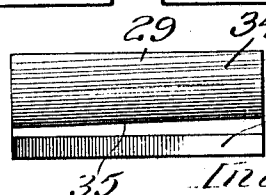
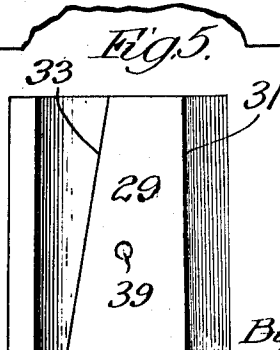
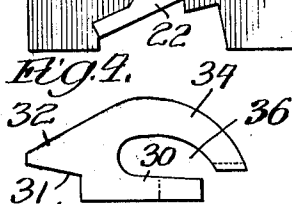
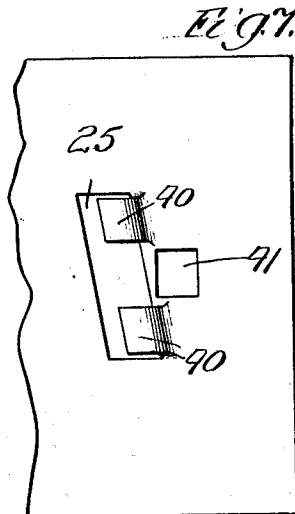
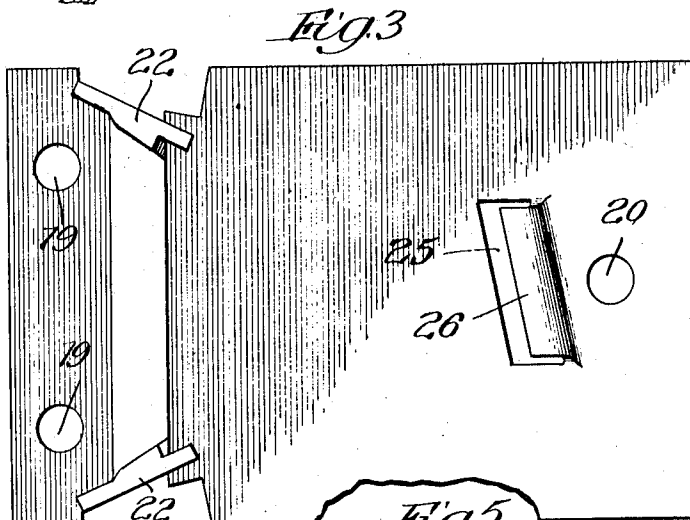
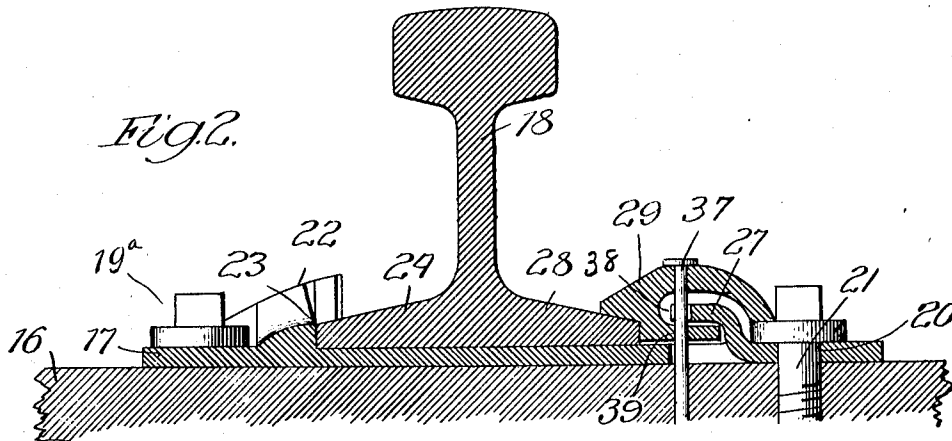
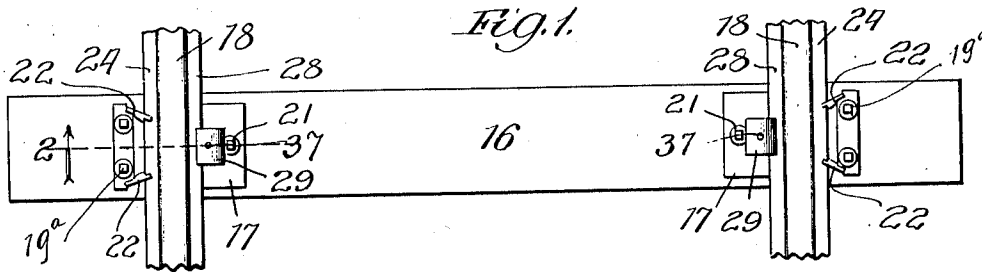


953,089.

