

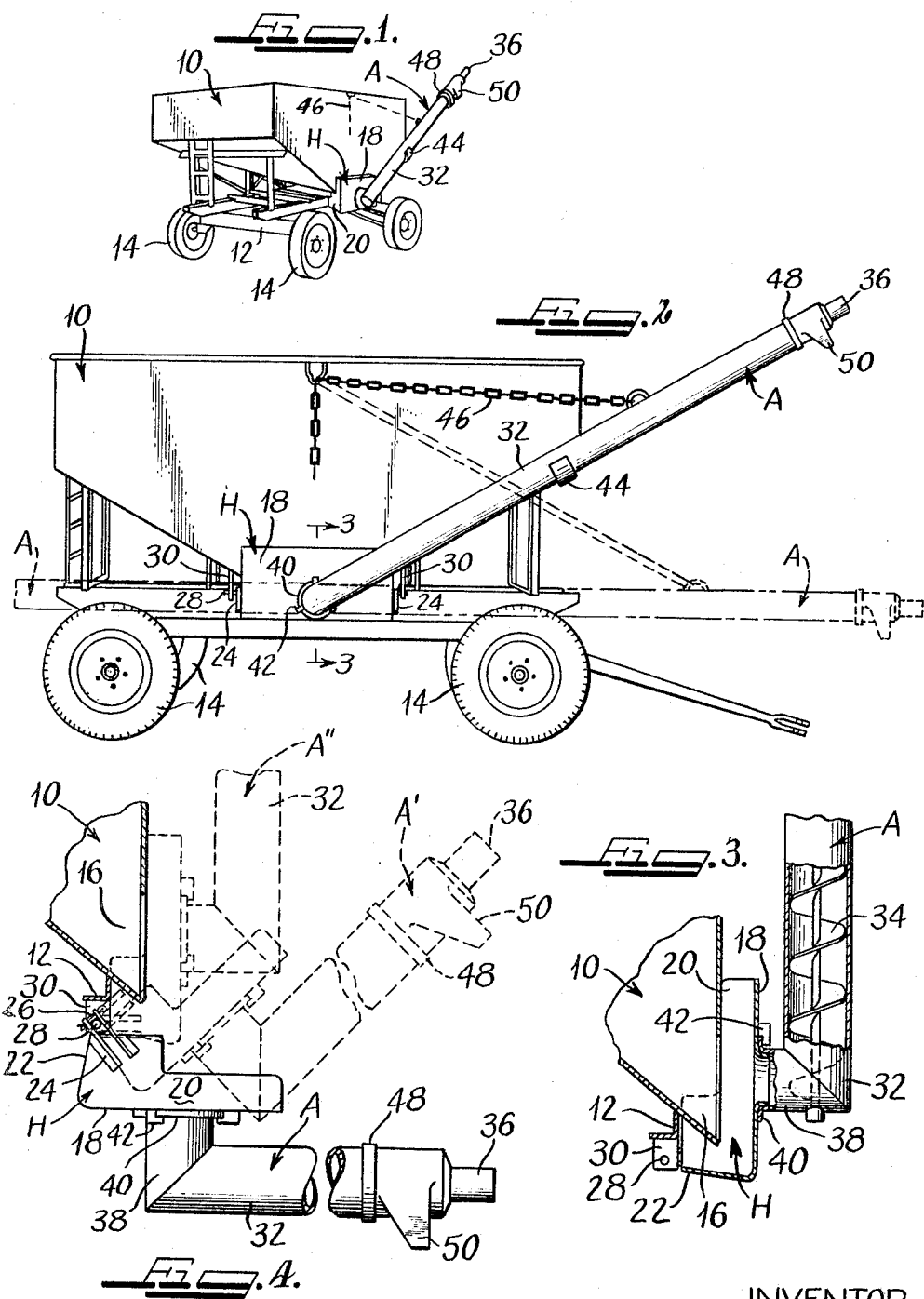
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D. W. NIEWOLD

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AUGER-HOPPER CONSTRUCTION

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INVENTOR
DONALD W. NIEWOLD
BY *Bair, Freeman &*
Molinare Attys.

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AUGER-HOPPER CONSTRUCTION
Donald W. Niewold, R.F.D. No. 1, Loda, Ill.
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This invention relates to a combination hopper and auger type elevating unit for grain and the like adapted particularly to be attached to a gravity flow wagon box.

