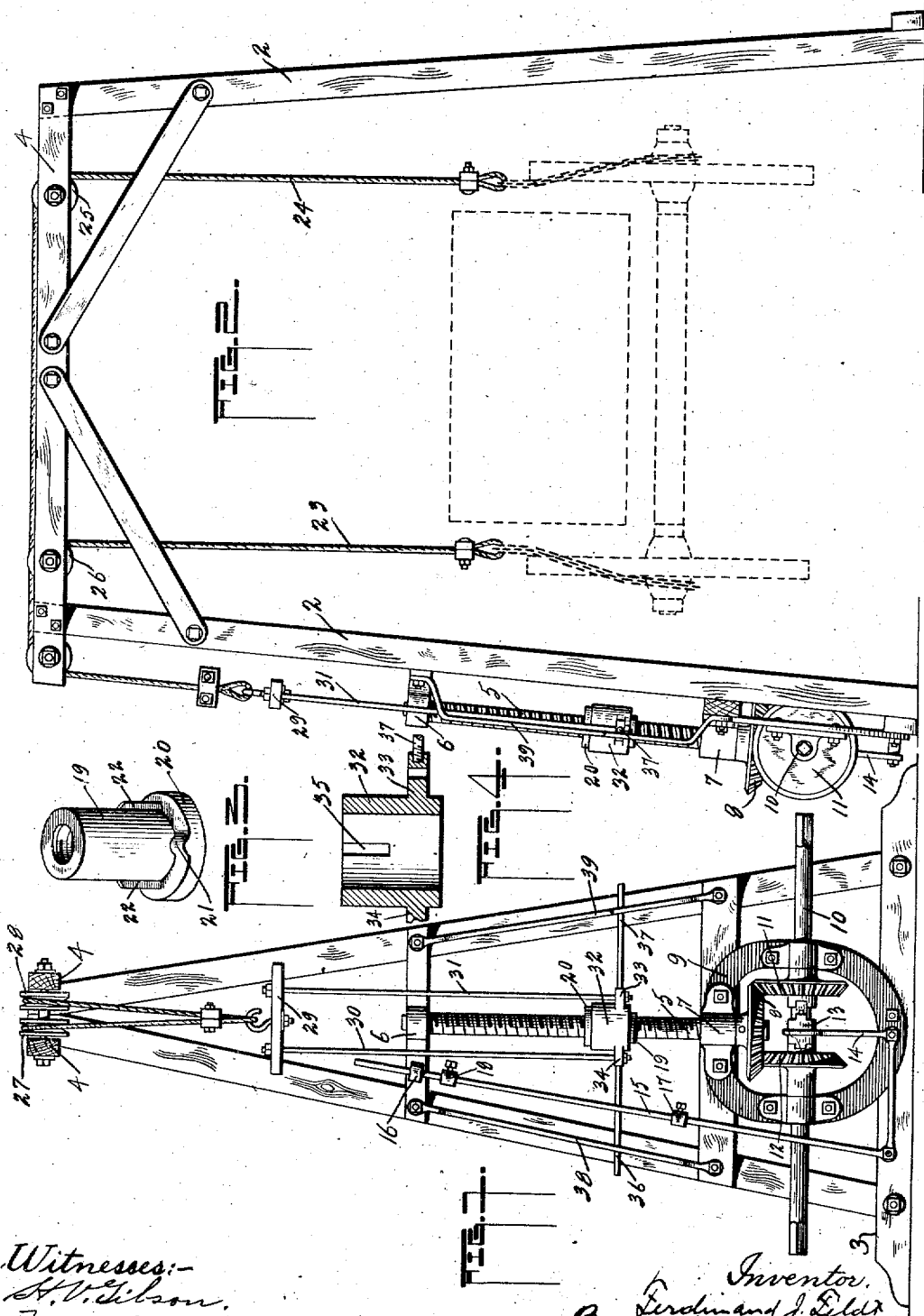


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WAGON JACK.  
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Patented May 3, 1910.



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# UNITED STATES PATENT OFFICE.

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## WAGON-JACK.

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Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, FERDINAND J. FELDT, 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 relates to devices for raising the front end of a wagon for dumping the contents from the rear end thereof and has reference more particularly to devices wherein the elevation of the front end of the wagon is effected by means of the part threaded on a rotary screw and movable lengthwise of the screw by the rotation thereof through and by means of devices connecting the wagon with parts moved by the screw.

