Nov. 10, 1931. T. J. LAVAN 1,831,670

TRACK JACK

Filed Feb. 4, 1929 2 Sheets-Sheet 1

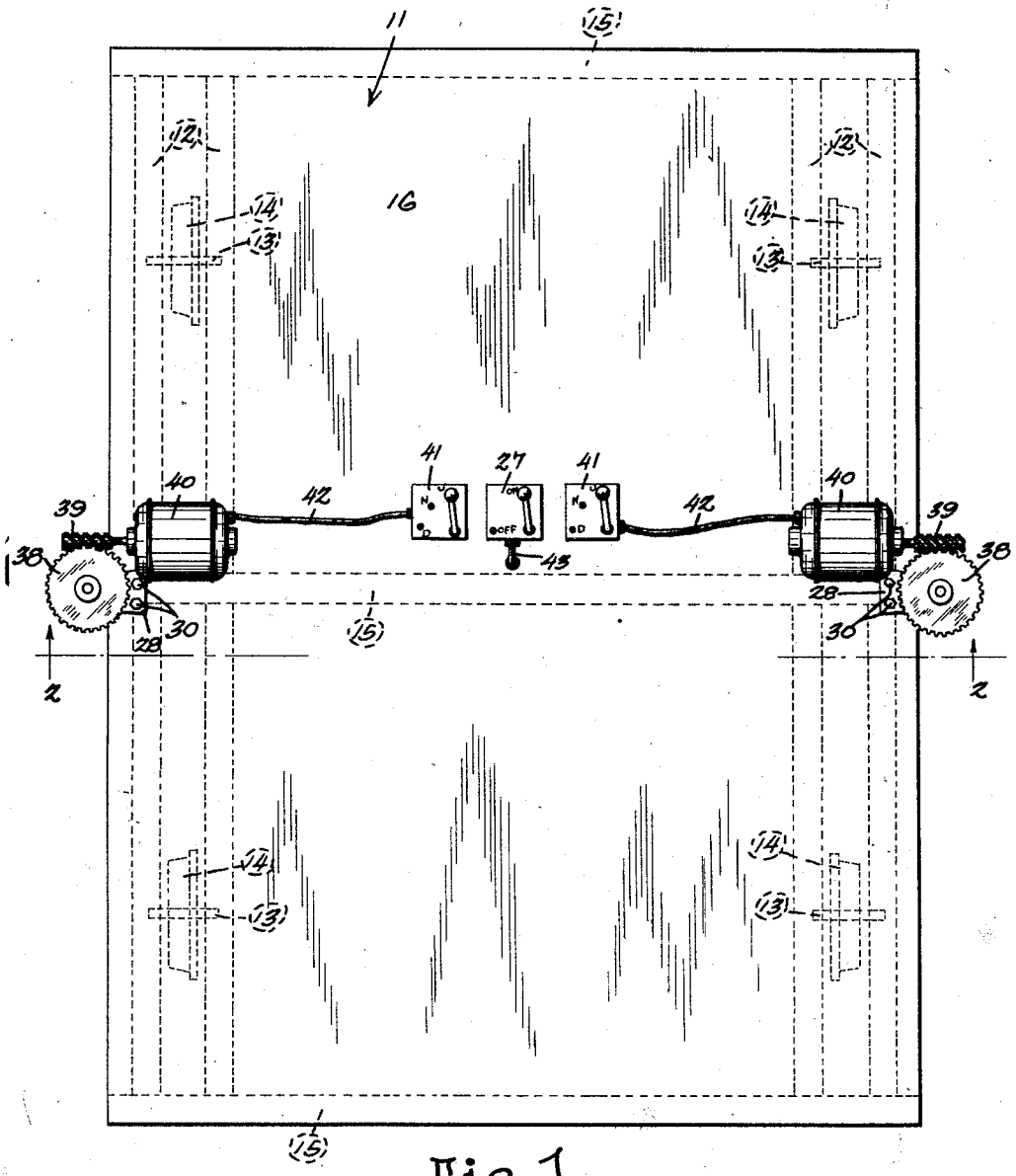

Fig. 1

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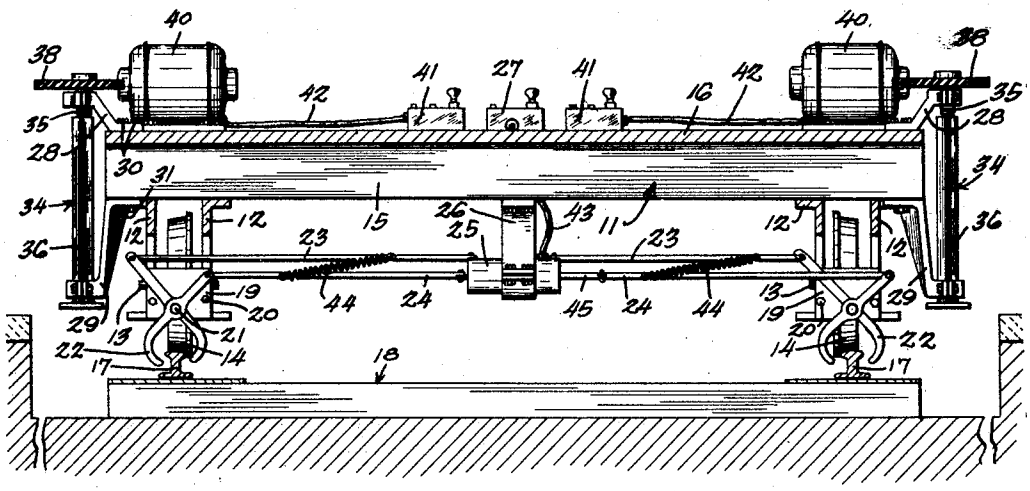

Fig. 2

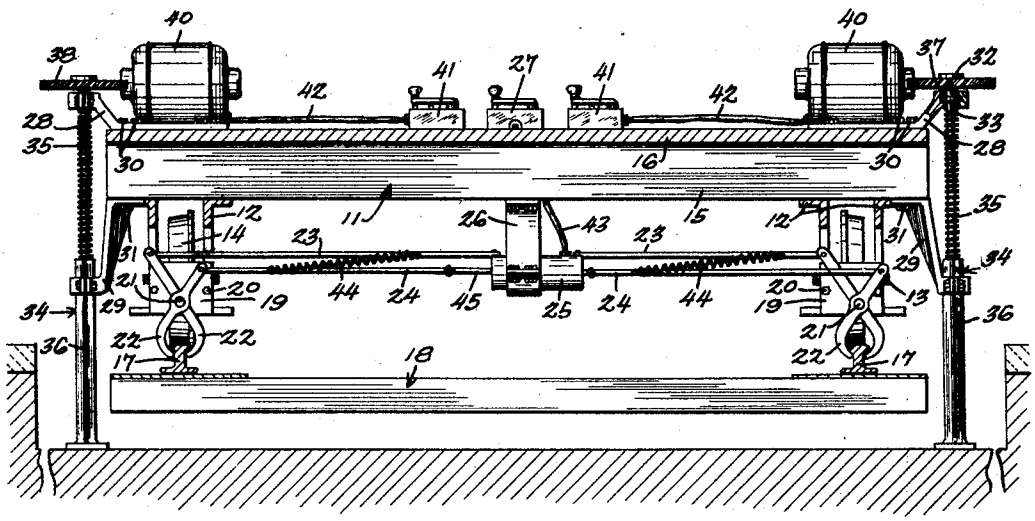

Fig. 3

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Patented Nov. 10, 1931 1,831,670

UNITED STATES PATENT OFFICE

THOMAS J. LAVAN, OF CLEVELAND, OHIO

TRACK JACK

Application filed February 4, 1929. Serial No. 337,319.

My invention relates to track jacks, and more particularly to track jacks for raising railroad tracks and the like, and the principal object of my invention is to provide a new and improved device of this type. In the drawings accompanying this specification and forming a part of this application I have shown, for purposes of illustration, one form which my invention may assume, and in these drawings:

Figure 1 is a top plan view of this illustrative embodiment of my invention;

Figure 2 is a section taken on the line 2—2 of Figure 1 showing my invention mounted on a track, while

Figure 3 is a section similar to Figure 2 showing my invention suspending a track.

