

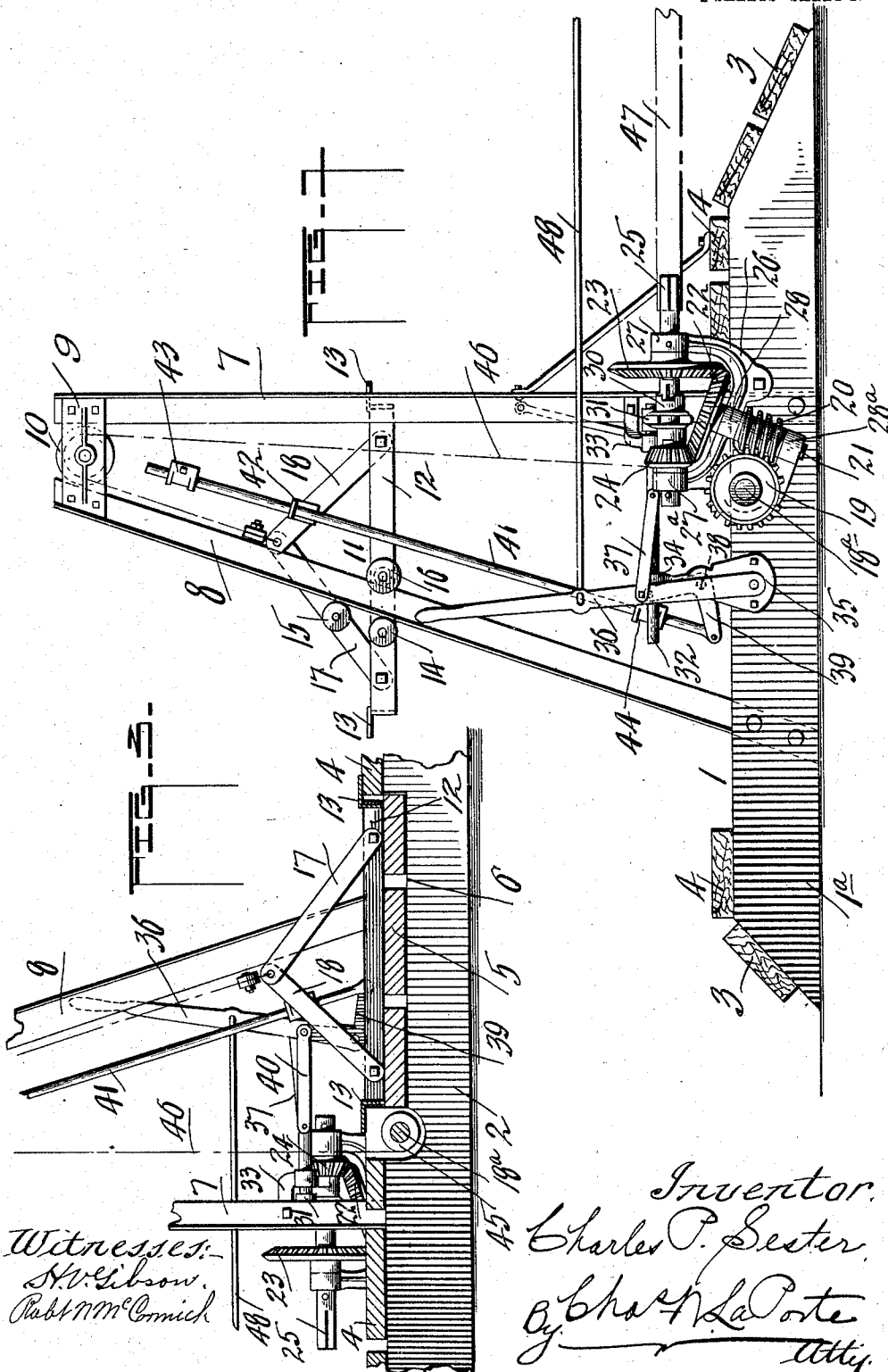
No. 833,980.

PATENTED OCT. 23, 1906.

C. P. SESTER.
WAGON JACK.

APPLICATION FILED JAN. 19, 1905.