The object of my invention is to provide a screw jack which is simple in construction and operation wherein an overhead connection is made between the parts moved by the screw and with suitable parts of the wagon, as distinguished from my companion application wherein the same screws and parts immediately operated thereby are arranged to work in connection with a platform dump.

In the accompanying drawings, Figure 1 is a side elevation showing one side of a frame derrick whereon there is mounted the essential operative parts of my device. Fig. 2 is a front elevation of the derrick frame carrying the various operative parts and showing the manner of connecting the same with the wagon, for the purpose of raising it; Fig. 3 is a perspective view of a nut adapted to operate upon screws; Fig. 4 is a sectional view of a circular casting within which said nut is carried when the parts are assembled in the machine.

The framework of the machine consists of the standards formed by uprights 2—2, joined at the bottom by frame pieces 3; and meeting at the top, there being two of such standards joined together at the top by cross pieces 4—4. The derrick frame structure is adapted to be constructed of such a height and width as to accommodate the driving of a wagon between the up-

rights and beneath the overhead cross frame parts to allow the wagon to be raised any desired distance that may be necessary for the dumping of the contents therefrom. Upon one of the frame parts 2, there are adapted to be carried screws 5 journaled as at 6 and 7 in suitable boxings. This screw 5 carries on its lower end the double faced gear wheel 8 securely attached thereto.

Within a suitable supporting frame as 9, there is adapted to be carried the shaft 10 which is suitably formed at its ends to facilitate the connection at either end thereof of the power appliances. Upon shaft 10 are carried the loose gears 11 and 12 meshing, respectively, 11 with the outer set of gear teeth on gear wheel 8, and 12 with the inner set of gear teeth thereon, and each of said gear wheels 11 and 12 being provided with recesses in the hubs as shown.

13 is a clutch member having a spline groove connection with the shaft 10 and being adapted to move longitudinally thereon, the same being provided with lugs on each end adapted to engage with recesses in the hubs of the gear wheels 11 and 12. A circular groove is formed on the outer surface of the clutch member within which are adapted to be carried fingers on the upper end of bell crank 14, the outer end of arm 14 having a loose connection with the upwardly extending rod 15 which is supported in the eye bolt 16 toward its upper extremity, and upon said rod are carried the collars 17 and 18, the same being adjustable thereon by means of set screws, to facilitate tripping at desired points as hereinafter explained.

On the screw 5 is adapted to be carried the nut 19 which has an elongated cylindrical body portion and the annular flange 20 at one end thereof and diametrically arranged upon one face of the flange are ridges 21 like those shown in Fig. 3 and also arranged diametrically on the outer face of the nut 19 and at a quarter turn from the ridges 21 are provided the ribs 22. This nut 19 is adapted to apply the power from the screw to mechanism for raising the wagon through an overhead arrangement of devices whereby connection is made directly with the wheels thereof. This overhead arrangement consists of ropes or cables 23—24 adapted to be connected with the

hubs of the wagon wheels or other parts thereof, carried over divided pulley wheels as 25—26 suitably supported in the frame structure and also carried over the pulleys 5 27—28 and finally connected with a hanger frame by means of the hook connection shown, the said hanger frame consisting of the head 29, the depending rods 30—31 and the cylindrical casting 32 which has flanged extensions 33—34 which are connected with 10 the rods 30—31 of the frame. The lateral walls of the opening in casting 32 are provided with two grooves as 35 diametrically arranged therein and of suitable dimensions to receive the ribs 22 of the nut 19 loosely 15 therein so as to permit rocking laterally and transversely of the main frame structure of the part 32, and hold the nut from rotation.

20 The nut 19 and the circular casting 32 are in function designed to form the same part in the operation of this machine as they are in my companion application wherein the device is applied to a platform dump, 25 and the detailed construction is identical excepting that the casting 32 herein is merely provided with the extensions 33—34 to connect with the frame rod, whereas in my companion application this casting is a 30 part of cast bars adapted to connect with the dump platform.

Connected with and extending laterally from the casting 32 are the rods 36—37 adapted to bear against guide rods 38—39 35 which are suitably carried on framework, the same being provided to prevent the turning of the nut 19 as the screw is revolved and also incidentally serving to automatically trip the device, as will hereinafter 40 be explained.

