

B. BERTKE.
UNLOADING APPARATUS.
APPLICATION FILED JULY 31, 1909.

961,336.

Patented June 14, 1910.

3 SHEETS—SHEET 1.

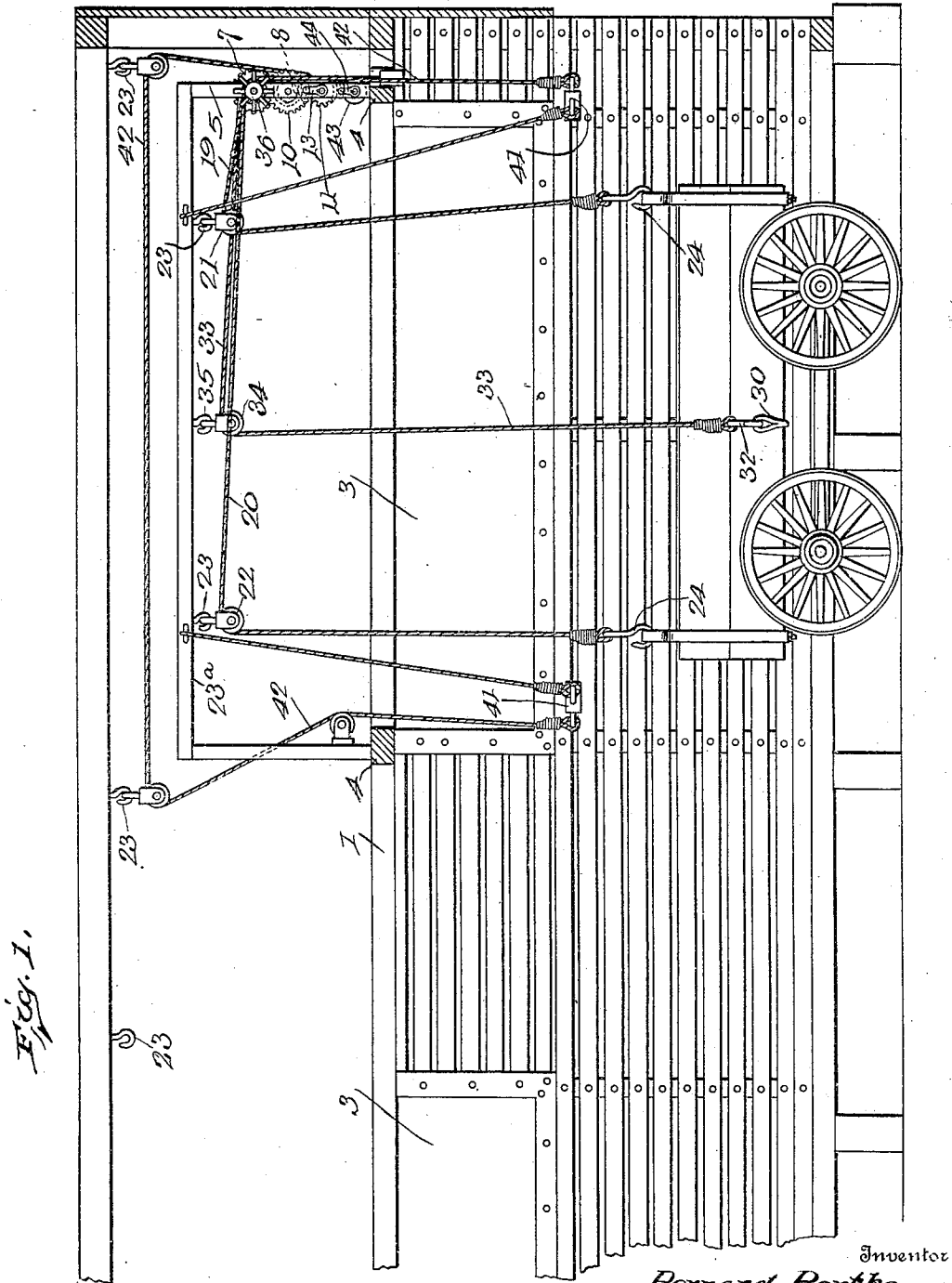


Fig. 1.

