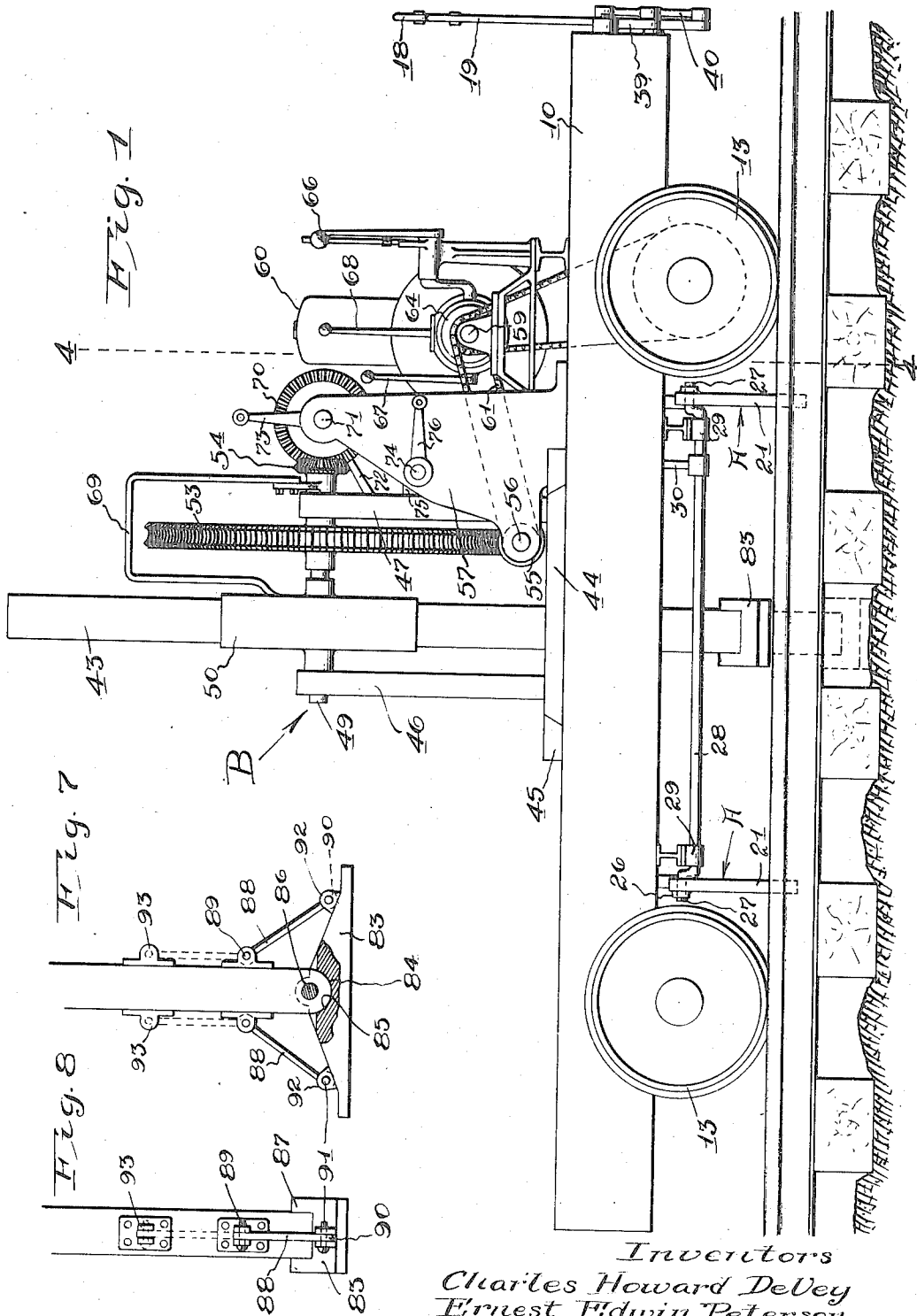


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MACHINE FOR RAISING AND THROWING RAILWAY TRACKS.
APPLICATION FILED JAN. 18, 1917.

1,264,376.

Patented Apr. 30, 1918.

