

Mar. 6, 1923.

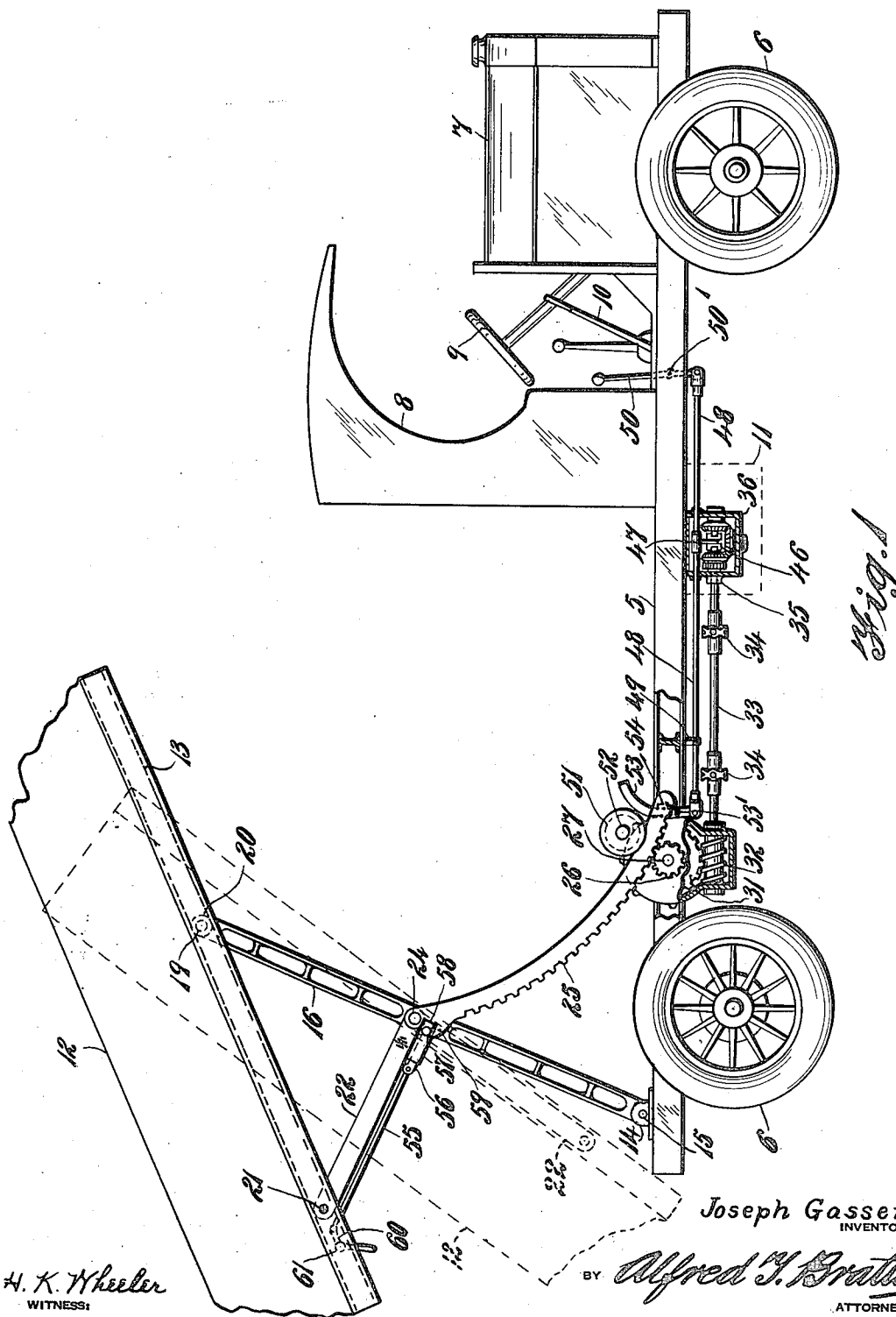
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J. GASSER

