

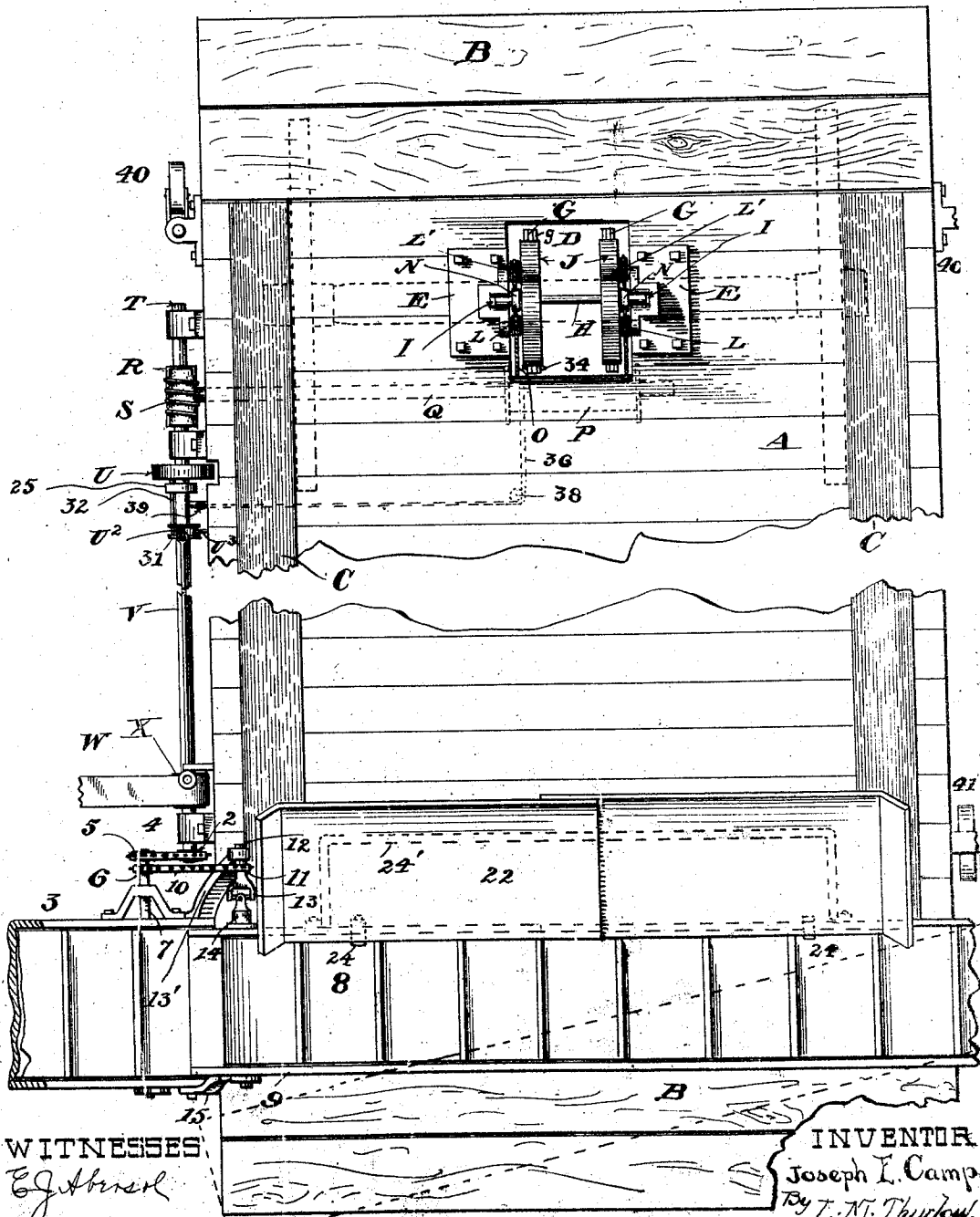
No. 859,596.

PATENTED JULY 9, 1907.

