Dec. 11, 1951 J. D. RAYMICK 2,578,264

DRAFT GEAR JACK

Filed Dec. 30, 1949 2 SHEETS—SHEET 1

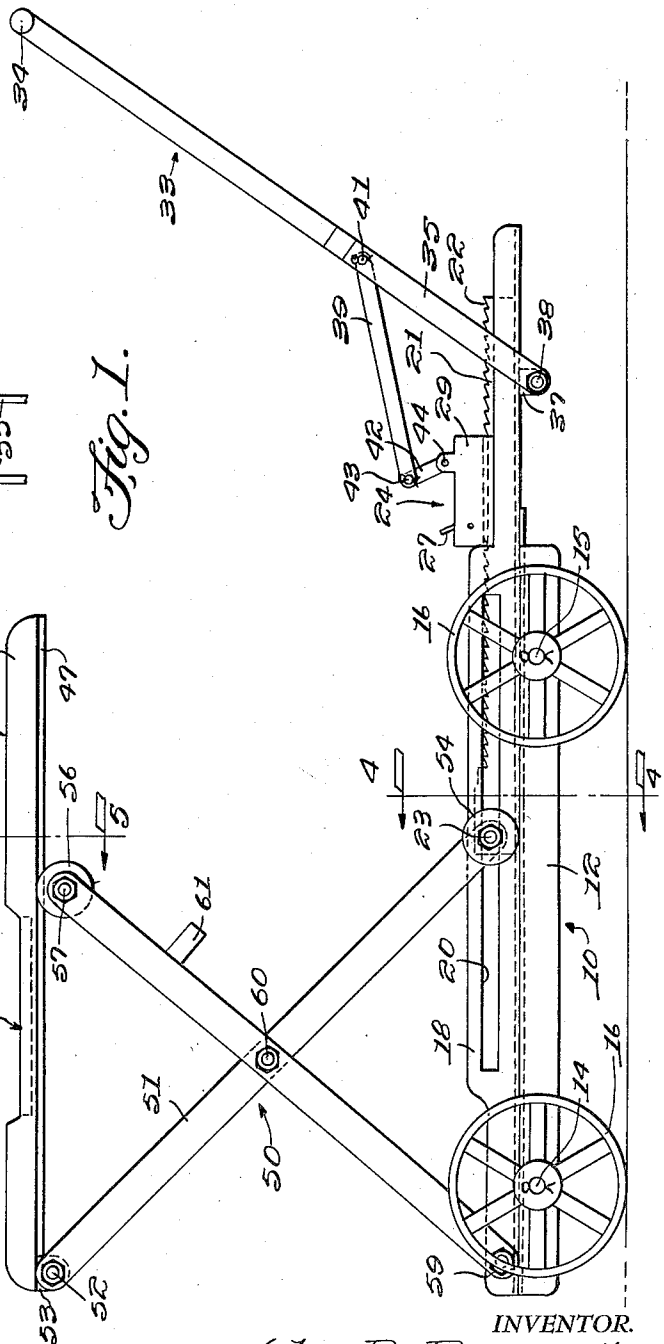


Fig. 1.

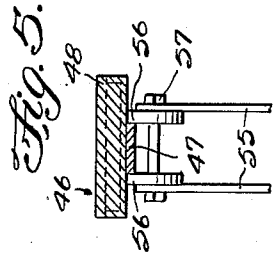


Fig. 5.

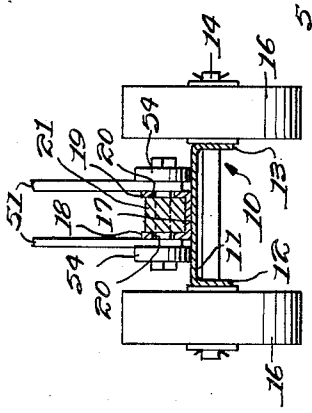


Fig. 4.