COMBINATION HIGH HOIST AND DUMP WAGON

Filed June 22, 1922

2 sheets-sheet 1



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WITNESS

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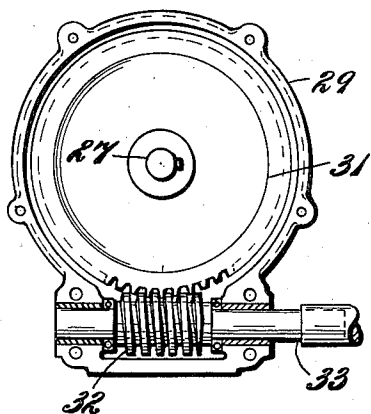


Fig. 2

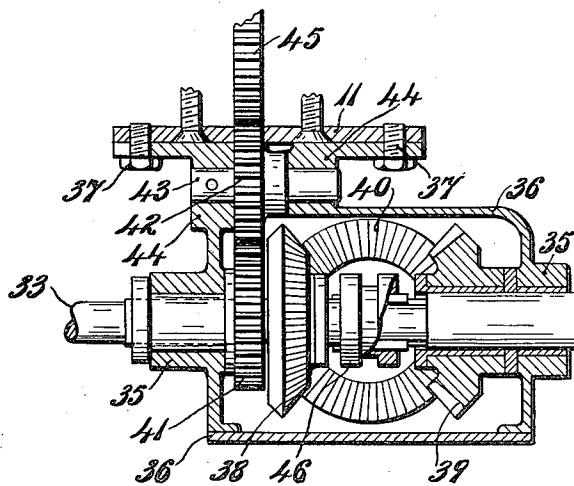


Fig. 3

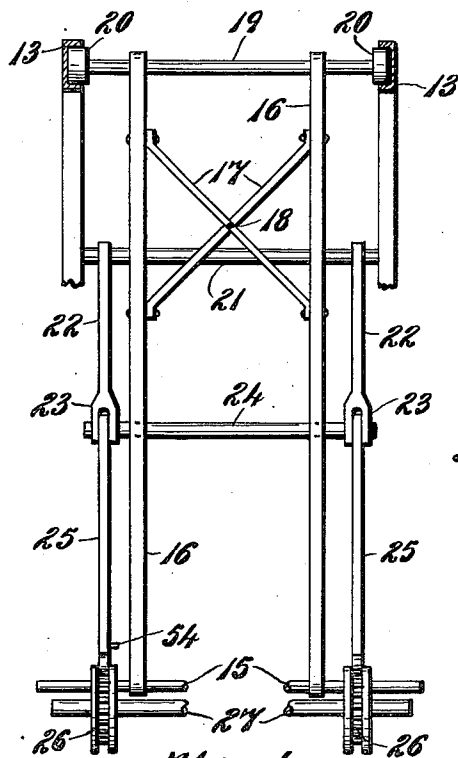


Fig. 4

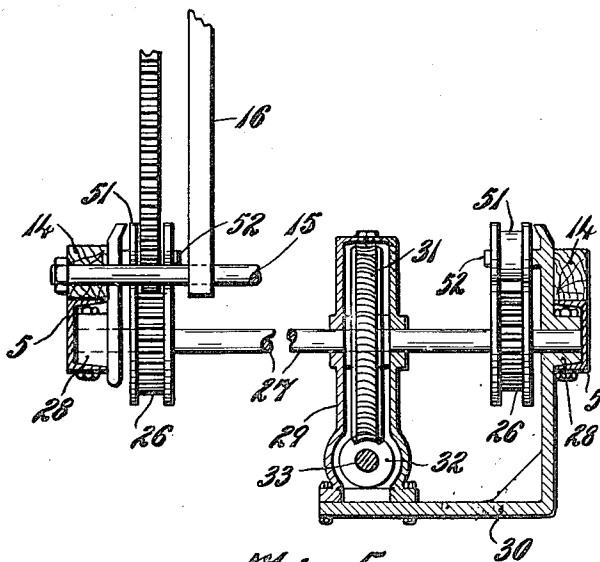


Fig. 5

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UNITED STATES PATENT OFFICE.

JOSEPH GASSER, OF TRENTON, NEW JERSEY.

COMBINATION HIGH HOIST AND DUMP WAGON.