J. E. CAMP.
PORTABLE GRAIN DUMP.
APPLICATION FILED OCT. 9, 1903.

3 SHEETS--SHEET 1.

Fig. 1.



WITNESSES

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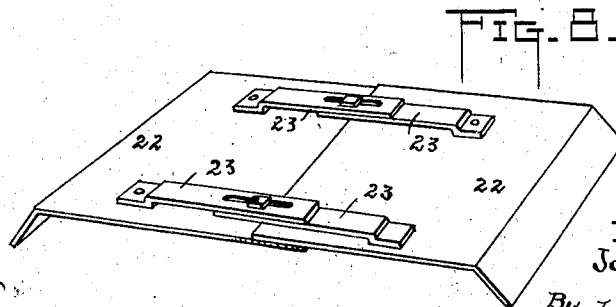
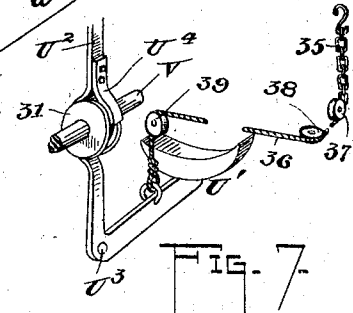
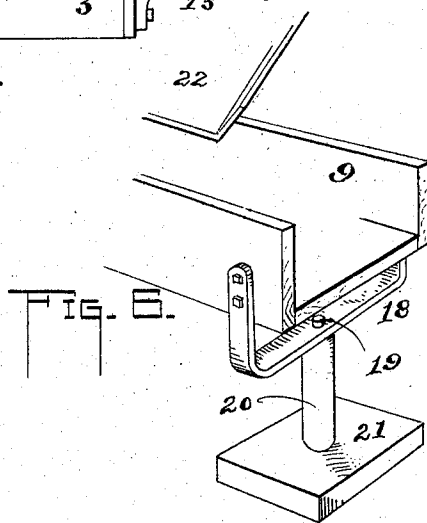
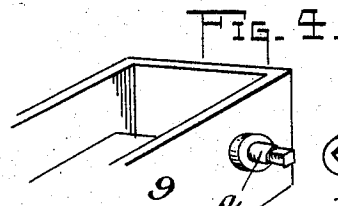
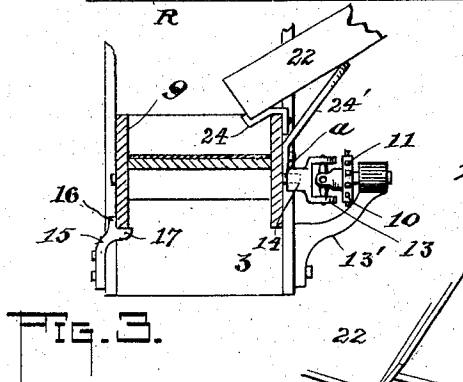
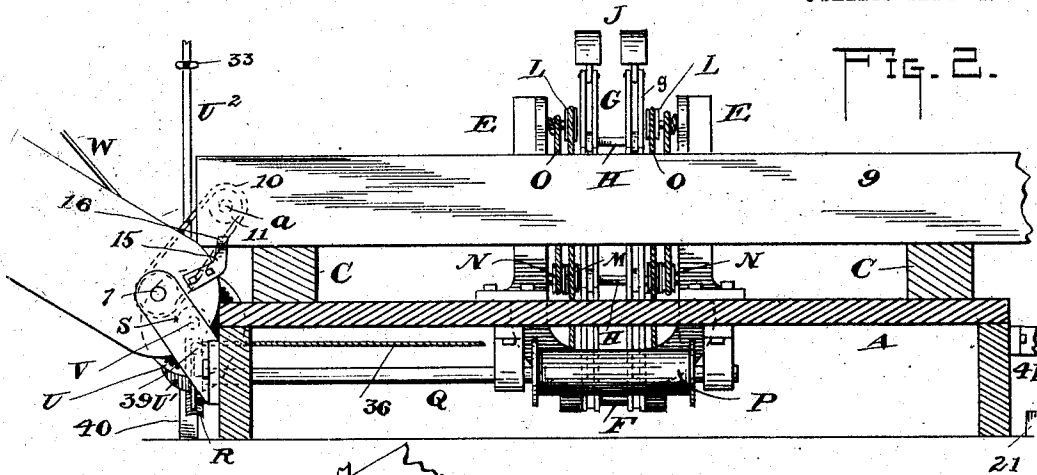
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3 SHEETS—SHEET 2.