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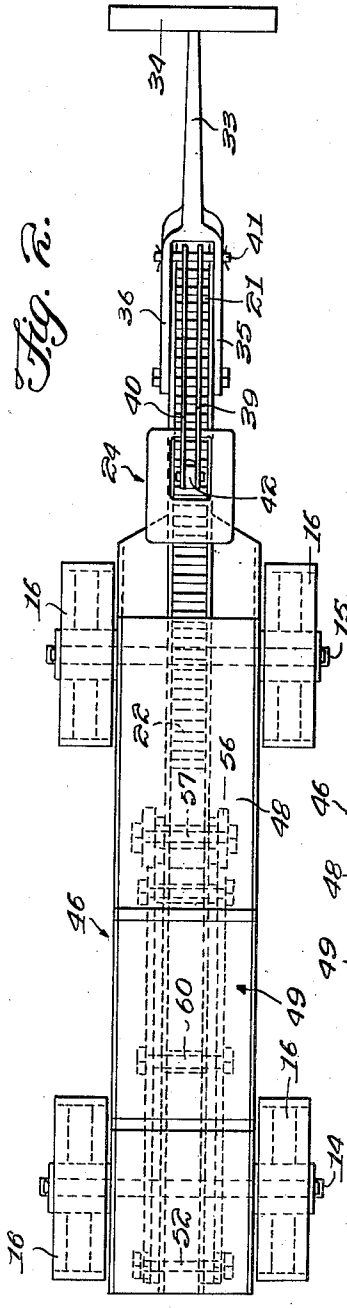


Fig. 2.

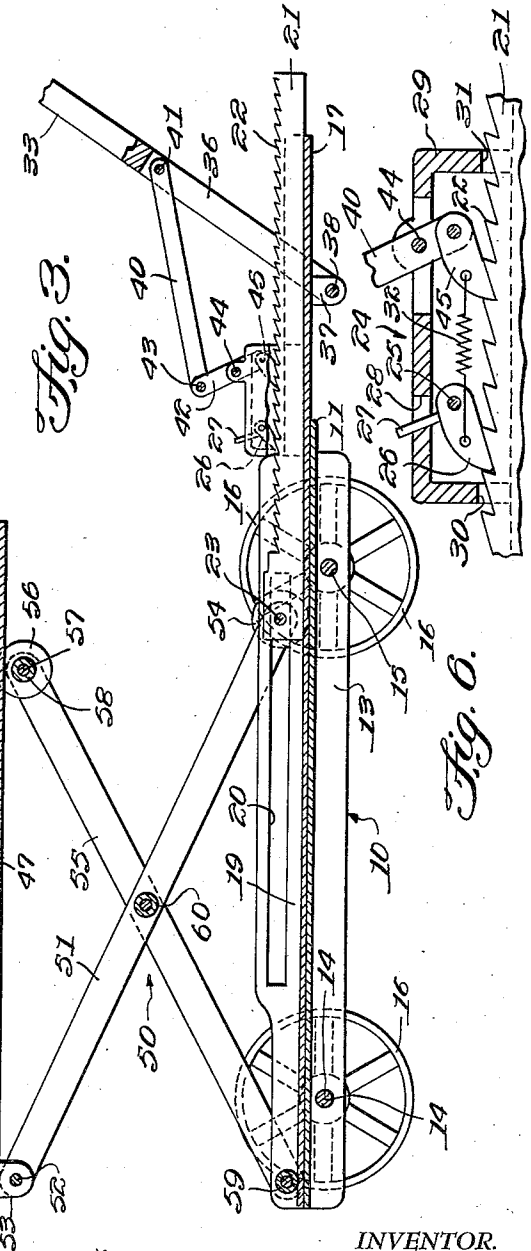


Fig. 3.

Fig. 6.

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2,578,264

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2 Claims. (Cl. 254—8)

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This invention relates to a portable hoisting apparatus, and more particularly to a portable hoisting apparatus for use in handling various types of railway equipment.

The object of the invention is to provide a portable hoisting mechanism which is adapted to be used for removing or replacing heavy, hard-to-handle parts or equipment, such as the draft gear and brake rigging of railway cars.

Another object of the invention is a provide a portable hoist which can be used to lift and maintain heavy objects at any desired height, the hoist being especially suitable for use in repairing and constructing railway cars, or in construction in the street, the hoist of the present invention effecting a saving in time and money, and wherein the danger of injury to workmen is minimized.

A further object of the invention is to provide a portable hoisting apparatus which is extremely simple and inexpensive to manufacture.

Other objects and advantages will be apparent during the course of the following description.

In the accompanying drawings forming a part of this application, and in which like numerals are used to designate like parts throughout the same:

Figure 1 is a side elevation of the portable hoist of the present invention;

Figure 2 is a top plan view of the hoist;

Figure 3 is a vertical sectional view of the portable hoist with the parts in a different position from that shown in Figure 1;

Figure 4 is a sectional view taken on the line 4—4 of Figure 1;

Figure 5 is a sectional view taken on the line 5—5 of Figure 1;

Figure 6 is an enlarged vertical sectional view showing the jack mechanism.