Application filed June 22, 1922. Serial No. 570,159.

To all whom it may concern:

Be it known that I, JOSEPH GASSER, a citizen of the United States, residing at 402 Greenwood Avenue, in the city of Trenton, county of Mercer, and State of New Jersey, have invented certain new and useful Improvements in Combination High Hoists and Dump Wagons, of which the following is a specification.

10 This invention relates to wagons and it has more particular reference to motor propelled vehicles of the truck type which are provided with means whereby their bodies may be inclined for dumping purposes, or
15 raised and tilted to discharge the contents and thereafter returned to normal position on the vehicle underframe or chassis.

The primary object of this invention is to provide a combined high-hoist and dump wagon having a novel mechanism for raising the body portion high to empty its contents, or simply inclining the same relative to the underframe or chassis for ordinary dumping purposes.

25 Another object of this invention is to provide a combination high-hoist and dump wagon having a novel form of power take-off and reverse mechanism, the same being automatic in action in so far as the throwing
30 of said mechanism into neutral position is concerned when the wagon body reaches its limits of movement.

With the foregoing and other objects in view, as will become more apparent from
35 the following description, my present invention consists essentially in certain novel features of construction, combinations and arrangements of parts hereinafter fully described and more specifically defined by the
40 subjoined claims.

In the further disclosure of the invention reference is to be had to the accompanying sheets of drawings, constituting a part of this specification, and in which like characters of reference designate the same or corresponding parts in all the views.

Figure 1 is a side elevation of a motor truck or wagon having my present improvements applied thereto, the wagon body and
50 its hoisting and inclining mechanism being

shown in the high-hoist position and partly broken away, while the dotted line position is indicative of the ordinary dumping inclination of the wagon body portion.

Figure 2 is an enlarged detail elevation 55 of the worm drive hereinafter more fully explained.

Figure 3 is an enlarged broken and partly sectional detail view of the power take-off mechanism.

Figure 4 is a front end view or elevation of the wagon body raising and lowering means; and

Figure 5 is a sectional detail of the mechanism for effecting the body raising and lowering, and illustrating its manner of support from the wagon chassis or underframe.

Referring more particularly to the views the numeral 5 designates the chassis or underframe of an ordinary motor truck, 6 the wheels therefor, 7 the motor, 8 the driver's hood or cab, 9 the steering wheel, 10 the brake control and 11 the transmission gear case or box, all of said parts being briefly enumerated but forming no part of my present invention.

According to my present invention and as illustrated, the dump box or body 12 is built in accordance with any of the well known or standard forms and it is fitted on its underside with longitudinally opposed channel beams 13 of appropriate size and dimensions. Transversely of the chassis 5 and near the rear end thereof, I mount a pair of bearings 14 in which are journaled a cross-shaft 15, said cross-shaft serving as a support for the rear ends of a pair of longitudinal links or rock-levers 16 suitably braced in rigid spaced relation by diagonal ties 17 riveted or otherwise secured together at their point of intersection by means of a through bolt or rivet 18. Suitably journaled or otherwise mounted in the forward or free ends of the aforesaid longitudinal links or rock-levers 16 is a transverse shaft 19 fitted with anti-friction rollers 20 at its free ends, and said rollers 20 are of appropriate size and dimensions to freely traverse the aforesaid opposed channel beams 13 as will be clearly understood on an examina- 100

tion of Figure 4 more particularly. Thus it will be clearly seen that the aforesaid longitudinal links or rock levers 16 serve, as later on explained, to effect the raising and lowering of the dump box or body 12.

Journalled or mounted transversely between the aforesaid opposed channel beams 13 in the rear of the rollers 20 is a second transverse shaft 21 on which are coupled the upper ends of a pair of spaced links 22 the forked other ends 23 whereof are pivotally connected by a cross shaft 24 with the upper ends of toothed arcuate racks 25 the lower or free ends whereof are in mesh with pinions or shrouded gears 26 securely keyed or otherwise mounted on a transverse shaft 27 journaled in bearings 28 bolted or otherwise secured in the aforesaid chassis 5, as will be clearly understood by those acquainted with the art to which my invention appertains. This last mentioned transverse shaft 27 passes through a gear box or housing 29 that is supported on an angle bracket 30—Figure 4—connected in any of the well known ways to one side of the chassis 5.

