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APPARATUS FOR LAYING RAILWAY RAILS

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3 Sheets-Sheet 1

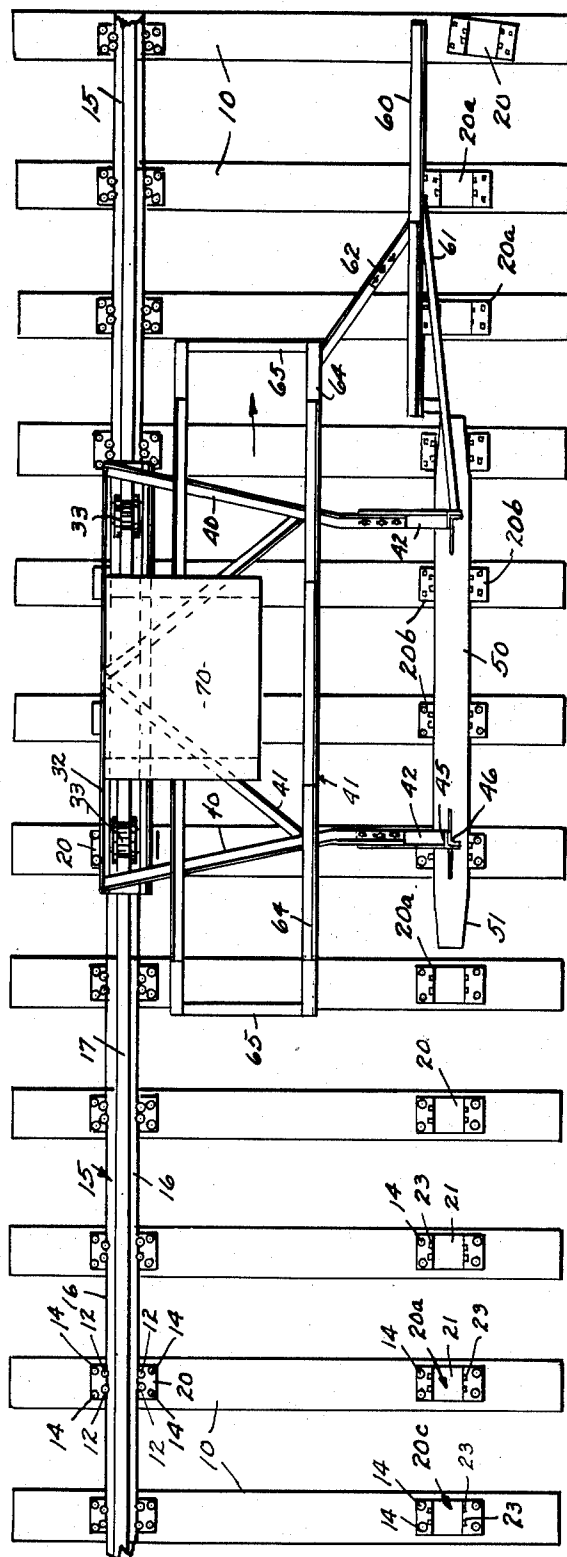


FIG-1

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