5 SHEETS—SHEET 1.



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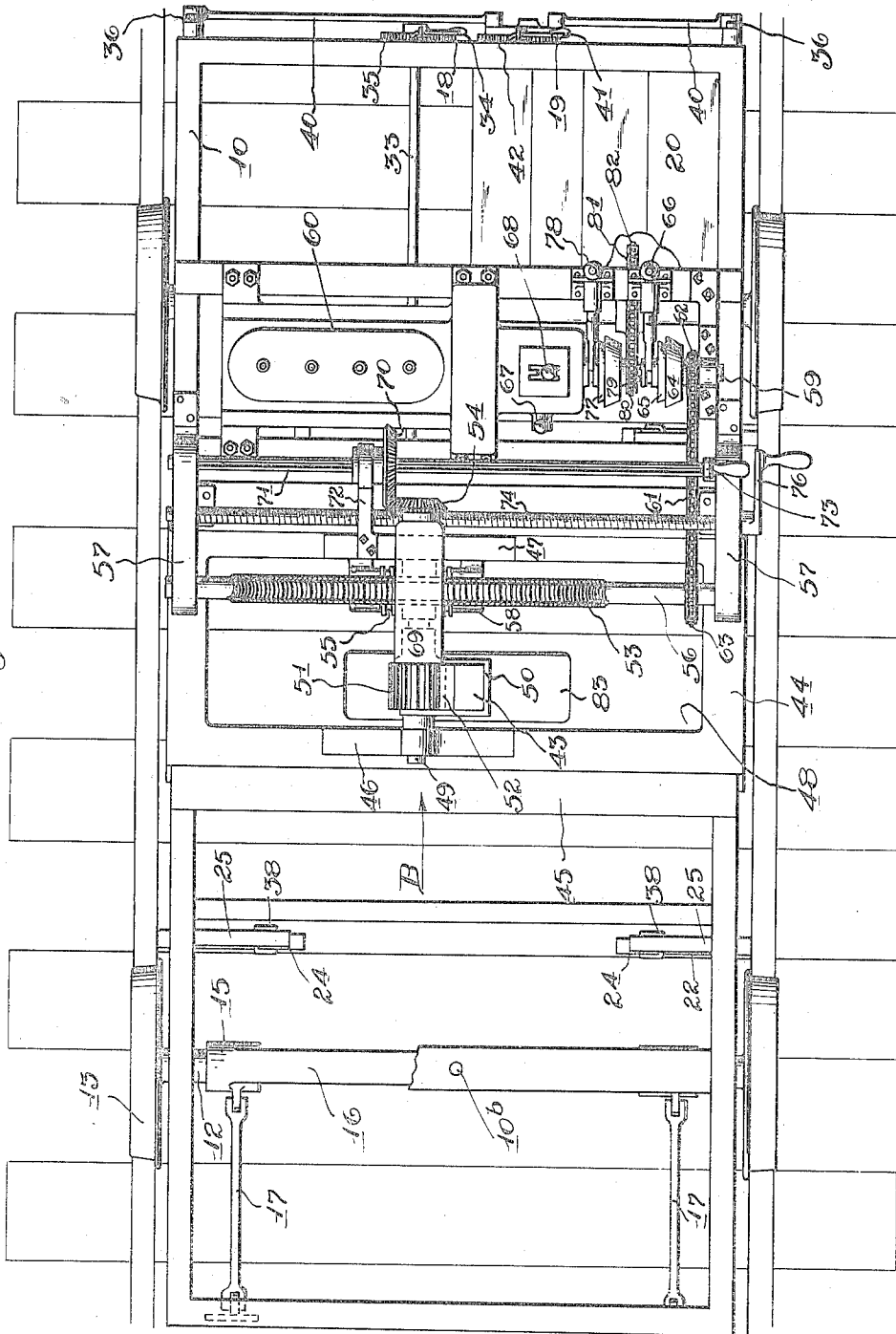
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Fig. 2