In laying railroad tracks and the like it is customary to first prepare a trench into which the ties are placed, then to secure the rails to the ties, then to raise the completed track to its desired height, and finally to work the ballast under the ties. My invention provides means for raising the track.

The embodiment of my invention herein disclosed comprises a car 11 having a pair of longitudinal rails 12 extending the entire length of each side of the car 11, while four car wheels 14 mounted on axles 13 journaled in the rails 12 of the car 11 ride on rails 17 of the track 18. Three cross beams 15 joining the two pairs of longitudinal rails 12 are secured thereto in any suitable manner while a platform 16 fixedly mounted on the three cross beams 15 provides a convenient support for the operating mechanism carried by the car 11.

Centrally the two pairs of longitudinal rails 12 are cut away to form an aperture extending from the lower edges of the rails 12 to adjacent the top edges thereof, and support plates 19 are secured to the cut away ends of the longitudinal rails 12 by bolts 20. Two shafts 21 mounted in the support plates 19 support two pairs of clamps 22, while two links 23 connect one arm of each of the pairs of clamps 22 to a solenoid 25; the other arms of the clamps 22 are joined by a link 24 connected to the core 45 of the solenoid 25, while a bracket 26 depending from the central cross beam 15 supports the solenoid 25.

For retracting the links 23 and 24 I provide two coil springs 44 each having one end secured to a link 23 and the other end secured to a link 24.

Secured to the outer edges of the top of the platform 16 by bolts 30 are two brackets 28 which extend outwardly and upwardly therefrom and are provided at their extending ends with vertical apertures 32 having annular recesses 33, while secured to the lower outer edge of the central cross beams 15 by bolts 31 are two brackets 29 which extend outwardly and downwardly therefrom and are provided at their extending ends with vertical apertures positioned directly below the apertures 32 in the brackets 28.

Two screw-jacks 34 providing means for raising the car 11 and thus the track 18 have screw portions 35 screw-threadedly received in bases 36 so constructed and positioned that the bases 36 may reciprocate up and down in the vertical apertures in the brackets 29, while two collars 37 positioned near the tops of the screw portions 35 of the screw-jacks 34 are fitted into the annular recesses 33 in the brackets 28 so that they may rotate therein.

Two worm gears 38, suitably mounted horizontally at the top of the screw portions 35 of the two screw-jacks 34, mesh with the teeth of two worms 39 mounted on the extending ends of the shafts of two electric motors 40 which furnish the means for actuating the screw-jacks 34. The two motors 40 are suitably secured to the top of the platform 16, while suitable conductors 42 connect the two motors 40 to two controllers 41 suitably mounted on the top of the platform 16. A controller 27 is suitably mounted on the top of the platform between the controllers 41 while suitable conductors 43 connect the controller 27 to the solenoid 25.

In operation the car 11 carrying the track jack is run along the rails 17 of the track 18 to the place where the track 18 is to be raised. Then the controller 27 is actuated to energize the solenoid 25, whereupon the solenoid 25 will attract the core 45 to move horizontally

both the solenoid 25 and the core 45 thus moving both the links 23 and the links 24 to swing together the arms of the clamp 22 to cause the clamps 22 to grip both rails 17.

The car 11 supporting the rails 17 then is raised by means of the screw jacks 34 positioned along the sides of the rails 12. The screw jacks 34 are operated under control of the controllers 41 by the motors 40, the degree of operation of each of the motors 40 depending upon the distance if any through which it is desired to raise the corresponding rail 17. The worms 39 on the shafts of the motors 40 meshing with the worm gears 38 on the screw portions 35 of the screw jacks 34 form driving units, so that the operation of the motors 40 turns the screw portions 35 of the screw jacks 34 and causes the bases 36 of the screw jacks 34 to thereby be forced downwardly along the sides of the track 18. After the bases 36 of the screw jacks 34 have touched the ground additional actuation of the screw jacks 34 causes the screw jacks 34 to lift the car 11, and the track 18 depending therefrom, the distance of such additional operation of the screw jacks 34. As each side of the car 11 is raised to the proper height the corresponding controller 41 is actuated to cut off the current to that motor 41, whereupon the screw jacks 34 hold the car 11 carrying the track 18 in a suspended position.