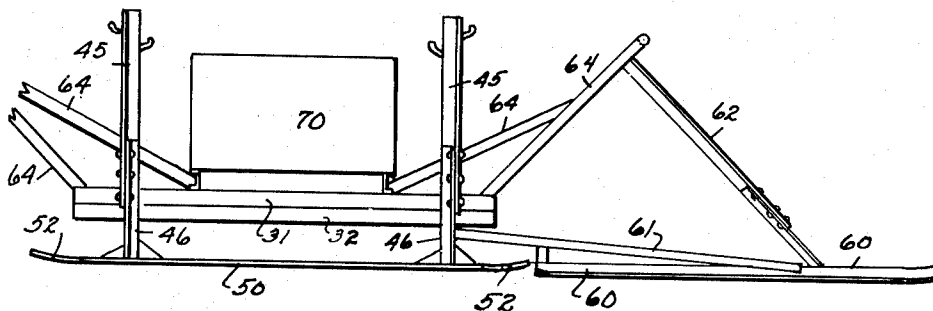
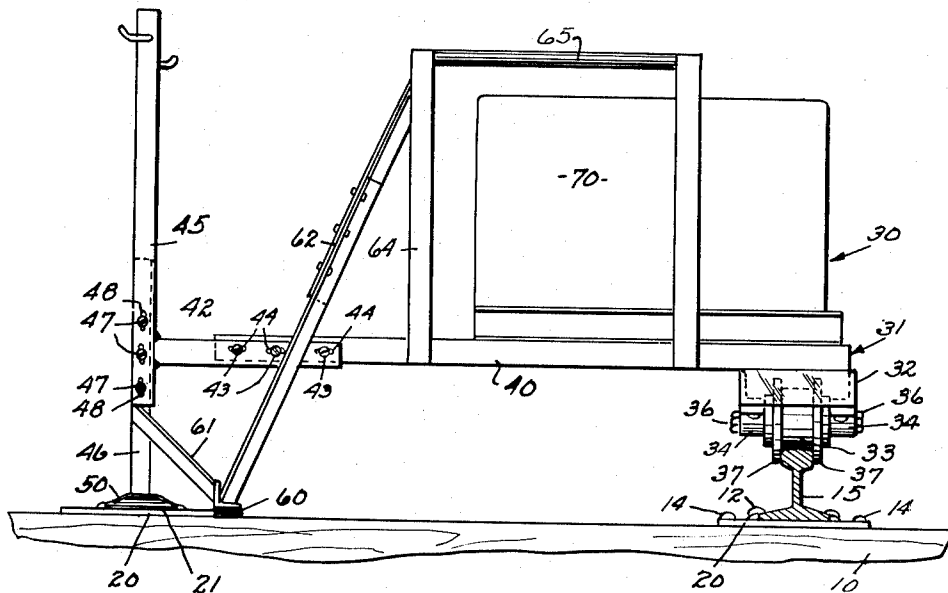
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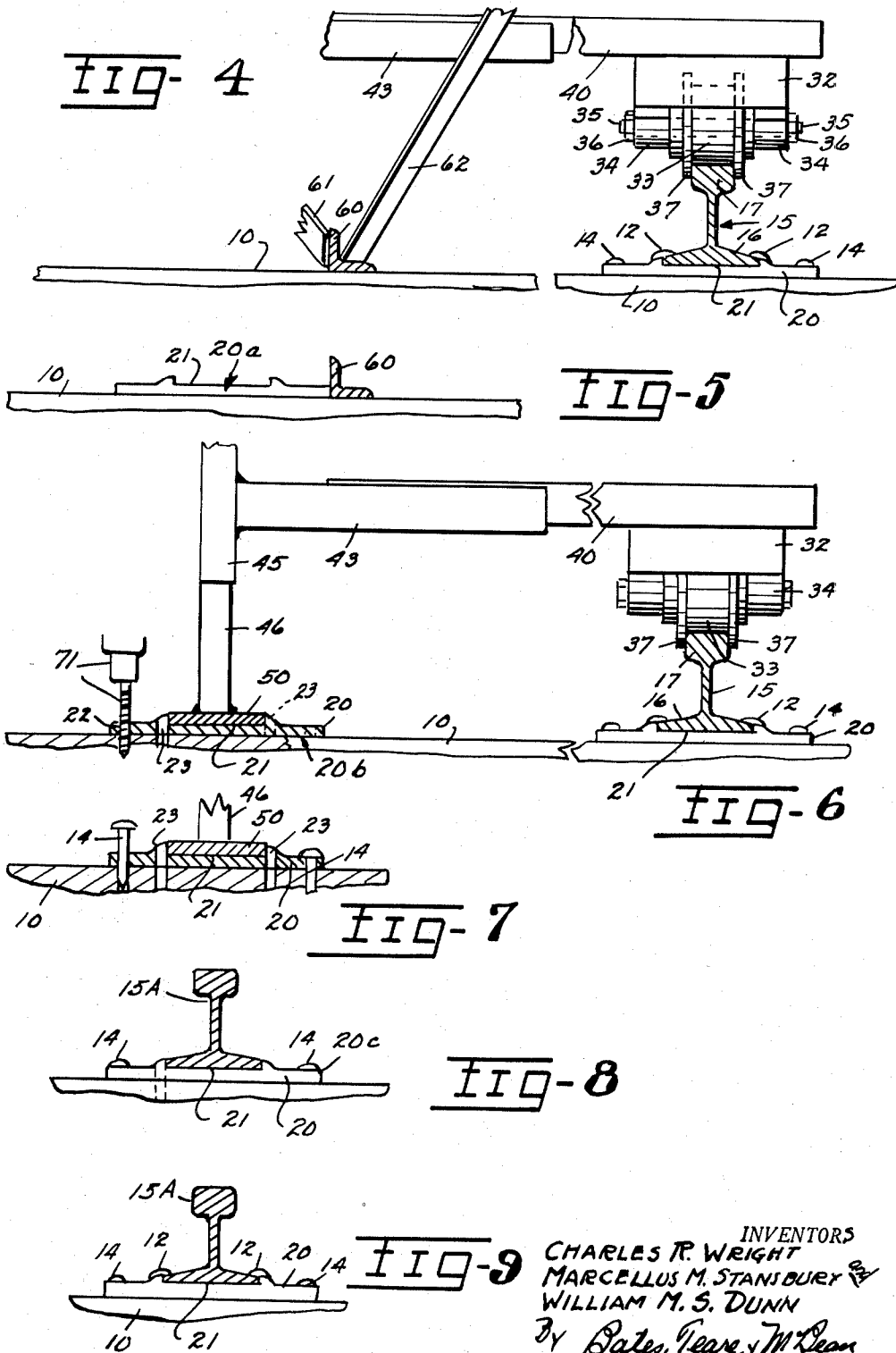
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APPARATUS FOR LAYING RAILWAY RAILS

