

C. R. HOLDEN.  
RAILWAY ROAD BED CONSTRUCTION.

APPLICATION FILED MAR. 12, 1909. RENEWED DEC. 13, 1909.

964,517.

Patented July 19, 1910.

4 SHEETS—SHEET 1.

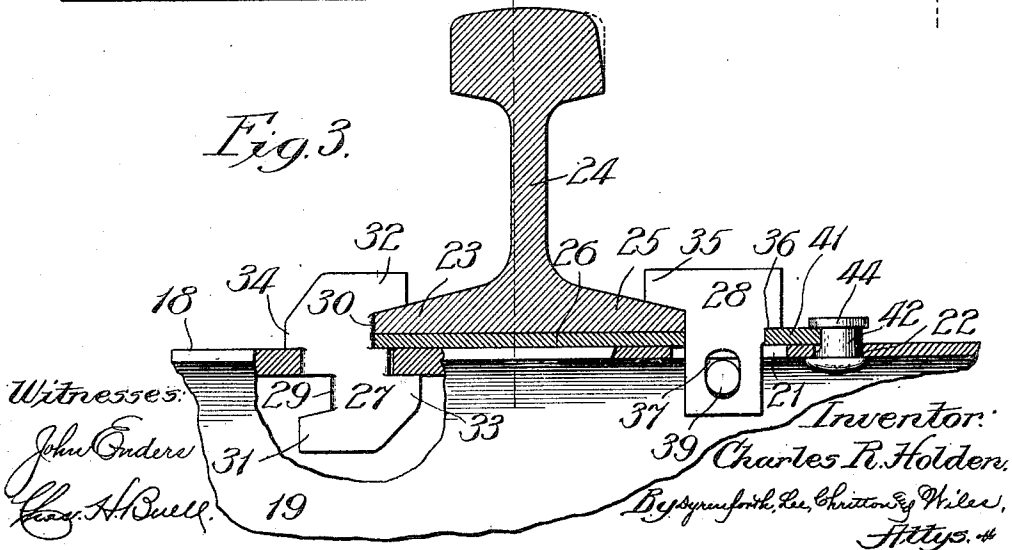
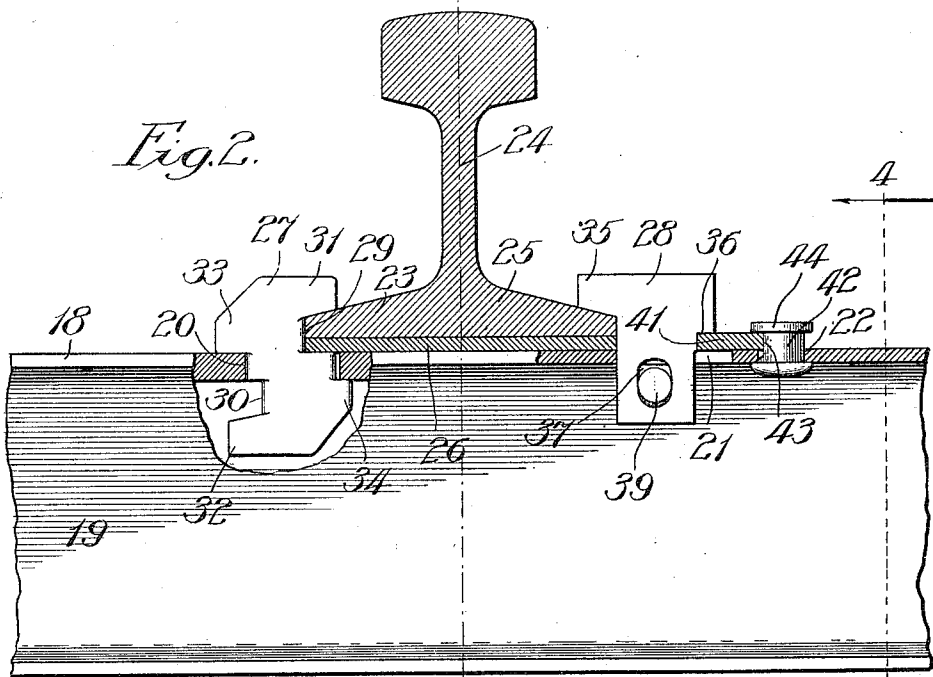
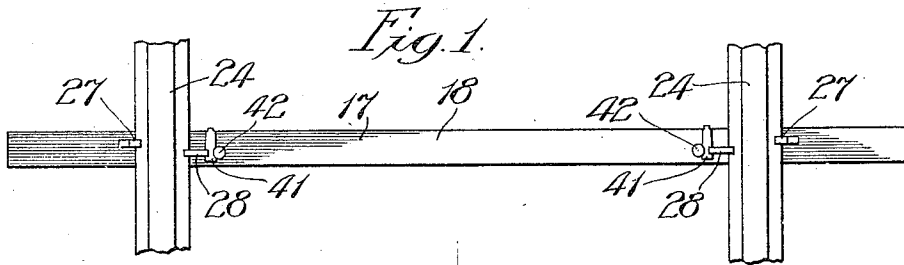


