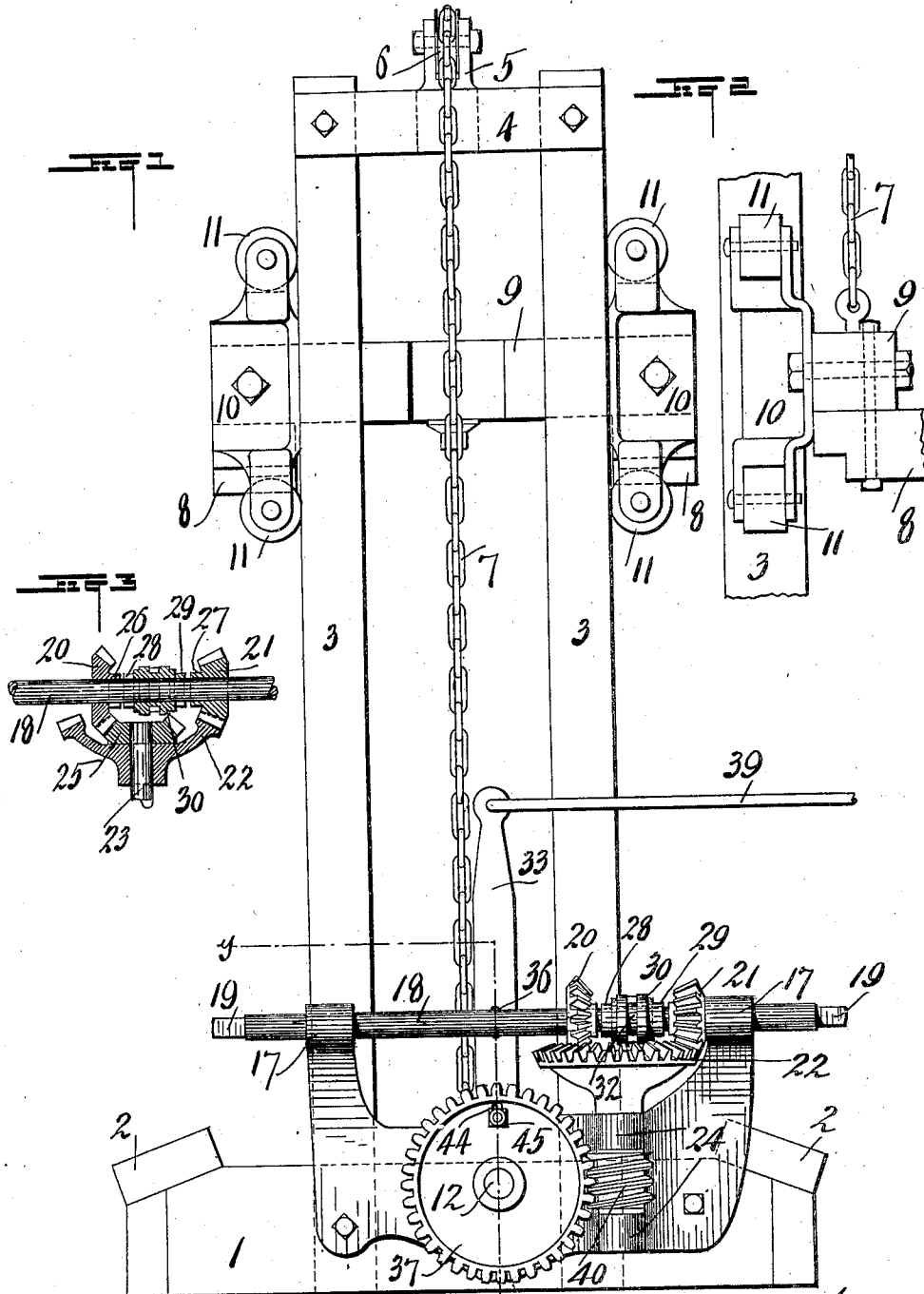


No. 835,891.

PATENTED NOV. 13, 1906.

R. L. RHEA.
GRAIN DUMP LIFTING JACK.
APPLICATION FILED JUNE 18, 1906.

2 SHEETS—SHEET 1.



Witnesses:
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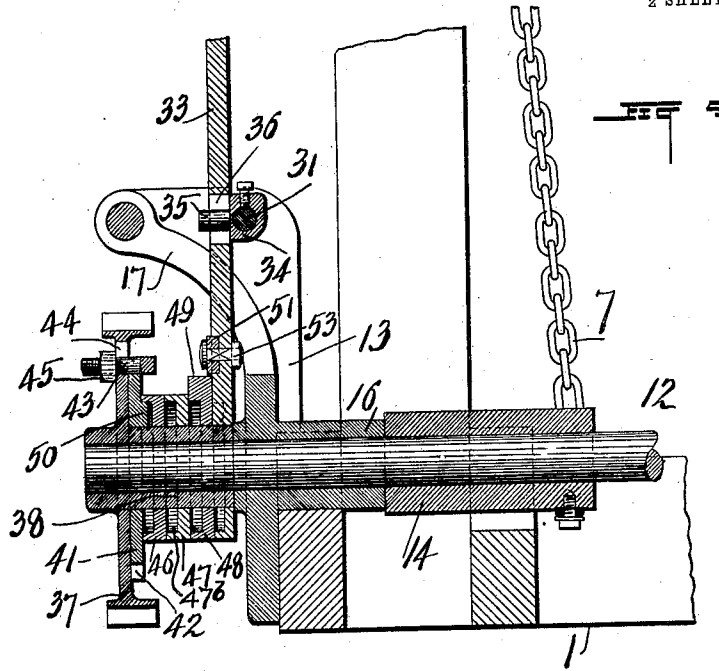


