Sept. 9, 1969 | M. E. KERNS | 3,465,687

RAIL POSITIONING SYSTEM

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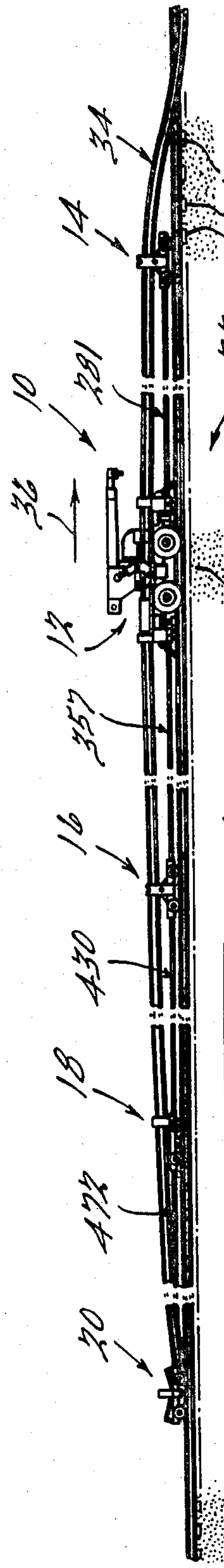

FIG. 1

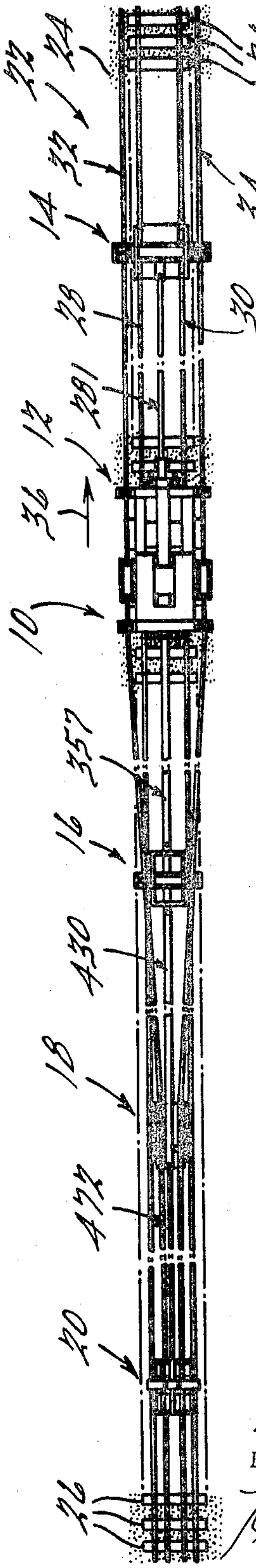

FIG. 2

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RAIL POSITIONING SYSTEM

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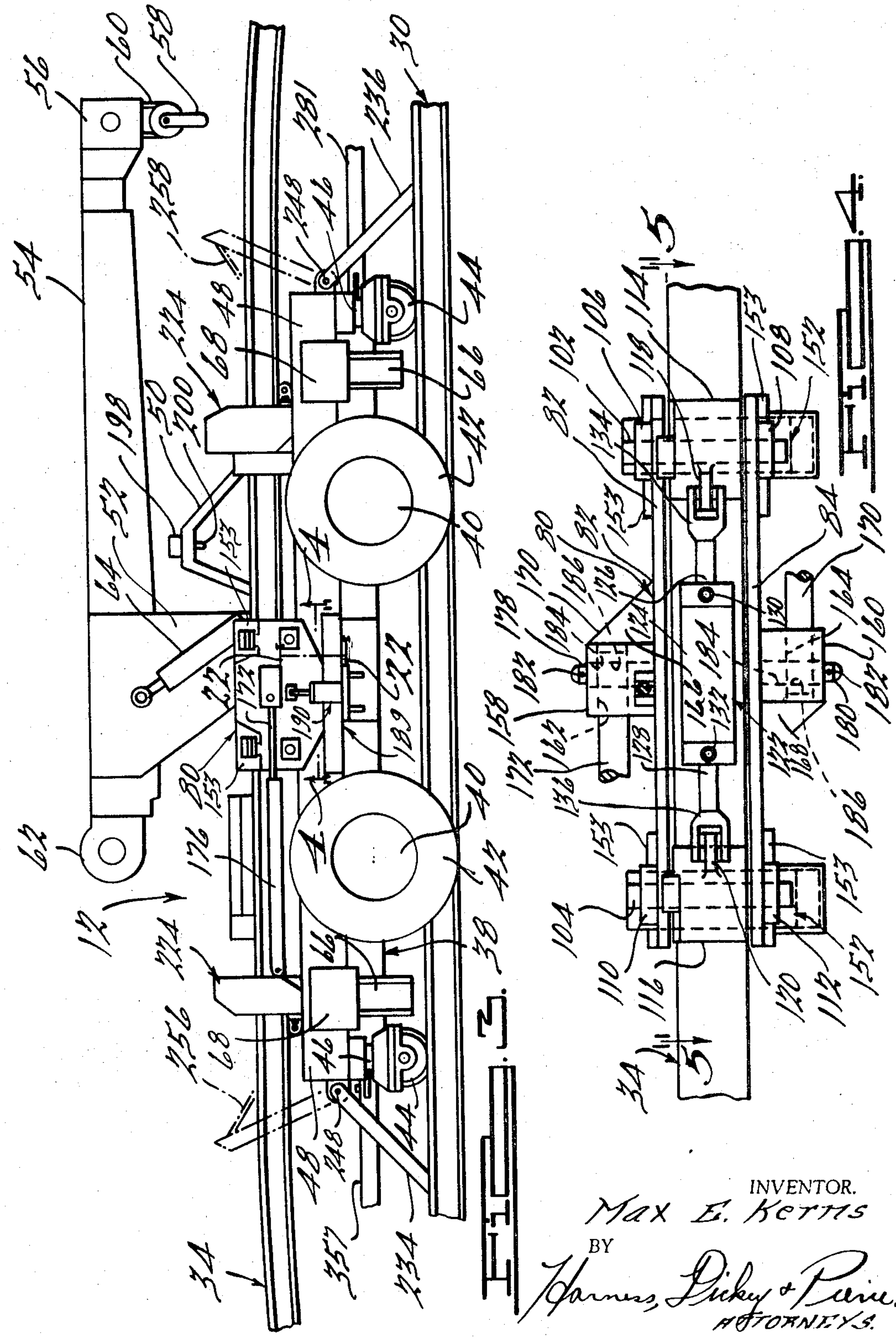

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RAIL POSITIONING SYSTEM

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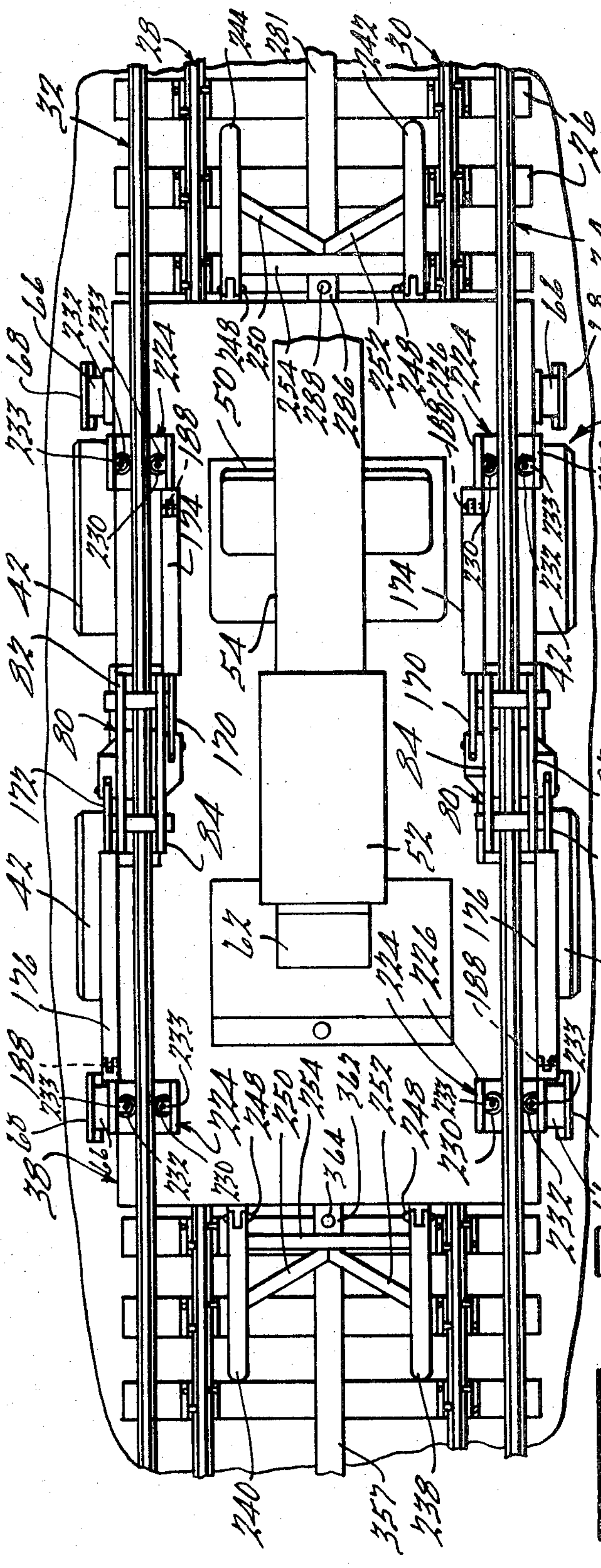

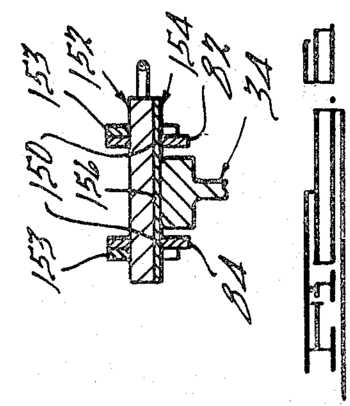

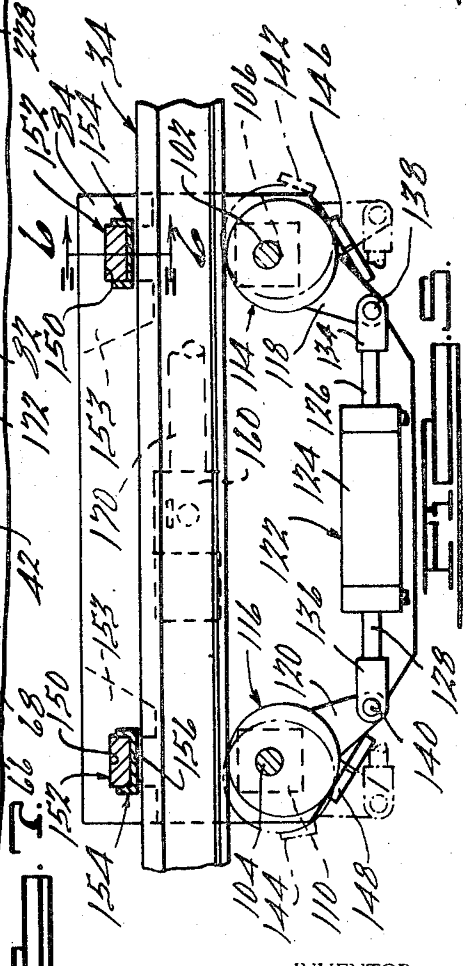

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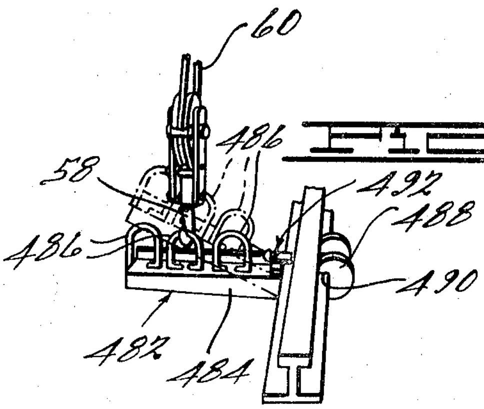

FIG. 9.

