Nov. 25, 1958 N. J. VITO ET AL 2,861,521

RAILWAY TRACK ALIGNING DEVICE

Filed Oct. 29, 1953 3 Sheets-Sheet 1

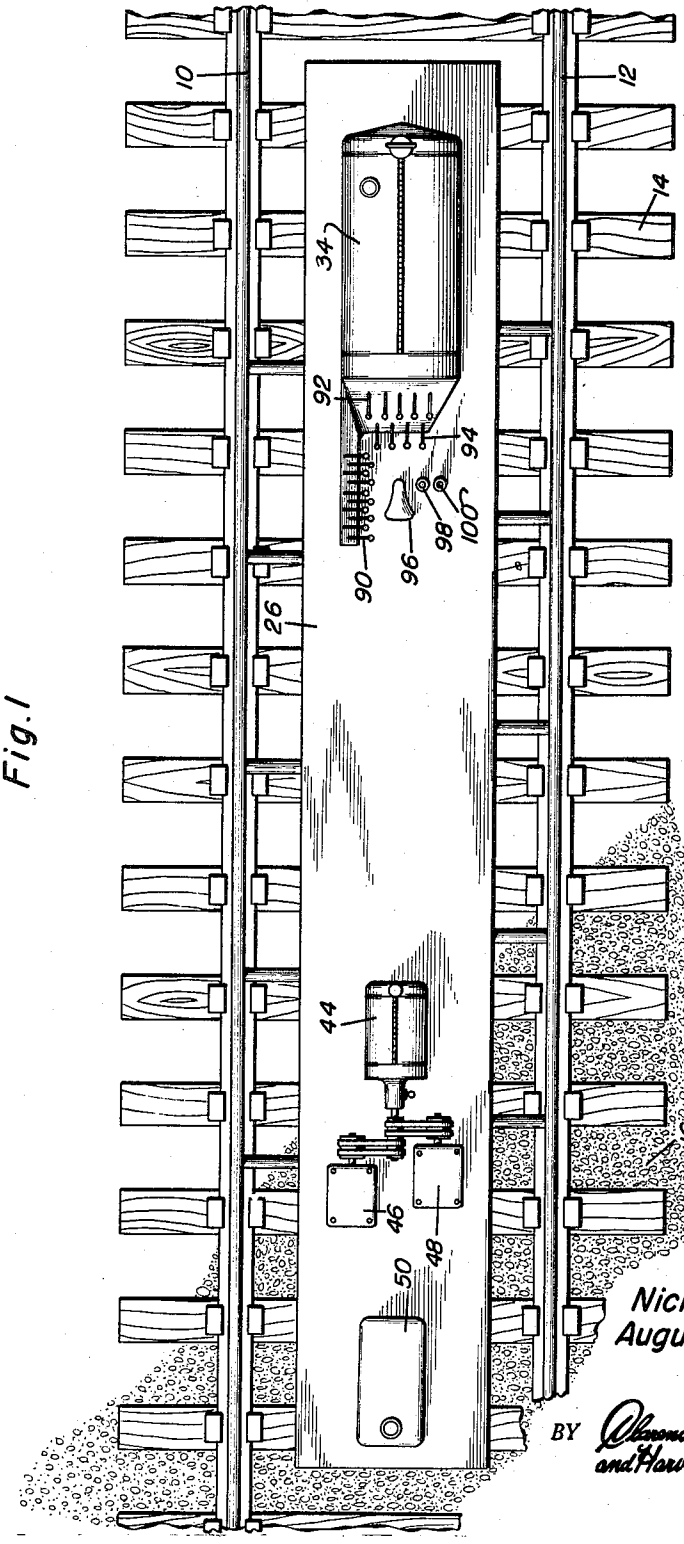


Fig. 1

Nicholas J. Vito
August J. Galasso
INVENTORS.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Nov. 25, 1958 N. J. VITO ET AL 2,861,521