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3 SHEETS—SHEET 3.

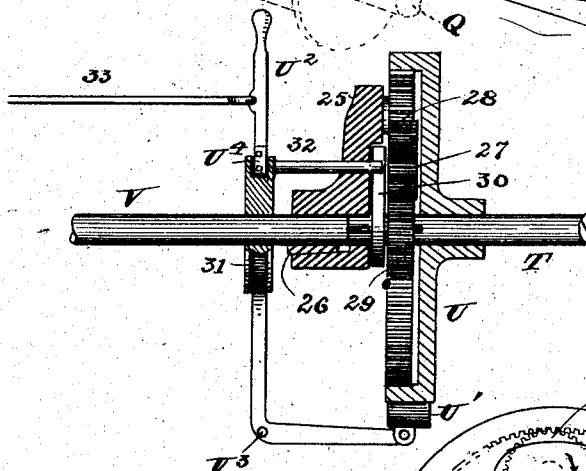
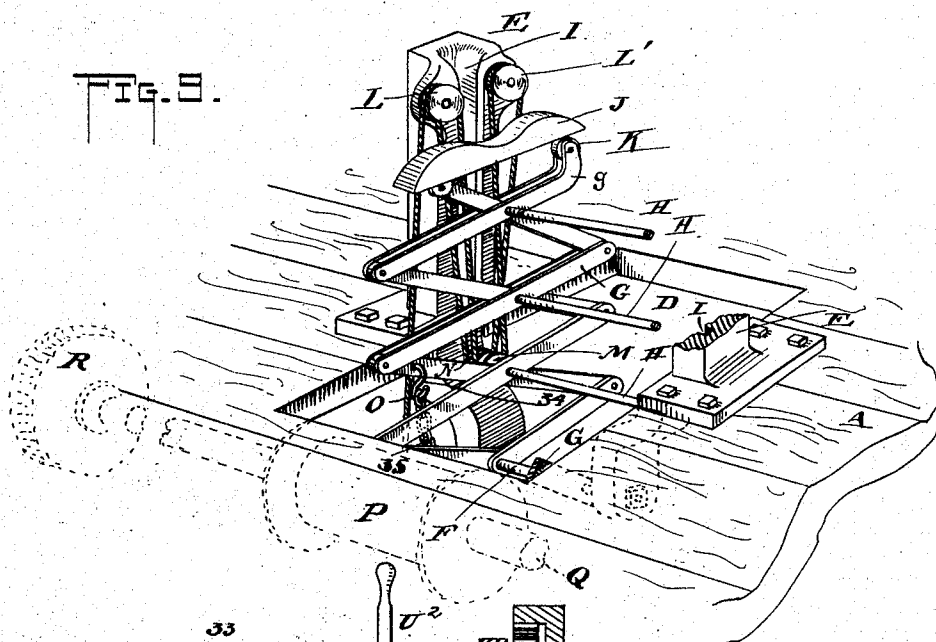
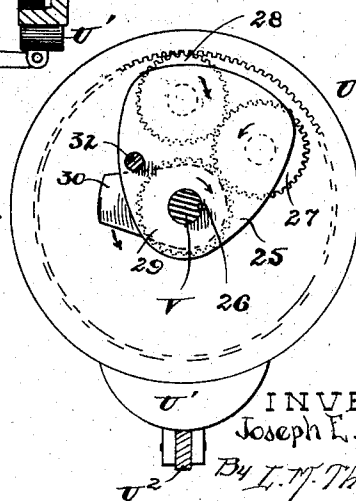


FIG. 11.