2 SHEETS—SHEET 1.



Witnesses:
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Inventor:
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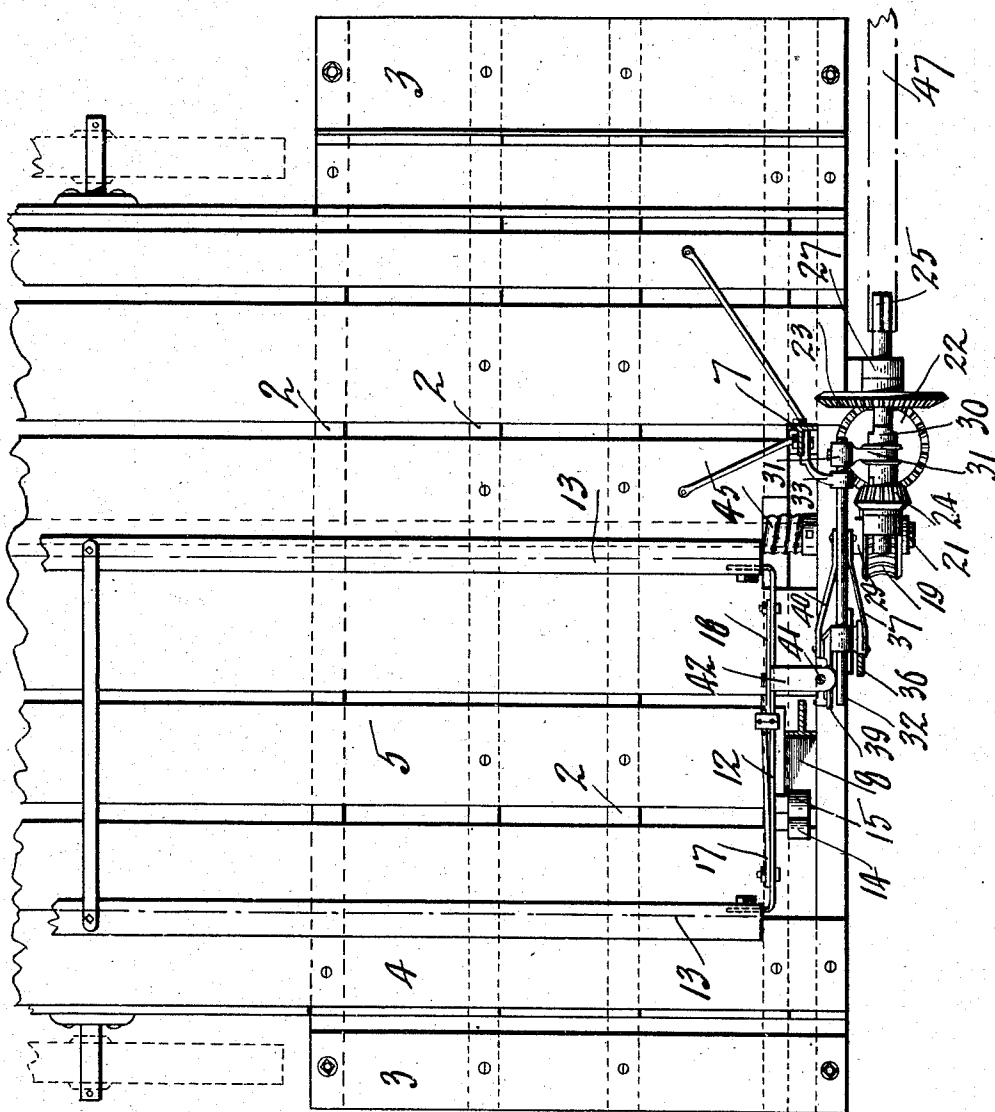
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2 SHEETS—SHEET 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

CHARLES P. SESTER, OF PEORIA, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO PORTABLE ELEVATOR MFG. CO., OF BLOOMINGTON, ILLINOIS, A CORPORATION OF ILLINOIS.

WAGON-JACK.

No. 833,980.

Specification of Letters Patent.

Patented Oct. 23, 1906.

Application filed January 19, 1905. Serial No. 241,739.

To all whom it may concern:

Be it known that I, CHARLES P. SESTER, a citizen of the United States, residing at Peoria, in the county of Peoria and State of Illinois, have invented certain new and useful Improvements in Wagon-Jacks; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same.

