

937,061.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

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UNITED STATES PATENT OFFICE.

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WAGON-JACK.

937,061.

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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 wagon dumps, and has reference more particularly to devices wherein screw raising means are employed.

The object of my invention is to provide a screw jack which is simple in construction and operation, and to provide a loose connection between the raising frame and screw whereby binding of the screw is prevented; also to so support each end of the raising platform in connection with the screws for raising same that the bearing at each end will be exactly upon and in the vertical plane of the centers of the screws.

In the accompanying drawing, which illustrates my invention, Figure 1 is a top view of a machine embodying my improvements, a portion thereof being broken away to permit an enlarged view to be shown; Fig. 2, a vertical transverse sectional view on the line *a-a* of Fig. 1, looking in the direction indicated by the arrow intersecting said line; Fig. 3 an oblique longitudinal sectional view of the gearing at the left hand end of Fig. 1, taken on the line of the screw; Fig. 4 a top view of the base plate of the screw standard; Fig. 5 a perspective view of the nut which operates on said screw; and Fig. 6 a sectional view of the casting within which the nut operates. Fig. 7 is a view of the knuckle (in section) which couples the stub and intermediate shafts.

The base of this wagon jack consists of the two parallel planks 10—10 which are connected at their ends by means of the transverse timbers 11—11 and oppositely inclined so that a wagon may be easily drawn upon and withdrawn from the elevating frame arranged therebetween. This elevating frame comprises the timbers 12—12 which are arranged in parallel relation, to fit loosely inside the upper edges of the planks 10—10 and the ends of said timbers which extend so as to rest upon the transverse timbers 11—11 are connected as hereafter described.

Mounted on each transverse timber intermediate of the inclined strips 10—10 is a screw 13 which is held in position by the standards 14, said screw being inclined toward the rear of the wagon when in position on said jack so as to raise the forward end of the wagon without materially changing the position of the rear wheels of the wagon. The screws 13 are threaded in the same direction and each has the lower reduced end portion 15 thereof supported in the step or socket 16 in the upper face of the standard base plate 17, one of which is secured on the upper face of each transverse timber intermediate of the inclined planks 10—10. Said standard base plates are of the same construction and are correspondingly arranged on the transverse timbers 11—11 and have alining bearings 18 and 19 thereon through which the transverse shaft 20 extends and in which it is journaled. Intermediate of the bearings 18 and 19 the standard base plate is provided with the opening 21 and the transverse timber 11 is cut away as at 22 to provide for the bevel gear 23 which is fixed on said shaft as by means of the bolt 24 and meshes with a corresponding bevel gear 25 which is fixed on the lower end of the screw 13 just above the step or socket 16. Parallel with the bearing 18 and at each side thereof are the flanges 26 and 27 which extend upwardly at the same inclination as the screw 13 and have the lower ends of the four standards 14 bolted thereto as shown in the drawing. The plate 17 projects beyond the flanges 26 and 27 and is provided with perforations 29 through which bolts may be passed for securing said plate on the transverse timbers. The standards 14 above described extend upwardly parallel with the screw 13 and are connected at their upper ends to the four corners of the plate 30 by means of bolts 31 which are passed through the downwardly extending flanges 32 of said plate. This plate has the bearing 33 centrally arranged therein which receives the reduced end of the screw 13 therein. The angle iron standard is braced on its leaning side by means of a rod 34 which is bolted at its upper end to the top of the angle iron standard and has the lower end thereof secured to the base of the wagon jack as at 35. On each screw 13 is a nut 36 which has the elongated cylindrical body portion 37 and an annular flange 38 at the lower end

thereof. The flange 38 has the ridges 39 arranged diametrically on the upper face thereof and extending from front to back of the machine, and arranged diametrically on the outer face of the elongated portion 37 of the nut at a quarter turn from the ridges 39 are the ribs 40 which extend upwardly from the flange 38 a suitable distance for the purpose hereafter described.

The timbers of this elevating frame are connected at each end to the casting 41 by means of short angle irons 42 which are bolted at their inner ends to said casting 41 as at 43 and have their outer ends bolted to said timbers 12—12 by means of the long bolts 44, blocks 45 being interposed between the ends of the angle irons 42 and the timbers 12—12 to provide for required arrangement of the parts. The elevating frame is designed to occupy a horizontal position and the nut 36 consequently is disposed at an angle to the casting 41 which is provided with an obliquely disposed opening 46 within which the elongated body portion 37 of the nut loosely fits, said part being engaged when in operation by the ridges 39 on said nut, which permit considerable oscillation of the part 37. The lateral walls of the opening 46 are provided with the grooves 48 which are diametrically arranged therein and of suitable dimensions to receive the ribs 40 of the nut 36 loosely therein so as to permit oscillation of the part 37 and hold the nut from rotation.

