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ADJUSTABLE DELIVERY SPOUT FOR BULK MATERIAL DELIVERY TRUCKS

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2 Sheets-Sheet 1

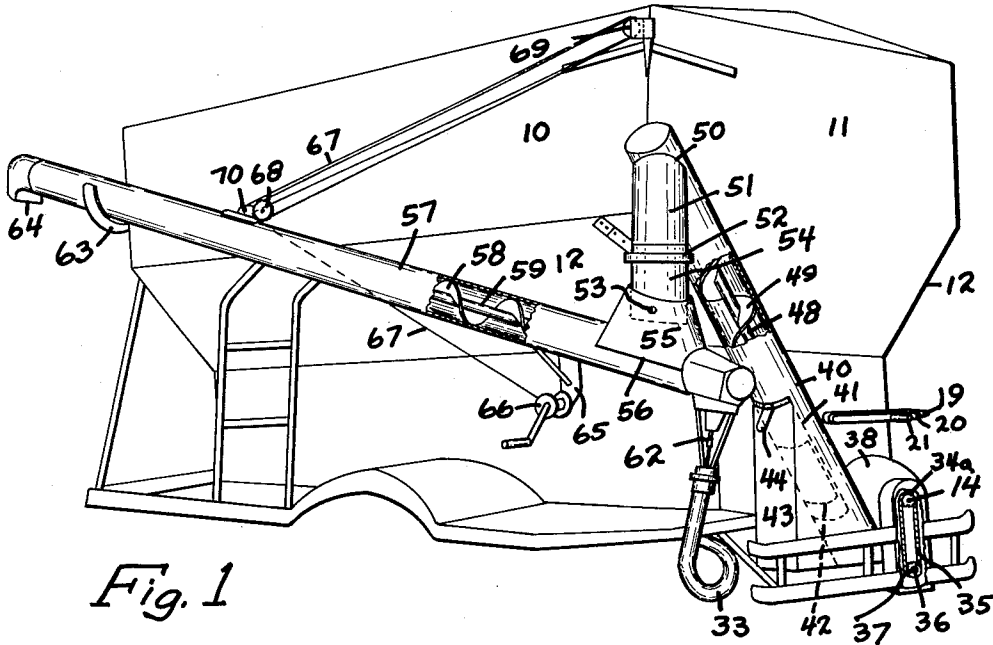


Fig. 1

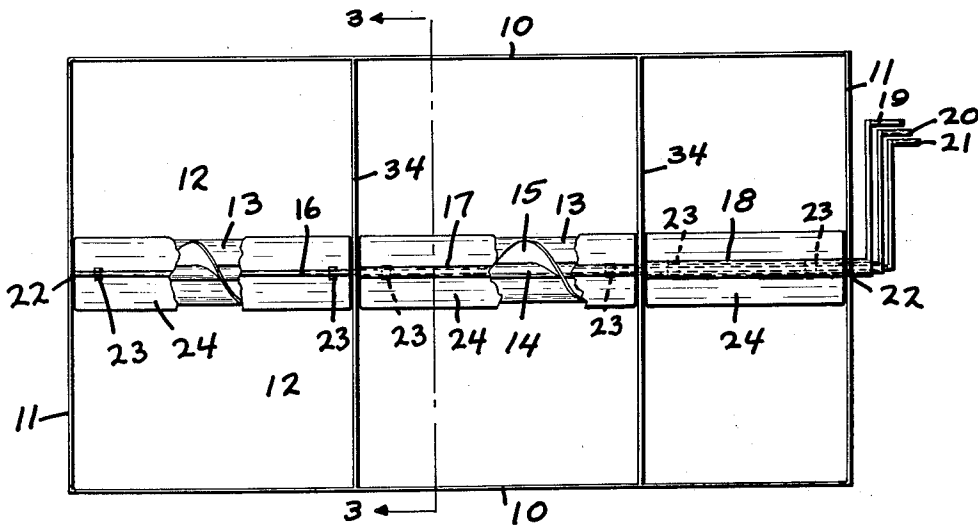


Fig. 2

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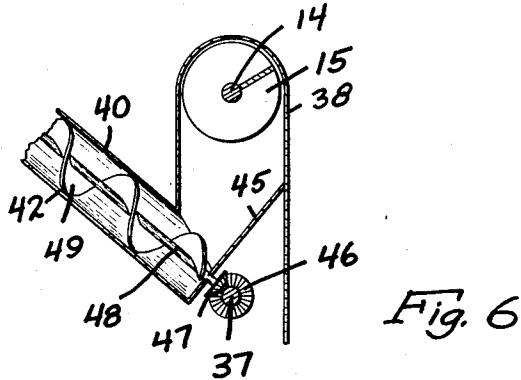
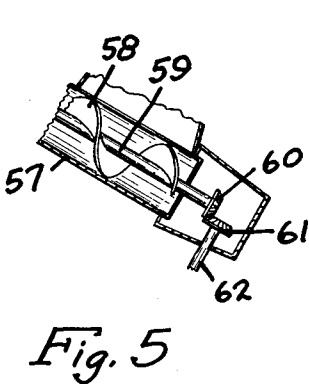
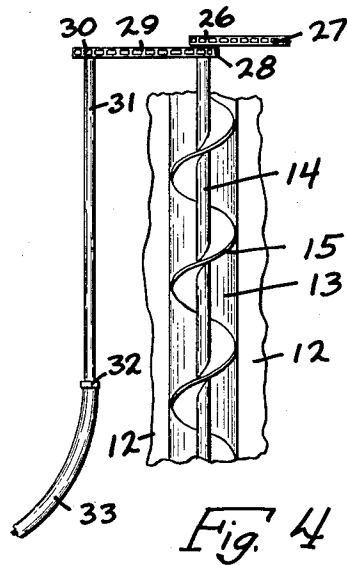
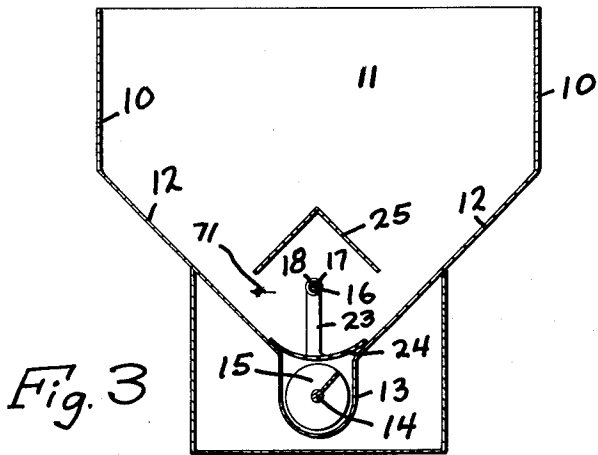
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ADJUSTABLE DELIVERY SPOUT FOR BULK MATERIAL DELIVERY TRUCKS

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2 Sheets-Sheet 2



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ADJUSTABLE DELIVERY SPOUT FOR BULK MATERIAL DELIVERY TRUCKS

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Our invention relates to a special arrangement of delivery spouts for bulk material delivery trucks, and further relates to a special type of truck box itself.

An object of our invention is to provide a delivery spout which can be swung to a maximum angle range to accommodate a variety of conditions.

A further object of our invention is to provide a spout extension which can be pivoted upwardly or downwardly to accommodate desired conditions.

A further object of our invention is to provide special discharge means whereby the grain in the truck can be discharged as desired.

A further object of our invention is to provide a special discharge arrangement within the truck body itself wherein the control elements are firmly locked in place and can be adjustably opened when desired, and to provide means for keeping the maximum pressure of the feed off of the control members so that they can be more easily manipulated.

A further object of our invention is to provide a driving arrangement wherein the various augers in the unit are constantly driven regardless of the angularity thereof.

With these and other objects in view, our invention consists in the construction, arrangement, and combination of the various parts of our device, whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in our claims, and illustrated in the accompanying drawings, in which:

FIGURE 1 is a side elevation of the major portions of the unit, with parts broken away,

FIGURE 2 is a plan view of FIGURE 1 with parts broken away,

FIGURE 3 is a sectional view of FIGURE 2 taken substantially along the lines 3-3 of FIGURE 2,

FIGURE 4 is a detail of the driving arrangement,

FIGURE 5 is a detail of a portion of one of the auger driving arrangements, and

FIGURE 6 is a further detail of a driving arrangement.

Our invention contemplates the provision of a special truck, and especially a delivery spout arrangement wherein the material discharged by the truck can be raised to any height, and wherein the spout can be swung angularly about, and can be pivoted upwardly or downwardly as required.