In operation of the device, the wagon having first been driven into position where the front wheels thereof are beneath the frame structure, the ropes or cables are either 45 directly or by means of chains herein shown connected with the wagon, usually by connection with the hubs thereof. Power being applied to either end of the shaft 10, as desired, as the shaft is turned, the clutch 50 13 is adapted to be thrown into engagement alternately with gear wheels 11 and 12 (the shifting of the clutch is designed to be accomplished by manual power by means of suitable bar and lever connection with the 55 bell crank 14, and may be so connected in any of the well known ways). When it is desired to raise the platform, the clutch 13 is shifted to engage gear wheel 11, which said gear wheel being in mesh with the set 60 of gears on cog wheel 8 farthest from the axis of the screw 5, the platform will be caused to be elevated through its connection with said double faced gear wheel 8, which is turned through its connection with the 65 outer set of cog wheels, which in turn cause

the nut 19 to travel upwardly thereon, carrying with it the casting 32 and the frame structure connected therewith. The ropes 23—24, through the connection with the frame structure, are adapted to draw the 70 wagon body upwardly and when the wagon body is raised to the desired height, the clutch 13 is designed to be thrown out of engagement with the gear wheel 11 until the dumping operation is completed. Im- 75 mediately after the dumping operation is completed, it is designed that the clutch 13 shall be shifted by the same manual power to engage gear wheel 12, which said gear wheel meshes with the inner set of cogs on 80 the double faced gear wheel 8 which are nearer to the axis of rotation of screw 5 and will cause the said gear 8 to turn more rapidly than when the clutch was in en- 85 gagement with gear wheel 11, and thereby the screw will be turned with a greater speed, resulting in the wagon being lowered at a greater speed than it was raised.

In the practical operation of devices of this kind, it is essential that arrangement be 90 made for automatically releasing the clutch mechanism to stop the upward movement of the wagon and also to throw the clutch out at the conclusion of the downward 95 movement of the wagon. In my device, I have arranged for this automatic shifting of the clutch by placing the collars 17—18 on a rod 15. These can be set at any point de- 100 sired and in the operation of my device, the trip is effected in the raising of the wagon by the arm 36 striking the collar 17 as the 105 nut 19 is turned downwardly upon the screw and the trip is effected at the conclusion of the lowering operation by the same arm striking the collar 18 on rod 15.

The drawing herein and specification indicates that the screw and its auxiliary mountings and connections are placed on the outside of one of the side standards, which 110 necessitates the placing of the divided pulleys 27—28 on the outside but I prefer in the practical construction of the device to place the screw and all of the operative parts working therewith on the inside and 115 in so doing, the pulley 26 is dispensed with and the divided pulleys 27—28 are placed in the same relation but at the point where the pulley 26 now appears.

In considering this application for patent, reference is had to my companion applica- 120 tion filed herewith wherein detailed parts that are common to both machines are specified more in detail.

What I claim is:—

1. In a wagon dump, the combination 125 with raising means, comprising a frame structure carrying ropes and pulleys at its top portion and underneath which a wagon is adapted to be driven and to be raised from a point above, of a screw connected 13

with said frame structure, gear and shifting clutch connection between said screw and the source of power, a nut operated by said screw, a shiftable lever connected with the clutch, and means connected with said lever operable through the movement of the nut, to cause the clutch to be automatically shifted.

2. In a device of the class described, the combination with a screw carrying a nut and with means carried above said nut adapted to engage a wagon, of a casting rockably connected with the nut on the screw and suitably connected with means provided for raising the wagon.

3. In a device of the class described, the combination with means for raising the wagon, comprising standards, rope and pulley parts adapted to be operated from an elevated point to raise the wagon, of a rotary screw, a non-rotary nut on said screw, a casting rockably connected with said screw and suitably connected with the means adapted to engage the wagon.

4. In a wagon dumping device comprising an upright frame structure, pulleys arranged in the upper portions thereof carrying two ropes adapted to extend to either side of the wagon and raise the same from a point above, the combination therewith of a rotatable screw supported in the standards, a non-rotatable nut on said screw, a hanger frame rockably connected with said nut and means for operating said raising means.

5. In a device of the class described, the combination with wagon raising means, of rope and pulley connections therewith, a rotary screw, and a non-rotatable nut thereon, and means associated with said nut and in a rockable relation therewith connected with the rope and pulley means for raising and means connected with said rockable part to prevent the nut from turning.

