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TROLLEY HOISTING MECHANISM.


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To all whom it may concern:

Be it known that I, Edward Y. Moore, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Trolley Hoisting Mechanism, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates to a trolley hoisting mechanism adapted to suspend a load at a plurality of points and laterally transport it, while allowing relative shifting of the points of suspension. Such a mechanism is very useful where it is desired to raise a body, transport it and deposit it standing out of parallelism with its original position. An instance of this is the placing of removable bodies on automobile trucks or the removal of the body therefrom. My invention enables such a body to be lowered directly into engagement with the truck frame, or raised vertically from the frame, though the frame be standing at somewhat of an oblique angle to the platform to or from which the body is transferred.

The preferred embodiment of my invention provides two dual hoisting mechanisms, each supported on trolleys and each having a pair of flexible raising members, these two dual mechanisms being connected together by means which allows independent movement of one with reference to the other. The raising mechanism is driven in this preferred form by means shiftable with one of the dual hoist mechanisms and connected with the other by a telescoping shaft having universal joints. Such construction is also included in my invention.

The invention is hereinafter more fully explained and its essential characteristics summarized in the claims.

In the drawings, Figure 1 is a plan partly broken away of one embodiment of my invention; Fig. 2 is a front elevation of the embodiment shown in Fig. 1, this view being also broken out immediately and showing the I-beam track-ways in section; Fig. 3 is a broken side elevation of the mechanism shown in Figs. 1 and 2; Fig. 4 is a side elevation on a smaller scale, showing the dual hoists suspending the removable body of an automobile truck; Fig. 5 is a plan of another embodiment of my invention, showing the parts somewhat differently arranged; Fig. 6 is a side elevation partly broken away and on an enlarged scale of the structure shown in Fig. 5; Figs. 7, 8 and 9 are respectively cross sections on the correspondingly numbered lines on Fig. 5; Fig. 10 is an elevation of the worm and worm wheel employed in the raising mechanism of each of the embodiments shown, this view showing half of the housing removed; Fig. 11 is a detail illustrating a means for clamping one end of the cable to the winding drum employed in either embodiment; Fig. 12 is a detail illustrating the gearing for driving one of the trolleys of the embodiment shown in Figs. 1 to 4 inclusive; Fig. 13 is a diagrammatic plan of a removable automobile body illustrating how the hooks may be positioned thereon; Fig. 14 is a side elevation of that portion of the right-hand trolley frame which supports the wheel of the bridge leading from the other trolley frame in each of the embodiments shown.

I will first describe the embodiment shown in Figs. 1 to 4 inclusive. As there shown A and B represent two parallel stationary I-beam supports, the lower flanges of which furnish the trackways on which the trolleys for the two dual hoists ride. 10 designates the main frame member of the dual hoisting mechanism supported by the trackway A, and 11 the corresponding member of the dual hoist on the trackway B. These two frame members are preferably horizontal channel beams with their flanges facing upwardly. Secured to the upper face of each channel beam are a pair of brackets 15 to which are pivoted the frames 16 of trolleys, each carrying four wheels riding on the opposite flanges of the respective I-beams.

Rigidly secured to the frame member 10 is a transverse frame shown as composed of angle bars 20 connected at their other ends by an angle bar 21 and laterally braced by a diagonal angle bar 22. The end angle bar 21 carries a stud 24 (Fig. 14) on which is mounted a roller 25. This roller rides on a plate 26 secured to the under side of the
channel beam 11. Vertical angle strips 27 and 28 carried by the frame member 11 limit the travel of the wheel 25 in either direction.

With such a frame as described it is evident that the mechanism suspended by either trolley trackway may be shifted independently of the other mechanism a short distance until the wheel 25 abuts the bracket 27 or the bracket 28, as the case may be, after which the propelled trolley frame will propel the other frame with it. As herein-after described, I prefer to provide independent mechanisms for driving some of the wheels 17 of each dual hoist, enabling the entire structure to be propelled along the trolley trackways, the structure traveling as a unit if the propelling speed is the same, but either dual hoist gaining on the other whenever desired simply by giving its trolley wheels a faster speed of rotation.