Fig. 4.

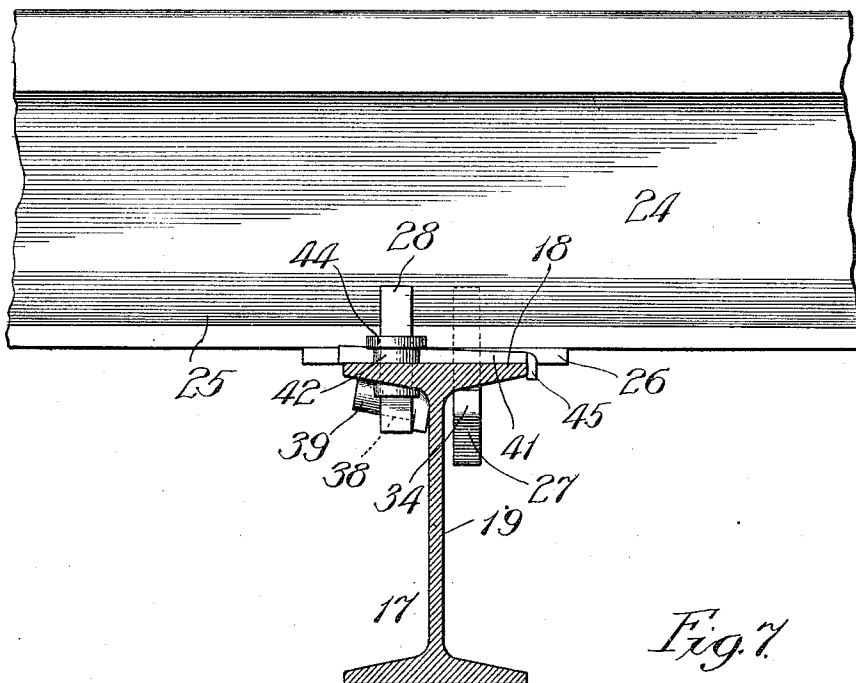
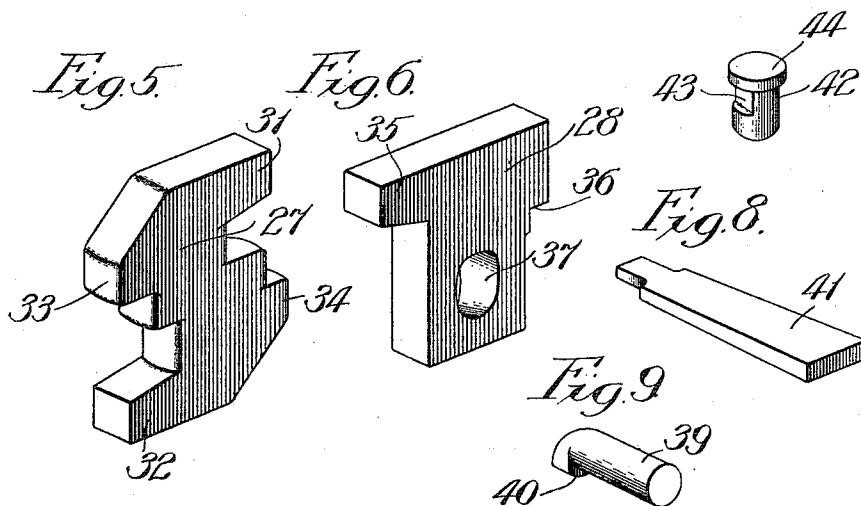


Fig. 7.