The stub shaft 48^a projects beyond the transverse timber 11 at one end of the wagon jack. A frame 51 is bolted to that end of the wagon jack, projects beyond the end thereof and is supported by the blocks 52 which are bolted to the transverse timber 11 as at 53. This frame 51 is provided with a bearing 54 in which the outer end of the shaft 49 is journaled and intermediate of the bearings 54 and 18 a small spur gear 55 is fixed on the shaft 20 as by means of the bolt 56. Above the shaft 20 is a short shaft 57 which is journaled in the bearing 58 of the frame 51 and also is journaled in the plate 59 which is bolted on the side of the angle iron standard as at 60. Intermediate of the bearings 58 and 59 is a small spur gear 61 which is fixed thereon as by means of the bolt 62 and meshes with the spur gear 55 on the shaft 20. On the outer end of the shaft 57 adjacent the bearing 58 is the large two faced beveled gear 63 which is fixed on said shaft by means of the bolt 64. Extending at right angles to the shaft 57 across the outer face of the large beveled gear 63 is the shaft 65. This shaft 65 is journaled in bearings 66 and has the collars 67 secured thereon outside the bearings 66 by means of the set screws 68 whereby said shaft is held against longitudinal movement in said bearings. The end of this shaft beyond the collar may

be squared as at 69 for connection with some suitable motor. Loosely mounted on the shaft 65 adjacent the inner face of the bearing 66 is a beveled gear 70 which meshes with the outer row of teeth of the two faced beveled gear 63 and loosely mounted on the shaft 65 adjacent the inner face of the bearing 66 is a similar bevel gear 71 which meshes with the inner row of gear teeth on the two faced gear 63, and each of said beveled gears 70 and 71 is provided on its inner face with the clutch lugs 72. Intermediate of the beveled gears 71 and 72 is a clutch member 73 which is keyed on the shaft as at 74 so as to slide longitudinally thereof, said clutch member being adapted to be moved to engage the clutch lugs of either of the beveled gears 70 or 71, or to be moved out of engagement with both.

Mounted in brackets 75 on the frame 51 parallel with the shaft and extending above the shiftable clutch member 73 is a rod 76 which is bent at its inner end to form the arm 77, whereby the rod 76 may be oscillated. Secured on the rod 76 above the clutch member 73 is the arm 78 which extends downwardly and is forked at its lower end to extend around the clutch 73 and is provided with inwardly extending fingers which project into the annular groove 79 of said clutch member 73 whereby the clutch may be shifted longitudinally of the shaft 65 by the oscillation of the rod 76. This lever 78 may extend above its connection with the rod 76 and be provided with a terminal to which a rod may be connected for operating the clutch from a distance. The arm 77 of the rod 76 extends toward the front of the wagon jack and is provided at its end with an opening through which is passed the lower end of the trip rod 80. This rod extends substantially parallel with the adjacent standard, the lower end 81 thereof being bent at an angle to pass through the opening in the end of the arm 77 and being held in place by means of cotter pin 82 or other suitable means. This rod 80 is held in position substantially parallel with the standard by means of the eye bolt 83 which is secured to the outer end of the adjacent angle iron 42 and encircles the rod 80, said eye bolt being thus adapted to move lengthwise of said rod as the elevating frame is raised and lowered. On the rod 80 above and below the eye bolt 83 is a collar 84 which may be adjusted thereon to regulate the shifting of the clutch 73 as hereinafter apparent. The stub shaft 48^a is connected with stub shaft 48^b by means of the intermediate shaft 49 the said stub shafts being squared off at their inner ends and likewise the ends of the intermediate shaft 49, and the respective ends of shaft 49 are coupled together with the stub shafts through the knuckles 48^c and 48^d in the manner shown in Figure 7, wherein it appears that the

squared ends of either the intermediate shaft 49 or the stub shaft 48^a and 48^b are made somewhat smaller in dimension than the opening in the knuckles whereby play is provided to accommodate any variation from the level of the foundation upon which the jack is placed, thereby preventing any binding of the parts.

When in use, the shaft 65 is connected to some motor and constantly driven. The wagon is driven onto the wagon jack until the front wheels thereof rest on the platform 85 which may be provided intermediate of the strips 12 of the elevating frame. The clutch 73 is then shifted to engage the clutch lugs of the gear 70 whereby the said gearing is locked to move with the shaft and turn the two faced bevel gear 63 and operate the shaft 49. The turning of the shaft 49 causes shaft 57 to be turned through the intermeshing of the spur gear wheels 55 and 61 and such turning of the respective parts causes screws 13 also to be turned simultaneously therewith through the intermeshing of the beveled gears 23 and 25, at each end of the shaft 13. The turning of the screws 13 moves the nuts 36 upwardly thereon, thereby carrying the elevating frame upwardly. When the elevating frame has reached the required position the eye bolt 83 engages the collar 84 and swings the arm 77 and lever 78, thereby moving the clutch 73 out of engagement with the clutch lugs of the bevel gear 70 leaving the elevating platform in the elevated position. For lowering the elevating platform, the clutch 73 is shifted to engage the clutch lugs of the bevel gear 71 thereby operating the screws 13 in the reverse direction and permitting the elevating platform to move downwardly. When the elevating platform nears the lowermost position, the eye bolt 83 engages the lower collar 86 on the rod 80 and shifts the clutch 73 out of engagement with the lugs on the bevel gear 71.