This invention has reference to new and useful improvements in wagon jacks or lifts, the object of the invention being to provide a device of this class upon which the front wheels of the wagon may be run and which can be bodily raised to tilt the wagon backward for the purpose of unloading the same. The mechanism for accomplishing this comprises gearing having a differential movement whereby the lift is lowered faster than it is raised.

In its organization the device comprises a suitable base, at the opposite ends of which are secured two upright frames, one of which extends up from the base on an incline, a platform adapted to be moved upwardly following the incline of the frame, gearing for raising and lowering the platform, the said gearing adapted to have a differential movement, and means operated by the platform when it reaches its greatest height and when lowered to automatically cut out the gearing aforesaid.

For a full description of the invention and the merits thereof and also to acquire a knowledge of the details of construction of the means for effecting the result reference is to be had to the following description and drawings hereto attached.

While the essential and characteristic features of the invention are susceptible of modification, still the preferred embodiment of the invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation looking at one side of the device, showing the platform partly raised and the position of the gearing and component parts when effecting this result. Fig. 2 is a plan view of one-half of the machine with the upper part of the end uprights cut away and showing the platform in its lowermost position with a plan of the gearing as it is seen in Fig. 1. Fig. 3 is a vertical

longitudinal section through a portion of the base and the platform looking toward the gearing.

Like numerals of reference indicate corresponding parts throughout the figures.

In the drawings, 1 indicates a base constructed of the side sills 1^a and the intermediate sills 2, each having slanting ends to which are fastened the boarding 3, forming approaches to the top of the base, which is composed of the boards 4. That portion of the base upon which is carried the movable platform to be described consists of the boards 5, which are supported on the sills 1^a and 2, the same being cut out, as at 6, so as to place the tops of the boards 5 on a line with the lower edge of the boards 4. In this way when the platform is in its lowermost position on the base a wagon run up onto the base may be easily run onto the platform. Extending up from the opposite sides of the base and having their lower ends positioned adjacent to the inner face of the sills 1^a are two upright frames or standards 7 and 8, preferably of T angle-iron. The upright 7 is disposed in a vertical position, while the upright 8 is disposed diagonally, the upper end thereof inclined toward the upper end of the upright 7 and joined in the coupling or casting 9, to which the upright 7 is secured, the couplings 9 being of such construction as to support or have journaled therein the pulley-wheels or sheave-wheels 10. The angle at which the uprights 8 are carried is such that when the front wheels of a wagon rest on the movable platform and the same is raised the front of the wagon will move upwardly in a line approximately the radius of an arc struck from the center of the rear wheels of the wagon, it being preferable to straighten the arc by making a straight frame and inclining the same rather than to curve the uprights, the construction shown facilitating in the easy raising and lowering of the wagon.

11 denotes a skeleton platform constructed of the ends 12 and the connecting angle-iron frames 13, extending at right angles thereto, forming a hollow rectangular frame which prevents the wheels of the wagon from becoming dislodged when the said platform is raised or lowered. When lowered, the end frames 12 rest on the boards 5, while the upper angular portions of the frames 13 rest on the boards 4. (See Fig. 3.) The said plat-

form is guided in its movement when raised or lowered by means of the rollers 14 and 15, which are adapted to travel up and down on the flat faces of the uprights 8, also the sheave-wheels 16, which travel up and down on the edge or opposite side of the said uprights 8. The rollers 14 and the sheave-wheels 16 are journaled to the end frames 12, while the rollers 15 are journaled to braces 17, which extend up from one end of the frames 12 and are connected to a brace 18, the lower ends of which are secured to the opposite ends of the frames 12. The arrangement of the rollers 14 and 15 and the sheave-wheels serves to retain the platform at all times in a horizontal position and prevents lateral displacement thereof.