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Witnesses

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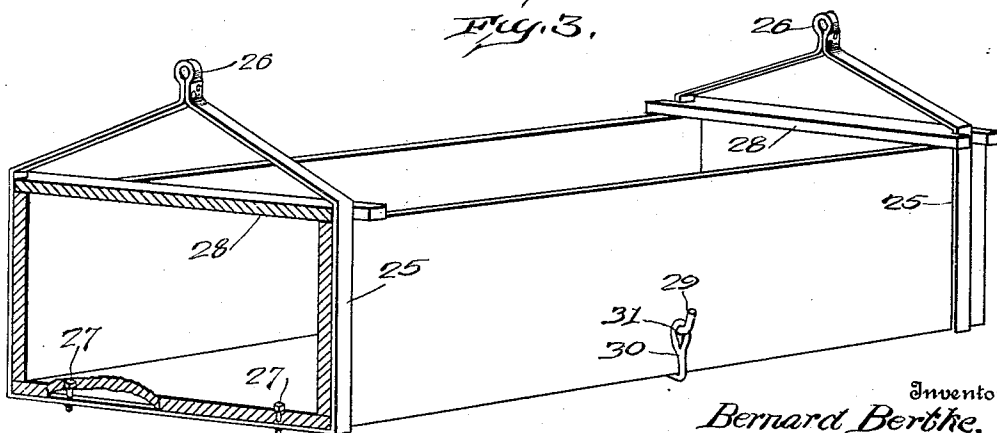
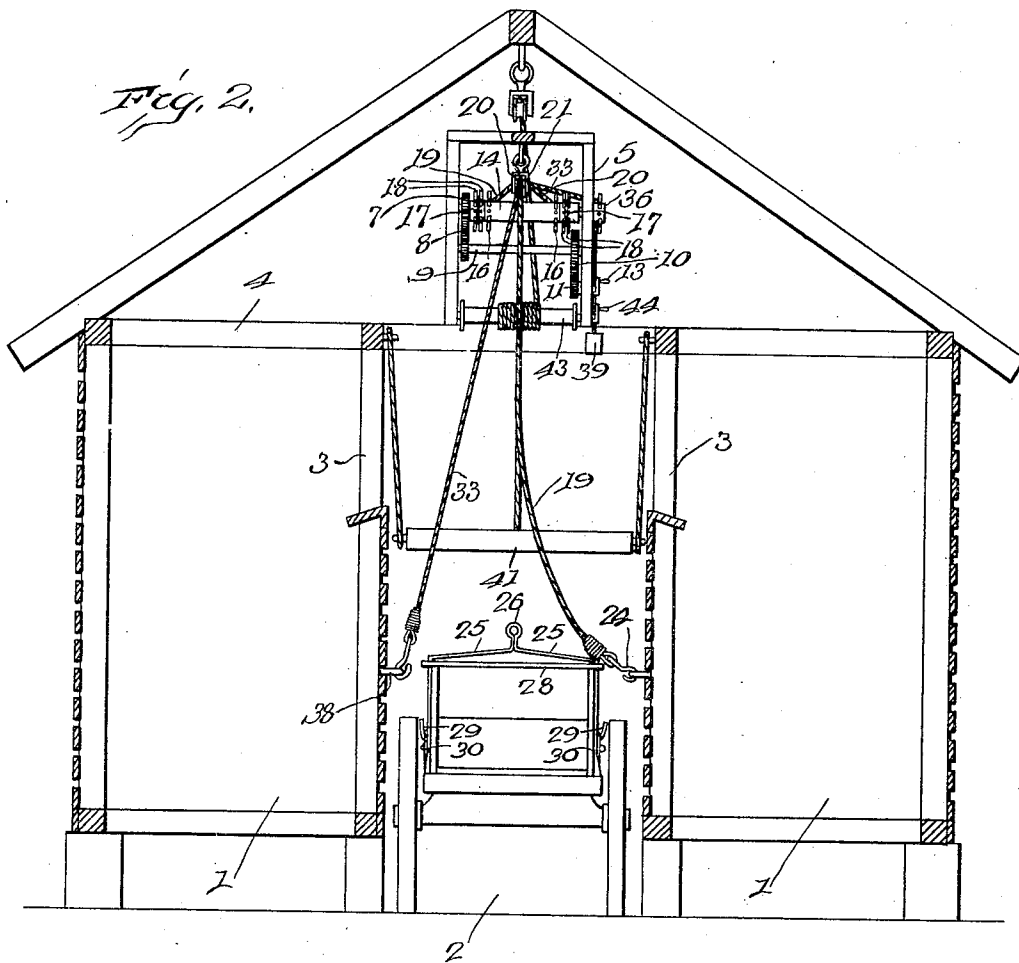
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