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UNITED STATES PATENT OFFICE.

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PORTABLE GRAIN-DUMP.

No. 859,596.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed October 9, 1903. Serial No. 178,335.

To all whom it may concern:

Be it known that I, JOSEPH E. CAMP, a citizen of the United States, residing at Washington, in the county of Tazewell and State of Illinois, have invented certain new and useful Improvements in Portable Grain-Dumps; and he does 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.

10 This invention pertains to improvements in portable grain dumps.

The object of the invention is to furnish an entirely new structure in apparatus of this character and one that will take up but little space.

15 A further object is to construct a grain dump in which the mechanism for raising the wagon for dumping is also used for lowering the same.

A still further and important object of the present invention is to provide a different mounting and means 20 for handling the conveyer or drag usually employed for receiving the grain from the wagon.

In the appended drawings, Figure 1 is a top view of my entire dump as I prefer to construct it. Fig. 2 is a partial vertical end section of the same. Fig. 3 is a vertical cross section of a conveyer or drag showing manner of mounting it at one end and attaching power thereto. Fig. 4 is a perspective view of a portion of said conveyer showing a squared shaft thereof. Fig. 5 is a perspective view of a portion of a "knuckle" or universal joint used with the shaft shown in Fig. 4. Fig. 6 is a perspective view of a portion of the conveyer showing the opposite end from that shown in Figs. 3 and 4 illustrating manner of pivotally supporting it. Fig. 7 is a perspective view of an automatic brake 35 mechanism and throw-off. Fig. 8 is a perspective view of an adjustable hopper. Fig. 9 is a perspective view of a portion of the dump platform showing part of my wagon raising mechanism. Fig. 10 is a longitudinal section of a reversing gear mechanism. Fig. 40 11 is a face view of the same showing the inside of a brake drum.

The platform for the wagon is indicated by the letter A and the approaches thereto by B. Running lengthwise of the platform A near each edge is a guide C 15 consisting of a wooden bar or other like member by which to properly guide the wheels of the wagon to station the latter in proper position for the dumping operation. These said members are better shown in Fig. 2 in cross section and it is designed that the wheels 0 run between them. Near the front end of the platform is a hole indicated at D situated midway between the said guides C. At each side of this hole and secured to the platform is a standard E extending above the platform about 18 inches and below the same 8 or 5 10 inches. The said standards at their lower ends approach each other as shown in Fig. 2 and a bar F

extending from one to the other forms a support for two lazy-tongs G whose lowermost bars are pivoted on such bar F, the latter passing therethrough. The said lazy-tongs are of the usual construction consisting of several 60 pairs of the arms *g* as shown.

The pivots for the several pairs of arms consist of the bars H which are similar to F and connect the two lazy-tong members, the ends of said bars H projecting beyond the said members and guided in grooves 65 I in the adjacent faces of the standards E which extend down to the floor of the platform or further if desired. Carried at the top of each-lazy-tongs is a horizontal bar J pivoted at one end to the bars of the tongs and the other end supported by a friction roller 70 K on the opposite arms of said tongs whereby the latter may rise and fall and its arm extremities move toward and away from one another. The ends of these arms must, of course, be free in order to permit the tongs to spread as will be understood and it will 75 be seen that since the said bar J is mounted in the manner described it will maintain a horizontal position at all times regardless of the elevation it may attain, the roller traveling beneath it as the tongs rise and fall. The two bars thus mounted on their 80 respective tongs constitute supports for the front axle of the wagon which is indicated in broken lines in Fig. 1. Said bars are placed sufficiently far apart to form a steady support for the said axle it being understood that both of them travel up and down in 85 the same relation at all times. Near the top of each standard E is an ear or lug at each side of the groove I and on each is a grooved wheel L, L'. Also on the extension of the lowermost bar H between the standard and the lazy-tongs is a pair of similarly grooved wheels 90 indicated by M and N. A cable O is attached at one end to the supporting pin of the roller L and passes down beneath the roller N, thence up over the roller L' and down around the roller M, thence up again over the roller L and finally down to a winding drum 95 P on a shaft Q journaled beneath the platform in a transverse direction. It will be seen that two cables are necessary, one being for each lazy-tongs as shown and letters of reference correspond in like manner to both the cables and the rollers or wheels described. 100 The lower ends of the cables are secured to the said drum P and are wound upon the latter and it will be understood that when winding upon the said drum the tongs will be raised to any desired height to properly elevate the wagon for dumping the load. The 105 height to which the wagon is carried may be predetermined and set to stop at the desired point all of which will be described. It is quite evident that by the peculiar arrangement of grooved wheels and cable that much lifting power is had with but little 110 expenditure of power from the engine or other source of motion. The shaft Q described extends outside