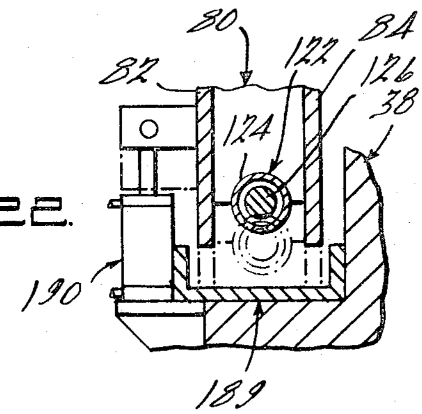

FIG. 22.

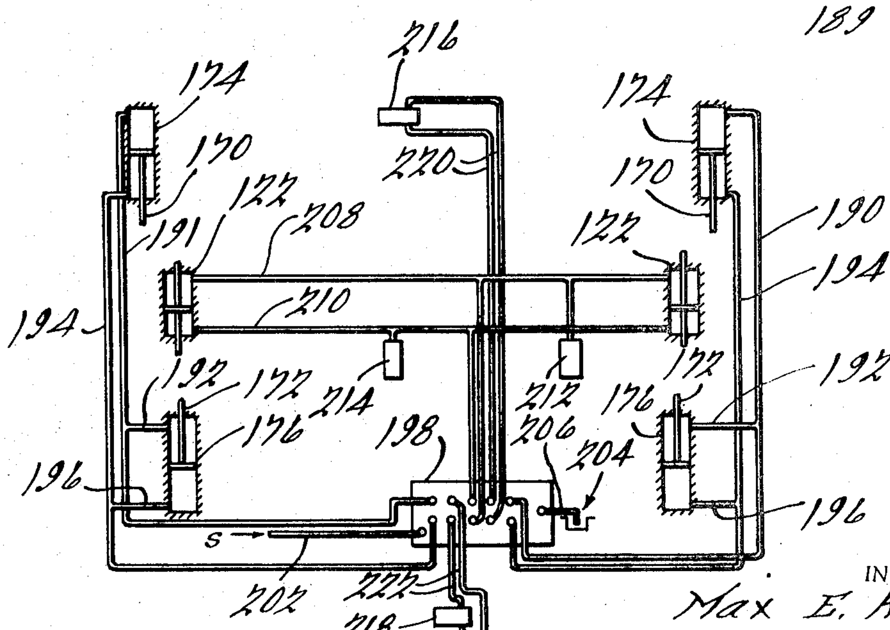

FIG. 8.

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RAIL POSITIONING SYSTEM

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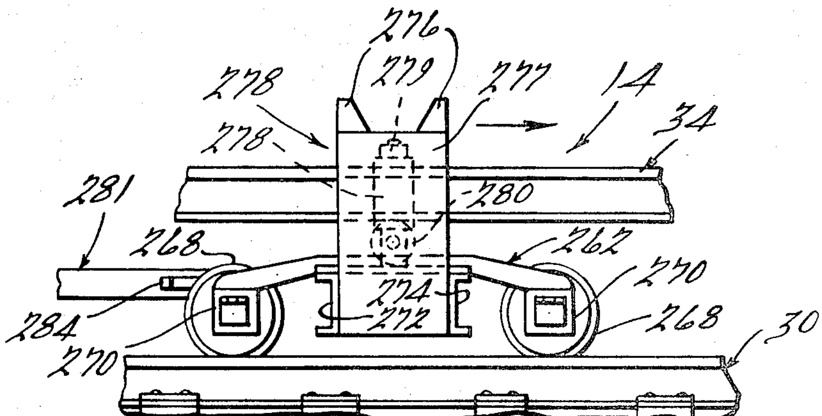

FIG. 10.

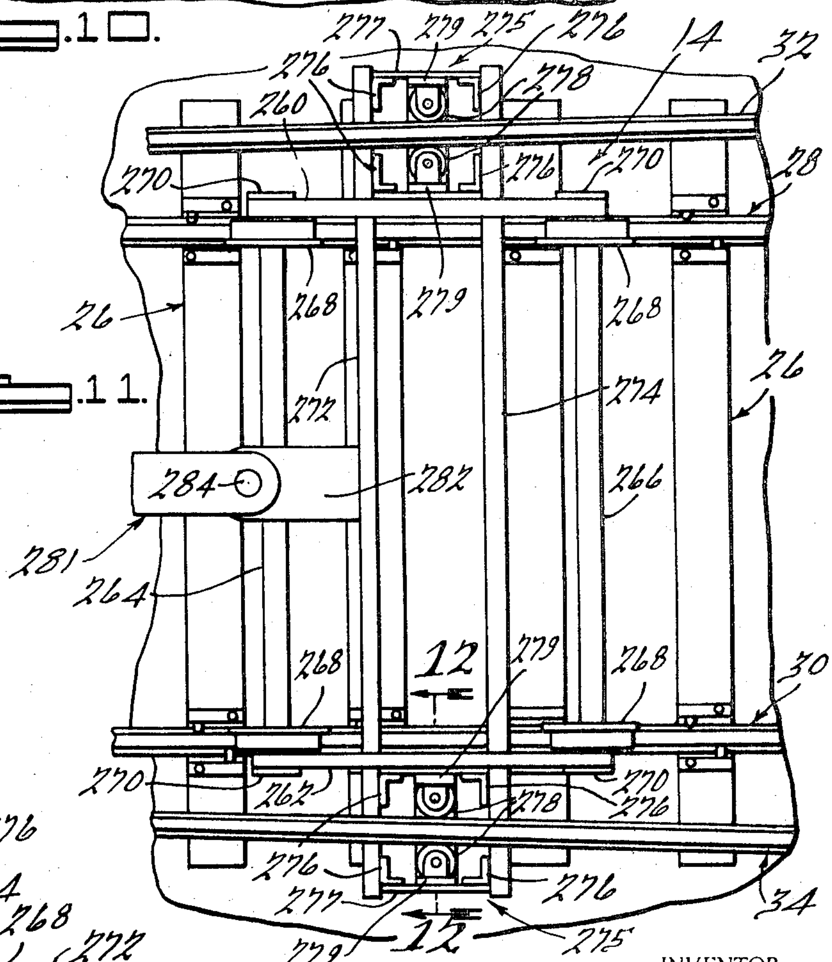

FIG. 11.

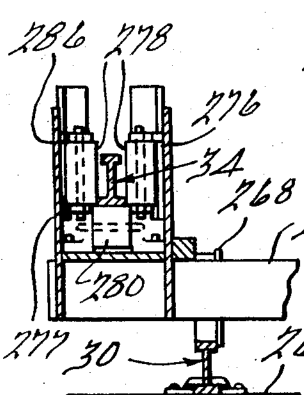

FIG. 12.

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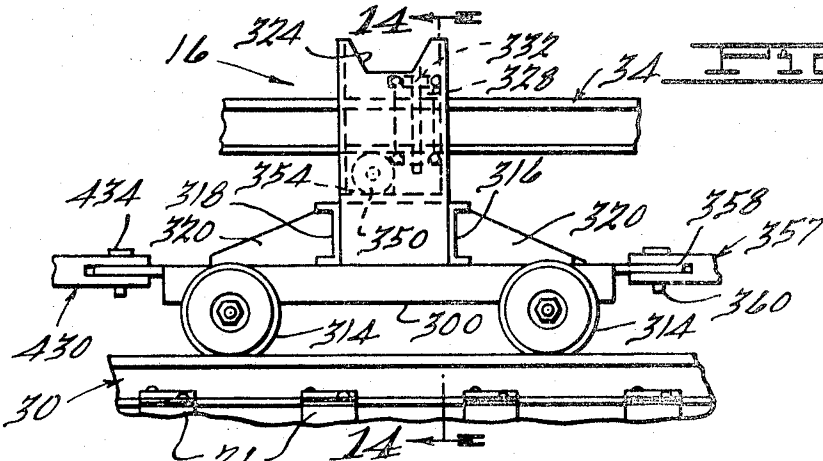

FIG. 13.

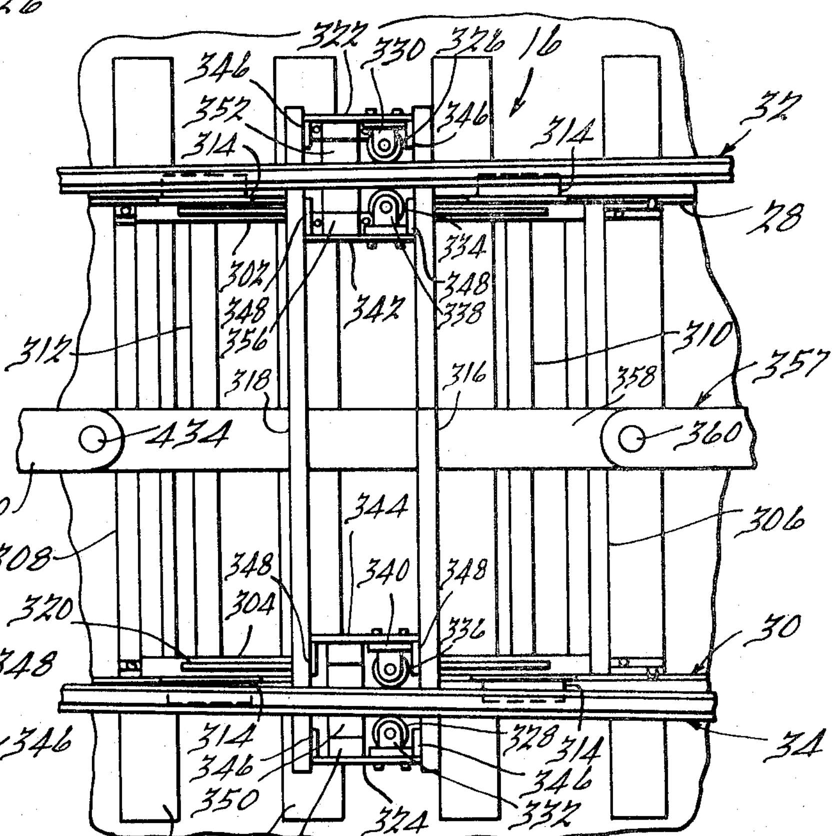

FIG. 15.