As shown in Figs. 5, 7, 8 and 9 the supporting beam C is a built-up structure of plate and channels corresponding to an I-beam. The two trolley frames are built up of outwardly facing channel members 89 having their webs vertical and flanges horizontal, and suitable cross members 82, which are preferably of the form shown in Fig. 7, and are bolted to the webs of the channels and extend transversely beneath them. The transverse bridge in the embodiment shown in Figs. 5 and 6 extends from substantially the middle of one of the trolley frames instead of from the end, as in the form first described. This transverse bridge is designated 85 and is built up of structural shapes braced by diagonal braces 86 and 87. At its far end it carries the wheel 25 in the same manner as already described. This wheel rider rides on a drive 26 carried by the right hand of the trolley frame.

In either embodiment shown I prefer to mount the power mechanism on the transverse bridge. As shown I provide an electric motor 40 secured to the under side of the horizontal flanges of these bridge members. The armature shaft of this motor has a pinion 41 meshing with a gear 42 on a shaft 43. One end of this shaft is connected by a coupling 44 with a shaft 45 for the hoist mechanism supported by the trolley frame 10. Near the other end the shaft has a bearing in a bracket 46 depending from one of the transverse members 29 and beyond this bracket is provided with a forked head 47. This head is pivoted to a block 48 which is pivoted at right angles to this pivot to a fork 49 on a sleeve 50, thus providing a universal joint between the shaft 43 and the sleeve 50. Telescoping within the sleeve 50 is a shaft 51 which is connected by a similar universal joint 52 with the shaft 53 of the hoist mechanism supported by the trolley frame 11. The shaft 51 is readily slidable within the sleeve 50 and is compelled to rotate therewith by a suitable connection, as a pin 55 projecting transversely from the shaft and occupying longitudinal slots 56 in the sleeve.

The two universal joints and the telescoping connection enable a driving rotation to be transmitted from the shaft 43 to the dual hoist suspended from the right hand trackway shown, irrespective of the position of that hoist with reference to the hoist on the other trackway. Accordingly no attention need be paid to the raising mechanism during the shifting of the structure, the motor and its connected mechanism being available for raising or lowering the load, whatever be the mutual position of the two dual hoists.

The two embodiments illustrated show somewhat different details of the dual hoists; the dual hoists appertaining to the same embodiment are preferably substantially identical. As shown in Figs. 1 to 4, each dual hoist comprises a shaft 60 suspended from the under side of the trolley frame 10 member 10 or 11 by brackets 61 and 62. On each shaft are a pair of lift pulleys 63 and 64 of any desired type, adapted to receive a wire cable. The bracket 62 is formed into a housing to contain a worm wheel 66 rigid with the shaft 60, this worm wheel meshing with a worm 67 which is formed on the shaft 45 or 53 as the case may be. Preferably each worm wheel 66 is mounted on a short extension 65 of the shaft 60 which is connected with it by a suitable coupling 68. The bracket 62 in such case has two bosses 69, 69, providing bearings for this short shaft on opposite sides of the worm. The bracket 62 may readily be a two-piece structure divided on a vertical plane and bolted together in use to provide for ready assembly or access. This is illustrated in Fig. 10.

In the embodiment shown in Figs. 5 and 6, the worm driven by the motor is located centrally of the dual hoist, the casing 62 being secured immediately of the lift wheels to the under side of the trolley frame members 89. The worm wheel is on a short shaft extending in each direction and terminating in couplings 68 which are connected to aligned driven shafts 60 carrying the raising pulleys 65. The other ends of these shafts are journaled in bearings provided by the cross members 82 of the trolley frame.