Fig. 5.

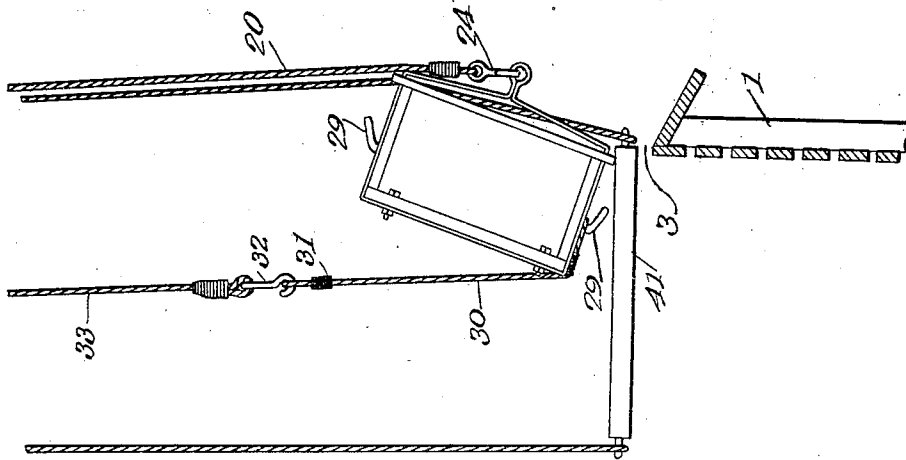
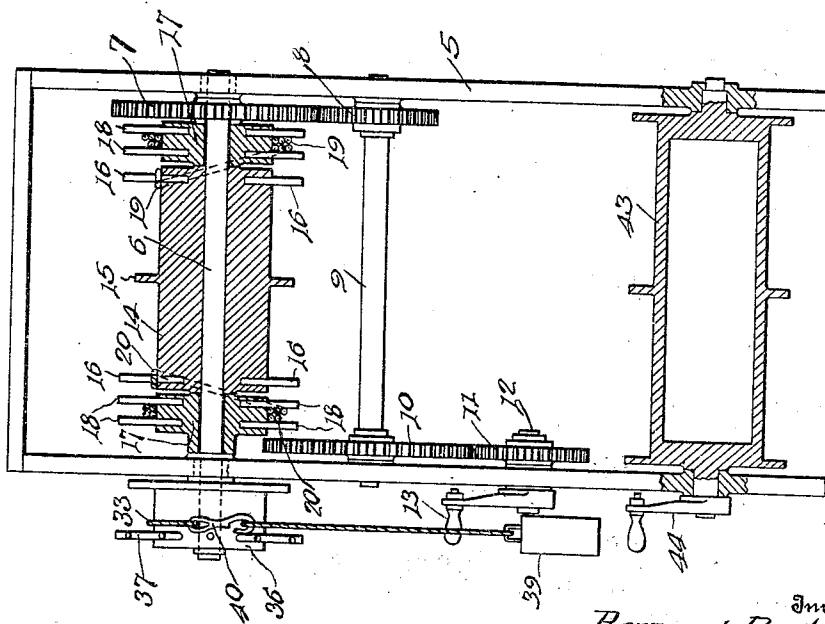


Fig. 4.