the platform and carries a worm-wheel R above which is a worm S on a longitudinal shaft T at the side of the platform A. This shaft is a short one and is designed to be power driven in both directions by means of a reversing gear within a friction drum U. Beyond said drum a second length of shaft V receives its motion from the engine or other power by a belt W and pulley X and further on a sprocket wheel 2 imparts motion to the usual elevator 3 by means of a sprocket chain 4 and sprocket wheel 5. A similar sprocket 6 on the elevator shaft 7 drives the conveyer or drag belt 8 of the drag 9 through chain 10 and sprocket 11. The latter member is secured and carried on a stub shaft 12 having bearing in an arm or bracket 13 secured to the elevator. Said shaft carries a knuckle or universal joint 13 one section of which is a socketed stem 14 as shown in Fig. 5. The shaft *a* of the belt 8 is shown in Fig. 4 and is squared at its end to enter the said socket of the joint 14 as will be readily understood. Secured to the elevator is an upwardly extending arm 15 having a vertical lug 16 and a projection 17 as shown in Fig. 3. The opposite end of the drag or conveyer, Fig. 6, is provided with a yoke 18 beneath it, the same being carried on a pin 19 at the top of a post 20 mounted on a portable block 21.

It is designed that the drag be moved out of the way of the team and wagon when entering upon the platform and this is done by turning that member about on the pin 19 of the post and block 20—21 which stands upon the ground at the right of the platform. The geared end of the drag is moved away from the elevator as shown by broken lines by lifting it out of the arm 15. In thus moving it the shaft *a* of the said drag is withdrawn from the socket 14 without stopping the power, the knuckle continuing its revolution. Then when the wagon is in place the drag is replaced and the shaft entered in place. The belt 8 is then again in operation ready for the grain from the wagon. I provide a hopper for the drag at 22 made in two sections one adjustable on the other to make the hopper longer or shorter to suit wagons of various widths or to enable the attendant to place the hopper beneath the end of the wagon so as to be sure of catching all of the grain if the wagon happens to be slightly out of its proper place on the platform. In Fig. 8 the back of the hopper is shown. Two straps 23 being secured to each section as shown with the extremities overlapping and slotted and provided with bolts which will hold the parts together but permit the desired adjustment. Fig. 3 shows the manner of supporting the hopper. A bracket 24 is secured near each end of the drag 9 and the hopper rests within it while a bail 24' is likewise secured to the drag, also shown in Fig. 1, and these both serve to give the hopper the desired support at all times. Attention is now directed to the shafts T and V which at times turn together and at other times revolve in opposite directions. Figs. 10 and 11 show the connection between these shafts. Near the end of the shaft T is loosely mounted the friction or brake-drum U before mentioned. This member is cup shaped and provided with gear teeth on its inner periphery while its outer surface is engaged by a brake-shoe U' pivotally held on a lever U² having its fulcrum at U³ at the side of the platform. Suitable bearings are provided for each shaft portion and the adjacent ends of these mem-