One object of the invention is to provide a relatively simple and inexpensive unit of this type that can be readily attached to the wagon box or detached therefrom, and which may normally be left attached thereto as it is capable of adjustment of the auger unit to various angles during transport of the wagon box at which time the auger unit can be positioned closely adjacent one side of the box.

In the use of gravity flow wagon boxes for handling seed, feed, fertilizer, grain or any other free-flowing material, the box in itself is equipped with sloping bottom walls to discharge the entire contents by gravity at a position closely adjacent the ground surface as into bushel baskets or other containers. Quite often, however, it is desirable to elevate the material from this relatively low position to a higher position as, for instance, to transfer grain from the wagon box into the hoppers of a grain drill. Obviously, however, the unit has many other uses.

Another object of the invention is to provide a hopper that is pivoted to the wagon box in a position adjacent the discharge chute portion thereof and capable of pivoting action to various positions, anywhere between horizontal and vertical, with full capacity to receive the material from the wagon box in any of the adjusted positions, and to provide an auger unit combined with the hopper and which is swivelly mounted so it is readily adjustable to different positions (so as to fill the successive hoppers of a grain drill for instance) and can swing through a 180° arc in one plane and through a 90° arc on another plane, or any combination thereof, and will operate in any of these positions. This makes it possible to store the wagon and attached auger in a low-clearance building or in driveways. The auger may be folded to either the front or the rear of the wagon box making it versatile for transport and storage, and can be cradled in a low transport position for safety when being utilized on public highways or otherwise transported.

Still another object is to provide a design of hopper which is easily adaptable to any of many different makes of wagon boxes that are currently commercially available.

A further object is to provide a design wherein the hopper is practically self-emptying, the auger unit being mounted with its receiving end underneath the hopper on a swivel connection so that the material flows by gravity into the auger unit.

Still a further object is to provide a readily operable adjustable support for the auger unit when at any angle to which it may be adjusted.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my auger-hopper construction, whereby the objects above contemplated are attained, as hereinafter more fully set forth, pointed out in my claims and illustrated in detail on the accompanying drawing, wherein:

FIG. 1 is a perspective view of a gravity flow wagon box with my hopper-auger construction mounted thereon;

FIG. 2 is a side elevation of the same showing how the auger unit may swivel in a horizontal plane either to the front or the back of the wagon during transport;

FIG. 3 is a sectional view on the line 3-3 of FIG. 2 to show a cross section through the hopper and part of

the auger, and illustrate the mounting of the hopper-auger construction on the wagon box adjacent the discharge chute portion thereof, and

FIG. 4 is a side elevation somewhat similar to FIG. 3 showing various positions of adjustment in the vertical plane for the auger unit.

On the accompanying drawing I have used the reference numeral 10 to indicate a gravity flow wagon box. The chassis thereof is shown at 12 and is supported by the usual four wheels 14. The box 10 is so shaped as to have a discharge chute portion 16 adjacent one side thereof, the bottom walls leading thereto sloping as illustrated so as to permit the action of gravity to deliver the entire contents of the box to the chute. A suitable sliding door is provided to normally close the discharge chute portion 16 but is not shown as it forms no part of my present invention which comprises an auger-hopper construction wherein an auger unit is illustrated generally at A and a hopper at H.

The hopper H comprises a bottom wall 18, a pair of end walls 20 and a back wall 22 which may be formed of sheet metal or the like. Mounting ears 24 are provided on the end walls 20 and may, as illustrated, comprise each a pair of angle irons welded to the end walls and spaced from each other so as to slidably receive between them pivot studs 28 which are welded to support brackets 30. These support brackets are of various designs to facilitate mounting the hopper on various model wagon beds. These brackets may be welded or bolted to the chassis 12 of the gravity flow wagon adjacent the forward and rearward portions thereof. When in the mounted position, cotter pins 26 are inserted through the ears 24 thereby pivotally mounting the hopper H so that it can be swung through an arc of 90° from a substantially horizontal position shown by solid lines in FIG. 4 and a vertical position shown in FIG. 3 for purposes which will hereinafter appear.

The auger unit A comprises an auger tube 32 in which is rotatably mounted an auger 34 extending from end to end of the tube. The inner end of the tube has an elbow 38 provided with a circular flange 40 which is mounted to the bottom wall 18 of the hopper H by means of a plurality of retainer clips 42 whereby the elbow is rotatable relative to the hopper H. The bottom wall 18 is provided with an opening 19 which leads to the elbow 38 (see FIG. 3).