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UNITED STATES PATENT OFFICE.

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UNLOADING APPARATUS.

961,336.

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To all whom it may concern:

Be it known that I, BERNARD BERTKE, a citizen of the United States, residing at Cranberry Prairie, in the county of Mercer and State of Ohio, have invented certain new and useful Improvements in Unloading Apparatus, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to unloading apparatus and is in the nature of an improvement upon Patent No. 779,113, granted to me Jan'y. 3, 1905.

The object of the present invention is to provide an unloading apparatus, of the same type shown and described in that patent, in which the several operating parts will be so arranged that they may be operated from a single point; to provide an improved hoisting mechanism, by means of which the loaded wagon-bed can be hoisted and dumped; to provide means for taking care of a surplus of rope without encumbering the hoisting drums, thereby enabling the wagon to be unloaded at different distances from the hoisting mechanism; to provide improved means for connecting the hoisting ropes to the wagon-bed; and further, to improve the details of construction and the arrangement of the apparatus as a whole to secure a more compact device having a high degree of efficiency.

With these objects in view my invention consists in certain novel features and in certain combinations and arrangements of parts hereinafter to be described, and then more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a side elevation showing my unloading apparatus connected to a wagon-bed, ready to hoist the same; Fig. 2 is a front elevation of the same before it has been attached to the wagon-bed; Fig. 3 is a detail view of the wagon-bed showing the straps for connecting the hoisting ropes thereto; Fig. 4 is an elevation of the operating devices showing the several drums in section; and Fig. 5 is a detail view showing the manner of dumping the loaded wagon-bed.

In these drawings I have illustrated one embodiment of my invention and have shown the same as installed in a corn-crib, in which the bins, 1, are arranged on opposite sides of the central driveway 2 and are provided in the walls adjacent said driveway with openings 3, through which the

corn is dumped into the bins. These openings are preferably of a length slightly greater than the length of the ordinary wagon-bed and are arranged near the top of the bin. The number of openings provided in each bin depends entirely upon the length of the bin and may, of course, be varied without affecting the character of the dumping apparatus.

The operating mechanism for the hoisting apparatus may be mounted at any suitable point within the corn-crib, but I find it more convenient to mount the same upon the cross-beams 4 of the crib near one end thereof, as, in this manner, the mechanism is removed from the driveway and does not interfere with the passage of the wagon through the crib. This operating mechanism, as here shown, comprises a frame 5 which, as stated, is mounted on the cross-beams 4 of the crib. Journaled in the upper portion of the frame 5 is a shaft 6 having means for rotating the same, such as a gear 7 rigidly secured thereto near one of the side members of the frame. This gear meshes with a pinion 8 mounted on a shaft 9 which is also journaled in the frame 5 and which has at its opposite end a gear 10 which, in turn, meshes with a pinion 11 carried by a short shaft 12 which is journaled in one of the side members of the frame 5 and extends beyond the outer side of that frame where it is provided with an operating crank 13.

Rigidly mounted on the drum 6 is a double drum 14 divided by a partition 15 into two parts, each of which has near its outer end an annular row of pins 16 extending some distance from the surface thereof and serving both to retain the rope on the drum and as a fastening means for the rope, as hereinafter described. Loosely mounted on the shaft 6, near each end of the drum, are spools or small drums 17, these spools being arranged, in the one instance, between the end of the drum and the frame member and, in the other instance, between the end of the drum and the gear 7. Each spool has suitable guides at the opposite edges thereof to retain the rope thereon and, in the present instance, these guides consist of two annular rows of pins 18 arranged near the opposite edges of the drums. Cables 19 and 20 are secured to the respective spools 17 and are wound about the same for a portion of their length and are then

