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PORTABLE GRAIN CONVEYER

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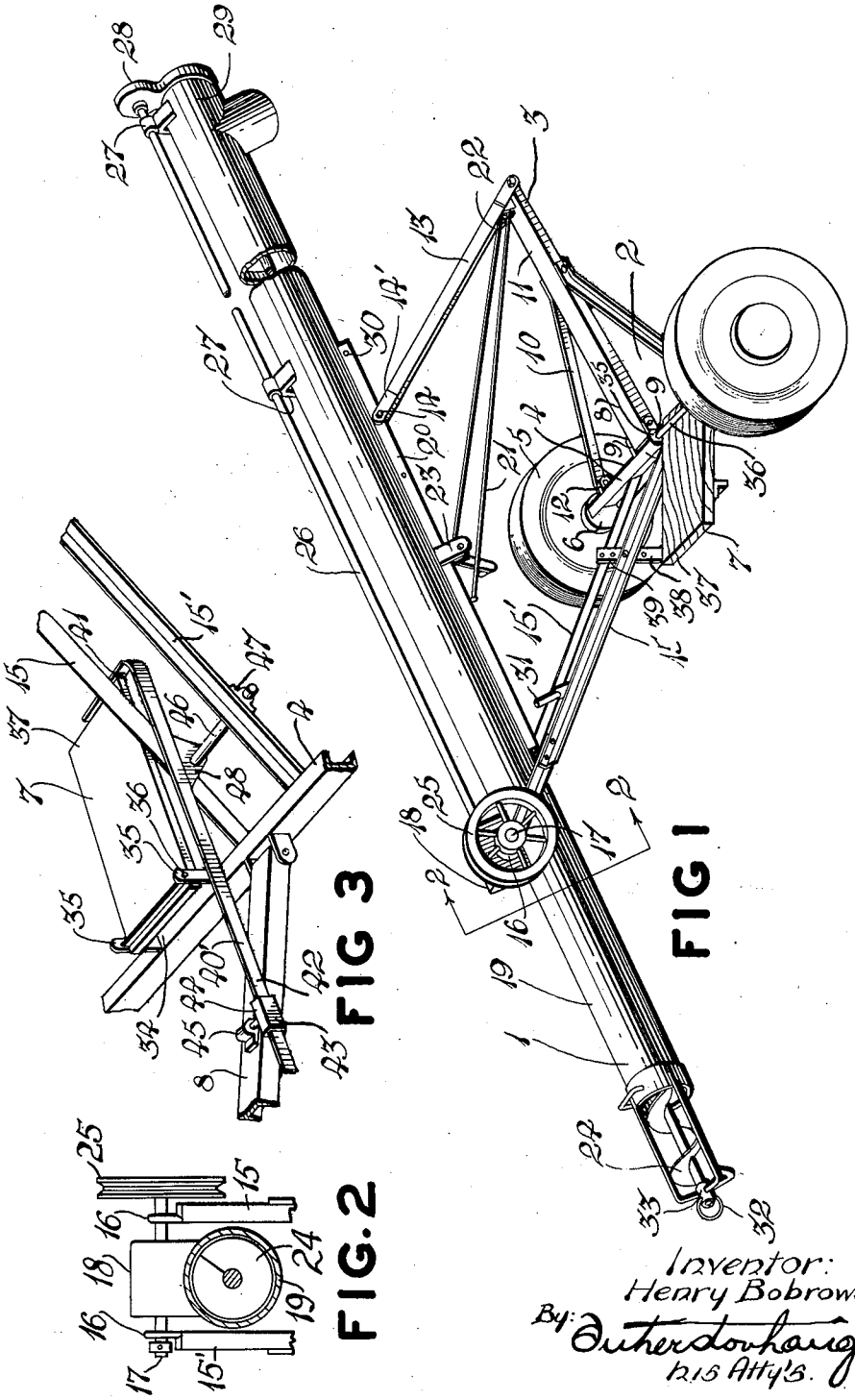


FIG 1

FIG 3

FIG. 2

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PORTABLE GRAIN CONVEYER

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1 Claim. (Cl. 198—233)

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My invention relates to new and useful improvements in portable grain conveyors, the object of my invention being to provide a device of the character herewithin described wherein the grain elevator is mounted upon a wheeled chassis which includes a source of power for the elevator thereby making the unit self-contained and easily transportable from one location to another by conventional towing means.

A further object of my invention is to provide a device of the character herewithin described wherein the height and angle of inclination of the elevator may readily be adjusted thereby making the unit adaptable for use under a variety of conditions.