While the track 18 is thus suspended the track 18 is blocked up into position wherein ballast can be worked under the track in any suitable manner, then the bases 36 of the screw jacks 34 are raised by turning the controllers 41 to reverse the flow of the current through the motors 40 and thus reverse the action of the screw jacks 34. The controller 27 is then actuated to cut off the current to the solenoid 25 whereupon the coil springs 44 will restore the solenoid 25 and core 45 to their original position thus releasing the clamps 22 from the rails 17. The car 11 may then be moved along the track 18 to the next scene of operation.

Power for the motors and solenoid may be derived from any suitable source; in using the car on an electric railway, from the trolley or the third rail of the railway.

It will be obvious to one skilled in the art that my invention provides a simple, durable, and efficient track-jack, mounted on the car operable along the track to be raised, and actuated by a motor. A very material advantage of my invention over the ordinary type of track-jack is that only a single operator is required to manipulate it, also that the operator can raise one rail of the track, or simultaneously can raise both rails of the track, all by the simple operation of moving certain controllers. Another material advantage of my invention is that it forms a compact unit mounted on a car so that it may be conveniently and quickly moved from one place to another, while still other advantages are that it more quickly raises tracks and possesses much more lifting power than hand operated track-jacks.

From the above description it will be obvious to those skilled in the art that my invention accomplishes at least the principal object of my invention, and that my invention provides a new and improved track-jack. At the same time those skilled in the art will appreciate that the embodiment of my invention herein shown and described may be used for other purposes than those specifically pointed out or suggested, and embodies advantages and uses other than those specifically pointed out or suggested herein, and also that this particular embodiment of my invention herein disclosed may be variously changed and modified without departing from the spirit of my invention or sacrificing the advantages thereof, wherefore it will be understood that the disclosure herein is illustrative only, and that my invention is not limited thereto.

I claim:

1. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track, said means including a pair of clamps for gripping said rail, a solenoid, and links connecting said solenoid and said clamps whereby said solenoid is operable to cause said clamps to grip said rail when said solenoid is in one position and to release said rail when said solenoid is in another position; means mounted on said car for raising said car and thus said track; and separate operating means for actuating said car-raising means.

2. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track, said means including a pair of clamps for gripping said rail, a solenoid, and links connecting said solenoid and said clamps whereby said solenoid is operable to cause said clamps to grip said rail when said solenoid is in one position and to release said rail when said solenoid is in another position; and means on said car for raising said car and thus said track, including a motor mounted on said car, a screw-jack, and gearing operatively connecting said motor to said screw-jack whereby said motor is operable thus to raise said car and said track.

3. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping both rails of said track, said means including two sets of clamps for gripping the two rails, a solenoid, and links connecting said solenoid and said clamps whereby said solenoid is operable to cause said clamps to grip said rails when solenoid is in one position and to release said rails when said solenoid is in another posi-

tion; and two means on said car for raising said car and thus both rails of said track, each including a motor mounted on said car, a screw-jack, and gearing operatively connecting said motor to said screw-jack whereby said motor is operable thus to raise the corresponding side of said car and the corresponding rail of said track.

4. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping the rails of said track, said means including a pair of clamps for gripping each rail, a solenoid, and links connecting said solenoid and both pairs of said clamps, whereby said solenoid is operable to cause said pairs of clamps to grip said rails when said solenoid is in one position, and to release said rails when said solenoid is in another position; means mounted on said car for raising said car and thus said tracks; and operating means for actuating said car-raising means.

5. A track jack, as for raising tracks, comprising: a car operable along a track; a pair of clamps on said car for releasably gripping a rail of said track, said clamps having scissors-like jaws and actuating portions; links oppositely movable lengthwise and connected to said actuating portions for engaging and releasing said clamps; means mounted on said car for raising said car and thus said track; and separate operating means for actuating said links and said car-raising means.

6. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track, said means including a pair of clamps having scissors-like actuating portions, and jaws for gripping said rail, a solenoid, and oppositely movable links connecting said solenoid and the actuating portions of said clamps whereby said solenoid is operable to cause the jaws of said clamps to grip said rail when said solenoid is in one position and to release said rail when said solenoid is in another position; means mounted on said car for raising said car and thus said track; and operating means for actuating said car-raising means.

7. A track jack, as for raising tracks, comprising: a car operable along a track; a pair of clamps on each side of said car for releasably gripping one of the rails of said track, each pair of clamps having scissors-like jaws and actuating portions; links oppositely movable lengthwise and connected to the actuating portions of each pair of clamps for engaging and releasing said clamps; means mounted on said car for raising said car and thus said track; and separate operating means for actuating said links and said car-raising means.

8. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping the rails of said track, said means including a pair of clamps at each side of said car, having scissors-like actuating portions and jaws, a solenoid, and oppositely movable links connecting said solenoid and said clamps at both sides of said car, whereby said solenoid is operable to cause said clamps to grip said rails when said solenoid is in one position and to release said rails when said solenoid is in another position; means mounted on said car for raising said car and thus said track; and separate operating means for actuating said car-raising means.

9. A track jack, as for raising tracks, comprising: means for releasably gripping a rail of said track, said means including a pair of clamping members for gripping said rail, a solenoid, and links connecting said solenoid and said clamping members whereby said solenoid is operable to cause said clamps to grip said rail when said solenoid is in one position and to release said rail when said solenoid is in another position.

10. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track; means for raising said car and thus said track, including: a motor mounted on said car, a screw-jack, and worm gearing directly connecting said motor to said screw-jack; and separate operating means for actuating said gripping means and said car-raising means.

11. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track; screw-jack means mounted on said car for raising said car and thus said track, said screw-jack means comprising spaced bracket members secured to said car, one of said bracket members carrying a screw confined to rotatable movement, and the other bracket member slidably carrying a base member having threaded engagement with said screw; and operating means for actuating said rail-gripping means and said screw-jack.

12. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track; screw-jack means mounted on said car for raising said car and thus said track, said screw-jack means comprising spaced bracket members secured to said car, one of said bracket members carrying a screw confined to rotatable movement, and the other bracket member slidably carrying a base member having threaded engagement with said screw; operating means for actuating said screw-jack comprising a motor mounted on said car and connected to said screw-jack by gearing; and means for operating said rail gripping means.

13. A track jack, as for raising tracks, comprising: a car operable along a track;

means on said car for releasably gripping a rail of said track; means on said car for raising said car and thus said track, including a motor mounted at each side of said car, a screw-jack mounted at each side of said car, and worm gearing directly connecting each of said motors to one of said screw-jacks.

14. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track; means on said car for raising said car and thus said track, including a motor mounted at each side of said car, a screw-jack mounted at each side of said car, and worm gearing directly connecting each of said motors to one of said screw-jacks; control means, whereby said motors are selectively operable to raise one side or the other of said car and said track or both sides in unison; and operating means for actuating said rail-gripping means.

15. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track; means on said car for raising said car and thus said track, including an electric motor mounted at each side of said car, a screw-jack mounted at each side of said car, and worm gearing directly connecting each of said motors to one of said screw-jacks, each of said motors having a separate controller by which the motors may be energized either separately or in unison.

16. A track jack, as for raising tracks, comprising: a car operable along a track; means on said car for releasably gripping a rail of said track; means on said car for raising said car and thus said track, including an electric motor mounted at each side of said car, a screw-jack mounted at each side of said car, and gearing connecting each of said motors to one of said screw-jacks; means comprising a separate controller for said motor, whereby said motors are selectively operable to raise one side or the other of said car and said track or both sides in unison; and separate operating means for actuating said rail-gripping means.

In testimony whereof I hereunto affix my signature.

THOMAS J. LAVAN.