It is obvious that the construction herein may be modified and changed without departing from the principle of my invention; that the object sought to be obtained by supporting the frame in connection with the nuts in a loose manner to facilitate oscillation to prevent binding upon the screw may be attained in many ways, but I prefer the embodiment shown in the drawings and described in the specification.

It will be observed that on account of the ends of the platform being joined to the lateral extensions from the rockable casting supported upon the nuts carried upon the screw that the weight of the load on the platform will be carried upon the centers of the screws.

What I claim is:

1. In a device of the class described, the combination of longitudinal wagon raising

means, a base plate at each end of the wagon raising means, obliquely disposed standards mounted on said base plates, obliquely disposed screw shafts, each journaled at one end in the base plates and at the other end in the top of the standards, a non rotatable nut on each of said screw shafts having laterally extending ridges, a part rockably related to said nut and provided with laterally extending arms and means for connecting said rockable part with the platform.

2. In a device of the class described, the combination of a platform, a screw shaft at each end of the platform, means connecting each end of the platform with the adjacent screw whereby the platform is elevated or lowered by the operation of said screws, a transverse shaft extending lengthwise of said platform provided with gearing for simultaneously operating said screw shafts, a countershaft and gearing connecting the countershaft with the aforesaid transverse shaft and the clutch for alternately operating the transverse shaft in opposite directions from the countershaft.

3. In a device of the class described, the combination of a platform, a screw at each end of the platform, a nut on each screw, arms connected with each of said nuts, one on each side projecting tangentially therefrom transversely of the wagon raising means, means connecting said platform with said nuts to cause the platform to be raised or lowered with the turning of the screws.

4. In a device of the class described, the combination with screws, each provided with a suitable nut thereon, a rockable casting carried upon each nut, each provided with an arm on each side thereof extending laterally therefrom in a plane tangential to each screw, and a suitable platform interposed between the screws and supported in connection with said laterally extending arms.

5. In a device of the class described, the combination with a platform, of mechanism for raising and lowering said platform, comprising rotary screws, nuts thereon, arms supported in connection with nuts, one on each side thereof extending transversely of the length of the platform, and connected with said platform, means for turning said screws differentially to cause the platform to be raised slowly in one direction of its movement and in the reverse direction of its movement to cause the platform to be lowered rapidly and means operated by the moving platform to automatically stop the upward and downward movement of the same.

6. In a device of the class described, the combination with a platform, of mechanism for raising and lowering said platform, comprising rotary screws, nuts thereon, means rockably supported on said nuts and pro-

vided with arms, one on each side extending transversely of the length of the platform and connected therewith, means for turning the screws differentially to raise and lower the platform, and means operated by the moving platform to automatically stop the upward and downward movement of the same.

7. In a device of the class described, the combination with a platform, of mechanism for raising and lowering same, comprising vertically supported screws, one upon each side thereof, nuts on said screws provided with laterally extending ridged parts, castings embracing said nuts and supported thereon in a rockable manner, arms one on each side of said castings and bearing outwardly therefrom in a line tangential thereto and at right angles with a line drawn from one screw to the other, means for turning the screws and means for connecting the said arms with the end of the platform.

8. In a device of the class described, the combination with screws, each provided with a suitable nut thereon, a rockable casting carried on each nut, means for supporting the ends of the platform, on a line through the centers of the screws at right angles with a line drawn from one side of the jack to the other through the screws, and the height

of the screws, comprising arms connected with said rockable nuts.

9. In a device of the class described, the combination with a platform, of mechanism for raising and lowering said platform, comprising rotary screws, nuts on said screws having laterally extending ridges, rockable parts connected with the platform, and supported upon the laterally extending bearings of said nuts, and interengaging parts on said rockable parts for facilitating the rocking of the parts together and for holding the nuts from rotation.

10. In a device of the class described, the combination of a platform, of a screw each side thereof, a nut on each of said screws provided with ridges extending transversely of a line drawn from one screw to the other, and a rockable part at each end of said platform, engaging the said bearings of the nuts, and means operated by the platform to automatically stop the upward and downward movement of said wagon raising means.

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

FERDINAND J. FELDT.

Witnesses:

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