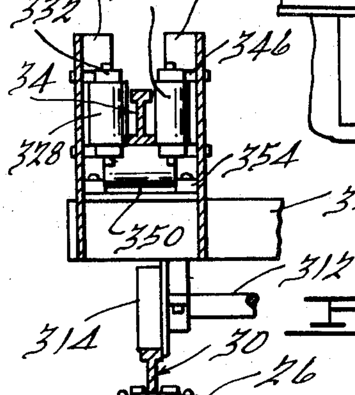

FIG. 14.

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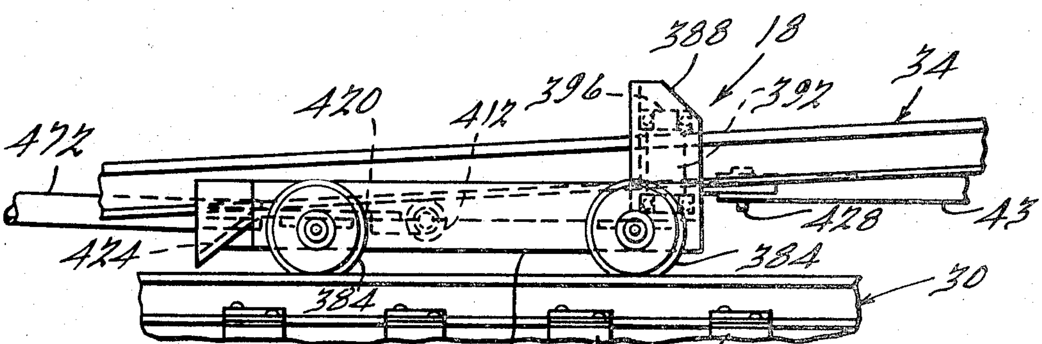

FIG. 16.

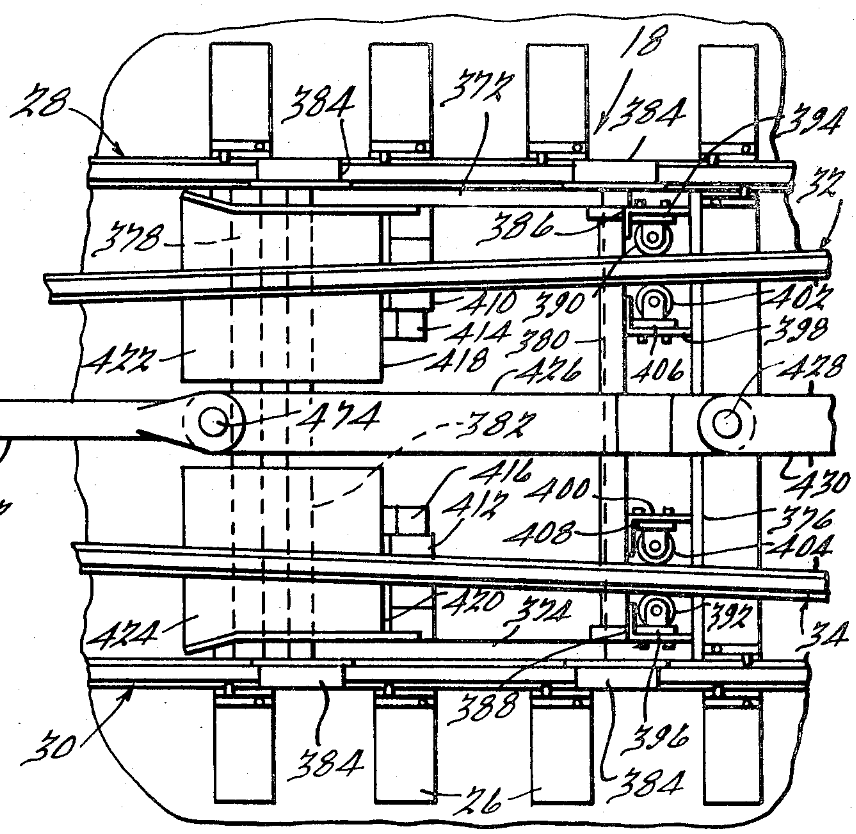

FIG. 17.

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RAIL POSITIONING SYSTEM

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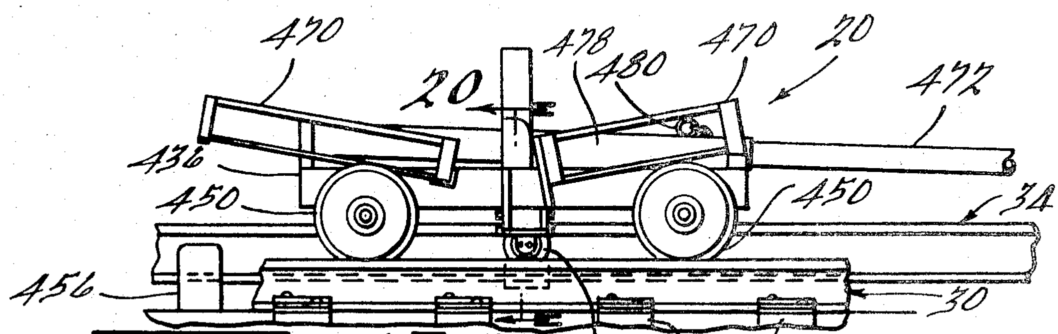

FIG. 18

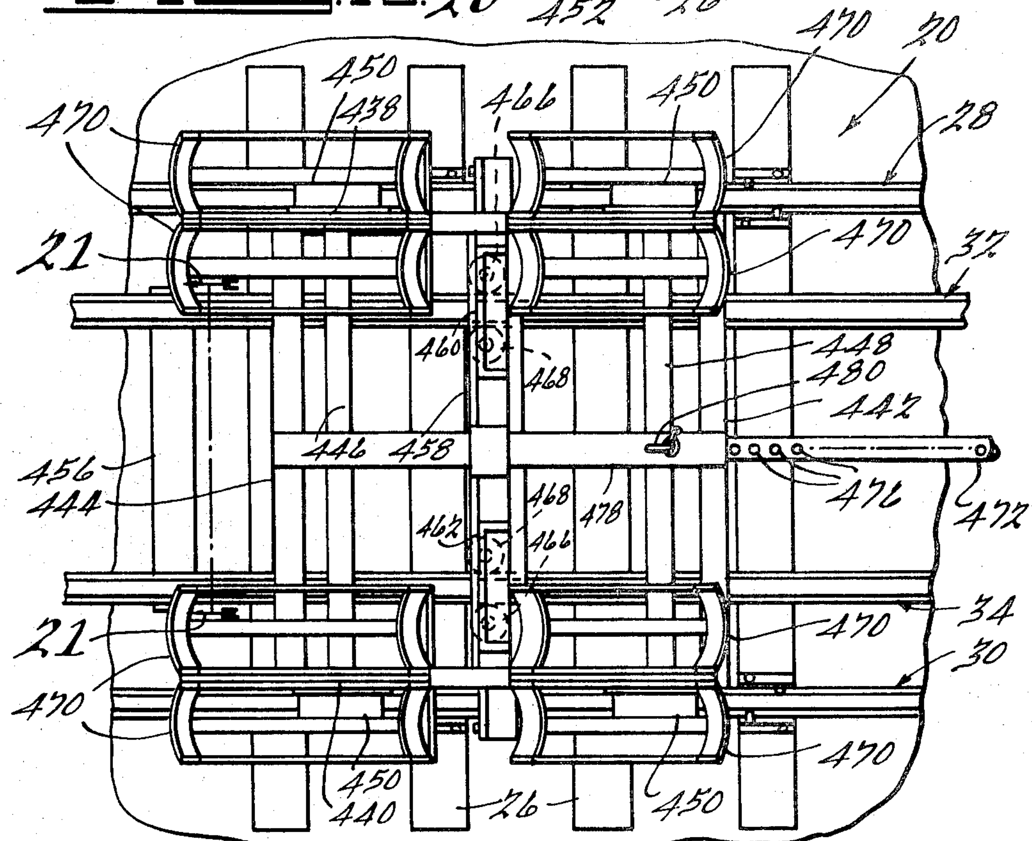

FIG. 19

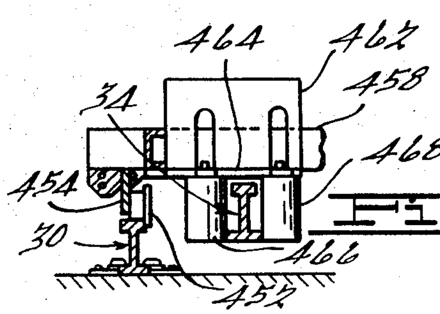

FIG. 20

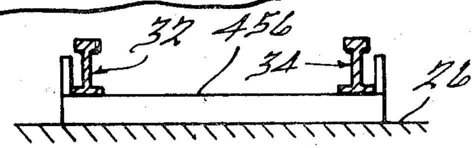

FIG. 21

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RAIL POSITIONING SYSTEM

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Int. Cl. E01b *29/16*

U.S. Cl. 104—2 35 Claims

ABSTRACT OF THE DISCLOSURE

A method and apparatus for laying continuous welded railroad rail which includes means for transferring continuous rails disposed outboard of the active rails along a railroad roadbed laterally inwardly to a position wherein the continuous rails provide a small gauge track interiorly of the active rails; the apparatus consisting of a series of rail positioning cars and a main positioning vehicle adapted to drive the cars along the roadbed, with the various cars including guide means for successively threading and feeding the continuous rails to the positions described above.

This invention relates generally to the railroad art and, more particularly, to new and improved equipment for laying continuous welded railroad rails.

For purposes of clarity, the term "continuous welded rail," as used herein, describes sections of railroad rail of up to one quarter mile in length, such rail sections consisting of a plurality of considerably shorter rails (approximately 39 ft. long) which are connected together at their adjacent ends by any suitable means, for example, welding, connecting plates or the like.