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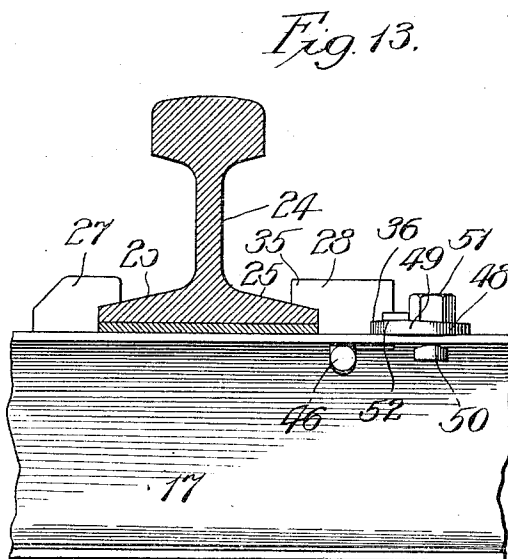
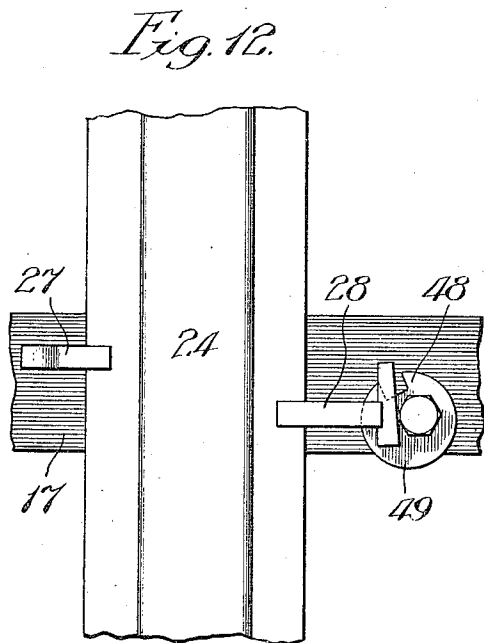
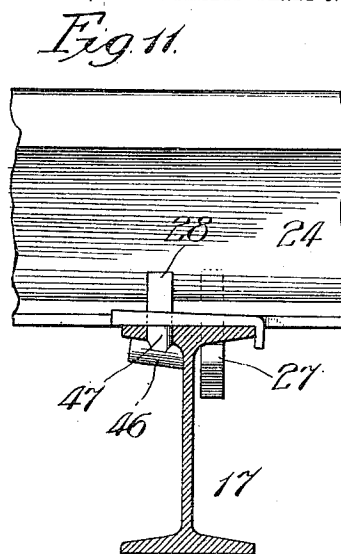
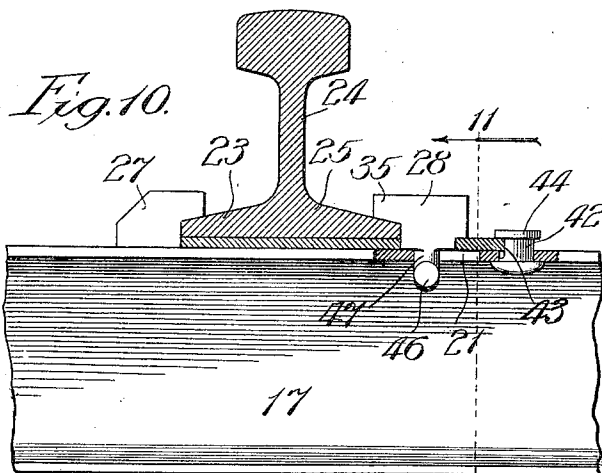