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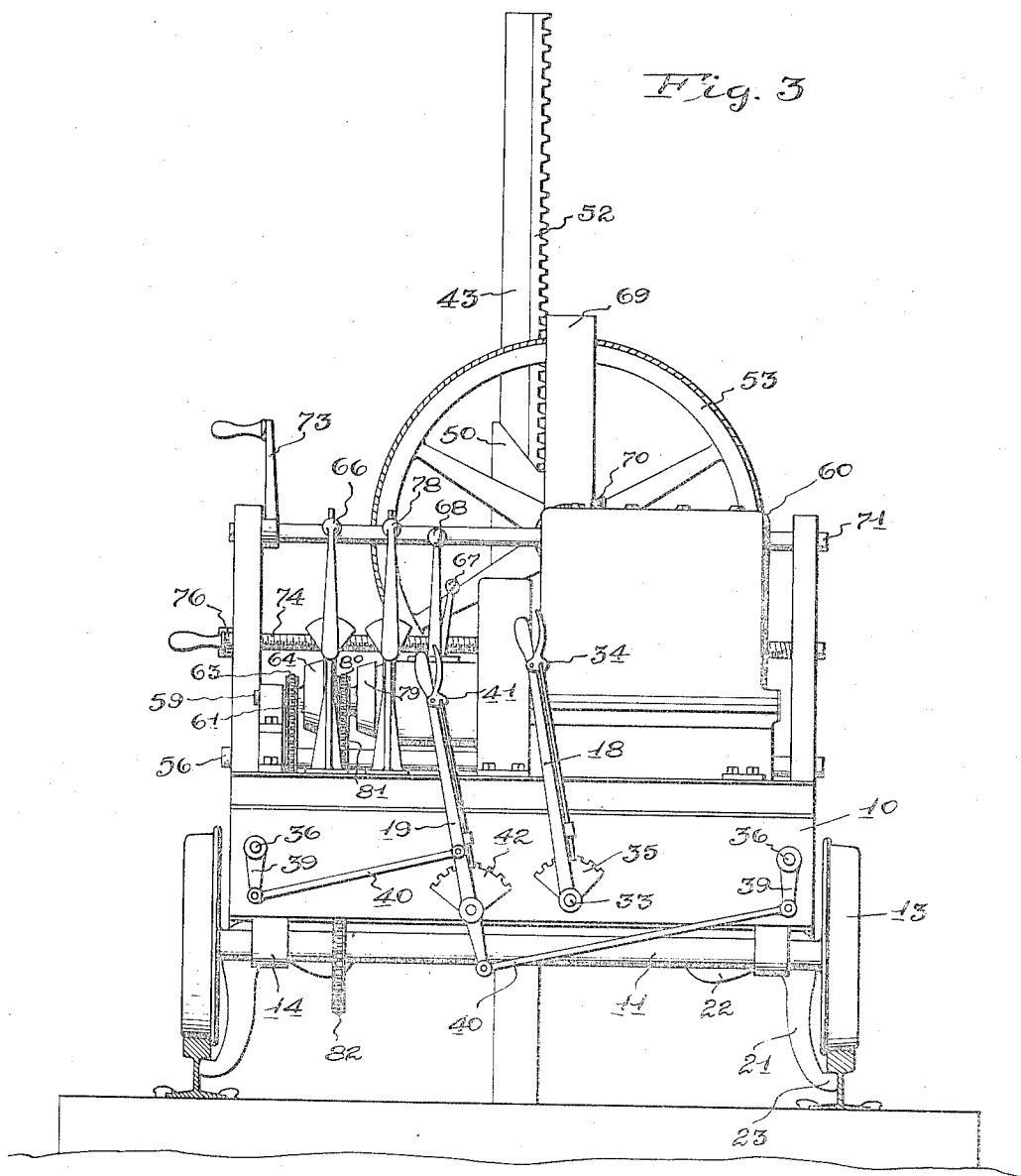
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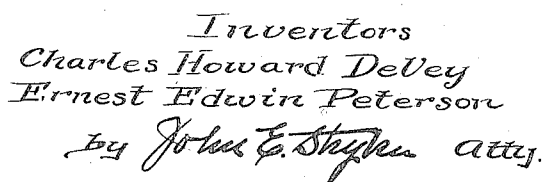
5 SHEETS—SHEET 3.