Continuous welded rail is used primarily where it is desired to replace the used and worn rail of an active railroad track. In the past, such use has consisted of initially placing a series of rail cradles along the railroad track which are adapted to space and temporarily hold the new continuous rail at a 28 inch or similar narrow gauge between the active rails. After the rail cradles have been properly positioned, a work train consisting of a sufficient number of freight type cars adapted to carry the quarter mile long continuous rails traversed the roadway during which time the continuous rails were removed from the cars by an associated rail pusher car or the like, whereby the rails were laid onto the rail cradles. After the continuous rails are positioned in the cradles, the spikes are removed from the active track and a machine which operates on the temporary 28 inch narrow gauge railway "threads" the old track out to a 96 inch or similar wide gauge, after which the 28 inch narrow gauge rails are threaded to the standard 57 inch gauge position. The new rails are then properly secured to the ties by means of conventional spikes and tie plates, and the old rails, which are now disposed outboard of the new rails, are removed in due course.

The aforementioned work trains that have heretofore been utilized in distributing the continuous rails onto the rail cradles have been objectionable for a number of reasons, not the least of which resides in the fact that such trains require a great number of workmen and that considerable difficulty is involved in moving such work trains to siding tracks and the like when it is necessary to have a scheduled train traverse the railroad right-of-way on which the work train is operating. Another serious objection to such work trains has resulted from the fact that the trains have not been capable of distributing the quarter mile lengths of continuous rail at positions where the adjacent ends of the rails are positioned near one another. That is, the ends of the continuous rail have

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either overlapped one another or have been spaced a considerable distance apart. This, of course, has resulted in considerable problems in longitudinally moving or adjusting the rails due to their extreme length, mass and flexibility. This problem has been particularly troublesome due to the fact that usually two continuous rails have been simultaneously dispensed, with the result that when the work train traverses a relatively arcuate or curved section of railway, either the continuous rails on the radially inner side of the curve have overlapped one another or, alternatively, the ends of the continuous rails on a radially outer side of the curve have been spaced considerable distances apart.

The present invention is generally directed toward a new and improved apparatus for transferring continuous welded railroad rail onto the aforementioned rail cradles, which apparatus is adapted to overcome virtually all of the disadvantages and objections which have resulted from the use of work trains heretofore known and used. More particularly, the present invention is directed toward a rail positioning system which is adapted to selectively transfer continuous welded rail, which is disposed adjacent the sides of a railroad right-of-way, i.e., on the roadbed along side the active tracks, onto the narrow gauge rail cradles disposed interjacent the active rails. The rail positioning system of the present invention comprises a plurality of rail threading cars or carriages which are adapted to selectively bias or thread the continuous rail upwardly from the roadbed and then downwardly and inwardly onto the rail cradles in an efficient, effortless and expeditious manner. The rail cars are adapted to be driven along the active rails by means of a rail positioning vehicle which is provided with means for conveniently longitudinally adjusting the rails, when necessary, whereby to accommodate for any overlapping or spacing between the adjacent ends of the rails. In accordance with the principles of the present invention, the rail positioning vehicle comprises means for utilizing one of a pair of continuous rails as an anchor for the entire system while the other of said rails is being longitudinally moved, thereby obviating the necessity for any complicated braking and/or anchoring mechanisms on the vehicle.

The rail positioning vehicle is provided with boom means which may be used for picking up the ends of the continuous rails and placing said rails on the rail threading cars, each of which is provided with suitable rail guide means having suitable antifriction roller means therein to permit free longitudinal movement of the system relative to continuous rails. The cars are connected to the rail positioning vehicle by means of suitable connecting bars, whereby the entire system can be moved along the railroad right-of-way by the aforesaid positioning vehicle which has suitable control means positioned adjacent the operator so that he alone can operate the longitudinal rail positioning means, boom means, and other accessories and features thereof which are hereinafter described in detail.

It is a general object of the present invention to provide a new and improved rail positioning system for longitudinally and laterally positioning continuous welded rail along a railroad right-of-way.

It is a more particular object of the present invention to provide a new and improved rail positioning system of the above character which is adapted to traverse a railway and thereby simultaneously transfer a pair of continuously welded rails from a position disposed outwardly of the roadbed to a position where the continuous rails provide a relatively narrow gauge railway between the active railroad rails.

It is another object of the present invention to provide a new and improved rail positioning system of the above character that functions in the above-described manner and which requires considerably less workmen than similarly functioning systems heretofore known and used.

It is still another object of the present invention to provide a rail positioning system of the above type which requires only one person to operate the system per se as it traverses a railroad right-of-way.

It is a further object of the present invention to provide a new and improved rail positioning system which includes means for longitudinally moving continuous welded rails for purposes of aligning the rails as they are laid.

It is a related object of the present invention to provide a rail positioning system of the above character which includes means for utilizing one of a pair of continuous rails as an anchor for the system while the other of said rails is being longitudinally adjusted.

It is still another object of the present invention to provide a rail positioning system of the above type that includes auxiliary anchor means for the system which can be selectively controlled by the operator of the rail positioning vehicle thereof.

It is a further object of the present invention to provide a rail positioning system of the above type which includes means for elevating continuous rails onto the various vehicles of the system, and which includes means for stabilizing said vehicle as the rails are placed thereon.

It is yet a further object of the present invention to provide a rail positioning system which is adapted to accommodate continuous rails of various lengths and rail sizes.

It is still another object of the present invention to provide a rail positioning system that is of heavy duty construction, which is relatively maintenance free, and which can be easily disassembled when desired.

It is a further object of the present invention to provide a rail positioning system of the above type which includes means for twisting continuous rails to properly align said rails with the various vehicle of the system.

Other objects and advantages of the present invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings, wherein:

FIGURE 1 is a side elevational view, partially broken away, of the complete rail positioning system of the present invention;

FIGURE 2 is a top elevational view, partially broken away, of the rail positioning system illustrated in FIGURE 1;

FIGURE 3 is a side elevational view of the main rail positioning vehicle incorporated in the positioning system of the present invention;

FIGURE 4 is an enlarged bottom elevational view of a portion of the vehicle illustrated in FIGURE 3, as taken substantially along the line **4—4** thereof;

FIGURE 5 is a cross-sectional view of the structure illustrated in FIGURE 4, as taken substantially along the line **5—5** thereof;

FIGURE 6 is a fragmentary cross-sectional view taken along the line **6—6** of FIGURE 5;

FIGURE 7 is a top elevational view of the rail positioning vehicle illustrated in FIGURE 3;

FIGURE 8 is a schematic diagram of the hydraulic circuitry incorporated in the rail positioning vehicle illustrated in FIGURE 3;

FIGURE 9 is an elevated perspective view of a rail manipulating or twisting device incorporated with the rail positioning vehicle illustrated in FIGURE 3;

FIGURE 10 is a side elevational view of one of the rail threading cars incorporated in the positioning system of the present invention;

FIGURE 11 is a top elevational view of the rail threading car illustrated in FIGURE 10;

FIGURE 12 is a transverse cross-sectional view of a portion of the car illustrated in FIGURE 11, as taken substantially along the line **12—12** thereof;

FIGURE 13 is a side elevational view of another of the rail threading cars incorporated in the positioning system of the present invention;

FIGURE 14 is a transverse cross-sectional view of a portion of the car illustrated in FIGURE 13, as taken substantially along the line **14—14** thereof;

FIGURE 15 is an enlarged top elevational view of the rail threading car illustrated in FIGURE 13;

FIGURE 16 is a side elevational view of still another of the rail threading cars incorporated in the positioning system of the present invention;

FIGURE 17 is a top elevational view of the rail threading car illustrated in FIGURE 16;

FIGURE 18 is a side elevational view of yet another of the rail threading cars incorporated in the positioning system of the present invention;

FIGURE 19 is an enlarged top elevational view of the car illustrated in FIGURE 18;

FIGURE 20 is an enlarged transverse cross-sectional view of a portion of the structure illustrated in FIGURE 18, as taken substantially along the line **20—20** thereof;

FIGURE 21 is a transverse cross-sectional view of a portion of the structure illustrated in FIGURE 19, as taken substantially along the line **21—21** thereof; and

FIGURE 22 is a transverse cross-sectional view of a portion of the structure illustrated in FIGURE 3, as taken substantially along the line **22—22** thereof, and shows one of the rail position units of the present invention in the position in which it is carried during periods of nonuse.

For convenience of description, the terms "inwardly," "outwardly," and words of similar import will have reference to the geometric center of the roadbed along which the rail positioning system of the present invention is intended to operate. Likewise, the terms "forwardly," "rearwardly," and derivatives thereof, will have reference to the rail positioning system of the present invention as shown in FIGURES 1 and 2, with the forward end of said system being located at the right side of these figures.

Referring now to the drawings, as best seen in FIGURES 1 and 2, a rail positioning system **10**, in accordance with an exemplary embodiment of the present invention, is shown as comprising a main rail positioning vehicle **12** and a plurality of rail threading carriage or cars **14, 16, 18** and **20**, the former of which is disposed forwardly with respect to the rail positioning vehicle **12** and the latter three of which are disposed rearwardly of the vehicle **12**. The entire system **10** is shown in operative position along a railroad, roadway or right-of-way **22** comprising a supporting roadbed **24** upon which a plurality of cross ties **26** are disposed. Supported upon the ties **26** in a conventional manner is a pair of spaced rails **28** and **30** of conventional construction. It will be understood that the rails **28, 30** are supported upon conventional tie plates which are secured by spikes in the usual manner. The forward ends of a pair of continuous welded rails **32** and **34** are shown resting on the roadbed **24** at the right side of FIGURES 1 and 2 in the position where such rails are normally dumped or laid prior to being threaded onto the roadbed **22** by the rail positioning system **10** of the present invention. The continuous rails **32, 34** normally rest below the level of the tracks **28, 30** and are spaced a considerable distance therefrom prior to being positioned by the system **10** so that there will be no interference between the rails **32, 34** and any trains which may traverse the roadway **22**. With this arrangement, the rails **32, 34** can be placed along the roadway **22** at any time prior to the time these rails are actually laid. The rail positioning system **10** of the present invention is adapted to traverse the roadway **22** in the direction of the arrows **36** in FIGURES 1 and 2 and thereby properly position the rails **32, 34** in a narrow gauge configuration shown at the left sides of these figures, preparatory to a subsequent operation unrelated to the present invention wherein the active rails

28 and 30 are removed and the rails 32, 34 are threaded outwardly to the standard 57 inch gauge.