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9 Claims. (Cl. 104—2)

This invention relates to improvements in or relating to an improved apparatus for use in connection with the laying of railway track.

It is essential in the laying of railway track that the two rails which comprise the track be accurately aligned with and spaced from each other to maintain parallelism of the rails and accurate gauge. In the past this generally has been accomplished by first laying one rail and securing it in place on its supporting ties. The second rail has then been placed in position on the ties and gauged, generally by use of hand gauges which extended from the head of the secured rail to the head of the unsecured rail. The unsecured rail then has been forced into contact with such gauge by suitable sidewise movement and secured to the ties in the usual manner. This method has been slow, and while resulting in an approximation of the desired gauge, nevertheless has not provided as high a degree in accuracy as is desirable. Likewise, the past methods also have been disadvantageous in that their use has resulted in the setting up of strains in the rail and in the spikes which secured the rail to the ties. These strains are believed to have resulted partially from the use of the second rail itself for gauging, and partially because, in the past, one end of a rail length is spiked to a tie and then the rail is gauged at the next tie by prying it into a position, the desired distance from the first rail. The rail is then spiked to such tie, and the operation repeated from tie to tie until the entire rail length has been gauged and spiked to the ties. Thus the free portion of the rail is pried from side to side while portions thereof are spiked to the ties. Shortly after the rail was secured in position these strains have acted to cause the track to become out of gauge, accordingly, the rails have had to be adjusted frequently to maintain any semblance of gauge accuracy.