We have used the character 10 to designate the side walls of the truck, the character 11 indicating end walls, the character 12 indicating the downwardly sloping further side walls which terminate in the lower arcuate portion 13 (see FIGURE 3) in which arcuate portion is mounted a shaft 14 to which is attached the helical conveyor 15.

Passing generally parallel to the shaft 14 is an inner rod 16, and further pipes 17 and 18 receiving the inner rod 16, there being a lever or handle 19, 20 and 21 attached to these various units as shown in FIGURE 2, this arrangement being suitably journaled as at 22, and attached to the various sections are the arms 23 which are attached to the arcuate covering members 24, each of which is adapted to cover a portion of the housing 13, and it should be specifically noted that the shaft 16, pipes 17 and 18 are eccentrically mounted with respect to the center line of the wagon, the reason for which will be explained later.

The character 25 indicates a substantially right angle shaped member which covers the lower units 23, 24, etc.,

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this member not being shown in FIGURE 2 so that FIGURE 2 can be shown more clearly.

The shaft 14 is driven by means of a suitable sprocket 26 (see FIGURE 4) which engages the sprocket chain 27, a further sprocket 28 driving a further sprocket chain 29 which drives a further sprocket 30 which drives the shaft 31 which is attached at 32 to a flexible drive arrangement 33.

The box includes the partitions 34, which are used to separate the loads of feed or grain.

The shaft 14 is attached to an end sprocket 34a (see FIGURE 1), the shaft 14 being suitably journaled, and the sprocket 34a engages the sprocket chain 35 which drives a further sprocket 36 which is attached to a lower shaft 37. The character 38 indicates a housing enclosing these members, and communicating with this housing is a further cylindrical housing 40 which includes a slidable slide 41 therein which covers an opening 42 in the housing 40, the character 43 indicating a further boxing portion, the character 44 indicating a handle attached to the slide 41.

The character 45 indicates a further wall, and attached to the shaft 37 is a bevel gear 46 (see FIGURE 6) which engages a further bevel gear 47 which is attached to the shaft 48, to which shaft 48 is attached the helical conveyor 49, the housing 40 being secured at 50 to a vertically positioned housing 51 which is rotatably mounted within the unit 52, which unit can therefore rotate with respect to the member 51, and pivotally attached by means of a suitable bolt 53 to the lower portion 54 of the unit 52 is a housing 55 which is secured at 56 to a further tubular housing 57.

The housing 57 includes a further helical conveyor 58 which is attached to the shaft 59, which shaft 59 is attached to a bevel gear 60 (see FIGURE 5) which engages a further bevel gear 61 which is attached to the shaft 62, which shaft 62 is attached to the driving arrangement within the flexible drive unit 33, thus providing means for driving the shaft 59 and the helical conveyor 58.

The character 63 indicates a hook, the character 64 indicates the upper opening of the tubular member 57, and the character 65 indicates a bracket attached to the housing 57, the character 66 indicating a winch over which passes a cable 67, the cable 67 passing over the various pulleys 68 and 69, the pulleys 68 being attached at 70 to the member 57, so that when the winch is wound the housing 57 can be raised or lowered as desired and pivoted on the bolt 53.

It will be obvious from the foregoing description that our truck and adjustable delivery spout has a variety of advantages which will now be explained. For instance, through the winch and cable arrangements 66, 67 the spout 57 can be raised to any angle consistent with any height desired, and if desired also extra sections including augers can be added to the delivery chute 57 for accommodating different heights. The pivotal attachment at 53 also provides an important function in that the spout portion 57 can be adjusted to any desired angle for delivering the grain wherever desired, and it should also be noticed that due to the fact that the portion 54 swings in an arc, the spout can be swung in an arc of substantially 270° so that the grain or feed can be fed to any angle or height.

For delivering the grain by gravity to a lower bin beneath the level of the wagon, the handle 44 is manipulated which in effect moves the slide 41 upwardly when so manipulated, whereby the grain will be delivered through the opening 42. It will be noted from FIGURES 1, 5 and 6 that the various augers or helical conveyors in the members 40 and 57 will operate at all times to deliver the grain, it being noted that the grain will pass upwardly through the housing 40 and thence will drop by gravity

through the portion 51 into the housing 57, and in this way a smooth and uniform delivery of the grain is effected.