FIG 5

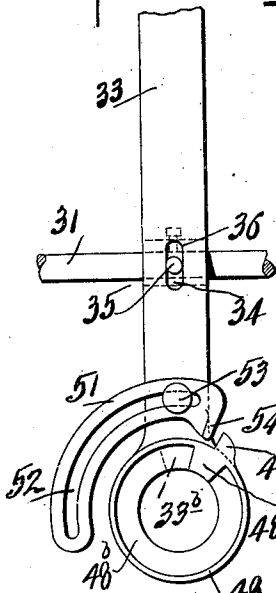


FIG 6

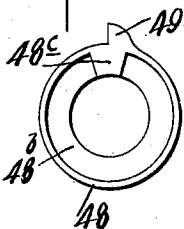


FIG 7



FIG 8

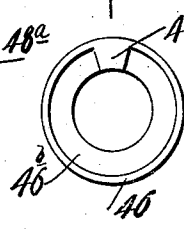


FIG 9

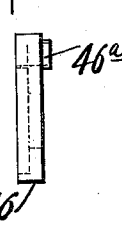


FIG 10

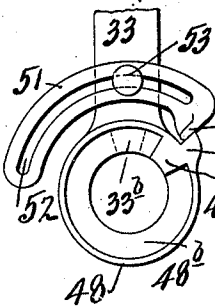


FIG 11

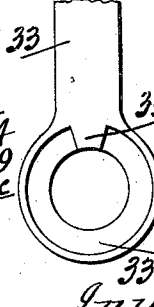
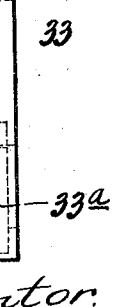


FIG 12



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UNITED STATES PATENT OFFICE.

ROBERT L. RHEA, OF PEORIA, ILLINOIS.

GRAIN-DUMP LIFTING-JACK.

No. 835,891.

Specification of Letters Patent.

Patented Nov. 13, 1906.

Application filed June 18, 1906. Serial No. 322,172.

To all whom it may concern:

Be it known that I, ROBERT L. RHEA, 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 Grain-Dump Lifting-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 certain new and useful improvements in grain-dumps, commonly known as "wagon-jacks," and relates particularly to that character of jack employed on farms to assist in unloading corn or other material from a vehicle into a receiving conveyer or elevator, which elevates the same to a car, crib, or other receptacle, it being designed to receive the front wheels of the wagon and elevate the same to a suitable height for the purpose of inclining the bed of the wagon, so that if the end-gate is removed the material will be gradually discharged as the wagon-bed is inclined, discharging the material into the conveyer or elevator or other suitable receiving means for the purpose of elevating the material, as described.

One of the objects of the present invention is the provision of means for automatically checking the raising and lowering means of the jack when the same is elevated to a predetermined height or when lowered, said means being adjustable for the purpose of regulating the height at which the elevating means for the wagon may be checked.

A further object of the invention is a guiding and sustaining means for the support which receives the front wheels of the wagon and elevates the same, the same being designed to prevent the support from being cramped when elevated or lowered.

For a further and full description of the invention herein and the merits thereof, and also to acquire a knowledge of the details of construction of the means for effecting the result, reference is 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 an end elevation of the jack, showing the mechanism which is adapted to

raise and lower the support for the front end of the wagon, the support being shown elevated to a suitable height. Fig. 2 is a side elevation showing in detail only a portion of the support and one of the uprights of the jack, together with one of the guiding and sustaining means for the support. Fig. 3 is a sectional detail of the gearing for transmitting motion in opposite directions to a drum-shaft employed in connection with the support for raising and lowering the same. Fig. 4 is a sectional view on the line *yy* of Fig. 1 and only showing one portion of the framework of the jack. Fig. 5 is a face view of a portion of a lever and connecting-rod for shifting certain clutch parts, and in connection therewith parts of the mechanism for automatically throwing the lever to check the movement of the jack. Figs. 6 and 7 show a side and edge view of certain parts of the checking mechanism. Figs. 8 and 9 show a side and edge view of certain other parts of the checking mechanism. Fig. 10 is a view somewhat similar to Fig. 5, but showing the manner of adjusting the checking mechanism to facilitate in stopping the upward movement of the jack at different positions; and Figs. 11 and 12 show side and edge views of the lower portion of the lever seen in Fig. 5.

Like numerals of reference indicate corresponding parts throughout the figures.