A still further object of my invention in conjunction with the foregoing objects is to provide a device of the character herewithin described wherein the auger elevator may be lowered substantially parallel with the chassis thereby facilitating towing of the unit without the possibility of the auger elevator striking overhead obstructions.

A yet further object of my invention is to provide a device of the character herewithin described which includes means whereby the engine platform is preserved in a substantially horizontal position irrespective of the inclination of the conveyor.

Another object of my invention is to provide a device of the character herewithin described which is economical to manufacture, simple in construction, and otherwise well suited for the purpose for which it is designed.

With the foregoing objects in view, and such other objects and advantages as will become apparent to those skilled in the art to which this invention relates as this specification proceeds, my invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawing in which:

Fig. 1 is a perspective view of my device shown in the partially elevated position.

Fig. 2 is a fragmentary cross-sectional view of my device taken along the line 2—2 of Fig. 1.

Fig. 3 is a perspective fragmentary view substantially reversed with respect to Fig. 1, of an alternative construction of the engine platform.

In the drawings like characters of reference indicate corresponding parts in the different figures.

In the science of agriculture considerable movement of grain is necessary either from storage bin to trucks or from ground level to elevated storage bins. Due to the widely dispersed storage points on present-day farms together with the different operating levels required, the need has long been felt for a self-contained auger elevator which can be transported readily to the desired location by car, truck or manually and which can then be adjusted to the correct operational level and can be operated without an external source of power being required.

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Consequently, I have designed the grain transferring unit hereinafter to be described which is mounted upon a two-wheeled chassis which also contains a source of power for the auger and which furthermore can readily be raised or lowered in relation to the ground thereby adjusting the outlet to the required height.

Proceeding therefore to describe my invention in detail it will be seen upon reference to the accompanying drawings that the auger elevator or conveyor collectively designated 1 is mounted upon a two-wheeled undercarriage 2 by means of the extending and retracting toggle action collectively designated 3. The undercarriage 2 comprises the axle beam 4, constructed of channel iron, on the ends of which are mounted the ground wheels 5 in line abreast supported by suitable bearings 6. A source of power for the auger elevator 1 in the form of a relatively small gasoline motor (not illustrated) is mounted upon engine platform 7 offstanding from the axle beam 4. The toggle action 3 comprises a pair of jack-knifing arms, the long one of which I call the draft arm 8 which is pivotally supported between the lugs 9, extends forwardly from the axle beam 4, being stabilized by a pair of diagonal angle iron members 10 which converge forwardly from lugs 12 at the extremities of the axle beam to be rigidly connected to the draft arm substantially towards the distal end or joint 11 thereof.

The upper arm 13 of the toggle action is pivotally connected to the distal end 11 of the draft arm 8 and extends upwardly to the pivoting attachment point 14 on the underside of the conveyor 1 as will hereinafter be described.

A pair of rear supporting members 15 and 15', which I designate as a boom, are rigidly attached to the rear of the axle beam 4 and extend upwardly and rearwardly, terminating in the ring bearings 16 within which the shaft 17 is mounted. The shaft 17 is supported in suitable bearings contained within a bevel gear box 18 secured to the upper surface of the conveyor tube 19 and transmits the drive from the power unit as will hereinafter be described.

From the foregoing it will be appreciated that the rear portion of the conveyor is supported by the boom 15 via the shaft 17 and that the ring bearings 16 permit the conveyor to pivot around this shaft in the raising and lowering of the elevator in relation to the chassis.

A longitudinally extending channel member 20 is secured to the underside of the conveyor tube 19 to which is pivotally attached the upper end of the arm 13 of the toggle action by means of the pin 14 engaged within the fork end 14 attached to the arm. This pin provides support to the forward or upper portion of the conveyor and reference to Fig. 1 illustrates the parallelogram formation of the supporting framework comprised of the toggle action 3, the boom 15, and the portion of the channel 20 between the pivot pin 14 and the shaft 17. The position of this parallelogram and consequently the angle of inclination of the conveyor is controlled by means of a cable 21 secured to the channel member 20 and extending downwardly and forwardly to the pulley 22 located adjacent to the joint 11 of the toggle action 3. The cable passes around the pulley and is connected to the winch 23 anchored to the channel member 20 rearwardly of the pivot pin 14.

The drive to the auger or flighting 24, mounted within the conveyor tube 19, is supplied from the source of power (not illustrated) mounted upon the engine platform 7. A conventional V belt (not illustrated) conveys the power to the conveyor drive wheel 25 mounted upon shaft 17, the bevel gear box 18 transferring the power to the line shaft 26 supported by bearing 27 attached to the upper side of conveyor 19. A conventional pair of meshed spur gears are contained within the casing 28 upon the upper end 29 of the conveyor, one gear being connected to the line shaft 26 and the other to the upper end of auger 24.