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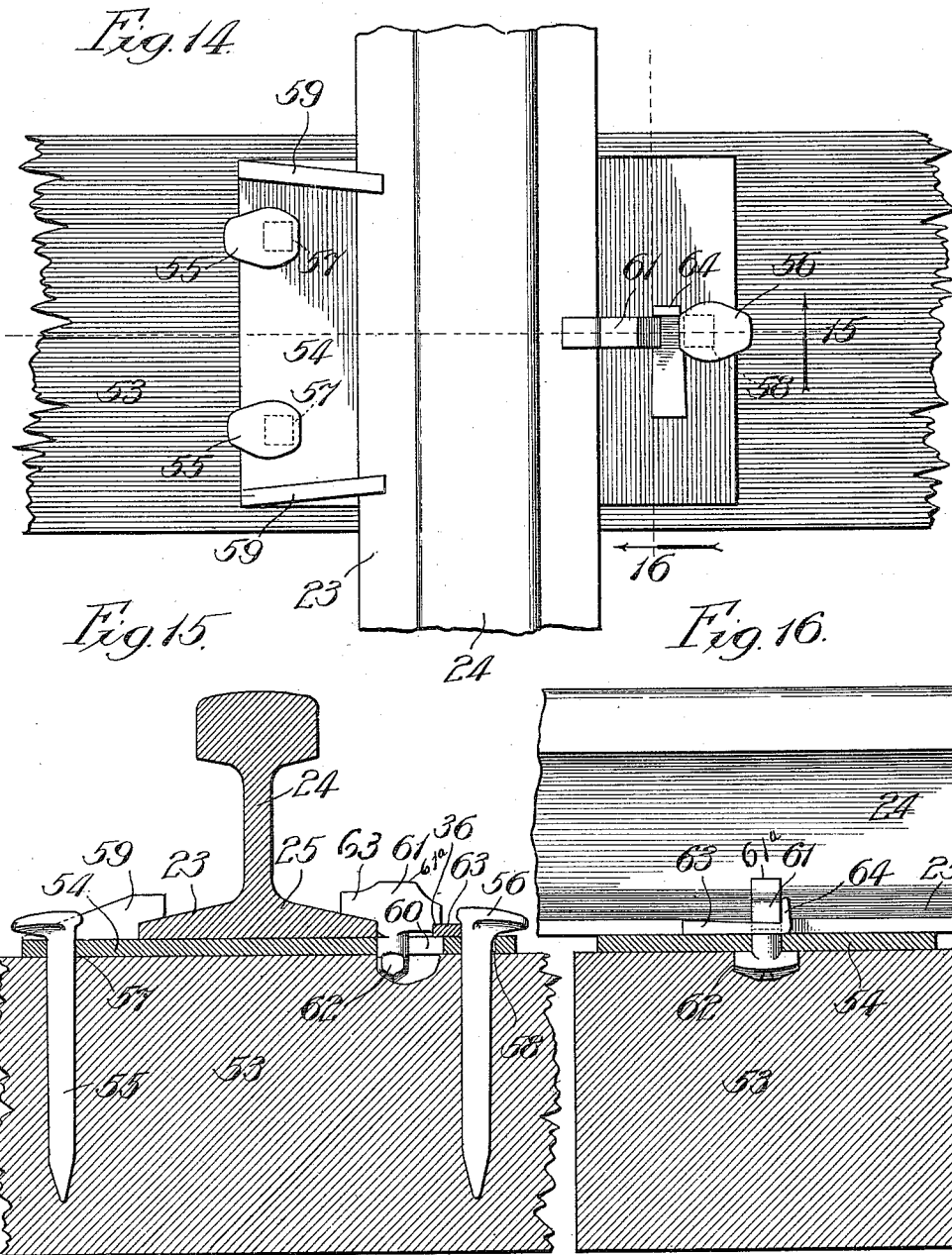
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# UNITED STATES PATENT OFFICE.