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5 SHEETS—SHEET 4

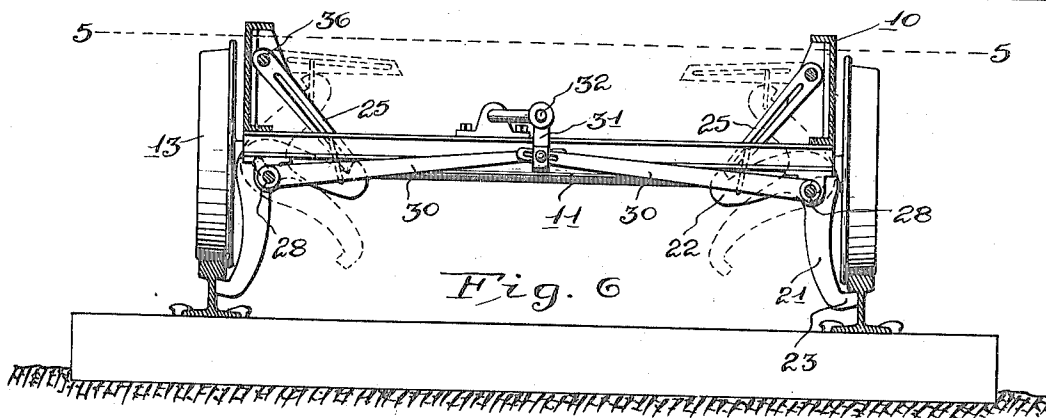
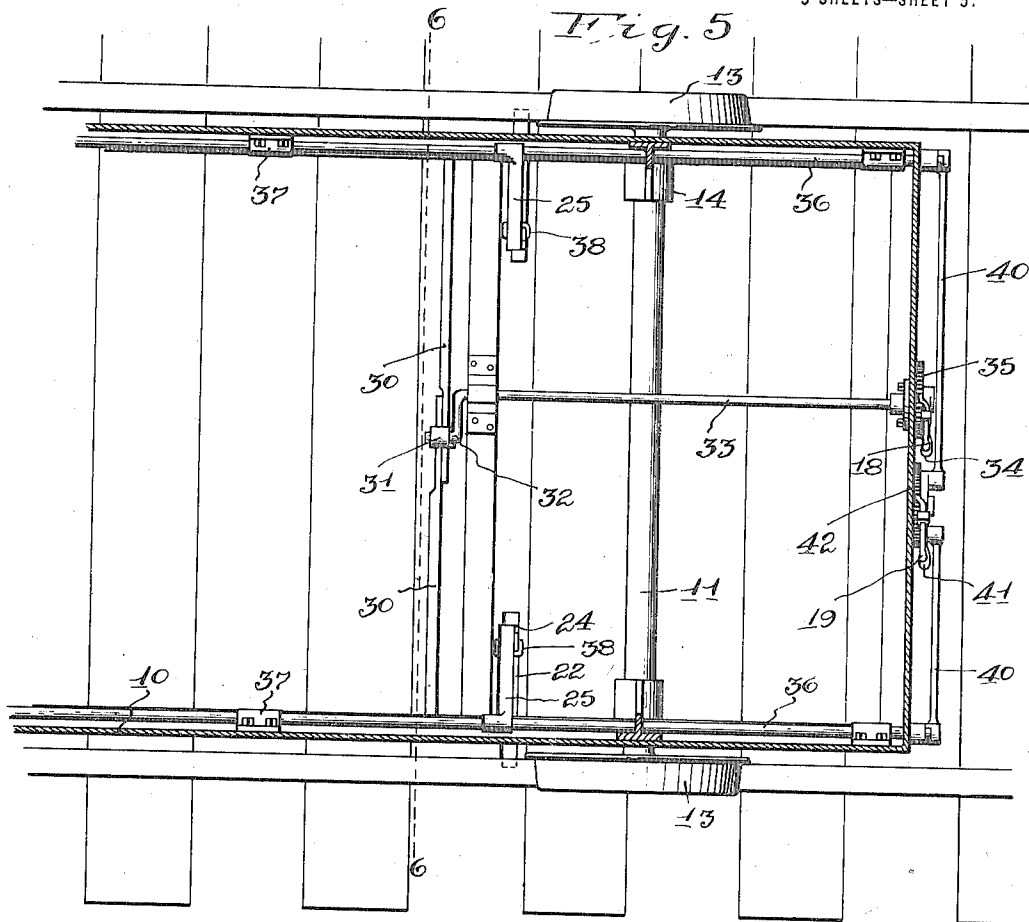


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5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

CHARLES HOWARD DE VEY AND ERNEST EDWIN PETERSON, OF BUHL, MINNESOTA.

MACHINE FOR RAISING AND THROWING RAILWAY-TRACKS.