Secured or mounted on the aforesaid shaft 27 in the gear box or housing 29 is a worm wheel 31 in gear with a worm drive 32 integral with a longitudinally disposed drive shaft 33 fitted with universal couplings 34 and journaled at its other or forward end in bearings 35 provided for the purpose in a power take-off box or casing 36 bolted or otherwise secured by bolts 37 on the transmission gear case or box 11. Freely mounted on the aforesaid shaft 27 in the power take-off box or casing 36 in opposed relation are a pair of miter gears 38, 39 in mesh with an intermediate gear 40, and it is to be noted that one of the gears—38 for example—is provided on its boss with a pinion 41 in gear with a toothed wheel 42 journaled on a stub axle 43 supported in appropriate bearings 44 in the aforesaid power take-off box or casing 36. This latter toothed wheel 42 is in turn driven by a gear wheel 45 from the jack shaft—not shown—in the transmission gear case or box 11. Feathered or otherwise slidably keyed on the shaft 33 intermediate the miter gears 38, 39 is a grooved sleeve or clutch member 46 with which co-operates a stirrup fork 47 on a longitudinally disposed rod 48 passing through said power take-off box or casing 36 and a bearing or bearings 49 provided for the purpose pendent from the chassis or underframe 5. This longitudinally disposed rod 48 is movable by means of a hand lever 50 appropriately mounted on a pivot 50' in the driver's hood or cab 8 and it will be readily understood that when said rod 48 is moved for example forwardly it will draw the sleeve or clutch member 46 into operative engagement with the outer gear 38 and through the mechanism hereinbefore de-

scribed will rotate the shaft 33 and through the worm drive 32 effect the raising of the arcuate racks 25.

In order to provide means for retaining the aforesaid arcuate racks 25 in operative engagement or mesh with the pinions 26, I employ grooved or flanged idlers 51 of suitable dimensions to fit the back of the racks 25, and said idlers 51 are conveniently and freely mounted on stub axles or bolts 52 carried by the aforementioned bearings 28, and as will be well understood by those conversant with the art to which my invention appertains.

In order to provide an automatic knock out for the raising and lowering mechanism, I preferably extend the aforesaid rod 48 rearwards into close proximity with one of the arcuate racks 25 and fit the end of said rod 48 with a forwardly curved arm 53 pivoted on the chassis 5 which is adapted to co-operate with a laterally projecting lug 54 outstanding from said rack 25. Thus it will be readily understood that when the rod 48 is longitudinally moved forwardly, it will carry with it or correspondingly advance the curved arm 53 so that as the co-operating arcuate rack 25 reaches or nears its limit of upward movement—for example—the projecting lug 54 thereon will contact with said curved arm 53 and through the rod 48 move the grooved sleeve or clutch member 46 into neutral position.

Fitting longitudinally parallel with one or both of the spaced links 22 is a rod 55 provided at its forward end with a latch member 56 slidably fitting a slot or guide 57 in said link 22. This latch member 56 is adapted to engage in a notched out part 58 in the headed end 59 of the co-operating arcuate rack 25, and as will be best seen from Figure 1. The aforesaid rod 55 is operable or movable by a bell crank handle or the like 60 pivoted at 61 to the adjoining channel beam 13. The unlatched position of the spaced links 22 is shown on Figure 1 in dotted lines and it will be clearly apparent that when said links 22 are unlatched from the racks 25 the dump box or body 12 will be tiltable for ordinary dumping purposes in contradistinction to the high-hoist movement.