Referring now in detail to the main rail positioning vehicle 12, as best seen in FIGURES 3 and 7, the vehicle 12 comprises a main frame or body 38 that is provided with a plurality of drive wheels 40 which preferably have heavy treaded drive tires 42 mounted thereon. The wheels 40 are spaced sufficiently laterally apart so that they bear upon roadbed 24 outboard of the cross ties 26 as the system 10 traverses the roadway 22. A suitable source of motive power such as a gasoline or diesel engine (not shown) is provided on the vehicle 12 and is adapted to drive the wheels 40 in a manner such that the vehicle 12 is capable of driving the entire system 10 along the railway 22.

Disposed at each of the four corners of the vehicle frame or body 38 is a flanged guide wheel 44 which is adapted to bear upon the rails 28 or 30 in a manner so as to guide the vehicle 12 along the rails 28, 30 as the same is driven along the roadway 22. The wheels 44 are rotatably mounted on suitable vertical extending members 46, the upper ends of which members 46 are mounted within housing portions 48 disposed on the body 38. The support members 46 are preferably spring loaded or similarly resiliently urged downward so that wheels 44 positively engage the rails 28 and 30. It will be noted that the guide wheels 44 are not mounted to support the vehicle 12 upon the rails 28 and 30, but instead, merely guide said vehicle as it is driven along the roadway 22 by the drive wheels 40 thereof.

The vehicle 12 includes a cab section 50 from within which the vehicle 12 is adapted to be controlled by a single operator, the cab section 50 being disposed directly forward of a centrally located upwardly extending boom support section 52 which is mounted on the upper side of the frame or body 38. An elongated elevating boom 54, which is preferably of the telescopic type, is rotatably mounted on the boom support section 52 and is thereby adapted to be rotated relative to the frame member 38, as well as extended telescopically when necessary. The boom member 54 is also pivotably mounted relative to the support section 52 so that the outer end portion 56 thereof may be raised or lowered when desired. A suitable lifting hook 58 is mounted on the end portion 56 by means of ropes, cables or the like 60, whereby the hook 58 may be moved away or reeled in relative to the boom 54 in the usual manner. Means for thus moving cable 60 is preferably provided by a suitable hydraulic motor 62 mounted on the end of the boom 54 adjacent the supported section 52. A suitable hydraulically energized piston and cylinder means or the like 64 is provided for effecting the aforementioned upward and downward pivotal movement of the boom 54 relative to the support section 52.

The vehicle 12 is preferably provided with four auxiliary outrigger or stabilizing arms, generally designated 66, which are disposed one at each corner of the frame 38. The arms 66 are adapted to pivot from their normal upwardly extending position illustrated in FIGURES 3 and 7 to a downwardly extending position where the ground engaging bearing plates 68 on the lower ends thereof bear against the roadbed 24, whereby to stabilize the vehicle 12 when the boom 54 thereof is under the influence of a relative heavy load, for example, when the boom 54 is being utilized to elevate one of the continuous welded rails 32 or 34.

Mounted on each longitudinal side of the vehicle 12 is one of a pair of rail adjusting units 80 which are preferably identical in construction and operation. As best seen in FIGURES 4 and 5, each of the units 80 comprises a pair of laterally spaced side plates 82 and 84 between which a pair of laterally extending shafts 102 and 104 are mounted. The shafts 102 and 104 are respectively journaled within suitable antifriction bearing assemblies 106, 108 and 110, 112 that are mounted on the outer sides of the plates 82 and 84. The shafts 102 and 104 are adapted to carry a pair of eccentric cam roller members 114 and 116 which are respectively provided with downwardly extending actuating arms 118 and 120 (see FIGURE 5). A pair of hydraulically actuated piston and cylinder assemblies 122 are disposed one interjacent the lower ends of the adjacent plates 82, 84, which assemblies 122 are provided with cylinders 124 and opposed piston rods 126 and 128. Hydraulic fluid is adapted to be communicated to and from the cylinders 124 by means of suitable hydraulic conduits 130 and 132 located at the opposite ends thereof. The piston rods 126 and 128 are provided with suitable clevis portions 134 and 136 that are pivotally connected to the lower ends of the actuating arms 118 and 120 by means of suitable pivot pins or the like 138 and 140, respectively. It will be seen that upon proper energization of the piston and cylinder assemblies 122, the piston rods 126 will move from the solid position in FIGURE 5 to the phantom position in this figure. Similarly, proper energization of the assembly 122 will result in the piston rods 128 moving from the solid line position in FIGURE 5 to the phantom position in this figure. As the piston rods 126, 128 move to their respective phantom positions, the cam rollers 114 and 116 will be rotated about the axes of the shafts 102 and 104 to lockingly engage the continuous welded rails 32 and 34, as will later be described. Preferably the cam rollers 114, 116 are provided with downwardly projecting abutment members 142 and 144 that are adapted to engage suitable stop members 146 and 148 on the units 80 to limit rotational movement of the rollers 114 and 116 toward their solid line positions in FIGURE 5 upon retraction of the piston rods 126 and 128.

The side plates 82 and 84 of each of the units 80 are formed with a pair of generally rectangular-shaped openings, generally designated 150, the pairs of openings 150 in the plates 82, 84 being aligned with each other and being disposed at the forward and rearward ends of the units 80, as best seen in FIGURE 5. The aligned pairs of openings 150 are adapted to receive generally rectangular-shaped laterally extending retaining members or pins 152 therein, which pins 152 are adapted to cooperate with the cam rollers 114 and 116 to lockingly secure the units 80 to the continuous rails 32 and 34, as will later be described. Preferably a pair of reinforcing plates 153 are provided on each end of each of the side plates 82 and 84, the reinforcing plates 153 being suitably recessed to provide the desired access to the openings 150 in the plates 82, 84. As best seen in FIGURE 5, the openings 150 are adapted to be sufficiently large to permit channel-shaped shim members 154 to be surmounted on the retaining pins 152 as the same are inserted through the pairs of aligned openings 150 in the side plates 82 and 84. The shims 154 have horizontally disposed lower portions 156 (see FIGURE 6) which may be of different thicknesses to best accommodate the particular size or height of the continuous rail being laid. It is contemplated that the positioning vehicle 12 will be provided with a plurality of pairs of shims 154, each pair having upper portions 156 of a thickness ranging from approximately ½ to 1½ inches, whereby the positioning units 80 may be used to position continuous rails of virtually all standard sizes.

Mounted on the outer sides of the side plates 82, 84 of each of the positioning units 80 is a pair of connecting brackets 158 and 160, respectively, which are preferably secured to the plates 82, 84 as by welding or the like. The brackets 158, 160 define generally U-shaped channels 162 and 164 and are preferably provided with reinforcing plates 166 and 168 which, as illustrated in FIGURE 4, are located at the rearward and forward ends of the brackets 158 and 160, respectively. The channels 162 and 164 of the brackets 158 and 160 are adapted to receive the ends of a pair of piston rods 170 and 172 of a pair of piston and cylinder assemblies generally designated 174 and 176. As best seen in FIGURE 7, the assemblies **174** are located forwardly of the units **80**, and the assemblies **176** are located rearwardly of the units **80**. As also shown in FIGURE 7, the assemblies **174** are located laterally inwardly with respect to the units **80**, while the piston and cylinder assemblies **176** are located laterally outwardly with respect to the units **80**. The piston rods **170** and **172** of the assemblies **174** and **176** are adapted to be pivotably connected to the brackets **158** and **160** by means of suitable pivot pins or the like **178** and **180** which may have suitable locking means such as cotter pins or the like **182** inserted in the outer ends thereof, whereby to positively retain the pivot pins **178** and **180** within suitable aligned apertures **184** and **186** in the brackets **158**, **160** and piston rods **170** and **172**, respectively. The ends of the piston and cylinder assemblies **174** and **176** opposite the piston rods **170** and **172** thereof are adapted to be pivotably connected to the body or frame **38** of the vehicle **12** by means of suitable pivot pins or the like best shown in FIGURE 7 and generally designated by the numeral **188**.

As best seen in FIGURES 3 and 22, the rail positioning units **80** are adapted to be supported within a pair of generally U-shaped channels or troughs **189** that are fixedly secured to the outboard sides of the frame **38** interjacent the drive wheels **40**. Means in the form of a pair of hydraulically actuated piston assemblies **190** are mounted one adjacent each of the troughs **189**. The piston and cylinder assemblies **190** are fixedly secured at their lower ends to the frame **38** and are detachably secured at their upper ends to the positioning units **80**. Upon energization of the assemblies **190**, the units **80** are elevated from the phantom position shown in FIGURE 22, where the units **80** normally carried during periods of non-use, to the solid line operative position shown in this figure.

Referring to the schematic hydraulic circuit illustrated in FIGURE 8, it will be seen that the piston and cylinder assemblies **174** and **176** on the opposite sides of the vehicle **12** are connected in series with each other. That is, conduits **191** and **192** connect the assemblies **174** and **176** such that upon energization thereof, the piston rods **170** and **172** associated with each of the positioning units **80** will move in the same direction, i.e., forwardly of the vehicle **12**. Similarly, the conduits **194** and **196** connect the assemblies **174** and **176** such that upon energization thereof, the piston rods **170** and **172** will move rearwardly of the vehicle **12**. A suitable hydraulic control panel **198** is preferably mounted on the top of the cab section **50** of the vehicle **12** or in some other readily accessible location where the actuating or control handles **200** thereof are accessible to the vehicle operator. A suitable hydraulic source S is communicable with the circuit through an inlet line **202**, and a hydraulic reservoir **204** is connected through a conduit **206** to the hydraulic system. The piston and cylinder assemblies **122** which actuate the cam rollers **114** and **116** are communicable with the hydraulic system through conduits **208** and **210**, a pair of fluid accumulators **212** and **214** being communicable with the lines **208** and **210** respectively. A pair of hydraulic winch motors **216** and **218** are communicable with the system through conduits **220** and **222**, the motors **216** and **218** functioning in a manner later to be described.

Referring again to FIGURES 3 and 7, it will be seen that the rail positioning vehicle **12** is provided with four continuous rail guide assemblies generally designated **224**, which are arranged in longitudinally aligned pairs along the opposite sides of the frame **38**, each pair of assemblies **224** being longitudinally aligned with the adjacent rail positioning unit **80**. Each of the guides **224** comprises a pair of upwardly extending laterally spaced guide plates **226** and **228** which have a pair of laterally spaced guide rollers **230** and **232** rotatably mounted on the mutually confronting sides thereof by means of suitable antifriction roller supports **233**. The rollers **230** and **232** are spaced apart a distance slightly greater than the width of the continuous rails **32** and **34**, whereby the rails **32** and **34** may move relative to the vehicle **12** through the guide assemblies **224**.

Although a detailed description of the operation of the vehicle **12** will be given in connection with the overall operation of the rail positioning system **10** of the present invention, a brief description of the operation of the vehicle **12** is as follows.