A wagon jack or dump when constructed with a platform serving as a support for the front wheels of a wagon comprises usually a bed with approaches from opposite sides and standards at its opposite ends, between which the platform is arranged and is adapted to be raised and lowered, the platform having connected therewith elevating means, such as chains or cables adapted to be wound around drums on a drum-shaft. The present device is constructed along these lines; but in the drawings it has been thought only necessary to show that end of the jack or dump which carries the support for gearing and trip mechanism for elevating and lowering the platform and checking the movement thereof, it being understood that the bed and platform are of suitable width to receive the front end of the wagon, and that standards, such as is shown in Fig. 1, are duplicated upon the opposite end of the machine, this being also true of the platform, the opposite end being substantially a duplicate of that also shown in Fig. 1.

In the drawings the bed of the jack or

dump is indicated as 1, provided with the approaches 2 at the opposite sides thereof. The bed may consist of end and cross braces, as may be desired, and the approaches may be such as illustrated in the drawings or modified as desired, such as connecting a short platform thereto. Extending up from the opposite ends of the bed are two uprights 3, which are spaced suitably apart, as shown in Fig. 1, and of suitable width and height. As was intimated, only one end of the jack is shown, hence the standard consisting of the two uprights 3 is only shown, the other end being omitted. The upper ends of the uprights 3 are connected by the cross-brace 4, supporting the bracket 5, between the arms of which is journaled a sheave-wheel 6, over which is designed to be carried a chain or cable 7, the object of which will be more fully explained. The platform, which is best seen in Figs. 1 and 2, comprises sills 8, which are suitably spaced apart and which are connected at their opposite ends by the cross-brace 9. The platform is carried between the standards comprising the uprights 3 at the opposite ends of the jack and is of suitable width, so that the front wheels of a wagon when run onto the jack will be carried between the braces 9 and raised between and on the sills 8. The platform when in its lowermost position is such that the tops of the sills 8 are on a level with the inner upper edges of the approaches 2 to facilitate in running the front wheels of a wagon to the platform.

I have provided for guiding and sustaining the platform as it is raised and lowered, so as to prevent cramping, and to do this I have provided the castings 10, which are attached or secured to the opposite ends of the braces 9, and in the upper and lower ends of said brackets or castings I have journaled the rollers 11, which are adapted to run up and down on the outer faces of the uprights 3, as shown in Figs. 1 and 2. By this means it will be seen that the platform is sustained in one position between the standards as it is raised and lowered, and cramping is prevented by guiding the platform through the rollers which engage with the uprights, as specified.

12 denotes what will be hereinafter known as the "drum-shaft," the same passing longitudinally through the bed of the jack and journaled in suitable bearings secured to the opposite sides thereof. To the bed of the jack at that end of the machine shown in Figs. 1 and 4 the shaft 12 is preferably journaled in a bracket, which is indicated as 13 and which is preferably secured to the bed in the manner shown and is provided with the tubular portion 16, which serves as a bearing for the said shaft, and on the shaft 12 are secured what are known as the "drums" 14, preferably located adjacent to the inner ends

of the tubular portion 16 of the brackets 13, in which the shaft 12 is journaled. It is intended that as the parts of the jack are duplicated at its opposite ends, so are there provided two of the drums 14, to which may be secured one end of chains or cables 7, which are adapted to be wound on the drums when it is intended to elevate the platform, the chains or cables passing upwardly and over the sheave-wheels 6 and have their opposite ends secured to the braces 9 of the platform, as shown in Fig. 2. The bracket 13 just referred to is further provided with the upwardly and forwardly carried arms or extensions 17, forming a bearing for the opposite ends of a clutch-shaft 18, which passes through the extensions 17 of the bracket and is provided with the squared ends 19 to facilitate in connecting with either end of the clutch-shaft a power-shaft, such as a tumbling-rod or equivalent means, to facilitate in operating the said shaft from a horse-power or some other suitable means.

On the clutch-shaft 18 are arranged a miter-gear 20 and a bevel-pinion 21, the latter being in continuous mesh with the bevel-gear 22, carried on a short vertical shaft 23, journaled in a bearing formed by the bosses 24, preferably integral with the bracket 15, while the miter-gear 20 is in mesh with the miter-gear 25, carried on the shaft 23 and seated within the bevel-pinion 22, although the miter-gear 25 may be integral with and form a part of the gear 22. The miter-gear 20 and the bevel-pinion 21 are preferably arranged loose on the clutch-shaft 18 and are each provided with the clutch-faces 26 and 27, adapted to have an intermittent connection with clutch-faces 28 and 29 of a sleeve 30, preferably feathered on the shaft 18 and connected with means adapted to slide the same on the shaft for the purpose of connecting it with either the miter-gear 20 or the bevel-pinion 21. The means just referred to consists of a rod 31, (best seen in cross-section in Fig. 4,) which is preferably provided with the usual yoke portion which engages an annular groove 32 on the sleeve 30 to facilitate in sliding the sleeve on the shaft. This particular construction has not been illustrated, as it is a common mode of connecting a slidable clutch part with the shifting-rod. The rod 31 at its outer end is adapted to have connection with the lever 33, preferably through a block 34, attached to the rod 31, which is provided with a stud 35, working in a slot 36 in the lever 33. It will thus be seen that when the lever 33 is shifted a corresponding movement will be imparted to the sleeve 30 on the shaft 18 through the rod 31, as specified.