CHARLES R. HOLDEN, OF CHICAGO, ILLINOIS.

## RAILWAY-ROAD-BED CONSTRUCTION.

964,517.

Specification of Letters Patent.

Patented July 19, 1910.

Application filed March 12, 1909, Serial No. 483,015. Renewed December 13, 1909. Serial No. 532,904.

*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 improvements in the means for securing the rails to the ties, and my object is to provide improved rail-securing means which shall serve to rigidly and securely maintain the rails in fixed position on the ties, may be quickly applied to the ties and rails and removed therefrom and shall permit of adjustment of the rails on the ties as conditions require.

Referring to the accompanying drawings—Figure 1 is a plan view of a tie of the I-beam type, shown as supporting a pair of rails fastened thereto by one of the forms of securing means in which my invention may be embodied. Fig. 2 is an enlarged view in elevation, partly sectional, of the left-hand end of the construction illustrated in Fig. 1, a portion of the web of the tie being broken away to show the outer rail-flange-engaging clip in elevation. Fig. 3 is a view like that of Fig. 2 illustrating a rail partially worn away on its inner side in position on the tie to compensate for the wear on the rail. Fig. 4 is a section taken at the line 4 on Fig. 2 and viewed in the direction of the arrow. Fig. 5 is a perspective view of one of the pairs of clips, for each rail, this clip being shown in Fig. 1, in its preferred position, namely for engaging with the outer flange of the rail. Fig. 6 is a perspective view of the other clip of said pair shown in Fig. 1 as engaging with the inner flange of the rail. Fig. 7 is a perspective view of an abutment adapted to be confined on the tie for engaging with a wedge cooperating with the clip shown in Fig. 6. Fig. 8 is a perspective view of the wedge for engaging with the clip of Fig. 6. Fig. 9 is a perspective view of a pin cooperating with the clip shown in Fig. 6. Fig. 10 is a view in side elevation, partly sectional, of a tie showing a modification of the inner rail-flange-engaging clip for the rail illustrated in Fig. 6. Fig. 11 is a section taken at the

line 11 on Fig. 10 and viewed in the direction of the arrow. Fig. 12 illustrates another form in which the means for engaging with one flange of the rail may be provided. Fig. 13 is a view in side elevation of the construction illustrated in Fig. 12. Fig. 14 is a plan view of a wooden tie employing a metal plate forming a rail-seat, with a rail secured to the plate in accordance with my invention. Fig. 15 is a section taken at the line 15 on Fig. 14 and viewed in the direction of the arrow; and Fig. 16, a section taken at the line 16 on Fig. 14 and viewed in the direction of the arrow.

The tie in connection with which I have chosen to illustrate my invention, as embodied in a metal tie, is of the I-beam type and is represented at 17. Referring to Figs. 1 to 9 inclusive, the horizontal upper flange 18 of the tie is shown to contain at each end on opposite sides of its web 19, three apertures 20, 21 and 22, the aperture 20 being located adjacent to the outer flange 23 of the rail 24 and being of elongated form, and the apertures 21 and 22 adjacent to the inner flange 25 of the rail 24, the aperture 21 being of rectangular elongated shape and the aperture 22 of circular shape and disposed beyond the aperture 21. The rails 24, which preferably rest on plates 26 of any suitable material supported on the tie between the openings 20 and 21, are shown as held to the ties by outer and inner rail-flange-engaging clips 27 and 28, respectively. In the preferred form the outer clips 27 are each constructed to afford adjustment of the rails longitudinally of the tie to permit the gage of the track to be varied at the curves in the track, and to permit adjustment of the rails in case of wear. To permit of this adjustment, each clip 27 is of general S-shape as represented, and is provided at opposite sides toward its ends with oppositely opening recesses 29 and 30, affording shoulders 31 and 32, respectively, for engaging with the rail-flanges 23. On the sides of the clip opposed to the recesses 31 and 32, respectively, are shoulders 33 and 34, the shoulder 33 extending outwardly from the side of the clip on which it is located considerably farther than the shoulder 34. The clips 27 are designed to be inserted into the apertures 20 in the