RAILWAY TRACK ALIGNING DEVICE

Filed Oct. 29, 1953 3 Sheets-Sheet 2

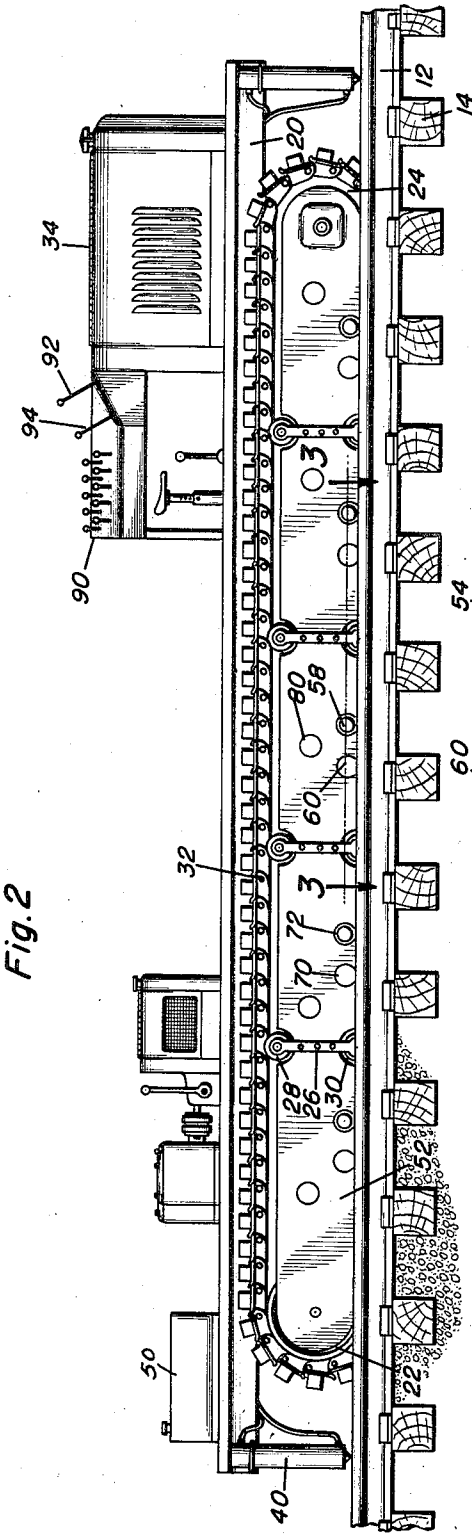


Fig. 2

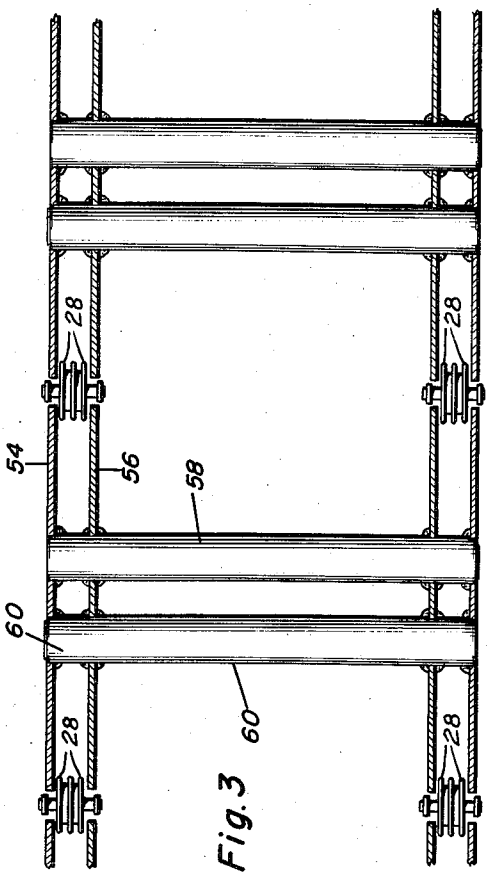


Fig. 3

Nicholas J. Vito
August J. Galasso
INVENTORS.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