3 SHEETS—SHEET 1.



Witnesses:
Ed. L. Paylord,
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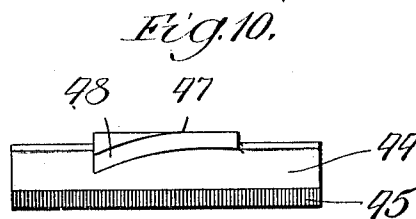
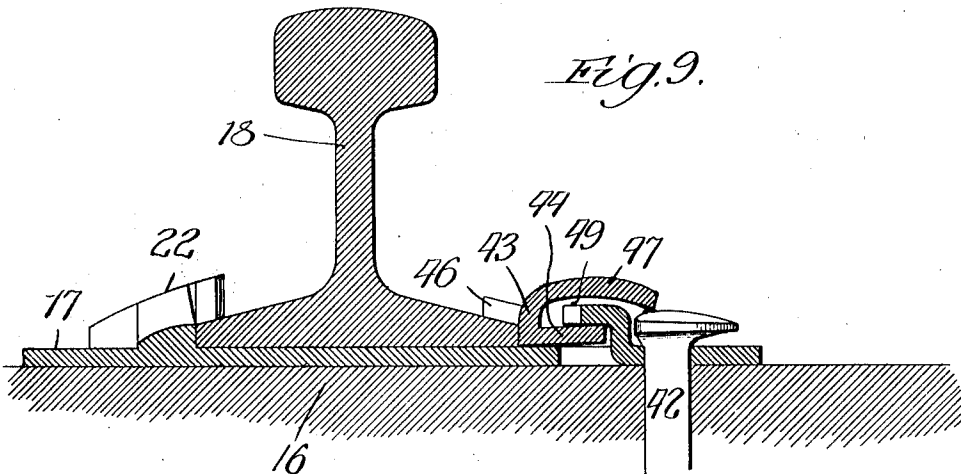
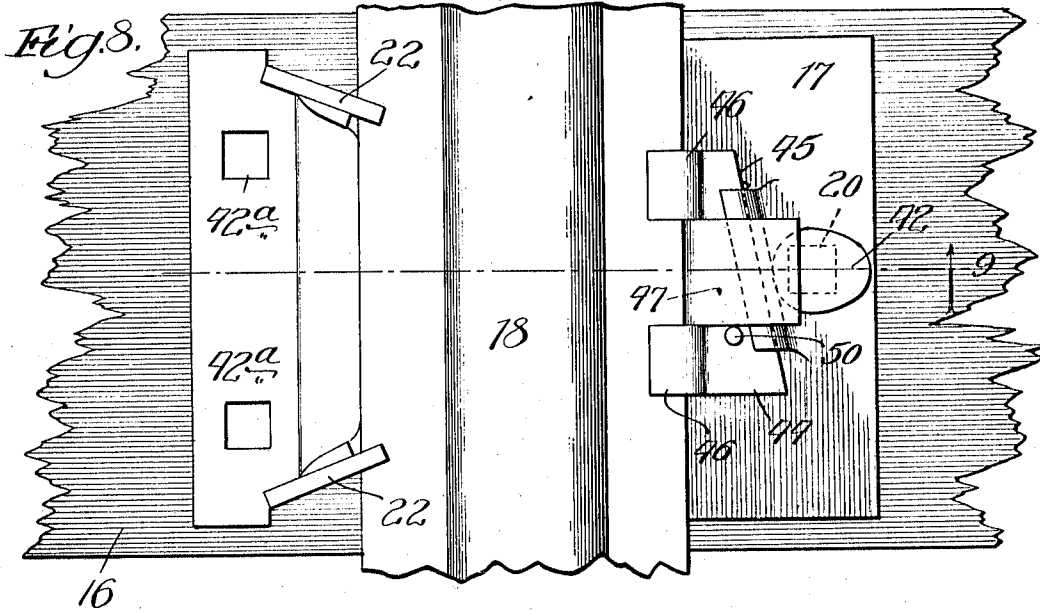
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RAILWAY ROAD BED CONSTRUCTION.
APPLICATION FILED MAY 17, 1909.