37 denotes a gear-wheel, which may be a worm-wheel, if it is desired, which is attached to and carried upon the outer end of the drum-shaft 12, which projects out through the bearing 16 in the bracket 13, the gear 37

being preferably provided with an elongated hub portion 38, which places the body of the gear 37 a suitable distance from the bearing 16 of the bracket, and carried on the hub 38 of the gear 37 adjacent to the bracket 13 is shown the lever 33 in such a manner as to adapt the lever to have an oscillatory movement on the hub 38 aforesaid. One means of oscillating the lever 33 is through the rod 39, which is preferably connected with the upper end of the lever 33 in the manner seen in Fig. 1. The rod 39 may extend in either direction from the jack to be within easy reach of an operator, so as to enable him to control the upward and downward movement of the platform whenever he may so desire.

For operating the drum-shaft 12 through the gear 37 I have provided a worm-pinion 40, which is carried on the shaft 23 preferably in the manner seen in Fig. 1 and meshes with the gear 37. The rotation of the gear 37 and the shaft 12, on which it is carried, is governed through the connection of the sleeve 30 with the miter-gear 20 and bevel-pinion 21, all of which, it is believed, will be understood. It is intended that the platform shall be raised very slowly to facilitate in gradually discharging material from a wagon and that upon the discharge of the material the wagon may be lowered very rapidly. To raise the platform, I preferably employ the bevel-pinion 21 and bevel-gear 22, in which event the sleeve will be connected with the bevel-pinion 21; but when lowering the platform I preferably employ the miter-gears 20 and 25, in which event the sleeve 30 will be connected with the miter-gear 20, all of which, it is believed, will be understood.

I will now describe the means which I employ in connection with the raising and lowering mechanism for checking the movement of the same when the platform has reached a predetermined height or when lowered. 41 denotes a disk provided with a series of notches 42, which are preferably arranged in a circumferential row around the edge of the said disk. The disk 41 is carried on the hub 38 of the gear 37 and is adapted to be locked in a fixed relation with the gear 37 by means of a pin 43, which is passed through one of the notches 42 in the disk and through a slot 44 in the gear 37 and retained in such position by means of a nut 45 engaging a threaded end of the pin 43, as best seen in Fig. 4. Also carried on the hub 38 of the gear 37 is a series of annular rings or plates, which I have indicated as 46, 47, and 48, the same lying in juxtaposition to each other and between the inner face of the disk 41 and the outer face of the lever 33, as shown in Fig. 4. The rings or plates 46 and 47 are substantially as those shown in Figs. 8 and 9 of the drawings, and the ring 48 is substantially as that shown in Figs. 6 and 7 of the drawings, the

only difference being that the ring or plate 48 is provided with the tooth or ear 49, as shown. It is also observed that that portion of the lever 33 which is carried on the hub 38 of the gear 37 is substantially in the form of the rings or plates 46 and 47. (See Figs. 11 and 12.)

The disk 41 is provided with the tapered offset or boss 50, and likewise the rings or plates 46, 47, and 48 are provided with similar offsets or bosses, which I have indicated as 46^a and 48^a. The boss or offset on the ring or sleeve 47 is not shown in the drawings; but it is understood that such a one as is provided on the ring 46 is also provided on the ring 47. The rings 46, 47, and 48 and the corresponding portion of the lever 33 are provided with the annular cut-out portions 46^b, 47^b, 48^b, and 33^a, with the exception of the tapered offsets or shoulders 48^c on the ring 48, 46^c on the ring 46, and 33^b on the lever 33, which in all respects correspond to the offsets 48^a and 46^a on the corresponding rings and are preferably arranged in the rear of the offsets just referred to to coincide therewith, it being understood that the ring or plate 47 is provided with an offset to correspond to the offset 46^c of the ring or plate 46, and while the lever 33 is provided with an offset 33^b, corresponding to the offset 46^c in the ring 46, it is not provided with the offset or boss similar to that indicated as 46^a on the ring 46.

In assembling the rings 46, 47, and 48 on the hub 38 of the gear 37 in a manner seen in Fig. 4 the offset or boss 50 of the disk 41 is seated in the annular cut-out portion 46^b of the ring 46 and alongside of and engaging the offset 46^c. The boss 46^a on the back of the ring 46 has the same relation with the ring 47 and the offset therein correspondingly to the offset 46^c. This is also true of the boss of the ring 47, which corresponds to the boss 46^a of the ring 46, which has the same relation with the ring 48 and the offset 48^c, while the boss 48^a of the ring 48 is correspondingly seated in the annular cut-out portion 33^a of the lever 33 and is seated alongside of and engages with the offset 33^b in the lever. It is intended that as the drum-shaft 12 is rotated for elevating the platform the disk 41 will make nearly a complete revolution until its boss 50, which moves away from one side of the offset 46^c of the ring 46, engages with the opposite side of the said offset 46^c, and the ring 46, as will be understood will also make nearly a complete revolution, when its boss 46^a will engage with the offset in the ring 47 corresponding to the offset 46^c in the ring 46, which will then set the ring 47 into motion, and the boss thereof corresponding to the boss 46^a on the ring 46 when it engages with the offset 48^c of the ring 48 will in turn cause the ring 48 to be rotated until the boss 48^a thereof comes around

and engages with the offset 33^b, which will impart a partial rotation to the lever 33 until the lever is oscillated into a position which will cause the rod 31 to shift sufficiently to disengage the sleeve 30 from the bevel-pinion 21, when the gear will be disconnected from the clutch-shaft 18, and thereby check the upward movement of the platform. The operator to reverse the movement of the drum-shaft will shift the rod 39 so as to cause the sleeve 30 to engage with the miter-gear 20, when the drum-shaft will be rotated in an opposite direction, reversing the movement of the gear 37 and the disk 41, which will operate on the ring 46 just opposite to that above described, and the rings 46, 47, and 48 will each operate in a reverse direction successively and again shift the lever 33, but in an opposite direction to that above described, for again checking the movement of the gearing and the platform, which by this time has reached its lowermost position.