bers abut within a gear carrier 25 secured to the end of the shaft V, said carrier permitting the shaft T to easily turn therein, the key 26 serving to hold the said carrier to the shaft V. Two pinion gears 27, 28 are carried on 25, the pinion 28 engaging with the internal teeth of the drum U and also with the pinion 27 which latter in turn meshes with a pinion 29 secured to the shaft T. Adjacent to the latter pinion is a dog 30 also secured to the shaft T. On the shaft V adjacent to the carrier 25 is a shifting ring 31 to which is attached a thrust-pin 32 passing through the carrier and designed to receive the dog 30 against it. Said pin is movable in the direction of its length by shifting the said ring 31. This movement is acquired by the use of the lever U² which as shown in Fig. 7 curves around the groove of the ring and serves to shift the latter by the help of a curved arm U⁴ secured to said lever and partially surrounding the ring. When the lever is moved on its pivot the ring will be shifted along the shaft to withdraw or insert the pin. A pull rod 33 is attached to the lever and extends in the region of the elevator and drag so that the gearing may be disconnected or operated as desired.

In operation the wagon is driven upon the platform to the position indicated for the front axle in Fig. 1 and power is then thrown on to turn the shaft V toward the left as viewed in Figs. 1 and 2 so that the elevator belt and drag belt are driven in the proper direction. This results in imparting the same direction of movement to the shaft T through the carrier 25, pin 32 and dog 30 secured to said shaft T. The brake-shoe U' is at this time free of the drum and the latter turns with the shafts as well as the ring 30 and its pin 32 described. The worm S during its revolution imparts motion to the shaft Q through the worm-wheel R in a direction to wind up the cables O to raise the lazy-tongs and the wagon. The arrangement of the pulleys or grooved wheels on the standards E and lazy-tongs is much the same as a "block and fall". The wheels M and N will be raised to a point between the wheels on the standards while the bars J will be raised much higher. The bars H above the one carrying the wheels M, N will pass out of the grooves of the standards E but will enter them again as they descend, the grooves being opened outward at the top to guide the bar in. The attendant permits the wagon to rise to the desired height and then grasping the lever U² pulls it toward the elevator thus withdrawing the pin 32 from the region of the dog 30 and at the same time the shoe U' is held against the drum U if the lever is drawn far enough. But if it is desired to have the wagon remain at the point where it is stopped the pin is withdrawn without setting the brake. In this case the shaft V continues to revolve but having no connection with shaft T that member is stationary, the worm serving to prevent the downward movement of the wagon. If it is desired to lower the wagon the lever is pulled far enough to bring the shoe U' firmly against the drum thus holding it from moving. The instant the drum is held the gear or pinion 28 on the carrier 25 is revolved in the direction of the arrow, Fig. 11, thereby communicating motion to the pinion 27 in the opposite direction as shown by its arrow and this latter member being in mesh with the fixed pinion 29 on the shaft T imparts movement to that wheel and said shaft T in a direction opposite to the direction of 1

revolution of the shaft V with the result that the worm S is driven in the opposite direction from what it was when raising the wagon. This motion reverses the direction of rotation of shaft Q to unwind the cables and lower the lazy-tongs. In connection with this mechanism I desire to provide means for automatically stopping the raising of the wagon and to accomplish this I attach a hook 34 to one of the bars of the lazy-tongs. Hung from this hook is a chain 35 terminating in a cable 36 which passes beneath a pulley 37 below the said lazy-tongs, Fig. 7, thence over a pulley 38 to a pulley 39 and down to connect with the lever U². This is indicated partially in Figs. 1, 2 and 9 but in full in said Fig. 7. It will be seen that as the wagon is raised the cable will be drawn upon at a certain point to withdraw the pin 32 to release the shaft T as before described and the extent of pull upon said cable can be such that the shoe U¹ will not be set to reverse the direction of rotation of the shaft, that operation being left to the attendant who, after the wagon is relieved of its load pulls the lever still further to set the shoe and cause the pinions to revolve the said shaft T in its other direction to lower the wagon.