6. In a device of the class described, the combination with wagon raising means operated to raise the wagon from a point above the same, of mechanism for operating the said wagon raising means comprising a rotary screw, a non-rotary nut on said screw having an elongated body portion and a nut provided with an opening therein adapted to receive the elongated body portion of the first mentioned nut, said part being connected with the wagon raising means.

7. In a device of the class described, the combination with wagon raising means operated to raise the wagon from a point above the same, of mechanism for operating said wagon raising means comprising a rotary screw, a nut on said screw having an elongated body portion and bearings extending laterally from the elongated body portion, and a part engaging said bearings and provided with openings therein adapted to re-

ceive the elongated portion of the nut therein, said part being connected with the wagon raising means.

8. In a device of the class described, the combination with wagon raising means operated to raise the wagon from a point above, of mechanism for operating said wagon raising means comprising a rotary screw, a nut on said screw, a casting rockably associated with said nut and having interengaging parts with said nut, means connected with said casting to prevent the nut from turning with the movement of the screw and means connecting the said casting with the wagon raising means.

9. In a wagon dump, the combination with raising means, comprising a frame structure carrying ropes and pulleys at its top portion, and underneath which a wagon is adapted to be driven and to be raised from a point above, of a rotatable screw suitably supported and driven, a non-rotatable nut carried thereon and means for rockably connecting the wagon raising means with the said nut.

10. In a wagon dump, the combination with dumping instrumentalities adapted to raise and lower the wagon, of mechanism adapted to operate said wagon raising means comprising a rotary screw, a non-rotatable nut thereon, means connecting said raising and lowering means and said nut in a rockable relation, means connected with the power and the screw to cause the screw to be differentially operated as it is turned in opposite directions and means operable from the movement of the nut to automatically stop the upward and downward movement of the raising means.

11. In a wagon dump, the combination with dumping instrumentalities adapted to engage the hub of a wagon and to raise the same from a point above, mechanism adapted to operate said raising means, comprising a rotatable screw, a non-rotatable nut thereon, mechanism connecting said dumping instrumentalities and said nut in a rocking relation, a shiftable clutch member and means operably connecting said nut with the clutch member to cause the latter to be shifted.

12. In a device of the class described, the combination with a pair of standards, a vertical stationary rotatable screw supported thereon, a vertically movable non-rotatable nut carried thereon, rope and pulley devices connecting said nut with the wagon to be raised, differential gear connection between the power and the screw, a shiftable clutch member adapted to engage the larger and smaller gears of the differential set, to cause the raising means to be raised slowly and lowered more rapidly, said clutch member connected to be shifted from the movement of the nut.

13. An apparatus of the character described consisting of a frame overlying the wagon way, wagon hoisting devices suspended therefrom comprising ropes and pulleys, a screw carried by the frame the upper end thereof connected with the hoisting devices, a double gear wheel fixed to said screw, a drive-shaft, gear wheels loosely mounted upon said shaft engaging opposite sides of the double gear wheel, and means for alternately locking the loose gear wheels upon the drive shaft.

14. An apparatus of the character described consisting of a frame overlying the wagon way, wagon hoisting devices suspended therefrom comprising ropes and pulleys, a screw carried by the frame the upper end thereof connected with the hoisting devices, a double gear wheel fixed to said screw, a drive-shaft, gear wheels loosely mounted upon said shaft engaging opposite sides of the double gear wheel, a sleeve slidable on the drive shaft but rotatable therewith adapted to lock the loose gear wheels upon said shaft, and shifting mechanism for alternately throwing said sleeve in engage-

ment with the loose gear wheels, or throwing it to a neutral position between said loose gear wheels.

15. An apparatus of the character described consisting of a frame overlying the wagon way, wagon hoisting devices suspended therefrom comprising ropes and pulleys, a screw carried by the frame the upper end thereof connected with the hoisting devices, a double gear wheel fixed to said screw, a drive-shaft, gear wheels loosely mounted upon said shaft engaging opposite sides of the double gear wheel, a sleeve slidable on the drive-shaft but rotatable therewith adapted to lock the loose gear wheels upon said shaft, and an automatic tripping mechanism actuated by the screw for throwing the sleeve to a neutral position between the loose gear wheels.

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

FERDINAND J. FELDT.

Witnesses:

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H. V. GIBSON.