carried over onto the drum 14 and passed about one of the pins 16 which serves to secure the rope to the drum and cause the same to be wound about the drum when the shaft 6 is rotated. The ropes 19 and 20 extend forwardly from the drum and over guides or pulleys 21 and 22 which are suspended above the driveway 2, preferably from a longitudinal beam 23^a, to which they are detachably secured by means of hooks 23. The cables 19 and 20 extend downwardly from said guides or pulleys 21 and 22 and have at their lower ends means for securing the same to a wagon-bed, such as the hooks 24, which are adapted to engage a ring or eye secured to the wagon-bed.

The ring or eye, to which the hooks 24 of the cables 19 and 20 are connected, may be secured to the wagon-bed in any suitable manner. As here shown, a strap or bail 25 is formed to fit about each end of the wagon-bed and to extend some distance above the top of the same, this upper portion of the strap being provided with an aperture or eye 26 which may be engaged by one of the hooks 24. These straps are shaped to fit snugly against the sides and bottom of the wagon-bed and are detachably secured thereto by means of bolts 27, which extend through the bottom of the bed and through the strap which is retained thereon by means of nuts. The bolts may be allowed to remain permanently in the wagon-bed and the straps may be readily attached to and removed from the bed by simply removing the nuts from the bolts. A cross bar 28 is arranged between the side members of each strap near the upper ends thereof to prevent the same from pulling together or collapsing under the weight of the load, which is suspended from the center of the strap or bail. The cross bar is here shown as resting upon the top of the wagon-bed and as notched to receive the sides of the strap, thus making a firm construction which will not jar loose.

Secured to the lower portion of each side of the wagon-bed near the lower end thereof is a hook or bolt 29, to which are detachably secured the opposite ends of a rope or strap 30, the rope being preferably provided at its opposite ends with loops 31 to enable it to be readily detached from either bolt. The rope 30 is adapted to be engaged by a hook 32 carrying the lower end of a rope 33 which extends upwardly over a guide or pulley 34 supported from a hook 35 secured to the beam 23^a, thence about a drum 36 which is rotated to dump the wagon-bed, as will be hereinafter described. The drum 36 may be actuated in any suitable manner to wind up or slack off the rope 33, but as a matter of convenience, I prefer that this drum should be operated from the same operating mechanism from which the hoisting drum 14 is

operated, and, to this end, I have extended the shaft 6 beyond one side of the frame 5 and have mounted the drum 36 rigidly thereon. The drum 36 is provided near one edge thereof with an annular row of pins 37, which serve both as fastening means for the end of the rope and to retain the rope thereon as it is wound about the drum. When the rope 33 is not in use the hook 32 is attached to a staple or ring 38 secured to the wall of one of the bins and a weight 39 is connected to the other end of the rope 33 which is preferably provided with an eye or hook 40. The rope 33 extends over the drum 36 and the weight 39 serves to hold the same taut both when it is connected to the ring 38 and while the wagon-bed is being hoisted. Before the wagon-bed is hoisted one of the loops 31 of the rope 30 is detached from its bolt 29 on that side of the wagon opposite the side toward which it is to be dumped. This loop is connected to the hook 32 of the rope 33 and the rope passed about the drum 36 and the weight connected thereto. Thus, as the wagon-bed is elevated, the rope 33 will be maintained taut. When the wagon-bed has reached the position from which it is to be dumped the weight is disconnected from the end of the rope and the rope passed about the drum 36 in a direction opposite the direction in which the ropes 19 and 20 are wound on the drum 14 and secured to the drum by engaging the eye 40 with one of the pins 37.