953,089.

Patented Mar. 29, 1910.

3 SHEETS—SHEET 2.



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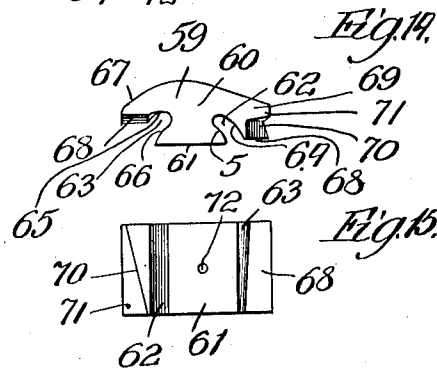
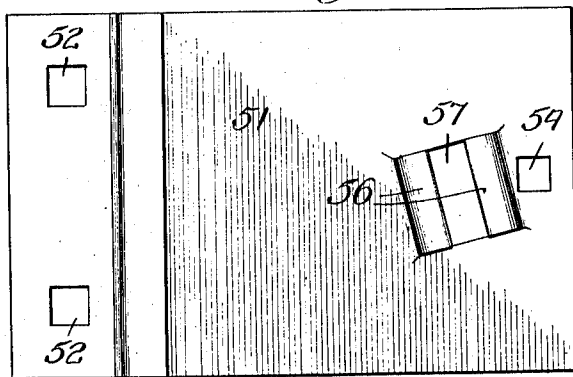
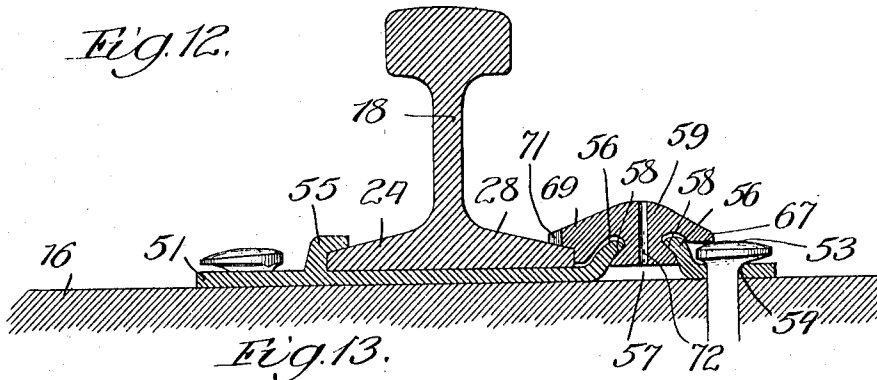
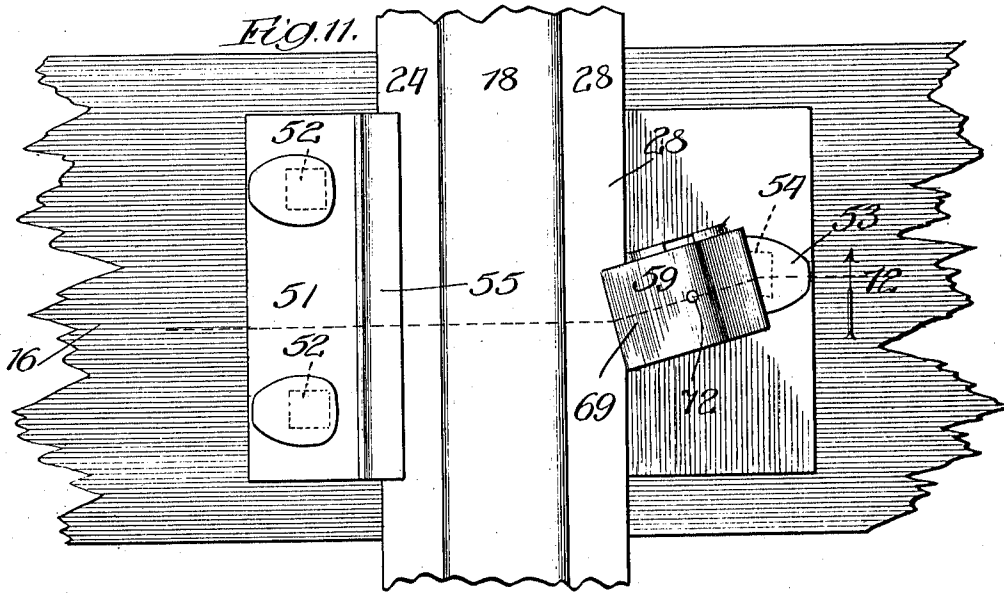
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