I have provided caster wheels for the front end of the platform A shown at 40 and also wheels 41 at the rear to provide means for more easily transporting the dump from place to place. In bringing out my improved dump I desire to make it clearly understood that it is not the intention to confine myself to the exact means shown and described for assisting the lazy-tongs in their work as other construction may be employed to accomplish the same end.

The peculiar form of the members J on the tops of the lazy-tongs is of advantage since the axle cannot slip out and therefore no lock is needed for the wagon to prevent backward movement when dumping as in other forms of dumps. The reversing gear within the member U causes the wagon to be lowered much faster than when in the raising act since the several pinions operating in connection with U compel this result as will be readily understood.

Claims.

1. In an apparatus of the class specified, the combination with elevating means for the front end of a wagon, a drive-shaft in connection with said means, an internal ring-gear on said shaft, and clutch controlled means also carried by said shaft in mesh with said internal gear.

2. In an apparatus of the class specified, the combination with elevating means for the front end of a wagon, a drive-shaft in connection with said means, an internal ring-gear on said shaft, clutch controlled mechanism also carried by said shaft and in mesh with said internal-gear, governing mechanism actuated by said elevating means for checking the movement of said clutch controlled mechanism.

3. In an apparatus of the class described, the combination with elevating means for the front end of a wagon, a drive-shaft in connection with said elevating means, an internal-ring-gear carried by said shaft, clutch controlled gearing also carried by said shaft and in mesh with said internal-ring-gear for elevating said elevating means, and worm-wheel gearing also in connection with said shaft and elevating means for lowering the latter.

4. In a wagon dump, an elevator, means for raising and lowering said elevator including a drum shaft and a worm gear for actuating the same, a drive shaft, means for imparting a direct movement to said worm gear from the drive shaft, and means for imparting an indirect movement to said worm gear from said drive shaft in a different direction.

5. In a grain dump of the character described, means located beneath the wagon consisting of lazy-tongs adapted to engage with and raise the wagon for dumping purposes.

6. In a grain dump of the character described, raising means beneath and adapted to engage the front axle of a wagon, such means comprising lazy-tongs, and means for projecting the same upward to place the wagon in position for dumping.

7. In a grain dump of the character described, a collapsible device beneath the wagon for raising the same, cables attached thereto for operating it to project the same upward to raise the wagon at its front end, a winding-drum for the cables, a shaft carrying the drum, a worm-wheel on the shaft, a second shaft adjacent to the first, a worm on the latter shaft for engaging the worm-wheel, a friction wheel loosely mounted on the worm-shaft, gear teeth on the inner periphery of said wheel, a power-shaft abutting against the end of the worm-shaft, a gear carrier secured on the end of the power-shaft adjacent to the internally toothed friction-wheel, a pinion carried by said carrier and in mesh with the teeth of said friction-wheel, a pinion affixed to the end of the worm-shaft, a pinion on said carrier in engagement with the first and also with the said pinion on the worm-shaft, a dog affixed to the worm-shaft, a shiftable ring on the power-shaft, a shifting pin on the ring and passing through the gear carrier to engage the dog, a lever for shifting the said shiftable ring and a brake-shoe on the lever for frictionally engaging the friction-wheel all for the purposes explained.

8. In a grain dump, raising means for the wagon consisting of collapsible members of lazy-tongs construction, means for raising and lowering the same, such means adapted for revolution in either direction for the purposes described, a power shaft adjacent to such means and adapted to revolve in one direction only, and means between the two latter elements for revolving the reversible member in one direction or the other for the purposes explained.

9. In a grain dump, raising and lowering means for the wagon to be dumped consisting of collapsible members of lazy-tongs construction, means for raising and lowering the members, the same capable of revolution in either direction, power means adjacent to the latter, and means between the two for imparting movement to the former in either direction or disconnecting the two entirely for the purposes explained.

10. In a grain dump of the character described, the elevator and drag therefor, mechanism for driving the conveyer belts of each, said drag adapted for connection with and disconnection from the driving mechanism and capable of swinging to and from such mechanism on its free end as a pivot substantially as described.