Assuming that the continuous rails **32** and **34** extend longitudinally of the vehicle **12** within the rail guide assemblies **224** at the opposite sides of the vehicle **12**, as shown in FIGURE 7, and that the units **80** are disposed in the phantom position shown in FIGURE 22, the units **80** are initially raised by properly energizing the piston and cylinder assemblies **190**. The retaining pins **152**, along with the proper size shims **154**, are then inserted into the openings **150**. After the piston rods **170** and **172** are properly secured to the units **80** by means of the pins **178**, **180**, the piston and cylinder assemblies **122** may be energized in a manner depending on whether or not either or both of the rails **32** and **34** are to be longitudinally moved, and whether or not either or both of the rails are to be moved forwardly or rearwardly with respect to the vehicle **12**. As the assemblies **122** are energized, the cam rollers **114** and/or **116** are rotated such that the rail(s) **32** and/or are lockingly secured within the units **80**, after which time the piston and cylinder assemblies **174** and **176** are selectively energized. For example, if it is desired to move the rail **32** rearwardly in FIGURE 7, the assemblies **174** and **176** are energized such that the piston rods **170** and **172** will move toward the rear of the vehicle **12**. This process, of course, will be varied depending on which of the rails **32** or **34** is to be moved and in which direction the rails are to be moved.

One particularly important feature of the construction described herein resides in the fact that it it is desired to move one of the rails **32** or **34**, the rail positioning unit **80** associated with the opposite rail can be lockingly secured to the opposite rail so that said rail acts as an anchor for the vehicle **12** while the other rail is being longitudinally adjusted. That is, one rail can be used to anchor the vehicle **12** while the opposite rail is being longitudinally adjusted. This, of course, obviates the necessity for any complicated brake and/or anchoring mechanisms for the vehilce **12**; however, an exemplary type of auxiliary anchoring means is shown herein and if desired may be provided on the vehicle **12**. Such anchoring means comprises a pair of spud assemblies **234** and **236** which are mounted on the rearward and forward ends of the vehicle **12**. The assemblies **234**, **236** comprise pairs of laterally spaced, elongated spud members **238**, **240** and **242**, **244**, respectively, which are pivotally connected to the opposite ends of the vehicle **12** by means of suitable pivot pins or the like, generally designated **248**. Suitable reinforcing members **250**, **252** and **254** are preferably provided between the members **238**, **240** and **242**, **244**, to rigidify the assemblies **234** and **236**. As best seen in FIGURE 3, the assemblies **234** and **236** are normally carried on the vehicle **12** in position where the members **238**, **240** and **242**, **244** thereof extend upwardly, the assemblies **234** and **236** being maintained in said position by means of suitable cables **256** and **258** which are mounted on winches (not shown) disposed on the frame **38** and adapted to be driven by the aforedescribed winch motors **216** and **218**. When it is desired to provide some type of auxiliary anchor means for the vehicle **12**, the winch motors **216** and/or **218** are energized such that the assemblies **234** and **236** are lowered from the phantom positions in FIGURE 3 to the solid line positions in this figure, whereby the ends of the members **238**, **240** and **242**, **244**, which are preferably somewhat pointed, will bury themselves into the roadbed **24** interjacent the cross ties **26**, thereby firmly anchoring the vehicle **12** against any longitudinal movement along the rails **28** and **30**. At such time as it is desired to move the vehicle **12**, the winch motors

216 and 218 are properly energized to pivot the assemblies 234 and 236 from their solid line position in FIGURE 3 to the phantom positions in this figure, whereby the vehicle 12 is free to traverse the roadway 22.

Referring now in detail to the construction of the rail threading car 14, as best seen in FIGURES 10 through 12, the car 14 comprises a pair of laterally spaced frame members 260 and 262 between which a pair of longitudinally spaced axles 264 and 266 extend. A plurality of flanged wheels 268 are disposed one on each end of each of the axles 264, 266, conventional journal means 270 being associated with each of the wheels 268 in the usual manner. The frame members 260 and 262 support a pair of longitudinally spaced, laterally extending channel-shaped support members 272 and 274 which project outwardly from the outboard side of the frame members 260 and 262, as best seen in FIGURE 11. Mounted on the outer ends of the support members 272, 274 is a pair of rail guide assemblies 275, each of which comprises four right-angle shaped members, generally designated 276, which extend vertically upwardly from the members 272 and 274. A pair of end plates 277 are mounted on the longitudinally extending sides of the members 276 of each of the assemblies 275. A pair of vertically extending, laterally spaced rollers 278 is mounted by means of suitable antifriction roller supports 279 on the confronting sides of the plates 277 and assembly 275, which rollers 278 are spaced laterally apart a distance slightly greater than the width of the continuous welded rails 32 and 34. Similarly, the laterally extending side portions of the members 276 are spaced apart a distance slightly greater than the width of the rails 32 and 34 whereby the assemblies 275 are adapted to receive the continuous rails 32, 34 therein in the manner shown in FIGURES 10 and 11. Another pair of horizontally disposed rollers 280 are located one between each pair of rollers 278, the rollers 280 extending laterally below the rollers 278 so as to support the lower sides of the rails 32, 34 as the same pass through the guide assemblies 275.

The car 14 is adapted to be drivingly connected to the rail positioning vehicle 12 by means of an elongated drive rod or bar 281 which is pivotally connected to a suitable mounting section 282 of the car 14 by means of a pivot pin or the like 284. The opposite end of the drive bar 281 is pivotably connected to a mounting bracket 286 on the forward end of the vehicle 12 by means of a suitable pivot pin or the like 288, whereby the car 14 will traverse roadway 22 simultaneously with and at the same speed as the vehicle 12.

Referring now in detail to the construction of the rail threader car 16 which is disposed directly rearwardly of the rail positioning vehicle 12 as the system 10 of the present invention traverses the roadway 22, as best seen in FIGURES 13 through 15, the car 16 comprises a generally rectangular-shaped frame 300 comprising laterally spaced side sections 302 and 304 which are connected together by means of transversely extending forward and rearward end sections 306 and 308, respectively. A pair of longitudinally spaced, laterally extending axles 310 and 312 are mounted on the lower side of the frame 300 and are adapted to journal support a plurality of flanged wheels 314 on the outer ends thereof. The wheels 314, like the aforedescribed wheels 268 of the car 14, are adapted to ride upon the active rails 28 and 30 of the roadway 22 during operation of the system 10. A pair of transversely extending, generally C-shaped channel members 316 and 318 are mounted on the top of the frame 300 and may be reinforced by suitable web members 320 which extend between the top of the frame 300 and the forward and readward sides of the channel members 316 and 318. A pair of end plates 322 and 324 extend upwardly between the adjacent ends of the channel members 316 and 318, and a pair of rollers 326 and 328 are mounted on the inboard sides of the plates 322, 324, respectively, by means of suitable antifriction roller supports 330 and 332. The rollers 326 and 328 are adapted to cooperate with another pair of vertically extending rollers 334 and 336 which are mounted by suitable roller supports 338 and 340 on a pair of longitudinally extending plates 342 and 344 that extend upwardly from the upper sides of the channel members 316 and 318 laterally inwardly from the plates 322, 324. A pair of longitudinally spaced, laterally and upwardly extending plates 346 are provided on the inboard sides of the plates 322 and 324 for reinforcing the same. Likewise, a pair of longitudinally spaced, laterally and upwardly extending plates 348 are provided on the outboard sides of the plates 342 and 344 for reinforcing the same. As best seen in FIGURE 15, the plates 346, 348 and rollers 326, 328, 334 and 336 provide a pair of rail guide assemblies which are spaced substantially above and aligned with the active rails 28 and 30 of the roadway 22. Preferably another pair of rollers 350 and 352 are rotatably mounted along a horizontal axis and disposed directly rearwardly and slightly below the rollers 326, 328, 334 and 336 by means of suitable roller supports 354 and 356 (see FIGURE 14). As will be apparent, the rollers 350 and 352 are adapted to have the lower sides of the continuous rails 32 and 34 bear thereon as the same are being threaded by the system 10 in the manner later to be described.

The car 16 is adapted to be drivingly connected to the rail positioning vehicle 12 by means of a drive bar 357 which is pivotably connected at its rearward end to a tongue section 358 of the car 16 by means of a suitable pivot pin or the like 360. The bar 357 is connected at its forward end to a mounting bracket 362 on the rearward end of the vehicle 12 by means of a suitable pin 364.

Referring now in detail to the rail threader car 18 which is disposed rearwardly of the car 16 as the rail positioning system 10 of the present invention traverses the roadway 22, as best seen in FIGURES 16 and 17, the car 18 comprises a generally rectangular-shaped frame 370 which includes a pair of laterally spaced, longitudinally extending side sections 372 and 374 that are connected by means of a pair of laterally extending forwardly and rearwardly disposed end sections 376 and 378, respectively. The frame 370 support a pair of longitudinally spaced, laterally extending axles 380 and 382 which have flanged wheels 384 mounted on the opposite ends thereof and adapted to be carried along the active rails 28 and 30 of the roadway 22. A pair of vertically extending L-shaped rail guide members 386 and 388 are mounted on the forward ends of the frame side sections 372 and 374 and have rollers 390 and 392 mounted on the inboard sides thereof by means of suitable roller supports 394 and 396, respectively. Another pair of generally L-shaped roller guide members 398 and 400 are disposed laterally inwardly with respect to the guide members 386 and 388 and are rigidly mounted on the frame 370. The guide members 398, 400 are adapted to support a pair of rollers 402 and 404 which cooperate with the aforementioned rollers 390 and 392, respectively, the rollers 402 and 404 being rotatably supported on the guide members 398 and 400 by means of suitable antifriction roller supports 406 and 408, respectively. As best seen in FIGURE 17, the pairs of rollers 390, 402 and 392, 404 are located laterally inwardly with respect to the active rails 28 and 30.

A pair of horizontally disposed rollers 410 and 412 are rotatably mounted by means of suitable roller supports 414 and 416 on the inboard sides of the frame side sections 372 and 374. As best seen in FIGURE 16, the rollers 410 and 412 are disposed slightly below the vertical rollers 390, 402 and 404, 392, which rollers 410 and 412 are adapted to function in a manner later to be described to thread the continuous welded rails 32 and 34 to a narrow gauge configuration. A pair of horizontally and rearwardly extending platforms 418 and 420 are disposed directly rearwardly of the rollers 410 and 412, respectively, and are substantially laterally aligned therewith. The platforms 418, 420 have downwardly directed rear end sections **422** and **424** and are adapted to have various materials, i.e., spikes, tie plates, tools, etc., disposed thereon as the same are used in replacing the active rails **28** and **30** with the new continuous rails **32** and **34**. A centrally located, longitudinally extending member **426** is mounted on the upper side of the frame **370**, the forward end of which is adapted to be pivotably connected by means of a suitable pin or the like **428** to a connecting or drive bar **430** which extends between and drivingly connects the cars **16** and **18**. The forward end of the bar **430** is pivotably connected to the rearward end of the member **358** of the car **16** by means of a suitable pivot pin or the like **434**, as seen in FIGURE 15.