The construction, assembly and interrelation of the several parts having been fully described, it will be clearly apparent that when the dump box or body 12 is resting in a horizontal or the normal position on the chassis or underframe 5, and it is desired to elevate the same to the high-hoist position, as shown by the full lines in Figure 1, the operator or driver of the truck will move the hand or control lever 50 forwards from the neutral position. This movement of the control lever 50 will shift the clutch 46 into gear with the miter gear

38 and through the gears 41, 42, and 45 effect the rotation of the power take-off or drive shaft 33. This rotation of the shaft 33 in the requisite direction will result in the driving of the worm 32 and worm wheel 31, and through the pinions or shrouded gears 26 effect the arcuately swinging elevation of the racks 25 and assuming that the spaced links 22 have been latched to the headed ends 59 of said racks 25 as hereinbefore described, it will be clearly apparent that the dump box or body 12 will be elevated and inclined as shown by the full lines in Figure 1. Now it will be perfectly obvious that as the racks 25 approach their limit of upward movement, the projecting lug 54 thereon will engage the curved arm 53 and thereby move the rod 48 forwardly and automatically shift the sleeve or clutch member 46 into neutral position and thereby disconnecting the raising and lowering mechanism from the power take-off mechanism of the wagon. Similarly a reverse movement of the hand lever 50 will shift the sleeve or clutch member 46 into mesh with the miter gear 39 and effect the return of the dump box or body 12 back to its normal position on the chassis or underframe 5. On the other hand when it is simply desired to dump the box or body 12, as indicated by the dotted line position in Figure 1, the latching means or members 56 will be retracted from connection with the headed ends 59 of the racks 25, thus rendering the link members 22 inoperative for raising purposes, whereupon it will be readily seen that the dump box or body 12 will be upwardly swung or inclined on the shaft 15 as a pivot.

It is also to be noted that as the dump box or body 12 returns to or approaches its normal or horizontal position on the chassis 5, the co-operating link or rock lever 16 will contact with the upper curved part of the arm 53 and thereby rock same on its pivot 53' to effect the movement of the clutch 46 back into neutral position, the same being obvious to those conversant with the art to which my invention relates.

From the foregoing description and explanation of the operation of my invention, its simplicity and usefulness will be self evident, while its easy application to new or existing motor trucks will be clearly apparent without further description.

While I have shown and minutely described one practical or preferred embodiment of my invention, it will be clearly apparent that the same is susceptible of many detail changes, and the right is accordingly hereby reserved to make all such reasonable changes and variations, or other combinations of the several parts as fairly lie within the scope of the appended claims.

Having described my invention, what I

claim as new and desire to secure by Letters Patent is:—

1. In a combined high-hoist and dump wagon the combination with the understructure, body and transmission thereof of power take-off mechanism including opposed miter gears journaled in a casing connectible to the transmission box, an intermediate gear in mesh with said opposed miter gears, one of said miter gears being driven from the transmission jack shaft, a clutch intermediate, the miter gears, means for moving said clutch into gear as desired, means operable by said power take-off mechanism for rotating or reversing the rotation of a transverse shaft journaled in the wagon chassis, arcuate racks upwardly movable for effecting the inclination of the wagon body, means connectible with the arcuate racks for raising the wagon body to high hoist position when desired and knock-out mechanism for automatically moving the power take-off mechanism into neutral as the wagon body approaches its limits of movement.

2. In a combined high hoist and dump wagon the combination with the understructure, body and transmission thereof of power take-off mechanism operable from said transmission, means for throwing said power take-off mechanism into and out of gear as desired, a shaft operable in either rotary direction by said power take-off mechanism, said shaft having a worm drive for rotating a transverse shaft journaled in bearings secured in the wagon chassis, arcuate racks upwardly movable by gear wheels on said transverse shaft for effecting the inclination of the wagon body, means connectible with the arcuate racks for raising the wagon body to high hoist position, when desired, and knock-out mechanism for automatically moving the power take-off mechanism into neutral as the wagon body approaches its limits of movement.

3. In a combined high hoist and dump wagon the combination with the understructure, body and transmission thereof, of power take-off mechanism operable from said transmission, means for throwing said power take-off mechanism into and out of gear as desired, a shaft rotatable in either direction by said power take-off mechanism, said shaft having a worm drive for rotating a transverse shaft journaled in bearings secured in the wagon chassis, longitudinally disposed links pivotally mounted by a transverse shaft adjacent the rear end of the wagon chassis and having their forward ends provided with anti-friction rollers adapted to traverse opposed channel beams beneath the wagon body, arcuate racks having their upper ends pivotally connected to the aforesaid links and upwardly movable by gear wheels on the aforesaid transverse

shaft for effecting the inclination of the wagon body, means connectible with the arcuate racks for elevating the wagon body to high hoist position when desired, and
 5 knock out mechanism for automatically moving the power take-off mechanism into neutral as the wagon body approaches its limits of movement.