Fig. 10 illustrates at 75 a suitable thrust block for the shaft of the worm 67, this block being adjusted by a screw 76, carried in a disk 77 which is secured to the hoist frame member 62 across their junction. On the other side the bearing sleeve 78 is provided with a screw threaded cap 79 which surrounds the shaft and is adapted to compress a washer about it. The result is that
this shaft is maintained tight and the worm and worm wheel cavity may be packed with grease, which is retained therein.

The propelling racking mechanism for the trolleys differs in the two embodiments. As shown in Figs. 1 to 4 this propelling mechanism for each dual hoist consists of a hand chain wheel 30 mounted on one of the trolley wheel frames and geared with two of the wheels 17 on that side. The gearing may readily be as shown in Fig. 12 where the shaft 31 of the hand chain wheel carries a pinion 32 meshing with gears 93 on the adjacent wheels 17.

To prevent the weight of the bridge and the motor it carries from tilting the frame on which the wheel 25 rests, I may provide a counterweight indicated at 95. This maintains the right-hand trolley frame level so that the trolley wheels 17, which are geared with the hand chain wheel, preserve their traction on the I-beam frame.

In the embodiment of Figs. 5 and 6, trolley wheels 17 on both sides of the trackway have rigidly secured to them gears 90 which mesh with pinions 91 on a transverse shaft 92 journaled in bearings secured to the under side of the trolley frame members 80. This shaft carries a hand chain wheel 93.

The method just described of driving trolley wheels on opposite sides of the center of the supporting structure has the advantage of dispensing with the counterweight, for driving traction is obtained on one flange or the other even though tipping or swinging of the trolley frame should carry the wheels on the other side out of contact with the trackway.

Where the lift pulleys carry a flexible cable I prefer to extend the cable in a height around a movable pulley and anchor the end of the pulley to the lower ends of the brackets as 61 and 62 respectively. Figs. 3 and 4 show such a construction where the movable pulley is designated 70 and the flexible cables 71. Fig. 11 shows a convenient construction for anchoring the end of the cable 71 to the winding drum. This consists of a block 75 loosely occupying a notch 76 in a flange of the winding drum but adapted to be forced into engagement with the cable by a radial screw 77 in such flange.

In Fig. 4, 8 represents the frame and running structure of an automobile truck and T the removable body thereof. This body is formed with suitable dowel pins t projecting from its base, enabling it to be properly positioned and held on the truck frame. The body is preferably of a suitable skeleton construction having uprights of sufficient strength to support the load from hooks 72 near the top, which may be readily engaged by eyes on the movable pulleys 70.

If desired the hooks 72 on each side of the vehicle body may be located a distance apart equal to the distance between the eyes on the opposite sides of the body; in other words, each hook, the same distance from each of the two adjacent hooks, as illustrated in Fig. 13, and the trackway centers may be the same distance apart as the distance between lift wheels on either shaft. This enables the same pulleys 70 to readily engage and support the body whether it extends transversely of the trolley trackway or parallel therewith.

One of the important uses of my invention is for shifting movable loaded bodies between automobile trucks and freight platforms. In such operation a loaded truck, for example, is driven into position alongside of the platform either with the truck approximately parallel with the edge of the platform or approximately at right angles to it, the latter being the position where the truck backs into place. When the loaded truck is in one of these positions the hoisting mechanism is positioned to bring the raising cables substantially above the hooks 72, one dual hoist being trolleyed farther out than the other, if necessary, to accomplish this. Then the movable pulleys are attached and the motor on the hoist mechanism operated to raise the body free from the truck frame. The racking mechanism is then operated to cause the supporting structure and body to travel inwardly over the platform. During this movement one dual hoist may be racked faster than the other, if desired, to bring the body which was approximately parallel with the edge of the platform into true parallelism therewith, or to bring the body which was at approximately right angles to the edge of the platform into true right angular position with reference thereto, as the case may be. Then the opposite movement of the raising motor deposits the body on the platform.