I have provided in connection with the mechanism for checking the upward movement of the platform an adjustable means, so as to regulate the height at which the platform may be stopped—that is, the platform ordinarily would rise to a position and not be checked until the boss 48^a on the ring 48 engaged with the offset 33^b in the lever 33; but the means I have just made mention of is employed for the purpose of making provision for the checking or stopping of the platform at various points between its lowermost position and its highest position. This means consists of a plate 51, which is adjustably carried by the lever 33 somewhat in the manner shown in Figs. 4, 5, and 10. The said plate is provided with an elongated slot 52 to enable the said plate to be adjustably secured to the lever 33 by means of the bolt or pin 53, and the said plate is provided with an offset or stop portion, (indicated as 54,) which is adapted to be engaged by the tooth or ear 49 on the ring 48. In the position shown in Fig. 5 the plate 51 is so adjusted that the tooth or ear 49 will not engage with the offset 54 of the plate, which enables the boss 48^a of the ring 48 to engage with the offset 33^b of the lever 33 to insure the latter being oscillated to disconnect the gearing from the clutch-shaft 18; but in Fig. 10 it will be seen that the plate 51 has been adjusted so as to insure the tooth or ear 49 of the ring 48 engaging with the offset 54 of the plate 51, and it is through such engagement that the lever 33 is oscillated for disconnecting the gearing from the clutch-shaft instead of relying on the boss 48^a engaging with the offset 33^b on the lever 33 for accomplishing this result. It will be seen from an examination of Figs. 5 and 10 that the plate 51 has a very wide range of adjustment to enable the disconnecting of the gearing, so as to check the upward movement of the platform at different

heights, all of which, it is believed, will be understood.

Constructing the disk 41 as I have with a series of notches 42 arranged around its edge is for the purpose of adjusting the said disk on the hub of the gear 37 and to provide for its connection when so adjusted to the said gear. By releasing the nut 45 on the pin 43 the pin may be raised in the slot 44 of the gear 37, which will release it from the notch in the disk 41 and adapt the disk to be adjusted on the hub of the gear. The purpose of adjusting the disk is to provide for taking up any slack in the chain or cable 7 which might occur through the stretching of the chain or cable in the continuous operation of the device, so that when the platform was lowered to its normal position the chain or cable might become displaced; but by adjusting the disk 41 on the gear 37 any such slack in the chain or cable might be taken care of, so that the platform would always lower to such a position so as to keep the chain or cable taut; all of which, it is believed, will be understood.

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

1. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, gearing for actuating the drum-shaft, and a plurality of revolvably-arranged rings cooperating with the said gearing for checking the movement of the same.

2. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, gearing for actuating the drum-shaft, and a plurality of rings revolvably carried on the drum-shaft and cooperating with said gearing for checking the movement of the same.

3. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device, for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, gearing for actuating the drum-shaft, and a plurality of successively rotatably operated members cooperating with said gearing for checking the movement of the same.

4. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, gearing for actuating the drum-shaft, and a plurality of successively rotatably operated members

carried on the drum-shaft and coöperating with said gearing for checking the movement of the same.

5. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, a gear on one end of the drum-shaft, mechanism for actuating said gear and thereby the shaft, and a plurality of rings in operative connection with said gear and coöperating with the mechanism last aforesaid for checking the movement of the same.

6. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, a gear on one end of the drum-shaft, mechanism for actuating said gear and thereby the shaft, and a plurality of successively-operated rings in operative connection with said gear and coöperating with the mechanism last aforesaid for checking the movement of the same.

7. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, a gear on one end of the drum-shaft having an elongated hub portion, mechanism for actuating the said gear and thereby the shaft, and a plurality of successively-operated rings carried on the hub of the gear and in operative connection therewith, said rings coöperating with the mechanism last aforesaid for checking the movement of the same.

8. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, a gear on one end of the drum-shaft, mechanism for actuating the said gear and thereby the shaft, a lever capable of being manually operated in connection with such mechanism, and a plurality of rings in operative connection with said gear and coöperating with said lever, whereby the lever is automatically operated at predetermined intervals for checking the movement of the mechanism aforesaid.

9. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, a gear on one end of the drum-shaft having an elongated hub portion, mechanism for actuating

the said gear and thereby the shaft, a lever capable of being manually operated swingably carried on the hub of said gear and in operative connection with the mechanism aforesaid, and a plurality of rings arranged in juxtaposition on the hub of the gear between the body of the same and said lever and coöperating therewith, whereby the lever is automatically operated at predetermined intervals for checking the movement of the gear-actuating mechanism.