The mechanism by means of which the platform is raised or lowered, as also the tripping devices for automatically controlling the upward or downward movement of the platform, will now be described. Extending transversely through the base 1 and at a suitable point therein is carried a shaft 18^a, one end thereof protruding through one of the side sills 1^a and having secured on the terminal thereof the worm-wheel, (indicated as 19.) In continuous mesh with the worm-wheel 19 is a worm 20, carried on a vertically and diagonally disposed short shaft or spindle 21, upon the upper end of which is carried the bevel gear-wheel 22. In continuous mesh with the bevel gear-wheel 22 is shown the oppositely-disposed bevel gear-wheel 23 and the bevel-pinion 24, which is of smaller diameter than the wheel 23, both of which are loosely carried on the horizontally-disposed drive-shaft 25. A bracket 26 is provided, secured to the sill 1^a, which serves as a support for the shaft 25, the shaft 21, and the shaft 18^a, which are journaled in the bearings 27, 27^a, 28, 28^a, and 29, respectively. Disposing the shaft 21 at an angle, as shown in Fig. 1, it permits me to arrange the gear 22 at such an angle with reference to the horizontal bearing of shaft 25 as to provide the differential gears 23 and 24 in continuous mesh with the gear 22 to impart a differential speed to certain parts in a manner to be described.

30 indicates a clutch member feathered on the shaft 25, its opposite ends adapted to have clutch engagement with the gear 23 and the pinion 24 and so arranged as to permit both the pinion and gear to run loose on the shaft 25 or throw either one of them into engagement therewith. The clutch 30 is operated by a clutch-arm 31, which is fixedly attached to a rod 32, situated to the rear of the shaft 25, the said rod movable lengthwise in bearings 33 and 34, the former secured to the standard 7 and the latter extending up from a bracket 35, which is secured to the sill 1^a, which also serves a further purpose, as will be described. The clutch 30 through the arm

31 and the rod 32 may be operated in two different ways—either by hand at some remote point from the machine or when close by, also automatically when the platform reaches a suitable height or when reaching a suitable point in being lowered. A lever (indicated as 36) is shown pivoted at its lower end to the bracket 35, and at a suitable point on the body of the lever is pivoted a reach or arm 37, having its opposite end pivoted to the rod 32 intermediate its ends. To the bracket 35 at 38 is pivoted a bell-crank lever 39, one end of which has pivotally attached thereto a reach or arm 40, the opposite end of which is pivoted to the rod 32 at a point where the reach 37 is pivoted, but upon the opposite side thereof, as will of course be understood. The opposite end of the bell-crank has pivotally attached thereto the lower end of a rod 41, the same extending upwardly and substantially parallel with the standard 8. The said rod passes through a bracket 42, secured to the platform, and particularly the brace 18 thereof, adapted in the movement of the platform to slide up and down on the rod aforesaid. To the rod at or near its upper end, also at or near its lower end, are adjustably secured the couplings or collars 43 and 44, the purpose of which will be further described.

Referring again to the shaft 18^a, secured to the same at or near its opposite ends and adjacent to the sills 1^a, are drums or crimped collars 45, to which and around which is adapted to be wrapped or coiled one end of a flexible cable, rope, or chain 46, (indicated in dotted lines in the figures,) which travels over the pulley-wheels 10 at the top of the standards and the opposite ends thereof secured to the braces 17 and 18, where they meet and are joined together. (See Figs. 1 and 3.) Thus if the shaft 18^a is rotated in a direction to wrap the cables on the drums or collars thereof the platform may be raised or lowered if the said shaft is rotated in the reverse direction.

Power may be imparted to the shaft 25 through any well-known device; but I prefer to attach thereto a tumbling shaft 47, (indicated by dotted lines,) the same being actuated from any suitable source of power. In the position in which the gearing is now placed the rotation of the shaft 25 will impart power through the pinion 24, the gear 22, the worm 20, and the worm-wheel 19 to the shaft 18^a, which will raise the platform slowly and in the manner seen in Fig. 1. Upon the platform reaching the desired height the bracket 42 of the platform engages the collar 43, which lifts the rod 41, and through its connections with the bell-crank 39 and the bell-crank with the rod 32 the said rod is pushed forwardly, also carrying with it the arm 31 and the clutch 30, which cuts out the clutch from the pinion 24 and the said