The foregoing difficulties have been accentuated by increases in the height of the rail which makes it more susceptible to strains imparted during gauging operations, and by the use of lengths of rail, several hundred feet long, comprising a plurality of shorter lengths of rail welded together end to end, prior to the laying thereof, to form a continuous length. The use of welded lengths of rail, particularly those welded prior to the laying thereof, is desirable as it eliminates joints between rail sections, the advantages of which elimination are well known.

The present invention contemplates laying of railway rails to gauge in a manner such as will eliminate setting up strains in the rail or rail spikes, either of which might later cause the rail to become out of gauge. This is accomplished by first aligning and securing the one rail in position on the ties. Tie plates having recessed seats to receive the other rail, as is customary are then placed on the ties with their recesses accurately spaced from the first or secured rail. These tie plates are secured to their respective ties while the rail receiving recesses are held accurately spaced from the secured rail. The second rail is then positioned on such tie plates with its base seated

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in their recesses and the rail then secured in position by spiking it to the ties in the usual manner. Accordingly, pressure is not applied to the rail itself to bring it to gauge while any portion of the rail length is secured to the ties, thus the spiked portion of a rail length is not subjected to strains resulting from pressures used to bring the rail to gauge.

The invention further provides an improved form of apparatus to facilitate the positioning and securing of the tie plates for the second rail on the ties in a manner which enables them to be accurately spaced from the previously laid rail. Further the improved apparatus acts to hold a plurality of tie plates in a definite distance from the previously secured rail while such tie plates are being secured to the ties.

Further objects and advantages of the present invention will become more apparent from the following description which refers to the accompanying drawing in which there is illustrated one manner of carrying out the improved method together with one form of improved apparatus for use in connection therewith. The essential features of the invention will be summarized in the claims.

In the drawings, Fig. 1 is a plan view of a section of railway track, illustrating one rail secured in position and the tie plates for the other rail being positioned to receive the other rail, together with one form of apparatus for accurately gauging such tie plates; Fig. 2 is a side view of the apparatus shown in Fig. 1; Fig. 3 is an end view of the apparatus on a slightly enlarged scale; and Figs. 4 to 9 inclusive are diagrammatic views partially in transverse section illustrating the various steps in the improved method of laying the rail.

Referring now to the drawings and particularly to Fig. 1, there is illustrated a relatively short length of railway road bed including a plurality of ties 10 spaced one from the other in the usual manner. One rail, for instance the rail 15, is shown affixed to the ties by spikes 12 which extend through tie plates 20 into the ties 10 and having the usual heads which engage the base of the rail 15 in the customary manner. Other spikes 14 are shown as extending through the tie plates and securing them in position on the ties.

The tie plates 20 are of the usual type which, as shown in Fig. 5, comprise an elongated flat plate having a recessed portion or rail seat 21 extending transversely thereof and of a width corresponding with the width of the base 16 of the rail 15. The tie plate 20 is provided with suitable openings indicated at 22 which extend through the plate to enable it to be secured to the tie by the spikes 14. Other openings 23 are positioned relatively close to the edge of the rail seat or recess 21 so that the heads of spikes 12 positioned therein will overlie the rail base 16, as indicated in Fig. 9.

In laying the second rail 15A, tie plates indicated at 20a are first placed on the ties adjacent the ends thereof opposite the rail 15. These tie plates are first brought into accurate alignment and spaced relation to the rail 15 as indicated by the plates 20b. While these plates are held in position the ties are drilled to receive the spikes 12 and 14 using the tie plate openings 22 and 23 as templates and the spikes 14, which secure the tie plates to the ties are driven. When a number of tie plates 20c have been secured to the ties, the rail 15A is positioned thereon and spiked to the ties by the spikes 12 which pass through the openings 23 of the tie plates and the heads of which secure the rail in position in the usual manner.