10. In a grain-dump lifting-jack, the combination with the base and standards thereof, an elevating device for the front end of a wagon movable vertically between the standards, a drum-shaft, connections between the drum-shaft and elevating device, a gear on one end of the drum-shaft having an elongated hub portion, mechanism for actuating the said gear and thereby the shaft, a lever capable of being manually operated swingably carried on the hub of said gear and in operative connection with the mechanism aforesaid, and a plurality of successively rotatably operated members arranged in juxtaposition on the hub of the gear between the body thereof and said lever and coöperating with both said gear and lever, whereby the lever is automatically operated at predetermined intervals for checking the movement of the gear-actuating mechanism.

11. In raising and lowering mechanism, a drum-shaft, a gear carried on one end of the said shaft, mechanism for actuating said gear and thereby the shaft, a plurality of successively rotatably operated members arranged on the drum-shaft and operatively connected with each other and the said gear, and connections between one of said members and said gear-actuating mechanism adapted to be automatically actuated by the actuation of said gear for checking the gear-actuating mechanism aforesaid.

12. In raising and lowering mechanism, a drum-shaft, a gear carried on one end of said shaft, clutch-controlled mechanism for actuating the gear and thereby the shaft, a series of axially-arranged coöperating members adapted to be successively actuated by the gear on the drum-shaft, and means operated by one of said members for automatically checking the clutch-controlled mechanism aforesaid.

13. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged coöperating members associated with said raising and lowering mechanism, and adapted to be successively operated thereby, and means operated by one of said members for automatically checking said raising and lowering mechanism.

14. In a grain-dump lifting-jack, the combination with an elevating device for the

front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged rotatable members associated with said raising and lowering mechanism, and adapted to be successively operated thereby, and means operated by one of said members for automatically checking said raising and lowering mechanism.

15. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged cooperating members associated with said raising and lowering mechanism, and adapted to be successively operated thereby, and means arranged in axial alinement with said members and adapted to be operated by one of them for automatically checking said raising and lowering mechanism.

16. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged rotatable members having interengaging parts associated with said raising and lowering mechanism, and adapted to be successively operated thereby, and means operated by one of said members for automatically checking said raising and lowering mechanism.

17. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged intermittently-revoluble plates having interengaging parts associated with said raising and lowering mechanism and adapted to be operated thereby, and means operated by one of said plates for automatically checking said raising and lowering mechanism.

18. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged rotatable members having interengaging parts, associated with said raising and lowering mechanism, and adapted to be successively operated thereby, and means arranged in axial alinement with said members and adapted to be operated by one of them for automatically checking said raising and lowering mechanism.

19. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged intermittently-revoluble plates having interengaging parts associated with said raising and lowering mechanism, and adapted to be operated thereby, and means arranged in axial alinement with said plates and adapted to be operated by one of them for automatically checking said raising and lowering mechanism.

20. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, mechanism for raising and lowering said device, a series of axially-arranged intermittently-revoluble plates having interengaging parts associated with said raising and lowering mechanism, and adapted to be successively operated thereby, and a lever arranged in axial alinement with said plates and operatively connected therewith and with the raising and lowering mechanism, said lever being adapted to be automatically actuated at predetermined intervals for checking the movement of said raising and lowering mechanism.

21. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, a drum-shaft and connections between the same and said device, a gear on one end of the drum-shaft, clutch-controlled mechanism for actuating said gear, a series of intermittently and successively actuated members operatively connected with the gear, and means interposed between the clutch-controlled mechanism and the last member of the series aforesaid adapted to be actuated thereby at predetermined intervals for controlling the movement of said clutch-controlled mechanism.

22. In combination with an elevating device, a drum-shaft and connections between the same and said device, clutch-controlled mechanism for actuating said shaft, a series of intermittently and successively actuated members, means for operating such members from the mechanism aforesaid, and means actuated by said members for governing the movement of said clutch-controlled mechanism.

23. In combination with an elevating device for the front end of a wagon, clutch-controlled mechanism operatively connected with said elevating device, a series of axially-disposed and intermittently and successively actuated members operatively connected with said mechanism and an oscillatory part adapted to be operated at predetermined intervals by one of said members for governing the movement of said clutch-controlled mechanism.

24. In combination with an elevating device for the front end of a wagon, a drum-shaft and connections between the same and said device, a gear carried on one end of said shaft and having an elongated hub, mechanism for intermittently actuating said gear, a series of revoluble members arranged in juxtaposition on the hub of the gear having interengaging parts and in operative connection with said gear, a lever adapted to be actuated by one of said chambers at predetermined intervals, and connections between the said lever and the gear-actuating mechanism aforesaid.

25. In combination with an elevating de-

vice for the front end of a wagon, a drum-shaft and connections between the same and said device, a gear on one end of the shaft, a series of axially-arranged members having interengaging parts, means for operating the first member of the series from the gear and thereafter in succession all of said members, clutch-controlled mechanism for actuating said gear, and intermediate means adapted to be automatically actuated by the last member of the series for governing said clutch-controlled mechanism.

