to the lower part of the slide 8, in a position slightly above and between the braces 12, 12.

A first V-belt 32 is trained over and between the engine pulley 30 and one of the grooves of the dual pulley 20, the runs of the belt 32 passing through guide means 33 on the adjacent one of the frame side members 13, 13. It is obvious that as the shaft 28 and drum 27 are turned so as to wind or unwind the cable 25 on the drum, in accordance with the direction of rotation of the crank handle 29, the resultant movement of the slide 8 will equally raise or lower both the elevating tube 6 and the motor 9, so as to avoid any change in the distance between the pulleys 30 and 20, and thereby preserve their operative relation to the belt 32 without any attention upon the part of the operator.

The helical type conveyor 7 is suitably mounted within the elevating tube 6 to rotate axially therein with a portion of its lower end exposed below the lower end 133 of the tube, and protected by a U-shaped guard and ground rest 34 secured to the lower end of the tube, whereby the conveyor can pick up the grain or the like to be elevated, from a ground pile or from a container. The lower part of the elevating tube 6 has an external flange 35 enabling attachment of a feed scoop when desirable or necessary.

The elevating tube is closed at its upper end by a plate 36, below which is a transverse shaft 37 having a pulley 38, a second V-belt 39 being trained over the pulley 38 and one of the grooves of the dual pulley 20. The shaft 37 is operatively connected by suitable means (not shown) to the upper part of the helical conveyor 7, whereby the conveyor is operated whenever the motor 9 is running and its clutch mechanism engaged. A discharge funnel 40 depending from the elevating tube 6 immediately below its upper end enables the grain or the like conveyed to this point by the action of the conveyor 7, to discharge gravitationally, into a receptacle or vehicle positioned under the funnel.

It will be obvious that the above described loading device is conveniently and easily transportable from place to place upon its wheels 11, 11, and that it is adapted to be easily and quickly adjusted to requirements of angulation and of elevation of the elevating tube 6, by tilting the device on the axis of the wheels 11, 11, and through operation of the crank handle 29. It is also obvious that the device is composed of few and simple parts which are susceptible of being constructed of inexpensive and readily available material, and that the device can be made as light in weight and bulk as the choice of material and the requirement of adequate structural strength dictate.

While the illustrated embodiment is believed to adequately fulfill the objects and advantages herein stated, it is to be understood that many variations and modifications are possible, within the spirit and scope of the subjoined claims.

I claim:

1. A grain loader comprising, in combination, a forwardly inclined elevator tube having a discharge at its upper end, a helical conveyor in said tube for moving grain from the lower end of said tube to said discharge, a frame comprising a vertical member and a substantially horizontal member rigidly associated with said vertical member and extending rearwardly therefrom, first means horizontally pivoting the rear end of said horizontal member to a lower portion of said tube, a vertically movable slide on said vertical member extensible above said vertical member, second means horizontally pivoting the upper end of said slide to an upper portion of said elevator tube, a cable drum mounted on said vertical member having a cable wound thereon and attached to a lower portion of said slide, a hand crank for turning said drum to raise and lower said slide so as to alter the angulation and elevation of said elevator tube above said frame, a motor mounted on said slide having a drive belt pulley, an intermediate dual pulley horizontally journaled on said slide coaxially with respect to said second pivoting means, a first belt operatively connecting said drive and intermediate pulleys, a driven pulley journaled on the upper part of said elevator tube and operatively connected to said helical conveyor, and a second belt operatively connecting said intermediate and driven pulleys.

2. A grain loader comprising a frame having a horizontal transverse member carrying ground engaging wheels on its opposite ends, converging vertical members fixed to the outer portions of said transverse member, a perpendicular member fixed to the mid-portion of said transverse member, a union to which the upper ends of said converging members are fixed, said union comprising a tubular guide axially aligned with said perpendicular member, a tubular slide having its lower part telescoped upon said perpendicular member and its upper part slidable through and above said guide, a forwardly inclined elevator tube, horizontal pivot means supportably connecting the upper end of said slide to an upper part of said elevator tube, and slide raising and lowering means comprising a crank operated drum mounted on said union and having a cable wound thereon and attached to said slide.

3. A grain loader comprising a frame having a horizontal transverse member carrying ground engaging wheels on its opposite ends, converging vertical members fixed to the outer portions of said transverse member, a perpendicular member fixed to the mid-portion of said transverse member, a union to which the upper ends of said converging members are fixed, said union comprising a tubular guide axially aligned with said perpendicular member, a tubular slide having its lower part telescoped upon said perpendicular member and its upper part slidable through and above said guide, a forwardly inclined elevator tube, horizontal pivot means supportably connecting the upper end of said slide to an upper part of said elevator tube, and slide raising and lowering means comprising a crank operated drum mounted on said union and having a cable wound thereon and attached to said slide, said elevator tube containing a conveyor, a motor carried by said slide and vertically movable with said slide as the inclination of said elevator tube is altered by raising or lowering of said slide, and power transmitting means operatively connected between said motor and an upper part of said

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conveyor, said power transmitting means comprising a pulley mounted on said elevator tube and a pulley on said motor with a drive belt trained thereover, the pulley on the elevator tube being mounted coaxially with respect to said horizontal pivot means whereby the distance between the pulleys remains constant in different positions of the elevator tube.

4. A device for loading grain and the like comprising a wheel mounted frame having rearwardly converging brace means and upwardly converging support means, a forwardly inclined elevating tube pivotally engaging said brace means, a tube mounted on said support means, a vertically movable member slidably engaged in said tube member, means pivotally engaging said movable member to said elevating tube at a point above said brace means, and operating means on said frame for raising and lowering said movable member to change the elevation of said elevating tube.

5. A device for loading grain and the like comprising a wheel mounted frame having rearwardly converging brace means and upwardly converging support means, a forwardly inclined elevating tube pivotally engaging said brace means, a tube mounted on said support means, a vertically movable member slidably engaged in said tube member, means pivotally engaging said movable member to said elevating tube at a point above said brace means, and a crank operated rotatable drum member having a cable wound thereon and attached to said movable member for raising and

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lowering said member to change the inclination and elevation of said elevating tube.

6. A device for loading grain and the like comprising a wheel mounted frame having rearwardly converging brace means and upwardly converging support means, a forwardly inclined elevating tube pivotally engaged with said brace means on an axis substantially parallel to the axis of the wheels of said frame, a hollow tube member rigidly mounted on said support means in a vertical position, a vertically movable tube slidably engaged in said tube member, means pivotally engaging said movable member to said elevating tube at a point above said brace means, and a crank operated rotatable drum member having a cable wound thereon and attached to said movable member for raising and lowering said member to change the inclination and elevation of said elevating tube.

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