CHARLES R. HOLDEN, OF CHICAGO, ILLINOIS.

RAILWAY ROAD-BED CONSTRUCTION.

953,089.

Specification of Letters Patent. Patented Mar. 29, 1910.

Application filed May 17, 1909. Serial No. 496,583.

To all whom it may concern:

Be it known that I, CHARLES R. HOLDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Railway Road-Bed Construction, of which the following is a specification.

My invention relates, more particularly, to improvement in ties of wood or other material of a character adapting them to receive spikes, provided with metal plates secured thereto toward their opposite ends and forming seats for rails secured to the plates, though as to certain features it is applicable to other kinds of ties, my primary object being to provide improved means for fastening a rail to its support, and my more particular object being to provide means co-operating with the plates for securing a rail thereto, which shall be readily applicable to the plate and rail for holding the rail to the plate, shall be readily removable therefrom, and which shall be simple of construction, economical to manufacture, and positive in operation, to the end of rendering the rail secure on the ties, permitting them to be quickly removed therefrom and permit tightening of the rails on the plates when loosened by use.

Referring to the accompanying drawings—Figure 1 is a plan view of a tie showing a pair of rails secured thereto by my improved fastening means. Fig. 2 is an enlarged sectional view taken at the line 2 on Fig. 1 and viewed in the direction of the arrow, this view showing a portion of one end only of the tie and one rail. Fig. 3 is an enlarged plan view of the tie-plate illustrated in the preceding figures. Fig. 4 is an end view of the rail-securing clip illustrated in Figs. 1 and 2. Fig. 5 is a bottom plan view of the same. Fig. 6 is a view in side elevation of the same. Fig. 7 is a broken plan view of one end of a tie-plate showing a modification of the clip-abutment. Fig. 8 is an enlarged plan view of one end of a tie shown as carrying a rail on its tie-plate, the rail being secured in place by fastening means constituting another embodiment of my invention. Fig. 9 is a section taken at the line 9 on Fig. 8, and viewed in the direction of the arrow. Fig. 10 is a view in rear elevation of the rail-fastening clip illustrated in Fig. 8. Fig. 11 is a view similar

to that of Fig. 8 illustrating a different type of tie-plate and a rail-securing clip constituting still another embodiment of my invention. Fig. 12 is a section taken at the line 12 on Fig. 11 and viewed in the direction of the arrow. Fig. 13 is a top plan view of the tie-plate illustrated in Figs. 11 and 12. Fig. 14 is a view in end elevation of the rail-engaging clip of Figs. 11 and 12; and Fig. 15, a bottom plan view of the same.

Referring to Figs. 1 to 6 inclusive, a tie, which may be of wood or any other suitable material capable of retaining spikes driven therein, is represented at 16. The tie is shown as supporting on its upper side toward its opposite ends plates 17 of metal, which are considerably longer than the width of the rails supported thereon and represented at 18, each of these plates containing at one end portion, beyond the sides of the rail, spike-holes 19 through which the spikes 19^a are screwed, and toward its opposite end a round aperture 20, through which and into the tie a headed screw-spike 21 extends, these spikes holding the plates 17 to the tie. Each plate toward the end through which the spikes 19^a are screwed carries at its opposite edges upwardly extending lugs 22 provided with undercut portions 23 into which the outer flange 24 of the rail 18 is adapted to extend, these lugs thus forming abutments for one side of the rail. Each plate 17 toward the end containing the spike-hole 20 has a portion of its metal between its sides and ends partially severed and struck upward to afford an opening 25 through the plate adjacent to the opening 20, the walls of which incline with relation to the end-edges of the plate, and an upwardly extending lip 26 flanking the opening and extending obliquely with relation to the flange of the rail and affording a shoulder 27, adjacent to the flange 28 of the rail. The lip 26 is provided for the purpose of receiving a removable and replaceable rail-flange-engaging clip 29 for engaging with the flange 28 of the rail opposite to that which engages with the abutments 23, it being preferred that these abutments engage with the outer flange of the rail and that the clip 29 engages with the inner flange thereof. The clip illustrated comprises a flat plate-like portion 30 having its forward edge-portion undercut as represented at 31 to afford a longitudinally extending shoulder 32, the rear wall of the por-