The improved gauging apparatus is generally indicated in the drawings at 30. This apparatus comprises a frame 31 having an elongated rectangular frame portion 32 provided with a pair of longitudinally spaced double flanged wheels 33. These wheels are mounted in bearings 34 secured to the frame 32 and are so journaled in the bear-

ings to permit them to be removed. This may be accomplished by mounting the flanged wheels on removable spindles 35 which are restrained from axial movement in the bearings 34 by retaining nuts 36.

The flanges 37 of the wheels are spaced to closely engage opposite sides of the head 17 of the previously laid rail 15. The wheels 32 are spaced longitudinally in the frame 31 a distance such as will insure longitudinal alignment of the frame with the rail 15. Secured to the frame portion 32, and extending transversely therefrom, are a plurality of frame members 40. These frame members extend toward the intended position of the other rail and are braced by cross frame members 41.

The frame members 40 are provided at their outer ends with removable horizontal frame extensions 42 which are adjustably secured to the frame members 40 as for instance by a plurality of bolts 43 extending through suitable slotted openings 44 in at least one of the frame members. Secured to the outer end of each frame extension 42 is a vertically extending post 45. Each post is provided with a downwardly projecting removable extension 46 which is secured thereto for vertical adjustment by bolts 47 which pass through slotted openings 48 in both of the vertical members.

A gauging member or shoe 50 is rigidly secured to the lower end of the vertical post extensions 42. This shoe comprises an elongated flat plate of a width substantially identical with the width of the rail base 16 and of such a length as will extend across three or four ties. Adjacent its ends the sides of this member are beveled as indicated in Fig. 1 at 51 to facilitate sliding of the shoe into the rail seat recess 21 of the tie plates 20 and the camming of such plates into the desired position. The ends of the gauging member or shoe 50 are likewise bent upward as indicated at 52, Fig. 2, to permit it to readily slide onto the tie plates which previously have been manually placed in approximate position.

To facilitate the manual positioning of the tie plates so that they may be brought to gauge by the gauging shoe 50 it has been found convenient to provide the gauging apparatus with a forwardly extending member 60 arranged to ride on the ties and of sufficient length to enable the tie plates 20 to be abutted thereagainst in a position to be engaged by the shoe 50 as it moves along the roadbed. The member 60 is adjustably secured to the shoe supporting structure by braces 61 and 62, the latter being adjustably secured to the foremost of a pair of frame members 64 carried by the frame 40.

The frame members 64 extend to either end of the gauging device and are shown joined by bars 65 which provide hand grips, by means of which the gauging apparatus may be moved along the track.

The frame 40 may support a power unit 70 to provide power for the operation of drilling apparatus and/or power hammers to spike the tie plates in position. The power unit and frame members 64 are spaced inwardly from the gauging shoe 50 and its associated supporting mechanism a distance sufficient to permit workmen to work therebetween. In operation the gauging apparatus is positioned with its flange wheels 33 in engagement with the rail 15 and tie plates 20 are positioned beneath the shoe 50 to thereby support the apparatus for movement along the roadbed.

Tie plates such as those shown at 20a are manually placed in position with one end thereof abutting the guide 60 and the apparatus moved in the direction of the arrow of Fig. 1 to cause them to be engaged and cammed into position by the shoe 50. While the tie plates 20b are engaged by the shoe the ties are drilled by suitable drilling apparatus to receive the spikes 12 and 14. After the ties have been drilled and before the tie plates have been disengaged by the shoe 50, the spikes 14 which secure the tie plates to the ties are driven. Accordingly, at this state of operation the tie plates are aligned with each other and are accurately spaced from the rail 15 thereby insuring accurate alignment and gauge of the

rail to be laid in the seats 21 thereof. When a sufficient number of tie plates have been secured in accurate position on the ties, the rail 15A is positioned in the seats 21 thereon and spiked to the ties by spikes 12. Accordingly, the rail 15A will be accurately gauged relative to the previously positioned rail 15, the gauging having been accomplished without the exertion of strains upon the rail itself. Accordingly, the gauge will be maintained over a long period of time.