1,264,376.

Specification of Letters Patent.

Patented Apr. 30, 1918.

Application filed January 18, 1917. Serial No. 143,069.

To all whom it may concern:

Be it known that we, CHARLES HOWARD DE VEY and ERNEST EDWIN PETERSON, citizens of the United States, residing at Buhl, in the county of St. Louis and State of Minnesota, have invented new and useful Improvements in Machines for Raising and Throwing Railway-Tracks, of which the following is a specification.

Present methods of moving railway tracks require large gangs of laborers, who with bars, jacks and other hand tools lift and shift the track as desired. This work is slow and expensive and the increasing scarcity of laborers renders track shifting a perplexing problem in railway and mining projects. The demand for quick track readjustment on the main lines of railways and in open pit mines, where the banks are rapidly broken away, suggests the necessity for mechanical means for securing the desired result.

The object of our invention is to provide a device of this character which is simple, durable, efficient and economical in operation.

More specifically, it is our object to provide a self-propelled car adapted to rest upon the track to be shifted, said car being supplied with clamps for rigidly securing the same to the rails and with a jack arranged to lift and shift said car and rails sidewise.

A further object is to provide in a device of this kind efficient and easily operated mechanism to firmly clamp the car to the rails and to release said car from the rails.

Another object is to provide in a device of this character a power driven jack having a thrust boom pivoted to swing transversely with respect to the car and adjustable from one side thereof to the other, whereby the car may be lifted and thrown sidewise in either direction.

In the drawings, Figure 1 is a side elevation of our improved device; Fig. 2 is a plan view thereof; Fig. 3 is an end elevation of the same; Fig. 4 is a sectional view taken on the line 4—4 of Fig. 1; Fig. 5 is a detail sectional view taken on the line 5—5 of Fig. 6; Fig. 6 is a detail sectional view taken on the line 6—6 of Fig. 5; and Figs. 7 and 8 are detail views in elevation showing the base of the thrust boom and illustrating the bracing rods for rigidly se-

curing the boom in upright position upon its pedestal.

Our improved machine comprises broadly, a car, clamps to rigidly secure the car to the rails upon which said car rests, a jack adjustable on the car and supplied with a pivoted thrust boom adapted to bear upon the bed of the track and raise the car with the rails, so as to shift said car and rails sidewise in either direction.

Referring to the drawings, we have used the reference numeral 10 to indicate the frame of the car which may be constructed of steel beams or other suitable structural material. This frame is mounted upon a driving axle 11 and a floating axle 12; both axles being supplied with flanged wheels 13. The connection between the frame 10 and driving axle 11 consists of bearings 14 which are secured upon the frame and revolubly receive said axle. The floating axle 12 is revolubly mounted in bearings 15 on a yoke 16; said yoke being pivoted beneath a transverse beam 10^a on the frame 10 by means of a king pin 10^b. Torsion rods 17, secured to the yoke 16 and frame 10, prevent the horizontal displacement of the axle 12 and allow vertical tilting movements thereof with respect to the frame. This floating mounting for said axle compensates for irregularities in a track and permits normal contacts of all of the wheels with the rails, without distorting the frame of the car.

The mechanism for rigidly securing the car to the rails of a track comprises four identical clamps A; one clamp being arranged near each wheel. Said clamps are simultaneously operated by means of levers 18 and 19 near the operator's platform 20 at one end of the car. Each clamp is formed with two arms 21 and 22. The arm 21 has a hook 23 adapted to engage the rail beneath the head thereof and the arm 22 is formed with a catch 24 adapted to abut against the end of a cooperating latch lever 25, as will be hereinafter described. A bearing 26 at the junction of said arms 21 and 22 is journaled upon a crank 27 of a crankshaft 28. We supply two of these crank shafts which extend longitudinally beneath the side beams of the car frame and are journaled in bearings 29 upon said frame. The ends of each crankshaft are bent to form the cranks 27 upon which said clamps A are journaled. Actuating arms 30, secured to said crankshafts 28, pass inward and overlap each

other at their ends. Said ends have slotted pivotal connections with a link 31 which is attached to a crank arm 32 on a shaft 33 upon which is mounted the hand lever 18.