26. In combination with an elevating device for the front end of a wagon, a drum-shaft and connections between the same and said device, mechanism for actuating the drum-shaft, a series of axially-disposed and intermittently-operated controlling members in operative connection with said mechanism, and means adjustably carried by one of said members to facilitate in controlling the said drum-actuating mechanism for governing the checking of said elevating device.

27. In combination with an elevating device for the front end of a wagon, a drum-shaft and connections between the same and said device, a gear carried on one end of said shaft, a series of intermittently-actuated members also carried by said shaft, means for successively operating each of said members from said gear, mechanism in operative connection with said gear for actuating the same and thereby the shaft, a clutch part for controlling the direction of movement of said gear-actuating mechanism, and a lever connected with said clutch part and adapted to be automatically actuated by one of said members for governing the movement of said clutch part.

28. In combination with an elevating device for the front end of a wagon, a drum-shaft and connections between the same and said device, a gear carried on one end of said shaft, a series of intermittently-actuated members also carried by said shaft, means for successively operating each of the said members from said gear, mechanism in operative connection with said gear for actuating the same and thereby the shaft, a clutch part for controlling the direction of movement of said gear-actuating mechanism, a lever connected with said clutch part and adapted to be automatically actuated by one of said members for governing the movement of said clutch part, and means adjustably connected with said lever whereby the time of operation of said lever may be regulated with respect to the movement of the member for actuating the same.

29. In combination with an elevating device for the front end of a wagon, a drum-shaft and connections between the same and said device, a gear on one end of the shaft, mechanism for actuating said gear, a clutch part for controlling the movement of said

gear-actuating mechanism, a disk connected with said gear, a series of successively-rotatable parts in axial alinement with said disk, means for operating each of said parts during the continued rotation of said gear and disk, a lever, adjustable connections between said lever and one of said parts for governing the movement of the lever, and connections between said lever and clutch part aforesaid.

30. In an apparatus of the class specified, the combination with a drum-shaft, of a gear carried on one end thereof, mechanism for actuating said gear, a clutch part for controlling the direction of movement of such mechanism, a lever carried on the drum-shaft, connections between the lever and clutch part, and a series of interposed members between the lever and gear aforesaid, the same being in operative connection with each other, the lever and said gear, adapted to be successively operated.

31. In an apparatus of the class specified, the combination with a drum-shaft, of a gear carried on one end thereof and having an elongated hub, mechanism for actuating said gear, a clutch part for controlling the direction of movement of such mechanism, a lever fulcrumed on the hub of said gear, connections between the lever and clutch part, and a series of coöperating members disposed in axial alinement on the hub of the gear between the lever and said gear and operatively connected with the same, and adapted to be successively operated.

32. In an apparatus of the class specified, the combination with a drum-shaft, of a gear carried on one end thereof and having an elongated hub, clutch-controlled mechanism for actuating the gear, a lever fulcrumed on the hub of the gear, connections between the lever and mechanism aforesaid, a series of interengaging parts arranged on the hub of the gear between the lever and gear and adapted to be successively actuated during the actuation of the gear, means for operating the lever from one of said members, and means adjustably attached to said lever adapted to be actuated by said last-mentioned member to facilitate in changing the time of operation of the lever.

33. In an apparatus of the class specified, the combination of a shaft, a gear carried on one end thereof and having an elongated hub, a lever fulcrumed on said hub, interposed means also carried by said hub for operating the lever at predetermined intervals from said gear and during the operation thereof, and mechanism for actuating said gear.

34. In an apparatus of the class specified, the combination with a shaft, a gear carried on one end thereof, having an elongated hub, a lever fulcrumed on said hub, a disk adjustably carried on the hub of said gear, means interposed between said disk and lever for

operating the lever at predetermined intervals from said disk and during the operation of said gear, and mechanism for actuating the gear.

5 35. In an apparatus of the class specified, the combination with a shaft, a gear carried on one end thereof, a disk attached to said gear, a series of revoluble members arranged in juxtaposition to each other and with said
10 disk, means carried by said disk and each of said members to facilitate in successively operating the members from said disk during the continued rotation of the gear, a lever, means for operating said lever from the last
15 member of the series at a predetermined point in its revolution, a plate adjustably connected with said lever, means carried by said last-mentioned member to cooperate with the plate of the lever to facilitate in changing
20 the time of the operation of the lever, clutch-controlled mechanism for actuating the gear, and connections between the lever and such mechanism.

36. In an apparatus of the class specified,
25 the combination of a shaft, a gear carried on one end thereof, a disk attached to said gear, a lever fulcrumed in axial alinement with the gear and spaced apart therefrom, a series of successively-operated members
30 interposed between the disk and lever, cooperating lugs between the disk and one of said members, between each of said members and between one of said members and the lever, clutch-controlled mechanism for actuating
35 the gear, and connections between the lever and such mechanism.

37. In an apparatus of the class specified, the combination of a shaft, a gear carried on one end thereof, a disk attached to said gear,
40 a lever fulcrumed in axial alinement with the gear and spaced apart therefrom, a series of successively-operated members interposed between the disk and lever, cooperating lugs between the disk and one of said members
45 and between each of the members aforesaid, a tooth projecting from one of said members, a plate adjustably attached to said lever and having an engaging part adapted to lie in the path of movement of the tooth of the member
50 aforesaid, clutch-controlled mechanism for actuating the gear, and connections between the lever and such mechanism.