Referring in detail to the drawings, the numeral 10 designates a horizontally disposed base that includes a body member 11. The body member 11 is provided with a pair of vertically disposed spaced parallel side flanges 12 and 13. Extending between the flanges 12 and 13 is a pair of horizontally disposed axles 14 and 15, and each of the axles 14 and 15 carries a pair of ground engaging wheels 16 thereon. The wheels 16 may be covered with a suitable solid rubber tire, if desired.

Extending along the top of the body member 11 and secured thereto is a U-shaped support member 17. The U-shaped support member 17 is provided with a pair of upstanding, spaced parallel side walls 18 and 19, and each of the side walls 18 and 19 is provided with an elongated slot 20 for a purpose to be later described. Slidably arranged between the side walls 18 and 19 is a rack bar 21 which is provided with a plurality of spaced teeth 22 on its upper surface. Carried by the rear end of the rack bar 21 is a transversely disposed

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pin 23, the pin 23 extending slidably through the pair of opposed slots 20 in the side walls 18 and 19.

For causing sliding movement of the rack bar 21, a jack mechanism 24 is provided, the jack mechanism 24 including a hollow housing 29 that is secured to the support member 17, as by welding. The housing 29 is cut away, as at 30 and 31, so as to permit the rack bar 21 to slide therethrough. A dog 26 is pivotally connected to the housing 29 by a pin 25, and the dog 26 serves to hold the rack bar 21 in its adjusted position, the dog 26 being urged into engagement with the teeth 22 of the rack bar 21 by means of a suitable spring 32, Figure 6. A lever 27 has its lower end secured to the dog 26, and the lever 27 projects through a slot 28 in the top of the housing 29, so that by manually moving the lever 27, the dog 26 can be moved out of engagement with the teeth 22 so as to permit the platform to be moved to its lowered position..

A handle 33 is provided, and the handle 33 is adapted to be used for actuating the jack mechanism 24, the handle 33 also serving to provide a means for pushing or pulling the hoist of the present invention to the desired location. The handle 33 includes a cross-piece 34 that is adapted to be gripped by the user's hands, the handle 33 further including a pair of spaced parallel legs 35 and 36 which are pivotally connected to lugs 37 by the bolt-and-nut assembly or pin 38. The lugs 37 are secured, as by welding, to the lower surface of the support member 17, Figure 3. A pin 41 pivotally connects a pair of spaced parallel straps 39 and 40 to the handle 33, Figure 2. A pin 43 pivotally connects the other or front ends of the straps 39 and 40 to the upper end of an arm 42, the arm 42 being pivotally connected to the housing 29 by a pin 44. Secured to the lower end of the arm 42 is a pawl 45 which is arranged in engagement with the teeth 22 of the rack bar 21. Thus, by oscillating or reciprocating the handle 33, the pawl 45 will engage the teeth 22 of the rack bar 21 to thereby move the rack bar 21 forwardly in the support member 17 so that a step-by-step movement of the rack bar 21 is accomplished. The dog 26 serves to hold the rack bar 21 immobile in its adjusted position.

Mounted for movement toward and away from the base 10 is a horizontally disposed platform 46. The platform 46 includes a guide plate 47 that has secured to its upper surface a longitudinally extending block 48. The block 48 is provided with a transverse cut-away portion 49 so that when an object, such as railway draft gear, is being supported on the block 48, a suitable strap may be inserted through the cut-away portion 49 and wrapped around the object thereon.

Operatively connecting the platform 46 to the base 10 is a lazy tongs mechanism, designated

generally by the numeral 50. The lazy tongs mechanism 50 includes a first pair of links 51 that have their upper ends pivotally connected to lugs 53 by a bolt-and-nut assembly 52, the lugs 53 being secured, as by welding, to the guide plate 47. The lower ends of the links 51 are pivotally connected to the pin 23 which is carried by the rack bar 21. A bearing wheel 54 is arranged adjacent each of the links 51 and is mounted on the pin 23, the bearing wheels 54 serving to insure that the lazy tongs mechanism operates smoothly. The lazy tongs mechanism 50 further includes a pair of inclined links 55 which are arranged in criss-cross relation with respect to the first pair of links 51. Mounted adjacent the upper end of each of the links 55 is a bearing wheel 56, the pair of bearing wheels 56 slidably embracing the guide plate 47. A bolt-and-nut assembly 57 pivotally or rotatably mounts the bearing wheels 56 on the links 55, and the bolt-and-nut assembly 57 also serves to connect the links 55 together. A sleeve 58 is arranged on the bolt of the bolt-and-nut assembly 57, Figure 3. A bolt-and-nut assembly 59 serves to pivotally connect the lower ends of the pair of links 55 to the side walls 18 and 19 of the support member 17. Further, the first pair of links 51 are pivotally connected to the second pair of links 55 by means of a horizontally disposed bolt-and-nut assembly 60.