5 This lever 18 is supplied with a hand latch 34 and a notched segment 35 therefor, so that said lever may be set in various positions, as hereinafter indicated. The latch levers 25, above mentioned, are secured in pairs on

10 shafts 36, revoluble in bearings 37 on the car frame. Each lever 25 is slotted longitudinally and slidably receives a link 38 which is attached to the arm 22 of one of the clamps A. These levers 25 are raised and lowered

15 by the oscillation of the shafts 36 and by reason of the link connections with the arms 22 of the clamps A cause the latter to be turned, whereby the hooks 23 on the arms 21 of said clamps may be shifted to operative

20 positions against the webs of the rails (solid lines, Fig. 6), or removed therefrom (dotted lines, Fig. 6). The levers 25 are so proportioned that the ends thereof engage the catches 24 on the clamps when the hooks

25 23 on said clamps lie beneath the heads of the rails. The shafts 36 upon which said levers 25 are mounted are connected through arms 39 and rods 40 with the hand lever 19

30 at the end of the frame; said lever being supplied with a hand latch 41 and cooperating notched segment 42 to secure the lever in various positions. In clamping our car

35 to the rails of a track, the hand lever 19 is manipulated to swing the clamps A into position with the hooks 23 against the webs of the rails. The hand lever 18 is then shifted to turn the crankshafts 28 and raise the

40 cranks 27 upon which said clamps are mounted, thereby drawing the hooks 23 snugly against the lower sides of the rail heads. It will be noted in this connection that the latch levers 25 secure the catches

45 24 on the end of the arms 22 when the crankshafts 28 are turned to raise the hooks 23 and that the cranks 27 are arranged on said

50 crankshafts 28 so that they rest on dead center when the hooks 23 are drawn against the rails, thereby relieving the lever 18 and connections thereto from strains. To release the

55 car from the rails, the lever 18 is first reversed to lower the hooks 23 and the lever 19 is then reversed to swing the clamps and carry the hooks 23 away from the rails to safe positions above the ties of the track.

60 The jack on the car comprises a transversely adjustable carriage B, an oscillatory thrust boom 43 mounted on said carriage, power operated mechanism for shifting the boom longitudinally and hand operated

65 mechanism for tilting said thrust boom and adjusting said carriage. The carriage includes a bed 44 which is slidable upon the frame in retaining guides 45. This bed is supplied with a pair of standards 46 and 47

70 48 to receive the thrust boom 43. A shaft 49 is revolubly mounted in said standards, and upon said shaft is a loosely pivoted sleeve 50, in which the boom 43 is slidably mounted, a fixed spur gear 51 in mesh with

75 a rack 52 on said boom, a fixed worm wheel 53 and a loosely mounted bevel gear 54. The worm wheel 53 meshes with a worm gear 55 feathered on a shaft 56 in bearing supports 57 upon the car frame. Said worm gear 55

80 is secured between bearings 58 on the standard 47 of the carriage and is thereby held in mesh with the worm wheel 53 when the carriage is shifted. This shaft 56 is connected with the power shaft 59 of an engine 80

85 60 by means of a sprocket chain 61, which passes over a sprocket wheel 62 on said shaft and over a sprocket wheel 63 on a driven clutch member 64 on said power shaft. A driving clutch member 65, actuated by a

90 hand lever 66, co-acts with said driven clutch member 64 and connects the engine with the thrust boom 43 through the power transmitting mechanism described. The power shaft

95 59 is supplied with an ordinary clutch and reverse gear mechanism (not shown); the former being actuated by means of a suitable hand lever 67 and the latter by a hand lever 68. Thus it will be seen that the thrust boom 43 may be moved by power longitudinally in either direction and at variable

100 speeds with respect to the speed of the engine. A strap 69, arched over the worm wheel 53, rigidly connects the sleeve 50 with the

105 loosely mounted bevel gear 54 on the shaft 49. This gear coöperates with a bevel gear 70, feathered on a shaft 71, which is revolubly mounted in the bearing supports 57. This bevel gear 70 is secured in mesh with

110 the bevel gear 54 by means of an arm 72, which is revolubly secured to said gear at one end and rigidly secured at its other end to the standard 47 of the carriage. A handle 73 on one end of the shaft 71 is furnished

115 to oscillate said shaft and swing the thrust boom 43, whereby the desired angular position of said boom is obtained. The mechanism for adjusting the carriage B transversely on the car frame and securing