The improved method and apparatus are of great advantage in relaying rail. In this instance one old rail may be aligned, the other old rail removed, and a new rail substituted therefor as heretofore explained, whereupon the newly laid rail may be used as a guide, the other old rail removed and replaced according to the present invention. The improved method and apparatus permits a considerable number of tie plates to be positioned before the rail is seated therein and due to the accurate positioning of such plate lengths of rail several hundred feet long may be readily positioned by and aligned with a previously laid rail without placing any undue strains upon the rail section.

The adjustability of the horizontal frame extensions 42 facilitate the use of the apparatus with tracks of differing gauges and permits compensation to be made for rail bases of differing widths. The vertical adjustment of the posts permits compensation to be made for differing heights of rail. The removability of the shoe permits the substitution of shoes of widths corresponding to differing widths of rail bases and the removability of the flanged wheels 33 permits substitution of wheels of various widths to compensate for rails of different head widths.

We claim:

1. A rolling gauge for railway tracks or the like including a frame adapted to extend between two rail positions, a pair of rollers rotatably supporting one side of said frame and adapted to engage a previously positioned and fixed rail at least two longitudinally spaced points relative to such rail, means to prevent transverse movement of said frame relative to said rail, an elongated shoe secured to the other side of said frame for engagement with the rail seats of a plurality of spaced tie plates to thereby support the other side of said frame, the forward end of said shoe having cam like surfaces to engage the side walls of the rail seats and cam them into alignment with said shoe, said shoe being removably mounted on said frame, means to adjust said shoe vertically and transversely relative to said frame, and means to secure said shoe in its adjusted position whereby compensation may be made for different rail heights and gauges.

2. An apparatus for gauging railway tracks including a frame, a pair of wheels supporting said frame, said wheels being rotatably mounted on said frame and longitudinally spaced to engage the head of a previously positioned and fixed rail at longitudinally spaced points, means to prevent transverse movement of said frame relative to said rail, an elongated longitudinal tie plate engaging shoe secured to said frame, said shoe extending longitudinally of the frame and spaced a predetermined distance from a longitudinal line connecting said wheels, said shoe having longitudinally extending sides to engage shoulders formed at the side of rail seats of tie plates.

3. An apparatus for gauging railway tracks including a frame, a pair of flanged wheels supporting said frame, said wheels being rotatably mounted on said frame and each having a pair of flanges to engage the opposite sides of the head of a previously positioned and fixed rail, said wheels engaging said rail at longitudinally spaced points, said frame having transverse frame members secured thereto and extending toward the desired position of the other rail, an elongated longitudinally extending tie plate engaging shoe removably secured to said transverse frame members for engagement with the rail seats of a plurality of tie plates and adapt-

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ed to be slid thereacross, said shoe having spaced parallel longitudinally extending sides to engage parallel shoulders of the tie plate seats and thereby position said tie plates.

4. An apparatus for laying railway rail to gauge including an elongated frame, a pair of flanged wheels supportingly mounted at either end of said frame for engagement with the head of a previously properly positioned and fixed rail at longitudinally spaced points, means to prevent transverse movement of said frame relative to the previously positioned rail, horizontal frame members secured to said frame and extending transversely toward the desired position of the other rail, a longitudinally extending tie plate shoe secured to said horizontal frame members, said shoe having a length to engage simultaneously a plurality of rail seat equipped tie plates adapted to receive such other rail, said shoe having a width substantially identical with the width of the tie plate seats and spaced parallel sides to engage shoulders formed at the sides of such seats, whereby the shoe will progressively engage such seats and their shoulders as the apparatus is moved along the rail toward approximately positioned plates on spaced ties, and a guide carried by said frame member and extending forwardly of the shoe in position to define the location of one end of the tie plates whereby the plates may be manually positioned for engagement by the aligning shoe.