Referring now in detail to the construction of the rail threader car **20** which is disposed rearwardly of the car **18** as the rail positioning system **10** of the present invention traverses the roadway **22**, as best seen in FIGURES 18 through 20, the car **20** comprises a generally rectangular-shaped frame **436** comprising longitudinally extending, laterally spaced side sections **438** and **440** which are connected by means of forwardly and rearwardly disposed end sections **442** and **444**, respectively. A pair of longitudinally spaced, laterally extending axles **446** and **448** are mounted on the lower side of the frame **436** and have flanged wheels **450** mounted thereon which rae adapted to ride upon the active rails **28** and **30** of the roadway **22**. A pair of guide rollers, one of which is illustrated in FIGURE 20 and designated by the numeral **452**, are mounted on downwardly extending support brackets **454** disposed on the lower sides of the frame side sections **438** and **440**. The rollers **452** are preferably flanged and adapted to ride upon the active rails **28** and **30** for accurately or precisely guiding the car **20** thereon, this precision movement of the car **20** being desired due to the fact that the continuous welded rails **32** and **34** are guided directly onto a plurality of rail positioning cradles **456** (see FIGURE 21) from the car **20**. Accordingly, the rollers **452** minimize any lateral movement of the car **20** as the same moves along the active rails **28** and **30** so that the continuous rails **32**, **34** are properly guided onto the rail cradles **456**.

The frame **436** includes a laterally extending member **458** which is disposed substantially midway between the end sections **442** and **444**, the member **458** being adapted to carry a pair of laterally spaced roller support plates **460** and **462** for vertical sliding movement. The plates **460** and **462** have forwardly extending, generally horizontally disposed lower end sections **464**, each of which has a pair of laterally spaced, vertically extending rollers **466** and **468** rotatably mounted thereon. It will be seen that the rollers **466** and **468** on each of the plates **460** and **462** are disposed laterally inwardly with respect to the active rails **28** and **30** of the roadway **22**. More particularly, the rollers **466** and **468** are arranged such that the continuous rails being guided therebetween are oriented in a 28 inch narrow gauge configuration. With this arrangement, the continuous rails **32** and **34** will be threaded to their final narrow gauge position by the rollers **466** and **468** so that said rails **32** and **34** will be properly positioned as they are threaded onto the rail cradles **456**. The support plates **460** and **462** are mounted for vertical movement so that they can be raised during such times as the car **20** is traveling to and from a rail laying location, suitable means such as a screw type crank or the like (not shown) being provided for the vertical adjustable movement.

The car **20** may be provided with a plurality of semi-cylindrical cradles, generally designated **470**, for carrying acetylene, oxygen or similar tanks as are commonly used for welding the ends of adjacent continuous rails, whereby such tanks are readily accessible to the workmen using them.

The car **20** is adapted to be drivingly connected to the preceding car **18** by means of a drive bar **472** which is pivotably connected at its forward end to the member **426** of the car **18** by a suitable pivot pin or the like **474**. The bar **472** is preferably of a tubular configuration and is provided with a series of apertures **476** at the rearward end thereof. A suitable tubular mounting member **478** is mounted on the forward end of the car **20** and is adapted to receive the rearward end of the bar **472** therewith, a suitable retaining pin **480** being provided to secure the rearward end of the bar **472** within the member **478**. With this construction, the car **20** may be secured to the bar **472** at any one of a variety of longitudinal positions thereon, depending upon the type (weight) of continuous rail being laid.

In order to facilitate correlating the operation and the function of the various vehicles comprising the rail positioning system **10** of the present invention, a detailed description of the operation of the system **10** will now be given.

Initially, sections of continuous welded rail, such as the rails **32** and **34**, are placed along side of the roadbed **24**. It is contemplated that the placement of such rails may occur during the winter months when the laying of the rail is usually prohibited by the weather conditions. Prior to the actual laying of the continuous rails, a base center line is painted along the cross ties **26** by a suitable machine which may be propelled along the active rails **28** and **30**, the center line being accurately located equidistant from the rails **28** and **30**. A series of rail cradles **456**, one of which is best shown in FIGURE 21, is then placed along the roadway **22** at preselected longitudinally spaced locations, the rail cradles **456** being properly aligned with the aforesaid base line so that they will be spaced exactly between the rails **28** and **30**.

After the rail cradles **456** have been properly positioned along the roadway **22**, the rail positioning system **10** of the present invention is moved to the area where the continuous rails are to be laid. The threader car **20** is properly positioned along the drive bar **472** in accordance with the particular type or weight of rail being laid, and the guide wheels **44** are lowered from the rail positioning vehicle **12**, as are the rollers **452** on the threader car **20**, whereby the system **10** will accurately traverse the rails **28** and **30** with a minimum of lateral movement between the various vehicles thereof and the rails **28** and **30**. The operator within the cab section **50** of the vehicle **12** next energizes the piston and cylinder means **64** to control upward movement of the boom **54** so that the ends of the continuous rails **32** and **34** which are laying along the roadbed **24** may be lifted upwardly and placed within the guide assemblies **275** of the threader car **14** and within the guide assemblies **224** on the vehicle **12**.

In the event the continuous rails **32** or **34** have assumed a somewhat twisted configuration as they lay along the roadbed **24**, a rail twisting or straightening device may be utilized for straightening the rails **32** or **34**, such a device being illustrated in FIGURE 9 and designated by the numeral **482**. The device **482** comprises an elongated body section **484**, the upper side of which is provided with a plurality of loops or eyelets, generally designated **486**. The eyelets **486** are adapted to be engaged by the hook **58** which is supported on the boom cable **60**. One end of the body section **484** of the device **482** is provided with a generally J-shaped section **488** which defines a recess **490** adapted to receive a portion of the foot section of the continuous rail being untwisted. A retaining bracket **492** is provided on the upper side of the section **484** and adapted to be moved to and from a position engaging the foot section of the subject rail opposite the section **488** of the device **482**. It will be seen that when the rail is engaged by the mechanism **482** in the manner shown in FIGURE 9, the boom hook **58** may be raised, thereby twisting the rail in a predetermined amount. It will be apparent, of course, that the amount of twisting may be controlled by a particular eyelet **486** with which the hook **58** is engaged, and that the direction of twisting may be controlled by placing the mechanism **482** on one side or the other of the rail which is to be straightened.

It will be noted that if the continuous rails **32** or **34** are disposed a substantial distance away from the roadbed **24**, the outrigger arms **66** may be lowered to stabilize the vehicle **12** during the time the rails **32, 34** are being positioned between the respective roller members of the threader car **14** and vehicle **12**.

After the ends of the continuous rails **32** and **34** have been placed in the positions illustrated in FIGURES 3 and 7, the rail positioning units **80**, which are normally carried in the phantom positions shown in FIGURE 22, are raised upwardly by the piston and cylinder assemblies **190** until the cam rollers **114** and **116** engage the rails. The assemblies **190** are then disconnected from the units **80**, and the piston rods **170** and **172** of the piston and cylinder assemblies **174** and **176** are connected to the units **80** by means of the pins **178** and **180**, and finally the retaining pins **152** are inserted within the openings **150** of the units **80** to secure the units **80** to the continuous rails **32** and **34**. As hereinabove described, as the pins **152** are inserted into the openings **150**, the shims **154** of the proper size are simultaneously inserted into the openings **150** to assure the continuous rails are positively clampingly secured between the cam rollers **114, 116** and the shims **154**.

With the continuous rails **32** and **34** positioned in the above-described manner, the entire rail positioning system **10** of the present invention is adapted to traverse the roadway **22** in the direction of the arrows **36** in FIGURES 1 and 2. As the positioning system **10** moves along the roadway **22**, the continuous rails **32** and **34** are threaded upwardly and slightly inwardly by the threader car **14** as said rails pass through the guide assemblies **275** thereof. The rails **32, 34** are threaded further inwardly as they pass between the rollers **230** and **232** of the guide assemblies **224** on the rail positioning vehicle **12**. As the rails **32** and **34** pass between the rollers **326, 334** and **336, 328** of the threader car **16**, the rails are threaded further inwardly until they are disposed substantially over the active rails **28** and **30** of the roadway **22**. As the continuous rails **32** and **34** pass over the threader car **18** and more particularly, as said rails pass between the rollers **390, 402** and **404, 392** of the car **18**, the rails are threaded to a position where they are disposed inwardly of the active rails **28** and **30**, as shown in FIGURE 17. Due to the great mass of the rails **32, 34** and the longitudinal spacing between the threader cars **18** and **20**, the section of the rails **32, 34** disposed rearwardly the car **18** will extend gradually from the elevated position on the car **18** to a position resting adjacent the roadbed **24** between the active rails **28, 30**, whereby the car **20** will pass over the rails **32, 34** as the positioning system **10** traverses the roadway **22**. As the car **20** passes over the rails **32, 34** the pairs of rollers **466** and **468** laterally guide the rails to a position wherein they are disposed precisely at a 28 inch or similar narrow gauge, with the result that rails are properly laterally positioned as they are threaded onto the rail cradles **456** preparatory to a subsequent threading operation which moves the rails **32** and **34** to the standard gauge position.

In the event it is desired to longitudinally move one of the rails **32** and **34** relative to the other of said rails, as for example, when the rails are being laid along a curved section of roadway, the piston and cylinder assemblies **122** are properly energized to lockingly secure the positioning units **80** to the rails **32** and **34**, after which time the operator of the vehicle **12** may energize the piston and cylinder assemblies **174, 176** on one side of the vehicle **12** depending on which of the rails **32** or **34** is to be longitudinally adjusted. For example, if the rail **32** is to be moved forwardly or to the right in FIGURE 7, the assemblies **174** and **176** on the adjacent side of the vehicle **12** are energized such that the piston rods **170** and **172** move forwardly of the vehicle **12**, with the result that the rail **32** will be moved in the direction desired. By virtue of the fact that the positioning unit **80** associated with the rail **34** is rigidly secured to said rail, the vehicle **12**, along with the rest of the positioning system **10**, will be firmly longitudinally anchored to the roadbed **24** by the rail **34**. After such time as the rails **32** or **34** have been properly longitudinally positioned, the piston and cylinder assemblies **122** may be deenergized to enable the vehicle **12** to move along the roadway **22** to continue the threading operation.