4. In a combined high hoist and dump
 10 wagon the combination with the understructure, body and transmission thereof, of power take-off mechanism operable from said transmission, means for throwing said
 15 power take-off mechanism into and out of gears as desired, a shaft rotatable in either direction by said power take-off mechanism, said shaft having a worm drive for rotating
 20 a transverse shaft journaled in bearings secured in the wagon chassis, longitudinally disposed links pivotally mounted by a transverse shaft adjacent the rear end of the wagon chassis and having their forward
 25 ends provided with anti-friction rollers adapted to traverse opposed channel beams beneath the wagon body, means bracing said
 30 opposed channel beams, arcuate racks having their upper ends pivotally connected to the aforesaid links and upwardly movable by gear wheels on the aforesaid transverse
 35 shaft for effecting the inclination of the wagon body, means connectible with the arcuate racks for elevating the wagon body to high hoist position when desired, and
 40 knock-out mechanism for automatically moving the power take-off mechanism into neutral as the wagon body approaches its
 45 limits of movement.

5. In a combined high hoist and dump wagon the combination with the understructure, body and transmission thereof, of
 40 power take-off mechanism operable from said transmission, means for throwing said power take-off mechanism into and out of gear as desired, a shaft rotatable in either
 45 direction by said power take-off mechanism, said shaft having a worm drive for rotating a transverse shaft journaled in bearings secured in the wagon chassis, longitudinally
 50 disposed links pivotally mounted by a transverse shaft adjacent the rear end of the wagon chassis and having their forward ends provided with anti-friction rollers adapted to traverse opposed channel beams
 55 beneath the wagon body, means bracing said opposed channel beams in rigid spaced relation, arcuate toothed racks having their upper ends pivotally connected to the aforesaid links and upwardly movable by gear wheels on the aforesaid
 60 transverse shaft for effecting the inclination of the wagon body, means for retaining said arcuate toothed racks in operative mesh at all times with the aforesaid gear wheels, means connectible with the arcuate racks
 65 for elevating the wagon body to high hoist

position when desired, and knock-out mechanism for automatically moving the power take-off mechanism into neutral as the wagon body approaches its limits of movement.

6. In a combined high hoist and dump wagon the combination with the understructure, body and transmission thereof, of
 70 power take-off mechanism operable from said transmission, means for throwing said power take-off mechanism into and out of gear as desired, a shaft rotatable in either direction by said power take-off mechanism, said shaft having a worm drive for rotating
 75 a transverse shaft journaled in bearings secured in the wagon chassis, longitudinally disposed links pivotally mounted by a transverse shaft adjacent the rear end of the wagon chassis and having their forward ends
 80 provided with anti-friction rollers adapted to traverse opposed channel beams beneath the wagon body, means bracing said opposed channel beams in rigid spaced relation, arcuate toothed racks having their upper ends
 85 pivotally connected to the aforesaid links and upwardly movable by gear wheels on the aforesaid transverse shaft for effecting the inclination of the wagon body, shrouded idlers journaled on the wagon chassis for
 90 co-operative engagement on the backs of the arcuate racks to maintain the same in operative mesh with the aforesaid gear wheels, means connectible with the arcuate racks for elevating the wagon body to high hoist
 95 position when desired, and knock-out mechanism for automatically moving the power take-off mechanism into neutral as the wagon body approaches its limits of movement.