For limiting downward movement of the platform 46, a bracket 61 is secured, as by welding, to one of the links 55. The bracket 61 contacts or engages a portion of the base 10 so as to limit downward movement of the platform 46.

In use, the hoisting mechanism of the present invention can be pushed or pulled to the desired location by means of the handle 33, the wheels 16 rotatably supporting the lifting device. Then, the object to be lifted, such as draft gears, brake rigging of railway cars, or other heavy objects, are positioned on the block 48 of the platform 46. Then, the cut-away portion 49 permits a suitable strap to be wrapped around these objects, if desired. Then, by oscillating or reciprocating the handle 33, the jack mechanism 24 will be actuated to thereby lift or raise the platform 46. Thus, reciprocation of the handle 33 results in the pawl 45 engaging the teeth 22 of the rack bar 21 to thereby slide the rack bar 21 in a step-by-step movement between the side walls 18 and 19 of the support member 17. The rack bar 21 carries the pin or bolt-and-nut assembly 23 so that as the rack bar 21 slides forwardly, the pair of links 51 will be moved and will simultaneously be pivoted in a clockwise direction. This will result in the pair of links 55 being pivoted in a counterclockwise direction, since the links 51 are connected to the links 55 by means of the bolt-and-nut assembly 60. This pivotal movement of the links 55 and 51 of the lazy tongs mechanism 50 will result in the platform 46 being raised, whereby the object, such as the railway draft gear or brake rigging, can be raised to the desired height. To lower the platform 46, the lever 27 is merely pivoted in a clockwise direction so that the weight of the object on the platform 46 will reverse the above-described procedure and the rack bar 21 will be permitted to slide in the support member 17.

From the foregoing, it is apparent that a mechanism has been provided which is especially suitable for removing railway car draft gear and brake rigging or installing the same. The device of the present invention operates smoothly and easily and the height of the platform can be accurately adjusted by means of the jack mechanism 24. By using the apparatus of the present invention, heavy objects will be able to be lifted with a saving of time and money, and further, danger of personnel rupturing or otherwise injuring themselves by lifting heavy objects will be minimized. Also, the portable hoist can be used for coupling together railway cars, and the hoist will also find wide use in the construction industry. The hoist is sturdily constructed so that a very heavy load can be lifted.

I claim:

1. In a portable hoist, a horizontally disposed base including a body member provided with a pair of spaced parallel vertically disposed flanges, a pair of axles extending between said flanges and connected thereto, ground engaging wheels mounted on each of said axles, a horizontally disposed support member positioned on said body member and secured thereto, said support member including a pair of spaced parallel side walls each provided with an opposed slot, a rack bar slidably positioned between said side walls and provided with a plurality of teeth on its upper surface, a pin carried by the rear end of said rack bar and slidably projecting through the slots in said side walls, a jack mechanism secured to said support member for causing sliding movement of said rack bar, a handle pivotally connected to said support member for actuating said jack mechanism, a horizontally disposed platform adjustably mounted for movement toward and away from said base, said platform including a guide plate, and a block extending longitudinally along the upper surfaces of said plate and secured thereto, there being a transverse cut-out arranged in said block, and a lazy tongs mechanism connecting said platform to said base and to the pin carried by said rack bar.

2. In a portable hoist, a base including a body member provided with a pair of flanges, a pair of axles extending between said flanges and connected thereto, ground-engaging wheels mounted on each of said axles, a support member positioned on said body member and secured thereto, said support member including a pair of side walls each provided with an opposed slot, a rack bar slidably positioned between said side walls and provided with a plurality of teeth on its upper surface, a pin carried by the rear end of said rack bar and slidably projecting through the slots in said side walls, a jack mechanism secured to said support member for causing sliding movement of said rack bar, a handle pivotally connected to said support member for actuating said jack mechanism, a platform adjustably mounted for movement toward and away from said base, said platform including a guide plate, and a block extending along the upper surface of said plate and secured thereto, there being a transverse cutout arranged in said block, and a lazy-tongs mechanism connecting said platform to said base and to the pin carried by said rack bar.

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