It will be seen from the foregoing description of the rail positioning system **10** that the present invention provides a new and improved apparatus which is adapted to facilitate the laying of continuous railroad rails. Through the use of the present invention, the required number of workmen is minimized to the extreme, thereby considerably reducing the labor expenses attendant to replacing the railway rails. It will also be seen that the present invention facilitates longitudinal adjustment of the continuous rails so that the adjacent ends of such rails can be properly aligned with a minimum amount of effort, such alignment procedures being extremely difficult and frequently prohibitive in the past due to the extreme maximum length, mass and flexibility of the continuous rails. The various vehicles comprising the system **10** are intended to be of an extremely rugged construction and durability in operation so as to minimize any downtime or component replacement costs. The system **10** is further designed so as to be easily disassembled and thereby may be conveniently removed from an active railway to accommodate existing train schedules.

While it will be apparent that the exemplary embodiment illustrated herein is well calculated to fulfill the objects above stated, it will be appreciated that rail positioning system **10** of the present invention is susceptible to modification and variation.

What is claimed is:

1. In a rail positioning system for transferring continuous welded rails from a position resting on a railroad roadbed outboard of the active railroad rails, to a position wherein said continuous rails provide a relatively narrow gauge railway between the active rails, the combination which includes,

- a plurality of rail threader cars movable along the active rails,
- guide means on each of said cars for successively threading and feeding the continuous rails such that each successive vehicle biases the continuous rails laterally inwardly from the position to which it was biased by the preceding vehicle,
- means for driving said threader car means along the active rails,
- means detachably engageable with the continuous rails as said rails are being transferred by said system, and
- means for selectively biasing said last mentioned means longitudinally of the active rails, whereby to longitudinally adjust said continuous rails relative to the roadway.

2. A rail positioning system as set forth in claim **1** wherein said rail threader cars include guide means for guiding the continuous welded rails along a predetermined path, said path extending from a position located outwardly from the active rails and spaced thereabove, to a position located between said active rails.

3. A rail positioning system as set forth in claim **1** wherein at least one of said rail threader cars is disposed forwardly of said driving means and wherein at least one of said cars includes roller means for guiding said continuous rails along a predetermined path.

4. A rail positioning system as set forth in claim **1** wherein said driving means comprises a rail positioning vehicle drivingly connected to said rail threader car means, said vehicle and said threader car means each being provided with rail guide means for threading the continuous rail to said position wherein said rails provide a relatively narrow gauge railway between the active rails.

5. A rail positioning system as set forth in claim **4** wherein said rail guide means includes antifriction roller means.

6. A rail positioning system as set forth in claim **5** wherein said roller means on one of said rail threader car means is disposed slightly above the roadway and in a position substantially aligned with the narrow gauge railway.

7. A rail positioning system as set forth in claim **1** wherein said detachably engageable means comprises means for individually clampingly engaging the continuous rails.

8. A rail positioning system as set forth in claim **7** wherein said means for clampingly engaging the continuous rails comprise cam means and piston and cylinder means for actuating said cam means.

9. A rail positioning system as set forth in claim **1** wherein said rail threader car means comprises a plurality of individual rail threading cars spaced longitudinally along the railway, wherein said means for driving said threader cars comprises a rail positioning vehicle drivingly connected to said cars, wherein said means detachably engageable with the continuous rails comprise at least one rail positioning unit mounted on said vehicle, said unit comprising means for clamping engaging a continuous rail, and wherein said means for selectively biasing the said last mentioned means comprises piston and cylinder means on said vehicle and operatively connected to said unit for longitudinally moving said unit relative to said vehicle.

10. In a railroad rail positioning system,

a rail positioning vehicle movable along a railroad track for transferring continuous welded rail from a position resting outboard of the track to a position wherein said continuous rail provides a relatively narrow gauge railway within the track,

said vehicle including means for guiding said continuous rails along a predetermined path, and

means for longitudinally moving said continuous rail including means clampingly engageable with said rail and means for longitudinally biasing said last mentioned means relative to the vehicle said clampingly engageable means including cam means selectively engageable with the continuous rail.

11. A rail positioning system as set forth in claim **10** wherein said guide means includes antifriction roller means for guiding the continuous rail along said predetermined path.

12. A rail positioning system as set forth in claim **10** which includes boom means on said vehicle for conveying the continuous rail to a position adjacent said guide means.

13. A rail positioning system as set forth in claim **12** wherein said boom means comprises a rotatably mounted boom on said vehicle, said boom including means detachably engageably with the continuous rail and elevating means for conveying the continuous rail to a position adjacent said guide means.

14. A rail positioning system as set forth in claim **13** which includes means connectable to said boom means for twisting the continuous rail in a predetermined direction, whereby to longitudinally align said rail with said guide means.

15. A rail positioning system as set forth in claim **14** wherein said twisting means comprises means detachably engageable with the foot of the continuous rail and means selectively connectable with said elevating means of said boom means.

16. A rail positioning system as set forth in claim **10** which includes outrigger means on said vehicle for stabilizing the same as the continuous rail is conveyed to a position adjacent said guide means.

17. A rail positioning system as set forth in claim **10** which includes drive wheel means drivingly engageable with the roadbed, and which includes guide wheel means engageable with the railroad track for guiding the vehicle therealong.

18. A rail positioning system as set forth in claim **10** wherein said vehicle includes brake means for fixedly positioning said vehicle along the railroad track, said brake means including means engageable with the roadbed and means for biasing said last mentioned means to and from a position engaging said roadbed.

19. A rail positioning system as set forth in claim **18** wherein said brake means includes spud means pivotably mounted on the vehicle and means for moving said spud means from a lower position engaging the roadbed to an elevated position located above said roadbed.

20. A rail positioning system as set forth in claim **10** wherein said means for longitudinally moving said continuous rail comprises a rail positioning unit including means defining a recessed portion adapted to receive a portion of said continuous rail and cam means for clampingly securing said rail within said recessed portion.

21. A rail positioning system as set forth in claim **20** which includes variable size retaining means within said recessed portion engageable with said continuous rail.

22. A rail positioning system as set forth in claim **20** which includes retaining pin means for retaining said continuous rail within said recessed portion, and which includes piston and cylinder means for biasing said cam means to a position clampingly securing said continuous rail between said pin means and said cam means.

23. A rail positioning system as set forth in claim **22** which includes means for varying the distance between said retaining pin means and said cam means, whereby continuous rails of different sizes may be clampingly secured within said recessed portion.

24. A rail positioning system as set forth in claim **23** wherein said means for varying the distance between said retaining pin means and said cam means comprises generally channel shaped shims mounted on said pin means and having portions engageable with said rails for adjusting the effective distance between said retaining pin and said cam means.

25. A rail positioning system as set forth in claim **10** wherein said last mentioned means comprises at least one rail positioning unit, said unit comprising a pair of spaced parallel side plates, cam means extending between said side plates, said cam means including actuating means, retaining pin means extending between said side plates and defining therewith a channel shaped recess adapted to receive a section of a continuous rail, said actuating means being operable to bias said cam means into engagement with said continuous rail section, whereby to clampingly engage said section between said cam means and said retaining pin means.

26. A rail positioning system as set forth in claim **20** which includes means for including piston and cylinder means for biasing said unit longitudinally of the vehicle.

27. In a rail positioning system for transferring a pair of continuous welded rails from a position resting on a railroad roadbed outboard of the active railroad rails to a position wherein said continuous rails provide a relatively narrow gauge railway disposed between the active rails,

first clamping means for longitudinally biasing one of said continuous rails relative to the active rails,

means for supporting said last mentioned means, and

anchor means for preventing longitudinal movement of said first mentioned means during longitudinal movement of said one continuous rail, said anchor means including second clamping means detachably engageable with the other of said continuous welded rails and independent of said first clamping means, whereby said other welded rail acts as an anchor to prevent longitudinal movement of said support means during longitudinal movement of said first mentioned means.

28. A rail positioning system as set forth in claim **27** which includes first means clampingly engageable with one of the continuous rails and second means clampingly engageable with the other of said continuous rails, and which includes means for biasing one of said clampingly engageable means and the continuous rail engaged thereby longitudinally of the other of said clampingly engageable means and the continuous rail engaged thereby.

29. A rail positioning system as set forth in claim **28** wherein said first and second clampingly engageable means includes cam means and means for biasing said cam means into engagement with the continuous rails.

30. A rail positioning system as set forth in claim **28** wherein said support means comprises a rail positioning vehicle, means supporting said first and second clampingly engageable means on said vehicle, and means for biasing one of said clampingly engageable means longitudinally of the vehicle, whereby the continuous rail engaged by said one clampingly engageable means is longitudinally adjusted relative to the vehicle.

31. A rail positioning system as set forth in claim **28** which includes means for supporting said clampingly engageable means in an inoperative position, and which includes means for moving said clampingly engageable means from said inoperative position to a position clampingly engaging said continuous rails.

32. In a rail positioning system for transferring continuous welded rails from a position resting on a railroad roadbed outboard of the active railroad rails, to a position wherein said continuous rails provide a relatively narrow gauge railway between the active rails, the combination which includes,

rail threader car means movable along the active rails for transferring the continuous rails upwardly from the roadbed and laterally inwardly over the active rails as said car means traverse the active rails,

means including a rail positioning vehicle for driving said threader car means along the active rails,

said vehicle including means detachably engageable with the continuous rails as said rails are being transferred by said system, and

means for utilizing one continuous welded rail as a means for anchoring said rail threader car means against movement along the active rails as another continuous welded rail is positioned longtudinally of the roadbed.

33. In the method of longitudinally positioning one of a pair of continuous railroad rails along a railroad roadbed having active rails along which a rail positioning vehicle my traverse, the steps which include,

moving the vehicle to a preselected position along the active rails,

clampingly engaging each of the continuous rails with one of a pair of positioning mechanisms on the vehicle, and longitudinally biasing one of the mechanisms, whereby

the continuous rail engaged by said one mechanism will be positioned longitudinally of the roadbed while the vehicle is fixedly positioned relative to the active rails by the mass of the other of the continuous rails which is clampingly engaged by the other of the positioning mechanisms.

34. In the method of transferring continuous railroad rails from a position resting on a roadbed outboard of the active railroad rails, to a position wherein the rails are disposed inboard of the active rails, the steps which include,

traversing a series of longitudinally spaced rail positioning vehicles along the active rails, and

continuously threading and feeding the continuous rails laterally inwardly of the active rails by engaging the continuous rails with guide means provided on the vehicles and arranged such that each successive vehicle biases the continuous rail laterally inwardly from the position to which it was biased by the preceding vehicle.

35. In a railroad rail positioning system,

a rail positioning vehicle movable along a railroad track for transferring continuous welded rail from a position resting outboard of the track to a position wherein said continuous rail provides a relatively narrow gauge railway within the track,

said vehicle including means for guiding said continuous rails along a predetermined path, and

first and second laterally spaced clamping means on said vehicle for longitudinally moving laterally spaced pairs of continuous rails, said first and second clamping means being independently actuable to independently move the continuous rails.

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