When it is desired to deliver a different load of grain, etc. to different locations, any one of the arcuate covering members 24 can be swung to a position away from the member 13, whereupon only the grain in that particular portion will be delivered. Since the rod 16 and pipes 17 and 18 are eccentrically mounted, when the arms 23 are swung in the direction of the arrow 71 (see FIGURE 3), or to the closing position, the eccentric mounting will cause the arcuate member 24 to engage more tightly against the sides 12, however it will be noted that when the arms 23 are swung in the reverse direction to open the various members 24, they will be more easily disengaged due to this eccentric mounting, these arrangements 24 thereby providing a tighter closure when closed and an easier method of handling for opening.

The angle members 25 provide the important function of keeping practically all of the weight of the feed off of the members 24 so that they then can be manipulated easier, this arrangement, however, providing means whereby the feed can be fed into the lower auger 15. Also, by controlling any one of the units 24 by means of the various handles 19, 20 and 21, the grains or other concentrates can be blended if desired.

It will now be noted that the various auger arrangements can run smoothly and uniformly. It will be noticed further that the principal delivery chute 57 can be swung to a considerable angle consistent with the use required, and it will also be noticed that this chute can be positioned angularly on the bolt 53, and it will be noted that all of these functions can be provided in an easily operated arrangement.

Some changes may be made in the construction and arrangement of the parts of our invention without departing from the real spirit and purpose of our invention, and it is our intention to cover by our claims any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

We claim as our invention:

1. In combination with a bulk material delivery truck, an adjustable delivery spout for the same comprising a rear mounted angularly inclined spout portion, said rear mounted spout portion being positioned substantially on the corner of said truck, a vertical portion extending downwardly from said angularly inclined portion for receiving material therethrough, a further spout portion pivotally secured for rotatable movement with respect to said vertical portion, said further spout portion being adapted to rotate throughout an arc of substantially 270°, said further spout portion being vertically pivoted with respect to said vertical portion, helical conveyors positioned within said spout portions, means for driving said helical conveyors, said bulk material delivery truck including a lower longitudinal chamber, a further helical conveyor in said chamber, a shaft attached to said further helical conveyor, means attached between said shaft and said rear mounted spout helical conveyor to drive the same, further means for driving said further spout portion helical conveyor, said truck including a plurality of compartments, separate covering members in said compartments for covering portions of said further helical conveyor, means for individually rotating any of said covering members, said covering members including arms attached thereto, means for pivoting said arms, the pivotal points of said arms being mounted eccentrically with respect to said lower chamber.

2. In combination with a bulk material delivery truck, an adjustable delivery spout for the same comprising a rear mounted angularly inclined spout portion, said rear mounted spout portion being positioned substantially on the corner of said truck, a vertical portion extending downwardly from said angularly inclined portion for receiving material therethrough, a further spout portion pivotally secured for rotatable movement with respect to said vertical portion, said further spout portion being adapted to rotate throughout an arc of substantially 270°, said further spout portion being vertically pivoted with respect to said vertical portion, helical conveyors positioned within said spout portions, means for driving said helical conveyors, said bulk material delivery truck including a lower longitudinal chamber, a further helical conveyor in said chamber, a shaft attached to said further helical conveyor, means attached between said shaft and said rear mounted spout helical conveyor to drive the same, further means for driving said further spout portion helical conveyor, said truck including a plurality of compartments, separate covering members in said compartments for covering portions of said further helical conveyor, means for individually rotating any of said covering members, said covering members including arms attached thereto, means for pivoting said arms, the pivotal points of said arms being mounted eccentrically with respect to said lower chamber, a substantially angle shaped member spaced from and positioned above said covering members to provide means for reducing grain pressure off of said covering members.

3. A bulk material delivery truck comprising a truck body, said truck body including a plurality of compartments therein, said bulk material delivery truck including a lower longitudinal chamber, a helical conveyor in said chamber, a shaft attached to said helical conveyor, separate covering members in said compartments for covering portions of said helical conveyor, means for individually rotating any of said covering members, said covering members including arms attached thereto, means for pivoting said arms, the pivotal points of said arms being mounted eccentrically with respect to said lower chamber.

4. A bulk material delivery truck comprising a truck body, said body including a plurality of compartments therein, said body including a lower longitudinal chamber, a helical conveyor in said chamber, separate covering members in said compartments for covering portions of said helical conveyor, means for individually rotating any of said covering members including concentric pipe sections, each of said sections being attached to each of said covering members, rotating handles attached to each of said pipe sections.

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