tion 30 inclining with relation to the wall of the undercut portion 31, as represented at 33, and a rearwardly extending curved lip 34 having its horizontally disposed edge-portion preferably inclined with relation to the under side of the section 30, as represented at 35, a longitudinally extending recess 36 being thus afforded between the portion 30 and the lip 34, it being understood that the lip 34 extends beyond the tapering surface 33 of the portion 30 as represented in Fig. 4.

To secure a rail, such as for instance the one represented at 18, to a tie, assuming the plates 17 to be secured in position thereon by the spikes 19^a and the spike 21, the clip 29 is applied to the plate in position to cause its portion 30 to extend under the lip 26 in which position the shoulder 32 of the clip will overlap the flange 28 of the rail, and the lip 34 will bear against the headed end of the screw-spike 21. The clip 29 may then be driven into rigid clamping engagement with the flange 28 as by striking it with a sledge, or the like, the clip being forced horizontally toward the rail by engagement of its inclined surface 33 with the under side of the lip 26 and down and against the rail at its shoulder 32 by the engagement of the inclined surface 35 on the lip 34 with the upper side of the head of the spike 21, the clip thus being given two movements as it is forced into engagement with the flange 28, namely a horizontal movement toward the rail and a tipping movement toward the rail at its rail-flange-engaging shoulder 32. When the clip has been driven to the proper position for securely holding the rail in place on the tie, a nail, such as that represented at 37, may be driven through alining openings 38 and 39 in the lip and clip, respectively, and the opening 25 in the plate into the tie proper, thus preventing the clip from becoming accidentally displaced on the plate. The engagement of the bottom surface 35 with the head of the spike 21 not only serves to force the clip down and against the rail-flange, but also serves to prevent the accidental withdrawal of the spike 21 under the action of trains passing over the track.

In Fig. 7 is illustrated a modification of the tie-plate shown in Fig. 3, the plate of Fig. 7 differing only with respect to the lip 26 and opening 20 of the construction previously described herein. Instead of forming the abutment on the plate for the clip 29 continuous as by providing a lip 26, this abutment is formed of two spaced lugs 40 bent up from the plate 17 adjacent to the opening 25, and intermediate these lugs a spike-opening 41 is provided, the opening 41 being shown as of square-shape to receive the ordinary spike, it being understood that the opening 41 instead of being square for receiving a spike of ordinary form may be

round to receive a screw-spike. The abutment thus provided by the lugs 40 operates, when the rail-securing clip 29 is introduced into engagement therewith, in precisely the same manner as the lip 26, the abutment when formed of the spaced lugs 40 affording the advantage of permitting the spike-hole to be located in the plate closer to the opening 25 than is the case with the plate construction illustrated in Fig. 3, the advantage thus afforded being that of permitting the minimum length of plate to be employed.

Referring to Figs. 8, 9 and 10, the construction therein shown involves the same structure of tie-plate as shown in Figs. 1 to 6, with the exception that the openings 19 and 20 instead of being round are square to adapt them to receive spikes of the ordinary construction, such as those represented at 42 and 42^a. The clip of this construction for securing the rail in place on the plate and represented at 43 differs however from the clip 29, the clip 43 being of a type adapting it to be formed by stamping and bending it from a plate of metal, whereas the clip 29 is produced by the rolling or drawing process. The clip 43 comprises a plate-section 44 having a flat bottom and a tapering rear wall 45, spaced upwardly and forwardly extending rail-flange-engaging lugs 46 on the portion 44, and a rearwardly extending lip 47 curved in cross-section and having the corner portion thereof adjacent to the wider end of the portion 44 preferably downwardly deflected, as represented at 48, the lip which, with the portion 44, defines a space 49, extending rearwardly a considerable distance beyond the portion 44, as represented in Figs. 8 and 9.