In operation, the winch 23 is actuated in order to shorten the length of the cable 21 which has the effect of elevating the pivot point 14 in relation to the ground. This causes the upper portion of the conveyor to be raised to the desired position.

In this connection is should be noted that the pivot pin 14 can be engaged within one of a series of apertures 30 situated along the channel member 20 thus permitting variation of the range of movements of the elevator.

In order to lower the conveyor the movement of the winch 23 is reversed thus lengthening the cable 21. The weight of the conveyor jackknives the action 3 thus lowering the conveyor as required. In this connection I have provided a stop 31 situated upon the boom 15 against which the underside of the panel 20 will bear when the conveyor is in the fully-lowered position. This is to prevent the conveyor from coming into interference with the source of power and to take the strain off the cable 21 when being towed.

With the conveyor in the lowered position the unit may be transported from one location to another by means of the towing ring 32 attached to the outboard bearing 33 of the auger. The height of this ring above the ground when in the towing position is such that the unit may be towed either by a car or tractor as desired.

The efficient operation of the gasoline motor (not illustrated) depends to a large extent upon the horizontality of the float chamber thereof. It will be appreciated that when the conveyor 1 is raised or lowered, the motor platform 7 will incline due to its attachment to the toggle action 3. In order to maintain the motor platform 7 in a substantially horizontal position irrespective of the inclination of the conveyor 1, I have pivoted the platform 7 at the end 34 thereof to the axle beam 4. In this embodiment, the end 34 of the platform 7 is suspended between a pair of upstanding lugs 35 by means of a pin 36 passing therethrough and secured to the upper surface of the platform.

In Fig. 1, the opposite end 37 of platform 7 is supported by means of an upwardly projecting, multi-apertured bracket 38 secured to the underside of the platform, the arm 39 of the bracket being attached to the boom 15 by means of a bolt or the like extending through any selected one of the apertures 40.

From the foregoing it will be appreciated that the end 34 of the platform is freely connected to the axle beam 4, the opposite end being adjusted thereby levelling the platform 7 after the auger 1 has been inclined to the desired position.

Fig. 3 of the accompanying drawings shows an alternative arrangement of the means provided for preserving the substantially invariant horizontality of the platform 7 which includes the free pivotal connection of the end 34 to the axle beam 4 as hereinbefore described. A slide bar 40' is hinged to the opposite end 37 of the platform by means of the hinge 41, the slide bar being angulated as illustrated to pass between the members 15 and 15' substantially parallel with the longitudinal side of the platform 7.

The distal end 42 of the slide bar is slidably engaged within a swivelling slide block 43 which includes a sleeve 44 surrounding the slide bar 40', the sleeve being swivellably supported within a pillow block 45 which in turn is attached to the aforementioned draft arm 8 of the toggle action 3.

The aforementioned slide bar 40' is also pivotally connected to a shaft 46 carried within the pillow blocks 47 upon the members 15 and 15', a bracket 48 extending downwardly from the slide bar 40' to this shaft. This pivotal support is located between the aforementioned hinge securement of the slide bar to the end 37 of the platform 7 and the aforementioned swivelling slide block 43.

In operation, the jack-knifing of the toggle action 3 automatically actuates the aforementioned slide bar 40' and hinge 41, thereby maintaining the platform 7 substantially horizontal assisted by the pivotal connection of the opposite end 34 to the axle beam 4.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claim without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

What I claim as my invention is:

A grain transferring unit comprising in combination an elongated conveyor and undercarriage therefor, said undercarriage comprising a pair of wheels in line abreast, an axle beam therebetween, and a conveyor elevating and tilting assembly, said elevating and tilting assembly embodying a toggle action connected at one end thereof to said beam, and at the other to said conveyor, and a supporting boom extending between said beam and said conveyor, means for actuating said toggle to vary the inclination of said conveyor, a motor platform, and means for preserving the substantially invariant horizontal-

ity thereof irrespective of the inclination of said conveyor, said platform being freely connected at one end thereof to said axle beam, a slide-bar hingedly secured at the opposite end of said platform, a swivelling slide-block on said toggle action in which said bar is slidably receivable, said bar being pivotally connected to said boom between the points of hinged securement aforesaid and said slide-block.

HENRY BOBROWSKI.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,343,133	Blank	Feb. 29, 1944
2,446,660	Mulkey et al.	Aug. 10, 1948
2,460,661	Tintes	Feb. 1, 1949
2,490,538	Newell	Dec. 6, 1949
2,528,917	Slocum	Nov. 7, 1950