In order to support the wagon-bed in its elevated position independently of the hoisting mechanism, two cross bars 41 are suspended from the side walls of the bins near the opposite ends of the wagon-bed. These bars are suspended from such points that, when allowed to swing free, they will be spaced apart a distance less than the distance of the wagon-bed and are of a length greater than the width of the wagon-bed. They are normally spaced apart a distance greater than the length of the wagon-bed by means of ropes 42 which are connected thereto and are wound about a drum 43, this drum being, in the present instance, mounted in the frame 5 and provided with an operating crank 44, by means of which the drum can be actuated to wind up or slack off the ropes 42 and thereby allow the cross bars 41 to move the wagon-bed when in its elevated position or to withdraw the same from beneath the wagon-bed.

When a loaded wagon is driven into the crib the hoisting ropes 19 and 20 are connected thereto, as above described, the dumping rope 33 is connected to that end of the rope 30 on the side opposite the side toward which the load is to be dumped. The cross bars 41 will be normally withdrawn to points beyond the end of the wagon-bed. The drum 14 is then actuated through the

train of gearing, 7, 8, 10 and 11 to hoist the loaded wagon-bed. This train of gearing is of the multiplying type and is such as to enable one man to hoist the wagon-bed un-
 5 assisted. When the bed has been elevated to a point substantially even with the openings 3 in the bins, the ropes 42 are slacked off the drums 43, thereby allowing the cross bars 41 to drop beneath the respective ends
 10 of the wagon-bed. The drum 14 is then allowed to move in a reverse direction a distance sufficient to place the weight of the wagon-bed upon the cross bars, which serve to support the same. The weight 39 is now
 15 disconnected from the dumping rope 33 and this rope is wound about the drum 36 in a reverse direction, as above described. The shaft 6 is then rotated in a direction opposite to the direction in which it was rotated
 20 to hoist the load, thereby winding the rope 33 on the drum 36 and slacking off the ropes 19 and 20 from the drum 14, and, in this manner, causing the wagon-bed to be turned on its side and raised to the position shown
 25 in Fig. 5, the hoisting ropes being slacked off sufficiently to permit of the load assuming this position. By disconnecting the rope 30 from one side of the bed the bed may be turned into the position shown in Fig. 5,
 30 which is such as to incline the lower side of the wagon-bed toward the bin and discharge all the corn therefrom. After the load is dumped the shaft 6 is operated in a forward direction again and the hoisting ropes wound
 35 upon the drum 14 to return the wagon-bed to its normal position and to lift the weight of the same off the cross bars. The drum 43 is then actuated to withdraw the cross bars from beneath the wagon-bed and the hoisting ropes 19 and 20 are slacked off to allow
 40 the wagon-bed to return to its position upon the wagon. The rope 33 is then disconnected therefrom and the loose end of the rope 30 attached to its bolt or hook 29 and the
 45 hoisting ropes 19 and 20 detached from the eyes 26 of the strap 25 and allowed to hang free or be secured to suitable fastening devices in the sides of the bin, as shown in Fig. 2.

50 In a long crib it is often necessary to dump the corn into the bins at different points along the length of the crib. To enable this apparatus to dump the load at different points it is only necessary to provide duplicate sets of hooks 23, each set being
 55 arranged adjacent to one of the openings 3. After enough corn has been dumped through the openings in the bins on each side of the driveway at one point, the several guide pulleys may be detached from
 60 their respective hooks and moved to the next set of hooks.

I have shown and described the apparatus as installed within a corn-crib and as adapted
 65 for dumping loads of corn, but, ob-

viously, it could be utilized in other manners. It could be installed in storehouses of different kinds or at any point where it is desired to unload quantities of material. Further, the location of the actuating mechanism, *i. e.*, the hoisting drums, etc., is an arbitrary one and this mechanism can be placed in the most convenient position. Further, I wish it to be understood that I do not desire to be limited to the details of construction shown and described, for obvious
 75 modifications will occur to a person skilled in the art.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent, is:—

1. An apparatus of the character described comprising a drum, hoisting ropes operated thereby, means for connecting said ropes to the ends of a wagon-bed, cross bars
 85 supported normally in an elevated position and adapted to be swung under the wagon-bed to support the same at the point at which it is to be dumped, means for turning said wagon-bed about a longitudinal axis
 90 while supported on said cross bars to discharge its contents, and a single means for actuating the hoisting drum and the turning means.