The reverse operation to that described will of course raise and transport a loaded body from the platform and deposit it on a truck, without requiring the truck to be strictly parallel or strictly at right angles to the platform edge.

Having thus described my invention, what I claim is:

1. The combination of two trolley hoisting mechanisms having individual means for independently shifting them, and power mechanism common to both hoisting mechanisms and coupled therewith.

2. The combination of two trolley hoisting mechanisms mutually changeable in position and power mechanism common to both hoisting mechanisms and connecting with the raising mechanisms thereof.

3. The combination of two hoisting mechanisms each having a plurality of support-
ing trolleys, one of said mechanisms being shiftable as a unit independently of the other, and a single power mechanism coupled with both hoisting mechanisms.

5. A pair of trolley hoisting mechanisms, a member connected with both mechanisms and having some independent play with reference to one of them, and power mechanism common to both hoisting mechanisms.

10. A pair of trolley hoisting mechanisms, a cross member connected with both mechanisms and having some independent play with reference to one of them, and power mechanism mounted on the cross member and connected with both trolley hoisting mechanisms.

15. The combination of two trolley hoisting mechanisms having independent frames, a later extension rigidly connected with one of the frames and having a limited loose movement connection with the other frame, and a single power mechanism connected with both hoisting mechanisms.

20. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms.

25. The combination of two trolley hoisting mechanisms each having an independent frame, two supporting trolleys, a rotary shaft and a pair of lift wheels thereon, a cross member suitably connected with one of the frames and having a limited loose movement connection with the other frame, power mechanism connected with the raising shafts of both trolley hoisting mechanisms.

30. The combination of two trolley hoisting mechanisms, one having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms.

35. The combination of two dual trolley hoisting mechanisms each having an independent frame, two supporting trolleys, a rotary shaft and a pair of lift wheels thereon, a cross member suitably connected with one of the frames and having a limited loose movement connection with the other frame, power mechanism connected with the raising shafts of both trolley hoisting mechanisms.

40. The combination of two dual trolley hoisting mechanisms each having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms.

45. The combination of two trolley hoisting mechanisms, one having a limited loose connection with the other mechanism and having a movable connection with the other comprising a wheel and a coating track therefor, stops limiting such movement, driving mechanism between the power mechanism and both hoisting mechanisms.

50. The combination of two trolley hoisting mechanisms adapted to travel on parallel trackways, a bridge member rigidly connected with one of said mechanisms and carrying a wheel riding on a trackway provided by the other mechanism, stops adapted to be engaged by the wheel for limiting the movement of one trolley hoisting mechanism independently of the other, and driving mechanism for the hoisting mechanism.

55. The combination of two trolley hoisting mechanisms each comprising a horizontal frame and a pair of supporting trolleys mounted thereon, a shaft below the frame, gearing for rotating the shaft, a lateral extension rigidly connected with the frame of one trolley hoisting mechanism and having a movable connection with the frame of the other trolley hoisting mechanism, stops limiting the independent movement, power mechanism, a connection between the same and the gearing of both trolley hoisting mechanisms.

60. The combination of two trolley hoisting mechanisms, means connecting them while allowing one mechanism to travel independently of the other mechanism, power mechanism, driving mechanism between the power mechanism and two hoisting mechanisms, said driving mechanism including an extensible shaft.

65. The combination of two trolley hoisting mechanisms, means connecting them while allowing one mechanism to travel independently of the other mechanism, power mechanism, driving mechanism between the power mechanism and two hoisting mechanisms, said driving mechanism including an extensible shaft, and universal joints between the power mechanism and one of the hoisting mechanisms.

70. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

75. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

80. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

85. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

90. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

95. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

100. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

105. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

110. The combination of two trolley hoisting mechanisms, a bridge rigidly connected with one of said mechanisms and having a limited loose connection with the other mechanism, power mechanism carried by the bridge, driving mechanism between the power mechanism and two hoisting mechanisms, including a telescoping shaft having universal joints between the power mechanism and one of the hoisting mechanisms.