38. In an apparatus of the class specified, the combination of a shaft, a gear carried on
55 one end thereof, a disk attached to said gear, a lever fulcrumed in axial alinement with the gear and spaced apart therefrom, a series of successively-operated members interposed between the disk and lever, cooperating lugs
60 between the disk and one of said members, between each of said members and between one of said members and the lever, a tooth projecting from the member cooperating with the lever, a plate adjustably attached
65 to said lever and having an engaging part

adapted to lie in the path of movement of the tooth of the member aforesaid, clutch-controlled mechanism for actuating the gear, and connections between the lever and such mechanism.

39. In an apparatus of the class specified, the combination of a shaft, a gear carried on one end thereof, a disk attached to said gear and revolubly adjustable thereon, a lever
70 fulcrumed in axial alinement with the gear and spaced apart therefrom, a series of successively-operated members interposed between the disk and lever, cooperating lugs between the disk and one of said members, between each of said members and between
75 one of said members and the lever, means adjustably carried by the lever and adapted to be operated by the member adjacent thereto to facilitate in changing the time of the operation of the lever clutch-controlled
80 mechanism for actuating the gear, and connections between the lever and such mechanism.

40. In an apparatus of the class specified, the combination of a shaft, a gear carried on
90 one end thereof, a disk having a series of notches around its outer edge, means adapted to be passed through the notches of the disk and engaging said gear for adjustably connecting the disk to the gear, a lever fulcrumed
95 in axial alinement with the gear and spaced apart therefrom, a series of revoluble members interposed between the lever and the disk, each of which is provided with external and internal lugs, the external lugs of one
100 member adapted to engage the internal lug of its adjacent member for imparting movement thereto, means secured to the disk for operating the member adjacent thereto, means for operating said lever from one of
105 said members, clutch-controlled mechanism for actuating said gear, and connections between the lever and such mechanism.

41. In an apparatus of the class specified, the combination of a shaft, a gear carried on
110 one end thereof, a disk attached to said gear and revolubly adjustable thereon, a lever fulcrumed in axial alinement with the gear and spaced apart therefrom, a series of revoluble members interposed between the lever and
115 the disk, each of which is provided with external and internal lugs, the external lugs of one member adapted to engage the internal lug of its adjacent member for imparting movement thereto, a lug on the disk adapted
120 to engage with the internal lug of the member adjacent thereto, an internal lug on the lever adapted to be engaged by the external lug of the member adjacent thereto, clutch-controlled mechanism for actuating said gear,
125 and connections between the lever and such mechanism.

42. In an apparatus of the class specified, the combination of a shaft, a gear carried on
130 one end thereof, a disk attached to said gear,

a lever fulcrumed in axial alinement with the gear and spaced apart therefrom, a series of revoluble members interposed between the lever and the disk, each of which is provided with external and internal lugs, the external lug of one member adapted to engage the internal lug of its adjacent member for imparting movement thereto, a lug on the disk adapted to engage with the internal lug on the member adjacent thereto, an internal lug on the lever adapted to be engaged by the external lug on the member adjacent thereto, a tooth carried by said last-mentioned member, a plate adjustably carried by the lever, having an engaging part, adapted to be engaged by the tooth aforesaid to facilitate in advancing the time of operation of said lever, clutch-controlled mechanism for actuating the gear, and connections between the lever and clutch mechanism.

43. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, clutch-controlled mechanism for elevating and lowering said device, a manually-operated lever connected with such mechanism for governing the same, a series of successively-actuated members in operative connection with each other and with the elevating and lowering mechanism adapted to govern the actuation of said lever, connections between one of said members and the lever, and means adjustably carried by said lever and adapted to be engaged by one of said members for advancing the operation of the lever aforesaid.

44. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, a drum-shaft, a gear on one end thereof, connections between the drum-shaft and elevating device, a clutch-

shaft and clutch thereon, gearing interposed between the clutch-shaft and the gear of the drum-shaft, a lever fulcrumed on the drum-shaft, connections between the lever and the clutch aforesaid, and a series of members interposed on the drum-shaft between the gear thereof and lever and operatively connected with the lever and gear, said members adapted to be successively operated by said gear, for automatically shifting said lever at predetermined intervals.

45. In a grain-dump lifting-jack, the combination with an elevating device for the front end of a wagon, a drum-shaft and connections between the same and said elevating device, a gear on one end of the shaft, a clutch-shaft, a worm-shaft, connections between the worm-shaft and gear on the drum-shaft, a bevel-gear on the upper end of the worm-shaft, a miter-gear also on said shaft and within the bevel-gear, a miter-gear and bevel-pinion loosely carried on the clutch-shaft and in mesh with the miter and bevel gears on the worm-shaft, a clutch part rotatable with and feathered on the clutch-shaft, a lever connected with the clutch part for controlling the connection of the clutch part with the gears on the clutch-shaft, and a series of successively actuated means in operative connection with the gear on the drum-shaft, one of which is adapted to automatically operate said lever for moving the clutch part aforesaid.

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

ROBERT L. RHEA.

Witnesses:

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