7. In a combined high hoist and dump wagon the combination with the understructure, body and transmission thereof, of
 100 power take-off mechanism operable from said transmission, means for throwing said power take-off mechanism into and out of gear as desired, a shaft rotatable in either direction by said power take-off mechanism, said shaft having a worm drive for rotating
 105 a transverse shaft journaled in bearings secured in the wagon chassis, longitudinally disposed links pivotally mounted by a transverse shaft adjacent the rear end of the wagon chassis and having their forward
 110 ends provided with anti-friction rollers adapted to traverse opposed channel beams beneath the wagon body, means bracing said opposed channel beams in rigid spaced relation, arcuate toothed racks having their upper ends pivotally connected to the aforesaid
 115 links and upwardly movable by gear wheels on the aforesaid transverse shaft for effecting the inclination of the wagon body, shrouded idlers journaled on the wagon chassis for co-operative engagement on the backs of the arcuate racks to maintain the
 120
 125
 130

same in operative mesh with the aforesaid gear wheels, spaced links pivotally connected adjacent the rear end of the wagon body and at their other ends having forked pivotal connection with the aforesaid arcuate racks, means for latching said spaced links to the arcuate racks to effect the elevation of the wagon body to high hoist position when desired, and knock-out mechanism for automatically moving the power take-off mechanism into neutral as the wagon body approaches its limits of movement.

8. In a combined high hoist and dump wagon the combination with the understructure, body and transmission thereof, of power take-off mechanism operable from said transmission, means for throwing said power take-off mechanism into and out of gear as desired, a shaft rotatable in either direction by said power take-off mechanism, said shaft having a worm drive for rotating a transverse shaft journaled in bearings secured in the wagon chassis, longitudinally disposed links pivotally mounted by a transverse shaft adjacent the rear end of the wagon chassis and having their forward ends provided with anti-friction rollers adapted to traverse opposed channel beams beneath the wagon body, means bracing said opposed channel beams in rigid spaced relation, arcuate toothed racks having their upper ends pivotally connected to the aforesaid links and upwardly movable by gear wheels on the aforesaid transverse shaft for effecting the inclination of the wagon body, shrouded idlers journaled on the wagon chassis for co-operative engagement on the backs of the arcuate racks to maintain the same in operative mesh with the aforesaid gear wheels, spaced links pivotally connected adjacent the rear end of the wagon body and at their other ends having forked pivotal connection with the aforesaid arcuate racks, longitudinally movable rods having their forward ends adapted for latching connection into the enlarged and notched out heads of the arcuate racks to effect the elevation of the wagon body to high hoist position when desired, and a laterally projecting lug on the free end of one of the aforesaid arcuate racks for engagement with a forwardly curved arm on the power take-off shifter rod to automatically move the power take-off mechanism into neutral as the wagon body reaches its limits of movement.

10. In a high hoist and dump wagon elevating and inclining mechanism operable by a power take-off from the wagon transmission the combination with the body understructure of longitudinally opposed channel beams, longitudinally disposed rock levers having their rear ends pivotally mounted on the wagon chassis and their forward ends fitted with anti-friction rollers traversable in the aforesaid channel beams, means for bracing said rock levers in rigid spaced relation, auxiliary spaced links hingedly connected adjacent the rear ends of the opposed channel beams with their forward forked ends straddling the upper ends of arcuate racks having pivotal connection with the aforesaid rock levers, means for latching the auxiliary spaced links to the arcuate racks to effect the elevation of the wagon body to high hoist position when desired, and means for moving said arcuate racks to effect the inclining and lowering of the wagon body for dumping purposes.

11. In a high hoist and dump wagon elevating and inclining mechanism operable by a power take-off from the wagon transmission the combination with the body understructure of longitudinally opposed channel beams, longitudinally disposed rock levers having their rear ends pivotally mounted on the wagon chassis and their forward ends fitted with anti-friction rollers

ers traversable in the aforesaid channel beams, means for bracing said rock levers in rigid spaced relation, auxiliary spaced links hingedly connected adjacent the rear 5 ends of the opposed channel beams with their forward forked ends straddling the upper ends of arcuate racks having pivotal connection with the aforesaid rock levers, means for latching the auxiliary spaced 10 links to the arcuate racks to effect the elevation of the wagon body to high hoist position when desired, means for moving said arcuate racks to effect the inclining and lowering of the wagon body for dumping purposes, and knock out mechanism for 15 throwing the rack actuating means into neutral as the wagon body approaches its limits of movement.

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