115. The combination of two trolley hoists, each comprising a longitudinal beam having two sets of supporting wheels above it, a shaft below it and a plurality of lift wheels on said shaft, a transverse bridge rigidly connected with one of said frames, a wheel carried by the bridge riding on the frame of the other hoist, stops on the latter frame limiting the movement of the wheel, a motor carried by said bridge, a shaft carried by the bridge and geared with the motor and connected with the two hoisting mechanisms, the connection with the trolley hoisting mechanism which has the loose connection with the bridge including a telescoping shaft and two universal joints.

120. The combination of two trolley hoisting mechanisms each having a raising shaft.
and a worm wheel and worm for rotating it, a lateral extension connected with the frame of one trolley hoisting mechanism and having a loose connection with the frame of the other trolley hoisting mechanism, power mechanism mounted on said lateral extension, a driving connection between said power mechanism and the two worms including a tumbling shaft connected with the worm of the trolley hoisting mechanism with which the lateral extension is movably connected.

28. The combination of two dual trolley hoists, each having a pair of flexible raising members spaced apart, trackways supporting the trolley hoists with a distance between their flexible raising members, and power mechanism common to both trolley hoists coupled with them in such manner as enables one to be shifted independently of the other.

29. The combination of two dual trolley hoists, each having a pair of flexible raising members spaced apart, trackways supporting the trolley hoists side by side but spaced apart, independent means for racking each trolley hoist in or out, means limiting the amount of independent movement of one hoist relative to the other, and power mechanism common to both trolley hoists and connected with the raising mechanisms thereof.

30. The combination of a plurality of hoisting mechanisms each having a plurality of supporting trolleys adapted to travel over one of a plurality of track rails and to support its load directly therefrom, and a single power mechanism coupled with said hoisting mechanisms on different trackways.

31. A pair of trolley hoisting mechanisms, each adapted to support a load directly from one of a pair of parallel trackways, a transverse member connected with both mechanisms, and power mechanism mounted on the transverse member and connected with both trolley hoisting mechanisms.

32. The combination with a trackway comprising two spaced rails, of two dual trolley hoisting mechanisms, each having a frame and a plurality of supporting trolleys, a rotary shaft parallel to each rail and a pair of lift wheels thereon, a cross member suitably connected with the frames, and power mechanism connected with the rotary shafts of both trolley hoisting mechanisms.

33. The combination of two dual trolley hoists, each having a pair of flexible raising members spaced apart, connecting means between said hoists substantially abreast of each other, trackways supporting the trolley hoists and their load independent of said connecting means with a distance between their flexible raising members and power mechanism common to both trolley hoists.

34. The combination of raising members, four flexible means operated thereby, means for operating the members as a unit to raise a load engaged at four points, and means for turning the load in a horizontal plane by relative motion of said raising members.

35. The combination of raising members, four flexible means operated thereby, means for operating the members as a unit to raise a load engaged at four points, means for laterally shifting said raising members as a unit, and means for turning the load by relative motion of said members.

36. The combination of a load hoisting structure having supporting wheels at four points, and connected to be moved as a unit on a pair of overhead trackways, four flexible raising members depending from such structure to spaced points on a load, means for swinging the load in a horizontal plane by changing the relative position of the points of support, and a common power mechanism on the structure for raising the four flexible members simultaneously.

37. The combination of a load hoisting structure having supporting wheels at four points whereby the structure may run on a pair of overhead trackways, four flexible raising members depending from such structure to spaced points on a load, means for turning the load by changing the relative position of the points of support, and a common power mechanism on the structure for raising the four flexible members simultaneously.

38. The combination of four trolleys adapted to travel a two-rail trackway, two trolley frames each parallel to the trackway and connected with two or said trolleys, a single transverse bridge member connecting the two frames, power raising mechanism carried by the bridge member, and a plurality of raising members independently supported by a single rail and simultaneously operated by said power raising mechanism.