pinion from the drive-shaft 25, stopping the upward movement of the platform, the use of the worm and worm-wheel in the gearing serving to lock the platform in any position upon the disconnecting of the power from the drive-shaft 25. To reverse or lower the platform, it is necessary to first clutch the clutch 30 with the gear 23, when the rotation of the gearing and the shaft 18^a will be in a direction just opposite to that above described. To accomplish this, the lever 36 may be pushed forwardly and through its connection with the rod 32 carrying the clutch member into engagement with the gear 23. To provide for shifting the lever in either direction at a point removed some distance from the machine, I have provided the rod 48 of any suitable length, one end of which is attached to the lever, as shown. The carrying forward of the clutch part also raises the lower end of the rod 41 through its connection with the bell-crank 39, as shown. Upon the platform reaching its lowermost position or upon its approach thereto the bracket 42 will engage the collar 44, thereby lowering the rod 41 and through its connections, as described, with the rod 32 disengage the clutch member from the gear 23, when the platform remains in a position of rest, all of which, it is believed, will be understood. It is also understood that in lowering the platform it moves down faster than when it is raised, for the gear 23 is much larger in diameter than the pinion 24. Raising the platform slowly, material in the wagon may be discharged in a slow continuous stream during the interval of raising, so that by the time the platform reaches its greatest height the material may be nearly, if not all, discharged. Upon the discharge of the material it is readily seen that it is advantageous to lower the platform and wagon as quickly as possible.

In order to facilitate transportation of the device, I have provided the lift with the spindles or short shafts 49, upon which are carried ground or truck wheels 50. When the lift is in position, it is desirable to remove the said wheels and let the sills rest upon the ground.

It is believed that without further description the operation of raising the front end of a wagon after the same has been run onto the platform and the means of placing in operation the means for raising the same and automatically stopping the platform will be readily understood, as well as the reverse operation of the parts to lower and stop the said platform. The application of the device is more particularly in connection with wagons used for hauling corn, wheat, and similar grains.

It will be obvious that various changes may be made in the construction and adaptation of the device, also that various changes

may be made in the detail construction, and I do not wish to limit myself to the details described and construction herein shown.

Having thus fully described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In a device of the class described, a platform adapted to have vertical movement imparted thereto, a drive-shaft, differential gears loosely carried thereby, a short shaft, a bevel-gear carried thereon in continuous mesh with said differential gears, a worm on said short shaft, a second shaft, a worm-wheel thereon in mesh with the worm aforesaid, means for clutching the differential gears to the drive-shaft, and connections between the platform and said second shaft, substantially as specified.

2. In a device of the class described, a platform adapted to have vertical movement imparted thereto, a drive-shaft, differential gears loosely carried thereby, a short shaft, a bevel-gear carried thereon in continuous mesh with said differential gears, a worm on said short shaft, a second shaft, a worm-wheel thereon in mesh with the worm aforesaid, clutch mechanism for connecting the differential gears to the drive-shaft, a reciprocally-mounted rod, connection between said rod and clutch mechanism, a hand-lever, a bell-crank lever and connections between the said levers and said rod, means controlled by the platform when the same reaches a desired height or when lowered for actuating said bell-crank lever, and connections between the said platform and second shaft, substantially as specified.

3. In a machine of the class described, the combination with a base, standards extending up from the said base, a platform movable vertically on the said standards, differential gearing and connections between the said gearing and platform whereby the same may be raised or lowered, clutch devices for controlling said differential gearing, a rod slidably supported carrying said clutch devices, a hand-lever and connections between the same and said rod, a bell-crank lever and connections between said bell-crank and said rod, a second rod, one end attached to the bell-crank lever, and means on the said rod adapted to be engaged by the platform for automatically controlling the clutch devices, in manner as specified.

4. In a device of the character described, means for raising and lowering the front end of a wagon, and actuating means therefor including a pair of shafts, a gear-wheel secured to one of said shafts, a pair of gear-wheels of different sizes loosely mounted on the other of said shafts and meshing with said first-mentioned gear-wheel, and means for causing either of said pair of gear-wheels to rotate with its shaft.

5. In a device of the character described,

means for raising and lowering the forward end of a wagon, and actuating means therefor including a pair of shafts, a gear-wheel secured to one of said shafts, a pair of gear-wheels of different sizes loosely mounted on the other of said shafts and meshing with said first-mentioned gear, a clutch member for causing either of said pair of gear-wheels to rotate with its shaft, means for manually operating said clutch member, and means actuated automatically by the raising and lowering means for disconnecting said clutch member from both of said gear-wheels.