tie with either end extending through these apertures above the tie-flange 18. When a clip 27 is inserted into the aperture 20 to the position indicated in Fig. 2, it will present its recess 29 to the outer flange 23 of the rail into which the latter extends into rigid engagement with the shoulder 31. The clip 27 in this position bears at its shoulder 33 against the top surface of the tie-flange 18 and at its shoulder 34 against the under side of this flange, the clip 27 being thus securely interlocked with the tie to securely hold it in place against displacement under pressure of the rail against it. Each of the clips 28, which is formed on one side with a shoulder 35 and on its opposite side with an undercut portion 36, contains in its lower end portion a vertically elongated slot 37, the bottom of which is inclined as represented at 38 in Fig. 4. The clips 28 extend at their lower ends through the apertures 21, which latter are longer than these clips, the shoulders 35 fitting against the upper surfaces of the adjacent inner flanges 25 of the rails. With the clips in this position it is designed that pins 39 having shouldered ends, as represented at 40, be inserted into the openings 37 to extend beneath the under side of the tie-flange 18.

To force the clips 28 into rigid engagement with the rails and hold them securely to the tie, I provide wedges 41 which are intended to be wedged between the clips 28 at their undercut portions 36, and abutments 42 which fit in the apertures 22 in the tie, the abutments being provided with grooves 43 for receiving the wedges 41 cooperating therewith and preferably headed, as represented at 44, and each wedge 41 being preferably formed with its sides tapered with relation to each other and its top and between surfaces likewise tapering, whereby a double wedging action may be obtained. The effect of driving the wedges 41 between the clips 28 and abutments 42 is that of forcing these clips toward the rails into binding engagement with their inner flanges, the apertures 21 being longer than the clips 28 serving to permit longitudinal movement of these clips in these apertures to the point of binding with the rail. The wedges 41 operating against the clips 28 at points above the pins 39 cause these clips to be turned on these pins, thereby forcing the shoulders 35 down and against the rail-flanges and into desired rigid engagement therewith. It is preferred that the wedges 41 be so constructed and shaped as to cause their smaller ends to extend beyond the tie when driven into place, thus permitting these ends to be bent down over the tie, as represented at 45, to prevent accidental displacement of the wedges. The effect of providing the wedging surface on the top or

bottom of the wedge in addition to its tapering edges is to accentuate its wedging action for moving the clips toward the rail and turning them down and against the adjacent rail-flange. It will be understood, however, that a turning movement may be imparted to the clips by the provision of the tapering edges only and thus provision of the double taper is unnecessary.

Where the wear on the rails necessitates re-adjustment of them on the ties from the position they occupy in Fig. 2 to a position in which they are brought closer together, the clips 27 at either or both ends of the ties, as conditions require, may be inserted into the apertures 20 in the ties in inverted position to seat the shoulder 34 against the upper sides of the tie-flanges 18 and cause the shoulders 33 to interlock with the under sides of these flanges 18, as shown of one in Fig. 3, in which position the shoulders 32 will engage with the outer flanges 23 of the rails, and by reason of the recess 30 being shallower than the recess 29 will form an abutment for the rail a slight distance closer to the center of the tie than that afforded by the shoulder when the clip is located in the position represented in Fig. 2.

In the modification illustrated in Figs. 10 and 11, the clips 28 instead of being apertured and cooperating with a separable pin, as illustrated in the preceding figures, each has its lower end-portion formed with a round cross-bar 46 extending at right angles to the body-portion of the clip and inclined from end to end as represented in Fig. 11, this cross-bar being connected with the body of the clip by a shank 47 circular in cross-section and of a diameter slightly less than the width of the aperture 21. The clips when thus constructed integrally are inserted at their cross-bars 46 through the apertures 21 and then rotated therein to cause their shoulders 35 to bear against the flanges 25 of the rail. The wedges 41 operate to force the shoulders down and against the rails as described of the construction illustrated in the preceding figures of the drawings, the curved upper surfaces of the cross-bars 46 permitting the clips 28 to be tilted down and against the rail-flanges 25 with which they cooperate.