To secure a rail in place through the medium of the clip 43, assuming the rail to be positioned on the plate and in engagement with the abutments 22, the clip 43 is inserted at its small end under the lip 27 and is then driven into place as described of the clip 29. Engagement of the oblique surface 45 of the clip 43 with the under side of the oblique lip 27 causes the clip 43 to be forced toward the rail, and the engagement of the cam surface on the lip 43 afforded by the deflecting of the latter as represented at 48, with the head of the spike 42 produces a turning of the clip in a direction to cause its lugs 46 to be tilted downwardly against the rail-flange 28 simultaneously with the movement of the clip toward the rail. After the clip has been driven to rail-flange-engaging position, a pin, such for instance as the one shown at 37, may be driven into the tie through an opening 50 in the portion 44 of the clip and the opening 25 in the plate for preventing the clip from becoming accidentally displaced. It will be noted that the lip 47 bears against the head of the spike 42, and thus the advantages recited of the

construction illustrated in Figs. 1 to 6 are accomplished.

Referring to Figs. 11 to 15 inclusive, the construction therein shown comprises a tie-plate 51 adapted to be secured to the tie 16 by spikes passing through openings 52 in one end of the plate and a spike 53 passing through an opening 54 in the opposite end of the plate. The rail-abutment in this case instead of being formed of two spaced lugs as represented at 22, as described of the previous constructions, is in the form of a continuous lip 55. The plate 52 adjacent to the opening 54 therein has portions of its metal, located intermediate its sides and ends, partially severed and struck upward to form converging lips 56 extending parallel with each other and obliquely with relation to the lip 55 and flanking an opening 57 thus provided in the plate, the under surfaces of these lips being of concave form in cross-section as illustrated at 58. The clip of this construction, which is represented at 59, is of the drawn or rolled type comprising a body-portion 60 having a flat bottom 61 and containing longitudinally and upwardly extending parallel grooves 62 and 63 having curved walls 64, 65 and 66 respectively, a lip 67 extending beyond the groove 63 and preferably provided with a surface 68 extending longitudinally of the clip and obliquely with relation to the bottom 61, and a forward extension 69 adjacent to the recess 62, having its forward edge undercut along the diagonal line 70 to afford a rail-flange-engaging shoulder 71 for engaging with the flange 28 of the rail.

To secure the rail 18 to the plate 51 and tie, assuming the rail 18 to extend at its flange 24 under the abutment 55, the clip 60 is applied to the plate into engagement at its recesses 62 and 63 with the lips 56. The clip may then be driven into rail-flange-engaging position by striking it with a sledge, or the like. As the clip moves in the guides thus afforded by the lips 56, its oblique surface 70 bears against the flange 28 of the rail, forcing the rail into close engagement with the abutment 55, and simultaneously with this movement the clip is tilted to cause its shoulder 71 to bear down and against the flange 28 of the rail by reason of the engagement of the cam-surface on the clip afforded by the inclined surface 68, with the head of the spike 53. When the clip has been driven into position for securely fastening the rail in place, a pin, such as the one represented at 37 in Fig. 2, may be driven into the tie through an opening 72 in the clip, and the opening 57 in the plate. It will be manifest that the rigid engagement of the lip 67 with the spike 52 not only serves to hold the clip in close engagement with the rail, but operates to prevent the accidental withdrawal of the

spike 53 under the action of trains passing over the track, as recited of the previously described constructions.

It will be manifest that a clip constructed in accordance with my invention may serve the purpose of securing a rail in place regardless of the particular form of member with which its rearwardly extending lip co-operates for turning the rail-flange-engaging portion of the clip down and against the rail, and thus instead of engaging with the head of the spike, which however is the preferred construction, may engage with any other suitable form of member provided on the plate.

While I have shown in Figs. 1 to 6 inclusive a screw-spike for securing the tie-plate to the tie and in the remaining figures of the drawings a construction involving spikes of the ordinary form, I do not wish to be understood as intending to limit my invention in any manner thereby, as either type of spike may be employed in any of the constructions by merely forming the spike-receiving openings in the plate round or square, as the case may be.

From the foregoing it will be readily apparent that by securing rails to ties of wood, or the like material, by means constructed in accordance with my invention the separate parts required for effecting this result are comparatively few in number, and the rails may be quickly fastened to the plates and readily removed therefrom.