6. In a device of the character described, means for elevating the forward end of a wagon, an actuating-shaft therefor, a drive-shaft, an intermediate shaft geared to said actuating-shaft, a gearing connecting the intermediate and drive shafts comprising a gear-wheel secured to one of said shafts, a pair of gear-wheels of different sizes loosely mounted on the other of said shafts and meshing with said first-mentioned gear-wheel, and means for causing either of said pair of gear-wheels to rotate with its shaft.

7. In a device of the character described, means for elevating the forward end of a wagon, an actuating-shaft therefor, a drive-shaft, an intermediate shaft, worm-gearing connecting the intermediate and actuating shafts, a gearing connecting the intermediate and drive shafts comprising a gear-wheel secured to one of said shafts, a pair of gear-wheels of different sizes loosely mounted on the other of said shafts and meshing with said first-mentioned gear-wheel, and means for causing either of said pair of gear-wheels to rotate with its shaft.

8. In a device of the character described, means for elevating the forward end of a wagon, a drum-shaft therefor, a drive-shaft, an intermediate shaft, worm-gearing connecting the intermediate and drum shafts, a gearing connecting the intermediate and drive shafts comprising a gear-wheel secured to one of said shafts, a pair of gear-wheels of different sizes loosely mounted on the other of said shafts and meshing with said first-mentioned gear-wheel, a clutch member for causing either of said pair of gear-wheels to rotate with its shaft, means for manually actuating said clutch member, and means actuated automatically by the raising and lowering means for disconnecting said clutch member from both of said gear-wheels.

9. In a device of the character described, means for elevating the front end of a wagon, a drum-shaft therefor, a drive-shaft having a pair of gears of different sizes loosely mounted thereon, an intermediate shaft geared to the drum-shaft, a gear-wheel secured to said intermediate shaft and in continuous mesh with the pair of gear-wheels on the drum-shaft,

and means for causing either of said pair of gears to rotate with the drive-shaft.

10. In a device of the character described, means for elevating the front end of a wagon, a drum-shaft, a drive-shaft, a pair of gear-wheels of different sizes loosely mounted on said drive-shaft, an intermediate shaft, worm-gearing between the intermediate shaft and drum-shaft, a gear-wheel secured on said intermediate shaft and in continuous mesh with the pair of gear-wheels loosely mounted on the drive-shaft, and means for causing either of said pair of gears to rotate with the drive-shaft.

11. In a device of the character described, means for elevating the front end of a wagon, a drum-shaft therefor, a drive-shaft, a pair of gear-wheels of different sizes loosely mounted on said drive-shaft, an intermediate shaft, worm-gearing between the intermediate shaft and drum-shaft, a gear-wheel secured on said intermediate shaft and in continuous mesh with the pair of gears loosely mounted on the drive-shaft, a clutch member for causing either of said pair of gear-wheels to rotate with the drive-shaft, means for manually operating said clutch member, and means operated by the raising and lowering means for automatically disengaging said clutch member from both of said gear-wheels.

12. In a device of the character described, means for elevating the front end of a wagon, a drum-shaft therefor having a worm-wheel thereon, a drive-shaft having a pair of gear-wheels of different sizes loosely mounted thereon, an intermediate shaft provided with a worm meshing with the worm-wheel on the drum-shaft and with a gear-wheel continuously meshing with the pair of gears on the drive-shaft, and means for causing either of said pair of gear-wheels to rotate with the drive-shaft.

13. In a device of the character described, means for elevating the front end of a wagon, a drum-shaft therefor having a worm-wheel thereon, a drive-shaft extending substantially at right-angles to said drum-shaft and having a pair of oppositely-disposed beveled gear-wheels of different sizes loosely mounted thereon, an angularly-disposed shaft provided with a worm meshing with the worm-wheel on the drum-shaft and with the beveled gear-wheel continuously meshing with the pair of gear-wheels loosely mounted on the drive-shaft, and means for causing either of said pair of gear-wheels to rotate with the drive-shaft.

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

CHARLES P. SESTER.

Witnesses:

CHAS. W. LA PORTE,
ROBT. N. McCORMICK.