2. An apparatus of the character described comprising a shaft, a hoisting drum mounted thereon, hoisting ropes operated thereby and adapted to be detachably connected to the ends of a wagon-bed, supporting bars arranged to be swung under the
 100 wagon-bed to support the same in an elevated position, a second drum mounted on said shaft, a rope connected to said second drum and arranged to be connected to one side of said wagon-bed to turn the same
 105 while supported by said cross bars to discharge its contents, and means for actuating said shaft.

3. An apparatus of the character described comprising a shaft, a hoisting drum mounted thereon, hoisting ropes operated thereby and adapted to be detachably connected to the ends of a wagon-bed, supporting bars arranged to be swung under the wagon-bed to support the same in an elevated position,
 115 a second drum mounted on said shaft, a rope connected to said second drum and wound about the same in a direction opposite the direction in which the hoisting rope is wound about the hoisting drum, the rope
 120 connected to said second drum being adapted to have its other end connected to one side of said wagon-bed to turn the same to discharge its contents, and means for rotating said shaft in opposite directions.

4. An apparatus of the character described comprising a hoisting drum, loosely mounted spools arranged at the opposite ends of said drum, hoisting ropes wound about said
 130 spools, then passed about said drum and

connected thereto, said hoisting ropes being adapted to be detachably connected to the opposite ends of a wagon-bed, cross bars arranged to support said wagon-bed in an elevated position, and means for turning said wagon-bed while supported by said cross bars to discharge its contents.

5. An apparatus of the character described comprising a frame, a shaft journaled in said frame, a gear secured to said shaft, a hoisting drum mounted on said shaft, hoisting ropes operated by said drum and adapted to be detachably connected to the ends of a wagon-bed, a train of multiplying gearing mounted on said frame for rotating said shaft, cross bars arranged to be swung beneath said wagon-bed to support the same in an elevated position, and means for turning said wagon-bed while so supported to discharge its contents.

6. An apparatus of the character described comprising a frame, a shaft journaled in said frame, a gear secured to said shaft, a hoisting drum mounted on said shaft, hoisting ropes operated by said drum and adapted to be detachably connected to the ends of a wagon-bed, a train of multiplying gearing mounted on said frame for rotating said shaft, cross bars arranged to be swung beneath said wagon-bed to support the same in an elevated position, a second drum journaled in said frame, ropes connected to said cross bars and wound about said drum to control the movement of said cross bars, and means for turning said wagon-bed while supported on said cross bars to discharge its contents.

7. In an apparatus of the character de-

scribed, the combination, with a hoisting mechanism comprising ropes, of a wagon-bed, straps extending about said wagon-bed near each end thereof and having recesses, projections secured to said wagon-bed and adapted to enter said recesses, and means for connecting said ropes to said straps.

8. In an apparatus of the character described, the combination, with a wagon-bed, and hoisting mechanism comprising ropes adapted to be secured to the opposite ends of said wagon-bed, of hooks secured to the opposite sides of said wagon-bed, a rope detachably connected at its opposite ends to the respective hooks, a turning rope adapted to be connected to one end of the rope connected to said hooks, and means for actuating said turning rope.

9. In an apparatus of the character described, the combination, with a wagon-bed, a cross rope extending beneath said wagon and detachably connected to the opposite sides thereof, and straps extending about each end of said wagon-bed, of a hoisting drum, hoisting ropes operated by said drum and adapted to be connected to said straps, a second drum, a turning rope arranged to be actuated by said second drum and adapted to have one end connected to one end of said cross rope, and means for simultaneously actuating said hoisting drum and said turning drum.

In testimony whereof, I affix my signature in presence of two witnesses.

BERNARD BERTKE.

Witnesses:

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LORETTA REINHARD.