120 the same in the various positions thereon comprises a threaded shaft 74 revolubly mounted at its ends in the bearing supports 57 and a threaded follower 75 on the standard 47 of the carriage in mesh with said

125 threaded shaft. A crank handle 76 on said shaft provides means for turning the same whereby said carriage may be shifted from one side of the car frame to the other. Our machine is propelled in either direction and at variable speeds by the engine 60. A driving clutch member 77, operated by the hand lever 78, coöperates with a driven clutch member 79 on the power shaft 59. Said clutch member 79 is supplied with a

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sprocket wheel 80, and a sprocket chain 81, passing over said sprocket wheel, also passes over a sprocket wheel 82 on the axle 11 and drives said axle.

5 The lower end of the thrust boom 43 is supported by a pedestal 83 which forms a bearing for said boom. The base of the boom is rounded at 84 to fit in a socket 85 in said pedestal and is pivoted therein by 10 a pin 86 passing through the boom and also through ears 87 on the pedestal. When the machine is employed merely to raise a track, the thrust boom 43 remains in upright position, and to assist in holding it in such position, we provide a rigid connection between 15 the pedestal and boom to prevent any tendency of the latter to tilt. For this purpose, brace rods 88 are hinged at one end upon pivots 89 on opposite sides of the boom 43 and are formed at the other end with eyes 20 90 thereon adapted to be detachably connected by means of pins 91 with eyes 92 on said pedestal, or with eyes 93 on said boom. When the former connection is made, the 25 pedestal is rigidly secured by said rods to the boom and when the latter connection is made, said boom is free to swing and the rods are held in safe inoperative positions.

In use, the machine is placed upon a track 30 to be moved and is propelled to the desired point; it being understood that the base of the boom with its pedestal 83 are elevated so as to clear the ground. The lever 19 is thrown to carry the hooks 23 against the 35 webs of the rails when the lever 18 is manipulated to draw said hooks against the lower sides of the rail heads, thereby firmly clamping the car upon the rails. If the purpose is merely to raise the rails to correct 40 the grade, the carriage B is moved to the center of the car by turning the crank handle 76. The brace rods 88 are secured to the pedestal 83 on the thrust boom (Fig. 7) and the boom is swung to upright position by 45 manipulating the handle 73. The clutch members 64 and 65 are then engaged by the manipulation of the hand lever 66, thus connecting the power shaft 59 with the thrust boom 43 through the chain 61, shaft 56, 50 worm gear 55, worm wheel 53, shaft 49 and spur gear 51, whereupon the pedestal of said boom is thrust against the roadbed (between the ties) and the machine and track are lifted. It will be noted that the intermeshing worm wheel 53 and gear 55 provide an 55 efficient lock which prevents the car from falling when the clutch members 64 and 65 are disengaged to discontinue the lifting of the car. To raise the thrust boom, the rotation of the power shaft 59 is first reversed 60 by throwing the levers 67 and 68, when the clutch members 64 and 65 are reengaged to again connect said boom with said power shaft.

65 When it is desired to throw the track side-

wise, the brace rods 88 are disconnected from the pedestal 83 and secured in the eyes 93 on the boom. The carriage B is shifted to one side of the car, in the direction in which the track is to be thrown, and the boom 43 is 70 operatively connected with the engine and thereby lowered, while it is swung to an inclined position by turning the handle 73 so that the descending pedestal 83 impinges against the roadbed, substantially midway 75 between the rails. The car and track attached thereto are thereupon shifted side-wise.

It will be seen that by successive operations of our machine as above described, long 80 stretches of track, including both rails and ties, may be readily raised and thrown side-wise as desired.

Having described our invention, what we claim as new and desire to protect by Let- 85 ters Patent, is:

1. In a machine of the character described, a railway car, means carried upon said car and adapted to clamp the same to the rails 90 upon which it rests, a thrust boom pivotally and slidably mounted on said car, a pedestal pivotally attached to the base of the boom and mechanism to move said boom longitudinally.

2. In a machine of the character described, 95 a railway car, means carried upon said car and adapted to clamp the same to the rails upon which it rests, a thrust boom pivotally and slidably mounted on said car, a pedestal pivotally attached to the boom, 100 bracing means to rigidly secure said pedestal with respect to said boom, and mechanism to move the boom longitudinally.