Nov. 25, 1958 N. J. VITO ET AL 2,861,521

RAILWAY TRACK ALIGNING DEVICE

Filed Oct. 29, 1953 3 Sheets-Sheet 3

Fig. 4

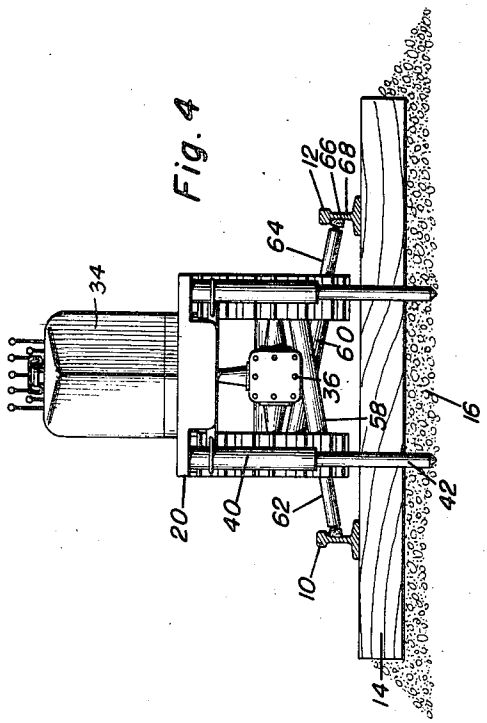


Fig. 5

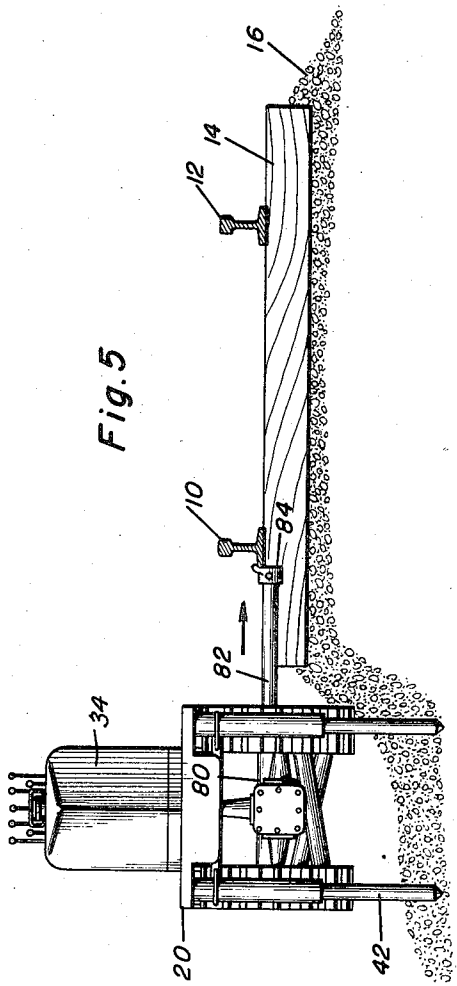
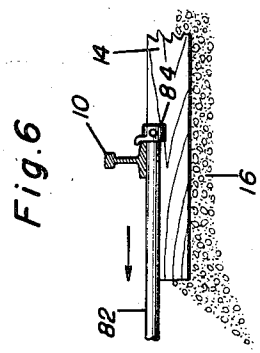


Fig. 6



Nicholas J. Vito
August J. Galasso
INVENTORS.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

United States Patent Office 2,861,521
Patented Nov. 25, 1958

2,861,521

RAILWAY TRACK ALIGNING DEVICE

Nicholas J. Vito, Buffalo, and August J. Galasso, Lancaster, N. Y.

Application October 29, 1953, Serial No. 388,938

5 Claims. (Cl. 104—8)

This invention relates to a track liner and particularly to a self propelled vehicle for operating either on track or off track for aligning the rails of a railroad track; without obstruction to the man aligning the track either with or without an instrument and to give a nice even ride on the rails.

In the operation of railways, it is customary to provide a pair of rails and mount the rails on spaced apart cross-ties which are in turn cushioned in ballast to provide a firm even footing for the rails. In order to have the track in such condition that a smooth even ride can be obtained in the passage of railway trains thereover it is necessary that the rails be in a smooth even plane horizontally and that the rails also be aligned longitudinally so that there will be neither up nor down nor sidewise sways to coaches, cars or other vehicles traveling thereover.