The construction illustrated in Figs. 12 and 13 is the same as that shown in Figs. 10 and 11 with the following exception: Instead of employing a bar-wedge 41 and abutment 42 as illustrated in Figs. 10 and 11, I provide a rotary wedge-device 48 formed with a circular head 49 adapted to bear against the upper side of the tie-flange 18, eccentrically disposed on a pivot-pin 50 journaled in the aperture 22, a lug 51, shown of hexagonal shape, surmounting the head 49, through the medium of which this head may be turned about its pin 50. The upper sur-

face of the head 49 is formed with a cam-surface 52 which bears against the undercut portion 36 of the clip 28 and thus by rotating the head 49, as by a wrench (not shown) applied to the lug 51, the clip 28 is forced at its shoulder 35 into rigid engagement with the adjacent rail-flange, as described of the constructions illustrated in the preceding figures of the drawings.

10 In Figs. 14, 15 and 16, I have illustrated my invention as embodied in a wooden tie-construction. The wooden tie which is illustrated at 53 carries at its opposite end-  
15 portions metal plates 54, one only of which is shown, each serving to support a rail 24 of the track. Each of these plates, which are secured to the tie by spikes 55 and 56 extending through openings 57 and 58, respectively, in the plates toward their opposite  
20 ends, carries near one end abutments 59 preferably formed integrally therewith, for engagement with the outer flange 23 of the adjacent rail, and contains toward its opposite end an aperture 60 like that represented  
25 at 21 in Figs. 2 and 3, intermediate the openings 57 and 58 and adjacent to and in line with the opening 58. The rails are secured in position on the plates by clips 61 which are of the same construction as the clips 28,  
30 with the exception of the shape of their cross-bars 62, and their top-surfaces. In the construction illustrated in Figs. 14, 15 and 16, the clip 61 is formed with its bottom surface of wedge-shape as illustrated, instead of  
35 circular as illustrated of the clips 28, whereby the clips 61 may be driven into the wooden tie and then partially rotated therein to cause their shoulders 63, like the shoulders 35, to bear against the adjacent rail-flanges. The clips 61 are formed with lugs  
40 61<sup>a</sup> on their top surfaces at which it is designed the clips be struck by a sledge or the like, for driving them into the wood. It will, however, be understood that openings  
45 may be formed in the tie below the apertures 60 preliminary to the application of the clips 61 to the plates, instead of forming them by driving the clips into the tie and partially rotating them therein. In the  
50 case where the apertures in the tie are formed preliminarily to the insertion of the clips in place, the cross-bars 62 may be of the form illustrated of the clips 28 of Figs. 10 and 11. As means for forcing the clips  
55 61 into engagement with the rail, as described of the clips of the constructions illustrated in the preceding figures, I provide a wedge-bar 63 like the bar 41, which wedges in between the undercut portion 36 of the clip and the head of the spike 56, the bar 63 being sufficiently long to permit it to be deflected at its inner end, as represented at 64, for holding the clip against accidental displacement.

65 It will be understood that my invention

may be embodied in ties of any construction in which apertures for receiving the clips may be provided and thus I do not wish to be understood as limiting my invention to its use in connection with the particular type of ties illustrated. 70

By constructing rail-securing means in accordance with my invention, a simple and very effective construction of fastener is afforded which permits of adjustment of the rails on the supports and the varying of the gage of the track as conditions require, the formation of the portions of the clips 28 and 61 which engage with the under side of the support serving to permit the clips, when moved toward the rail and into engagement therewith, to be swung at their shoulders down and against the adjacent rail-flange. 80

It will be noted that in a construction formed in accordance with my invention, pressure on the walls of the apertures in the support is so slight as not to produce appreciable wear of such walls. Furthermore, even if wear of the walls does occur, such wear will not prevent the adjustment of the rail-fastening means, as the wedging action is not against such walls. 85 90

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

1. A rail-engaging clip provided with rail-flange-engaging shoulders at its opposite ends and containing recesses adjacent thereto, together with shouldered portions opposed to its rail-flange-engaging shoulders, said recesses varying in depth with relation to the median line of the clip, for the purpose set forth. 95 100

2. A clip of general S-shape provided toward its opposite ends with a pair of shoulders extending in opposite directions, and with a second pair of shoulders arranged on opposite sides of the clip intermediate the center of the clip and said first-named shoulders, said second pair of shoulders forming means for interlocking the clip with a rail-support. 105 110