39. The combination of four trolleys, two trolley frames each connected with two of said trolleys, a transverse bridge member adapted to connect the two frames, power raising mechanism carried by the bridge member, and four raising members depending at four corners of a theoretical rectangle, common power mechanism for simultaneously operating the four raising members, and means for turning the load in a horizontal plane by action on two of its supporting members.

40. The combination of trolley hoisting mechanism having a straight trackway, flexible raising members depending parallelly from said mechanism to a load, and means for partially turning the load by shifting certain points of support of said members along the trackway.

41. The combination with a two-track trackway, of a traveling hoist thereon, four flexible raising members depending from...
the hoist and adapted to support a load by connection to four spaced points thereon, and means for shifting a portion of the hoist with reference to another portion thereof to swing the load into a position at an angle to the trackway.

32. In combination, two dual trolley hoisting mechanisms, each adapted to traverse one of two spaced parallel rails, two flexible raising members depending from equally spaced points on each mechanism and adapted to support a load (independently of any connecting means between the mechanisms), and means for swinging the load with its sides into or out of parallelism with the rails by changing the relative position of the supporting points of the raising members of one mechanism with respect to the other.

33. The combination of a trackway comprising two spaced rails, a trolley hoist independently supported on each rail, means connecting said hoists, and a single power mechanism for operating them.

34. In combination, two parallel trackways, a trolley hoisting mechanism suspended from each, a bridge connecting said mechanisms, and a single means on the bridge for operating said mechanisms.

35. In combination, a trackway comprising two spaced rails, a trolley hoisting mechanism having tandem winding drums supported from each rail, a cross member connecting said mechanisms, a power mechanism connected to the winding drums whereby they may be operated simultaneously, said winding drums being adapted to support a load directly from the track rails and independently of the cross member.

36. The combination of two parallel trackways, trolley hoisting mechanism suspended therefrom each comprising a frame having side members parallel to the rails, a cross member connecting said sides, a lift member adjacent to each end of each side member and supported independently of the cross member, and power mechanism connected to each lift member.

37. The combination of two trolley hoisting mechanisms each suspended on a single track and having spaced raising members depending directly therefrom and adapted to be secured to a load, means independent of said raising members connecting said hoisting mechanisms, and power mechanism for simultaneously operating said raising members.

38. The combination with parallel track rails of two trolley hoisting mechanisms, each adapted to support a load from a single track rail, and each having a raising shaft parallel to and beneath the rail, gearing on said shafts, a bridge member connecting the hoisting mechanisms, power mechanism mounted on the bridge member and a driving connection between the power mechanism and the gearing on the raising shafts.

39. The combination with two parallel track rails, of two trolley hoisting mechanisms, each adapted to support a load from a single track, and each having a raising shaft parallel to and beneath the rail, gearing on said shafts, a bridge member connecting the hoisting mechanisms, whereby they may traverse said rails side by side, power mechanism, and a driving connection between the power mechanism and the gearing on the raising shafts.

40. The combination with two rails comprising an overhead track of two trolley hoisting mechanisms, each adapted to support a load from a single track rail, a lateral member connecting said mechanisms whereby they may travel side by side on said track, each mechanism having a rotary shaft having winding drums thereon, and a worm wheel and worm for rotating it, and power mechanism having a driving connection with the two worms.

41. The combination of two trolley hoisting mechanisms, each adapted to support a load from a single track rail, a lateral member connecting said mechanisms whereby they may travel side by side on a track comprising two spaced rails, each mechanism having a rotary shaft having spaced winding drums in tandem thereon, and a worm wheel and worm for rotating it, power mechanism mounted on the lateral member and a driving connection between the power mechanism and the two worms.

In testimony whereof, I hereunto affix my signature.

EDWARD Y. MOORE.