As is well understood in the art, the upper surfaces of rail-flanges slope downwardly from the web of the rail to their outer edges and thus as the clips of the constructions described are moved bodily toward the rail the engagement of their shoulders with the upper surfaces of the rail-flanges force the shoulders upward. Thus it is not indispensable to the operation of the foregoing described constructions that the rearwardly-extending lips on the clips be provided with cam-surfaces for effecting clamping engagement thereof with the rail, though I prefer to so construct them as described. Furthermore when the portion of the spike or surface to be engaged by the free edge of the lip on the clip is cam-surfaced as is evidenced by the ordinary spike, the cam-surface thus provided performs the function of the cam-surface on the clip as described.

While I have illustrated and described my invention as applied to a tie of wood, or the like material, I do not wish to be understood as intending to limit my invention to its application to a tie of this character, as certain features of my invention may be incorporated in fastening means co-operating with any form of tie in which is afforded an abutment for one side of a rail, a lip toward the opposite side of the rail and a surface with

which the rearwardly extending lip of the clip cooperating with the rail and lip on the support, engages.

By referring in the claims to wooden ties I do not wish to be understood as limiting my invention to its use in connection with ties formed of wood, as it is applicable to ties formed of any other suitable material having the properties which render ties formed of wood desirable.

While I have illustrated and described constructions in which one side of the rail is held in place against a fixed abutment and have in the claims recited an abutment for one side of the rail, I do not wish to be understood as limiting my invention to a construction in which the abutment is fixed, as the abutment may take the form of a removable device on the support of any suitable form, such as for instance a clip construction made in accordance with my invention which would thus be duplicated for the opposite sides of the rail.

What I claim as new and desire to secure by Letters Patent is—

1. In a railway-roadbed construction, the combination of a support for a rail, an abutment on the support, a rail seated on said support and fitting at one flange under said abutment, a lip on the support beyond the other flange of the rail, a rail-flange-engaging clip adapted to engage with said lip and provided with a portion extending rearwardly of said lip, wedging means cooperating with said portion and said support, and means for moving the clip bodily toward the rail, for the purpose set forth.

2. In a railway-roadbed construction, the combination of a wooden tie, a metal plate spiked thereto, a rail supported on said plate, an abutment on the plate for one flange of the rail, a lip on the plate beyond the other flange of the rail, a rail-flange-engaging clip adapted to engage with said lip and provided with a rearwardly extending portion adapted to bear against the adjacent plate-securing spike, and means for moving the clip bodily toward the rail, for the purpose set forth.

3. In a railway-roadbed construction, the combination of a wooden tie, a metal plate spiked thereto, a rail supported on the plate, an abutment on the plate for one flange of the rail, a lip on the plate beyond the other flange of the rail, a rail-flange-engaging clip adapted to engage with said lip and having a rearwardly extending portion formed with a cam surface adapted to bear against the adjacent spike, and means for moving the clip bodily toward the rail.

4. In a railway-roadbed construction, the combination of a wooden tie, a metal plate spiked thereto, a rail supported on the plate, an abutment on the plate for one flange of the rail, a lip on the plate beyond the other flange of the rail extending obliquely with relation to said abutment, a rail-flange-engaging clip provided with a rail-flange-engaging portion on one side and a surface inclining with relation to said shoulder on its opposite side, and a rearwardly extending lip on said clip having a cam surface on its under side adapted to ride upon the head of the adjacent spike when moved transversely of the plate, for the purpose set forth.

5. A rail-flange-engaging clip for the purpose set forth, comprising a body-portion provided at one end with a rail-flange-engaging shoulder and having its opposite side obliquely disposed with relation to said shoulder, and a rearwardly extending lip spaced from the body-portion of the clip and extending rearwardly beyond such body-portion, for the purpose set forth.

6. A rail-flange-engaging clip for the purpose set forth, comprising a body-portion provided at one side with a rail-flange-engaging shoulder and having its opposite side obliquely disposed with relation to said shoulder, and a rearwardly extending lip spaced from the body-portion of the clip and provided with a cam surface, for the purpose set forth.

CHARLES R. HOLDEN.

In presence of—

RALPH A. SCHAEFER,
JOHN WILSON.