Heretofore it has been customary for the track repair crews or section men to raise the tracks with track jacks under each rail. After which the defective ties are replaced and ballast tamped under the ties to maintain them in the desired elevated position. This operation disturbes the longitudinal alignment as well as lateral alignment of the track.

In order for the tracks to be in alignment to give a proper ride thereon, the rails not only must be lifted to the proper level but must be aligned longitudinally. Heretofore this has also been done by a crowbar-like arrangement with various section hands being on the bar so that the foreman or other person in charge of the group may sight along the rail and have it pushed to proper alignment.

The present invention provides a machine operable by one man to make the aligning operation heretofore accomplished by a crew of 12 to 16 persons.

The construction according to the present invention comprises an elongated vehicular frame having supporting wheels mounted on the frame and elongated endless tracks entrained over the wheels and support rollers mounted along the track so that the device operates to lay the endless track and run thereon. The device is preferably of such size that it can be conveniently operated on the railway between the rails and so proportioned that, if desired, it may be moved laterally off the track by simply steering the device as is usual in caterpiller-type treads. Fluid-type jacks are mounted at each corner of the frame and the jack members may be placed into the tie crib and fluid under pressure introduced into the jacks to lift the endless tracks off the ties or other portion of the road bed so that the rails may be aligned without interference by the weight of the machine. Hydraulic rams are mounted horizontally or substantially horizontally in the machine and extend transversely therefrom and have end members adapted to engage the web of a rail and each of the rams is individually controlled so that the rail may be pushed at any desired amount so that the aligner can readily determine the amount of

sidewise disposition to either the right or the left as may be desired.

The device may also be used off the track, that is with the device mounted along side of the tracks so that the trains or other vehicles on the railway may pass by without disturbing the aligner in which case a ram will be provided with a push-pull hand so that the track may be either pushed or pulled as is necessary to get the proper alignment.

Accordingly, an object of the invention is to provide a track aligning machine.

A further object of the invention is to provide a track aligning machine which may be operated either on or off track.

A still further object of the invention is to provide a track aligner having rams for controlling the sidewise displacement of the rails.

Other objects and many of the advantages of the present invention will be apparent from the following detailed description taken in conjunction with the accompanying drawing in which:

Figure 1 is a top plan view of the track liner in position "on track";

Figure 2 is a side elevation of the track liner in propelling position "on track";

Figure 3 is a horizontal section taken substantially on the plane indicated by the section line 3—3 of Figure 2 and showing the position of a pair of positioning rams;

Figure 4 is an end elevation of the track liner in operating position "on track";

Figure 5 is an end elevation of the track liner in operating position "off track"; and,

Figure 6 is a detail showing the push-pull hand in pulling position.

In the exemplary embodiment according to the invention, a pair of railroad rails are mounted in rigidly spaced position by a plurality of spaced apart cross-ties 14. The cross-ties 14 are embedded in ballast 16 so that the ties may be properly cradled to give a firm foundation to the rails 10 and 12.

The track aliner comprises an elongated rigid frame member 20 having supporting wheels 22 and 24 thereon and arranged at the opposite ends of the platform 20. Spacer members 26 will be placed in spaced intervals between the wheels 22 and 24 and top rollers 28 and bottom rollers 30 will be placed on the spacer members and the endless track 32 will be mounted over the wheels 22 and 24 and supported intermediate the wheels by means of the spaced apart rollers 28 and 30.

A propelling motor 34 will be mounted on the platform 20 and will be connected to a differential housing 36 so that energy from the motor 34 may be distributed to the wheels supporting the tracks 32, as is well known. Any desired arrangement for reversing the direction of track or stopping the control of one track while the other advances may be utilized as these devices are well known in the art.

Fluid cylinders 40 are mounted adjacent each corner of the platform 20 and each of the cylinders 40 is provided with a projecting piston 42 so that the pistons 42 may be projected into the tie crib so that the projection of the pistons 42 will lift the platform 20 so that the longitudinal endless track 32 will be raised out of contact with the ties 14 so that the track may be aligned without interference from the device.