3. In a machine of the character described, a car, clamping means carried thereon 105 adapted to firmly secure said car to the rails of the track upon which it rests, a reciprocating thrust boom mounted on said car, a source of power and a power transmitting mechanism between said source of power 110 and said thrust boom, said mechanism including a worm gear and worm wheel, whereby said boom is locked against longitudinal reciprocation by other forces than said source of power. 115

4. In a machine of the character described, a car, clamping means carried thereon adapted to firmly secure said car to the track upon which it rests, a thrust boom 120 having a longitudinally slidable mounting on said car, a source of power, and power transmitting mechanism to drive the boom.

5. In a machine of the class described, a car, hooks on the car adapted to engage the rails upon which said car rests, mechanism to swing said hooks laterally and to 125 shift the same vertically to clamp the car upon said rails and a lifting jack on said car adapted to bear against the ground.

6. In a machine of the character described, 130

a railway car, means carried upon said car and adapted to clamp the same to the rails upon which it rests, a carriage adjustable transversely on said car, a thrust boom 5 pivotally and slidably mounted on said carriage and mechanism to move said boom longitudinally.

7. In a machine of the character described, a railway car, means carried upon said car 10 and adapted to clamp the same to the rails upon which it rests, a carriage slidable transversely on said car, means for adjusting said carriage and securing the same in the various positions of its adjustment, a thrust 15 boom pivotally and slidably mounted on said carriage and mechanism to move said boom longitudinally.

8. In a machine of the character described, a railway car, means carried upon said car 20 and adapted to clamp the same to the rails upon which it rests, a carriage adjustable transversely on said car, a thrust boom pivotally and slidably mounted on said carriage, mechanism to move said boom longitudinally and means for swinging the boom 25 to secure the desired angular relation thereof with respect to the car frame.

9. In a machine of the character described, a railway car, means carried upon said car 30 and adapted to clamp the same to the rails upon which it rests, a carriage adjustable transversely on said car, a thrust boom pivotally and slidably mounted on said carriage, a pedestal pivotally attached to said 35 boom, and mechanism to move said boom longitudinally.

10. In a machine of the character described, a railway car, means carried upon said car and adapted to clamp the same to 40 the rails upon which it rests, a carriage adjustable transversely on said car, a thrust boom pivotally and slidably mounted on said carriage, a pedestal pivotally attached to the boom, bracing means to rigidly secure said pedestal with respect to said boom, 45 and mechanism to move the boom longitudinally.

11. In a machine of the class described, a car, means carried upon said car and 50 adapted to clamp the same to the rails upon

which it rests, a carriage movable transversely on said car, a thrust boom pivotally mounted on said carriage, a pedestal pivotally attached to the base of the boom and adapted to rest upon the ground between 51 the rails, and means to rigidly secure said pedestal to the boom and to permit the boom to move radially upon the pedestal.

12. In a machine of the class described, a car, crankshafts mounted thereon, bell 60 cranks journaled on the cranks of said shafts, one arm of each bell crank having a hook adapted to engage a rail upon which said car rests, and the other arm being formed with a catch and supplied with a 65 link, latch levers on the car having slidable pivotal connections with said links, actuating mechanism for the latch levers, said levers being adapted to swing the bell cranks and engage the catches thereon, whereby 70 the hooks are held against the web of the rails, actuating mechanism for the crankshafts adapted to lift the bell cranks and draw the hooks upward against the head of the rails, and a lifting jack on said car 75 adapted to bear against the ground.

13. In a machine of the class described, a car, shafts revolubly mounted thereon, cranks on said shafts, bell cranks journaled on said cranks, one arm of each bell crank 80 having a hook adapted to engage a rail upon which said car rests, and the other arm being formed with a catch and supplied with a link, latch levers on the car having slidable 85 pivotal connections with said links, actuating mechanism for the latch levers, said levers being adapted to swing the bell cranks so that the hooks are retained against the web of the rails, actuating mechanism for said shafts adapted to lift the bell 90 cranks and draw the hooks upward against the head of the rails, in which position the cranks on said shafts are on dead center, and a lifting jack on said car adapted to bear against the ground. 95

Whereof, we have hereunto subscribed our names to this specification.

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ERNEST EDWIN PETERSON.