For rotating the auger 34, a motor 36 is provided which may be of the hydraulic type so as to utilize the hydraulic system of a tractor for its actuation. Obviously, an electric motor or any other suitable type of power for rotating the auger may be provided instead.

A transport bracket 44 may be mounted in any desired position on the wagon box 10 to support the auger tube 32 as shown in FIGS. 1 and 2, when moving the wagon box from one location to another. In this position, it is close to the side of the wagon and its highest end is low enough for entry into buildings with low clearance. As shown dotted in FIG. 2, the swivelling action may be had through substantially 180° so that the auger tube may be positioned level if such adjustment is required, or any position in between the two level positions. The bracket 44 may be located adjacent the rear of the wagon box in the event it is desirable to carry the auger tube during transport toward the rear rather than toward the front. An adjustable chain 46 is provided so as to hold the auger tube at any desired inclination during use.

If desired, the tube 32 may be provided with a swivel joint 48 so that a discharge hood 50 may be adjusted to direct the product being conveyed in a desired direction.

From the foregoing specification it will be obvious that I have provided an auger-hopper construction having a

versatile adjusting arrangement so that the auger unit may be used level as shown by solid lines in FIG. 4 or adjusted to angular or upright positions illustrated at A' and A''. Any desired angle between the extremes A and A'' is also possible using the chain 46 by adjusting it as desired. The construction disclosed allows the auger to swing in all directions and at all angles and permits the hopper H to be practically emptied by operation of the auger 34. A very small amount of material (less than a peck) will remain in the hopper upon complete unloading of the wagon. This is easily removed by hand by scraping it into the elbow 38.

The motor 36 may be provided with control means mounted directly thereon so that fingertip control at the discharge end of the auger is had. On the other hand, control may be provided at the tractor if that is found more desirable. The device doubles the utility of gravity flow boxes not equipped with an auger-hopper construction of the kind disclosed and the unit may be adapted to various makes of wagon boxes by the design of the posts 30 to fit a specific box.

The entire unit may be readily removed from the wagon box by removing the two cotter pins 26 and then an independent portable unit that can be used for many other jobs around the farm such as emptying grain bins or moving and elevating material from one position to another.

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

I claim as my invention:

1. In an auger-hopper construction of the character disclosed, a hopper having a bottom, a top and a pair of end walls, means for pivoting said hopper adjacent a discharge chute to receive material therefrom, said pivoting means permitting said hopper to pivot between substantially horizontal and vertical pivot limits of said bottom wall, and an auger unit for receiving material from said hopper comprising an auger tube, an auger therein, means for rotating said auger, an elbow at the intake end of said auger tube swivelly mounted on said bottom wall of said hopper, said pivoting means and said swivel connection cooperating to permit inclination of said auger tube in a plane at right angles to the plane of the axis of the pivotal connection and inclination of said auger tube in a plane parallel to the plane of the axis of said

pivotal connection for versatility in the adjustment of said auger unit relative to said discharge chute.

2. An auger-hopper construction according to claim 1 wherein said discharge chute is on a gravity flow wagon box, and a connection is provided between said box and said auger tube to support said tube relative to said box.

3. An auger-hopper construction according to claim 2 wherein said last mentioned connection is adjustable to support said auger tube at a desired angle of inclination.

4. An auger-hopper construction according to claim 2 wherein a transport bracket is provided for said auger tube and is mounted on said wagon box.

5. An auger-hopper construction according to claim 1 wherein said discharge chute is on a gravity flow wagon box and said pivot connection comprises a pair of slotted pivot ears at the front and rear of said hopper, said wagon box has a pair of pivot studs coacting with the slots of said pivot ears and removable retainers for said pivot ears on said pivot studs.

6. An auger-hopper construction according to claim 1 wherein said auger tube has a discharge hood on the outer end thereof.

7. An auger-hopper construction according to claim 2 wherein said discharge hood is swivelly mounted on said auger tube.

8. In an auger-hopper construction of the character disclosed, a hopper, means for pivoting said hopper to a discharge chute to receive material therefrom, and an auger unit for receiving material from said hopper comprising an auger tube, an auger therein, means for rotating said auger, an elbow at the intake end of said auger tube swivelly mounted on said hopper, said pivoting means permitting inclination of said auger tube in a plane at right angles to the plane of the axis of the pivotal connection and said swivel connection permitting inclination of said auger tube in a plane parallel to the plane of the axis of said pivotal connection.

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ROBERT B. REEVES, *Primary Examiner*.

N. L. STACK, *Assistant Examiner*.