A motor 44 is mounted on the platform 20 and drives a pair of fluid pumps 46 and 48 which obtain fluid such as oil from a reservoir 50 and provide a source of fluid under pressure for the operating pistons 40. Each of the pistons 40 will be provided with an individual control valve, as will presently be described, so that each of the

pistons may be extended the desired distance to firmly and rigidly support the platform **20** at a desired level position.

Vertical frame members or walls **52** are provided on each side of the platform **20** and preferably each of the walls **52** is made up of an outer plate **54** and inner plate **56** to provide spaced apart plates to provide substantially rigid sidewall members for supporting a plurality of fluid cylinders **58** and **60** with the cylinders being oppositely disposed and each of the cylinders carrying a projecting piston **62** and **64** respectively. The pistons **62** and **64** are provided with hard rubber end pieces **66** for contacting with the web **68** of the rails to be pushed. Obviously, either of the pistons **62** and **64** may be projected, as is desired, to push the rail to the desired extent.

The pistons **62** and **64** are located substantially centrally of the frame **20** and if desired, a plurality of pairs of auxiliary pistons **70** and **72** may be provided on each side of the main aligning pistons and as many pairs of cylinders and pistons may be provided as are desirable.

For operating "off track," the device is operated to move the platform **20** into parallel arrangement with the rails **10** or **12** and the pistons **42** projected to raise the platform **20** to a level position along side the track. For operating an "off track" position, the device is provided with a plurality of cylinders **80** having piston rods **82** projecting therefrom with the piston rods **82** having a push-pull hand **84** mounted on the end thereof for engagement with the lower flange of the rail for either pushing or pulling the same, as may be desired.

In the operation of the device, the rail is raised to the proper level after which the machine will be driven under its own power to the desired position either "on track" or "off track," as may be desired. The pistons **42** are then extended and driven into the crib due to the weight of the machine with the pistons **42** serving to prevent movement of the machine. If the device is "on track" the main pistons **58** and **60** will be substantially aligned with the apex of the bend to be straight after which the right or left hand piston will be projected, as is desired and any desired extent of lateral movement may be obtained to secure the necessary straightening of the track. If any secondary bends of the rails should appear, one of the auxiliary pistons or rams may be advanced to straighten out this auxiliary bend.

In the operation of the device "off track," the platform **20** will be anchored and raised by the pistons **42** so that the piston **82** will pass into the tie crib, that is, the space between the normally spaced ties, and if a pulling operation is desired, the piston **82** will be projected into the crib so that it extends past the rail after which the platform will be raised to bring the hand into engagement with the flange of the rail after which the rail will be pulled toward the device. When the operation has been a pulling operation, the piston **82** will be extended after the pulling operation is completed after which the entire platform may be lowered so that the piston **82** and the hand **84** may be retrieved from the tie crib. The hand **84** is reversed on the piston **82** when it is desired to perform a pushing operation if the hand **84** was last used for a pulling operation.

It will thus be apparent that the present invention provides a device which may be operated either on or off track and obviously may be self propelled so as to move off the track so that the trains may pass without the necessity of moving the device along the track to enter a switch or other turn out.

For simplicity of operation, each of the valves of each of the devices is provided with its own control so that the cylinders **58** and **60**, **70** and **72** will be provided with control valves **90** while the cylinders **80**, for the "off track" operation, will be provided with control valves **92** and the hydraulic jacks will be provided with control valves **94**.

A seat **96**, for the operator, will be placed, in addition to the control panels and control levers **98** and **100**, will be positioned adjacent the control seat **96** for reversing the movement of the endless tracks so that the device may be turned and moved off the right of way, as may be desired.

For simplicity of illustration and description, a preferred embodiment of the invention has been shown and described according to the best present understanding thereof. However, it will be apparent to those skilled in the art that various changes and modifications may be made in the construction and arrangement of the parts thereof without departing from the true spirit and scope of the invention.