11. In a grain dump, the drag thereof, mechanism for driving the same and from which it is capable of being disconnected and a pivot for its free end upon which it is swung to open the driveway of the dump.

12. In a grain dump, the drag thereof, mechanism for driving the same, a loose joint on the driving mechanism, the shaft of the drag for engaging the said joint and capable of instant connection with and disconnection therefrom and a pivotal support at the outer free end of the drag upon which said drag is swung to open the driveway of the dump.

13. In a grain dump, the drag thereof, and a hopper thereon adapted for adjustment in length for the purposes set forth.

14. In a grain dump of the character described, lazy-tongs located beneath the wagon and over which the wagon is driven, the same adapted for raising the wagon for dumping purposes, power means for projecting said lazy-tongs upward, means also for disengaging the power at a predetermined height and other means for returning the raising means to its initial position.

15. In a grain dump of the character described, lazy-tongs located beneath the wagon and over which the wagon is driven, the same adapted for raising the wagon for dumping purposes, power means for projecting said lazy-tongs upward, means also for disengaging the power at will and other means for returning the lazy-tongs to its initial position.

16. In a grain dump of the character described, lazy-tongs located beneath the wagon and over which the wagon is driven, the same adapted for raising the wagon at its front end, power means for projecting said lazy-tongs upward, means under the control of the attendant for stopping the raising movement at any point desired and other means in conjunction with the stopping means for returning the lazy-tongs to its normal or initial position at the will of such attendant.
17. In a grain dump of the character described, lazy-tongs for raising the front end of the wagon, power means for projecting said lazy-tongs upward, said power means adapted for continuous revolution, means for disconnecting the continuously moving means from that which operates the lazy-tongs, such disconnecting means adapted also for reversing the direction of movement of that portion which operates the lazy-tongs to lower the latter for the purposes set forth.
18. In a grain dump of the character described, lazy-tongs beneath the wagon for raising the same, a shaft for operating the lazy-tongs, a worm-wheel on said shaft, a second shaft at right angles to the first, a worm thereon adapted to engage the worm-wheel and power means for driving the said second shaft in either direction to raise or lower the lazy-tongs for the purposes set forth.
19. In a grain dump of the character described, lazy-tongs beneath the wagon for raising the same, a shaft for operating the lazy-tongs, a worm-wheel on said shaft, a second shaft at right angles to the first, a worm thereon adapted to engage the worm-wheel, power means for driving the said second shaft in either direction to raise or lower the lazy-tongs and devices between the second shaft and said power means for transmitting either direction of movement to said second shaft from the said power means.

20. In a grain dump of the character described, lazy-tongs for raising the wagon from beneath, power means for operating said means for raising the wagon, means for automatically arresting the upward movement of the lazy-tongs, the power means adapted also to lower the wagon after the same has been relieved of its load.

21. A hopper comprising the sections 22, the slotted pairs of straps 23 secured to each section and bolts for holding the straps in slidable relation to each other substantially as and for the purposes described.

22. In a grain dump, means for raising and lowering the wagon, other means for operating said first means comprising a winding drum P, cables O thereon connected to the first said means, a shaft Q for the drum, a worm-wheel R on said shaft, a shaft T at right angles to shaft Q, a worm S on said shaft T and meshing with the worm-wheel, an internally toothed friction-wheel U loose on the shaft T, a gear wheel 29 affixed to the shaft within the friction wheel, a fixed dog 30 also on said shaft, a shaft V abutting against the shaft T, a gear carrier 25 secured to the shaft V, gears 27, 28 on the carrier, the gear 28 adapted to engage the teeth of the friction-wheel U, the gear 27 adapted to engage with the gear 28 and gear 29 on shaft T as described, a lever U², a brake-shoe U' on one end to engage the friction-wheel, and a pin 32 traveling with the gear-carrier 25 and shiftable in the direction of its length by the lever U² to engage the dog 30 or release the same for the purposes described.

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

JOSEPH E. CAMP.

Witnesses:

FRANK T. MILLER,
L. M. THURLOW.