5. A rolling gauge for railway tracks or the like including a frame adapted to extend between the two rail positions, a pair of longitudinally spaced rollers rotatably supporting one side of said frame and adapted to engage a previously properly positioned and fixed rail at at least two longitudinally spaced points relative to the positioned rail, an elongated shoe secured to the other side of said frame for engagement with the rail seats of a plurality of spaced tie plates to thereby support the other side of said frame, means to prevent transverse movement of said shoe relative to said previously positioned rail, the forward end of said shoe having cam-like surfaces to engage the side walls of the rail seats and cam the tie plates transversely into alignment with said shoe, and wherein said shoe is mounted for transverse adjustment relative to said frame whereby compensation may be made for different rail gauges.

6. An apparatus for laying railway rail to gauge, including an elongated frame, a pair of wheels supportingly mounted at either end of said frame for engagement with the head of a previously properly laid and fixed rail at longitudinally spaced points, each wheel having a pair of spaced flanges to engage the sides of said rail head and restrict transverse movement of said frame, frame members secured to said frame and extending transversely toward the desired position of the other rail, a longitudinally extending tie plate shoe removably secured to said frame members and of a length to engage a plurality of rail seat equipped tie plates simultaneously, said shoe having a width substantially identical with the width of the tie plate seats and parallel side edges to engage shoulders formed at the sides of the seats, the forward portion of each of said edges terminating in a tapering surface to provide cam surfaces to move approximately prepositioned tie plates into accurate alignment with the shoe as the apparatus is moved along the rail toward such approximately positioned

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shoes, and a guide carried by said frame member and extending forwardly of the shoe in position to define the approximate location of the tie plates whereby the plates may be manually positioned for engagement by the aligning shoe.

7. An apparatus for laying railway rail to gauge, including an elongated frame, a pair of flanged wheels supportingly mounted at either end of said frame for engagement with the head of a previously properly positioned and fixed rail at longitudinally spaced points, means to prevent relative transverse movement between said frame and said fixed rail, a pair of spaced horizontal frame members secured to said frame and extending transversely toward the desired position of the other rail, a vertically extending post secured to each of said frame members, a longitudinally extending tie plate shoe secured to said posts and of a length to engage a plurality of rail seat equipped tie plates simultaneously, said shoe having parallel sides to engage inwardly facing shoulders formed at the sides of the seats, said shoe having a width substantially identical with the distance between said shoulders, the forward edges of said shoe tapering inwardly to provide cam surfaces to engage said shoulders and move the tie plate into accurate alignment with the shoe, said shoe having its forward end inclining upward to facilitate engagement of the tie plate seat by the shoe as the apparatus is moved along the rail toward approximately positioned shoes, and a guide carried by said frame member and extending forwardly of the shoe in position to define the approximate location of one end of the tie plates whereby the plates may be manually positioned for engagement by the aligning shoe.

8. An apparatus for gauging railway tracks including a frame, means carried at one side of said frame to engage the head of a previously positioned and fixed rail at longitudinally spaced points and maintain said frame accurately positioned transversely relative thereto, an elongated longitudinal tie plate engaging shoe secured to the other side of said frame adapted to enter the rail seats of a plurality of tie plates and adapted to be slid thereacross, said shoe having spaced longitudinally extending parallel sides to engage spaced shoulders of the rail seats, and wherein said sides are spaced apart substantially the same distance as said shoulders, to thereby accurately position the tie plates relative to the fixed rail.

9. An apparatus for gauging railway tracks including a frame, a pair of wheels supporting said frame and longitudinally spaced to engage the head of a previously positioned and fixed rail at longitudinally spaced points, an elongated longitudinally extending tie plate engaging shoe mounted on and extending longitudinally of the frame and spaced from a longitudinal line connecting said wheels, and means for holding said shoe at a predetermined lateral position with respect to the head of the previously positioned and fixed rail, said shoe having laterally spaced side members to engage shoulders formed at the side of rail seats of the tie plates.

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