What is claimed as new is as follows:

1. A railway track aligning device comprising an elongated rigid frame, endless tracks mounted on opposite sides of said frame in supporting relation to said frame for moving said frame along a roadbed, driving means mounted on said frame and operatively connected to said endless tracks, combined lifting and anchoring jacks rigidly mounted on said frame adjacent the corners of said frame for vertically moving said frame and said endless tracks to completely lift said frame and said endless track off of the roadbed, an aligning ram mounted on and directly carried by said frame and extending transversely of said frame, said aligning ram being adapted to engage a rail at right angles to the longitudinal axis thereof.

2. A railway track aligning device comprising an elongated rigid frame, endless tracks mounted on opposite sides of said frame in supporting relation to said frame for moving said frame along a roadbed, driving means mounted on said frame and operatively connected to said endless tracks, combined lifting and anchoring jacks rigidly mounted on said frame adjacent the corners of said frame for vertically moving said frame and said endless tracks to completely lift said frame and said endless track off of the roadbed, aligning rams mounted on and directly carried by said frame and extending transversely of said frame, said aligning rams being adapted to engage a rail at right angles to the longitudinal axis thereof, said aligning rams being disposed in crossed relation.

3. A railway track aligning device comprising an elongated rigid frame, endless tracks mounted on opposite sides of said frame in supporting relation to said frame for moving said frame along a roadbed, driving means mounted on said frame and operatively connected to said endless tracks, combined lifting and anchoring jacks rigidly mounted on said frame adjacent the corners of said frame for vertically moving said frame and said endless tracks to completely lift said frame and said endless track off of the roadbed, an aligning ram mounted on and carried directly by said frame and extending transversely of said frame, said aligning ram being adapted to engage a rail at right angles to the longitudinal axis thereof, said aligning ram being mounted intermediate said combined lifting and anchoring jacks.

4. A railway track aligning device comprising an elongated rigid frame, endless tracks mounted on opposite sides of said frame in supporting relation to said frame for moving said frame along a roadbed, driving means mounted on said frame and operatively connected to said endless tracks, combined lifting and anchoring jacks rigidly mounted on said frame adjacent the corners of said frame for vertically moving said frame and said endless tracks to completely lift said frame and said endless track off of the roadbed, aligning rams mounted on and directly carried by said frame and extending transversely of said frame in oppositely outwardly directed relation, said aligning rams being adapted to engage a rail at right angles to the longitudinal axis thereof, a push-pull hand mounted on each of said rams for engagement with a railway rail whereby each of said rams

may be used for selectively pushing and pulling railway track into alignment.

5. A railway track aligning device comprising an elongated rigid frame, endless tracks mounted on opposite sides of said frame in supporting relation to said frame for moving said frame along a roadbed, the distance between outermost parts of said endless tracks being less than the distance between rails whereby said railway track aligning device may move between the rails of the track to be aligned, driving means mounted on said frame and oppositely connected to said endless tracks, combined lifting and anchoring jack rigidly mounted on said frame adjacent to the corners of said frame for vertically moving said frame and said endless tracks to completely lift said frame and said endless tracks off of the roadbed, aligning rams mounted on and directly carried by said frame and extending transversely of said frame, said aligning rams being adapted to engage the rail at right angles to the longitudinal axis thereof, said aligning rams

being disposed in crossed relation and being disposed intermediate said combined lifting and anchoring jacks.

References Cited in the file of this patent

UNITED STATES PATENTS

978,858	Devitt	Dec. 20, 1910
1,329,185	Kawashima	Jan. 27, 1920
1,572,643	Falkner	Feb. 9, 1926
1,622,970	Payne	Mar. 29, 1927
1,784,963	Holt et al.	Dec. 16, 1930
1,939,480	Wilson	Dec. 12, 1933
1,977,276	Holt et al.	Oct. 16, 1934
2,693,769	Herlehy	Nov. 9, 1954
2,736,268	Yohe	Feb. 28, 1956
2,797,064	Abbott	June 25, 1957

FOREIGN PATENTS

491,881	Germany	Feb. 17, 1930
491,792	Germany	Feb. 19, 1930