3. A rail-engaging clip of general S-shape provided toward its opposite ends with undercut rail-flange-engaging shoulders extending in opposite directions and with shouldered portions opposed to its rail-flange-engaging shoulders, the rear inner walls of the undercut portions of the rail-flange-engaging shoulders varying in depth with relation to the median line of the clip, for the purpose set forth. 115 120

4. In combination with a support for a rail containing an aperture, of a reversible clip adapted to be inserted in said aperture and provided with shoulders at its upper and lower ends, and means for interlocking it between its ends with the said support adjacent to the aperture therein to hold either of its shoulders in position above said support. 125 130

5. In combination with a support for a rail containing an aperture, of a reversible clip adapted to be inserted into said aperture and provided with rail-flange-engaging shoulders at its upper and lower ends, and means for interlocking it between its ends with the said support adjacent to the aperture therein to hold either of its shoulders in rail-flange-engaging position.
6. In a railway-roadbed construction, the combination of a support for a rail, an abutment for one flange of the rail, a clip movable longitudinally of the support for engaging with the opposite flange of the rail provided with means by which it engages with the support for holding it against displacement thereon, and means for moving said clip toward the rail, the means for holding the clip to the support being constructed and arranged to cause the clip to be turned down and against the rail, at its rail-flange-engaging portion, under the action of the means for moving the clip toward the rail.
7. In a railway-roadbed construction, the combination of a support for a rail, an abutment for one flange of the rail, a clip movable longitudinally of the support for engaging with the opposite flange of the rail provided with means by which it engages with the support for holding it against displacement thereon, and wedging means for moving said clip toward the rail, the means for holding the clip to the support being constructed and arranged to permit the clip to be turned down and against the rail at its rail-flange-engaging portion under the action of the wedging means for moving the clip toward the rail.
8. In a railway-roadbed construction, the combination of a support for a rail provided with an abutment for one side of the rail and containing an opening adjacent to the opposite side thereof, a clip for the other side of the rail movable in said opening longitudinally of the support and carrying a rail-flange-engaging portion and means presenting a curved upper surface by which they engage with the under side of the support for holding the clip against displacement, and means operating against the clip above the means carried by the latter for forcing said clip toward the rail.
9. In a railway-roadbed construction, the combination of a support for a rail provided with an abutment for one side of the rail and containing an opening adjacent to the opposite side thereof, a clip for the rail movable in said opening longitudinally of the support and carrying a rail-flange-engaging portion, a cross-piece on the clip extending beneath said plate, and means operating against the clip above said cross-piece for forcing the clip toward the rail, the upper side of the cross-piece being so constructed as to permit the clip to be turned down and against the rail at its rail-flange-engaging portion, for the purpose set forth.
10. In a railway-roadbed construction, the combination of a support for a rail containing openings adjacent to the opposite sides of the rail, a removable and adjustable S-shaped abutment-clip for one of the flanges of the rail fitting in one of said openings and provided with shoulders at its upper and lower end, and with shoulders intermediate said first referred to shoulders by which the clip interlocks with the support, a second clip in the other of said openings for the rail movable in said opening longitudinally of the support and carrying a rail-flange-engaging portion and means engaging with the underside of the support for holding the clip against displacement, an abutment on the support beyond said clip, and wedging-means operating against said abutment and clip above the level of the support for moving said last-named clip into rail-flange-engaging position.
11. The combination of a support for a rail provided with an abutment for one side of the rail and containing an opening adjacent to the opposite side of the rail, a clip for the side of the rail opposite that engaged by said abutment, movable in said opening longitudinally of the support and carrying a rail-flange-engaging portion and provided with means engaging with the under side of the support for holding said clip against displacement and adapted to permit the clip to be turned in the opening, and wedging means constructed and arranged to operate to force the clip toward the rail and tip it, for the purpose set forth.
12. The combination of a support for a rail provided with an abutment for one side of the rail and containing an opening adjacent to the opposite side of the rail, a clip for the side of the rail opposite that engaged by said abutment, movable in said opening longitudinally of the support and carrying a rail-flange-engaging portion and provided with means engaging with the under side of the support for holding said clip against displacement and adapted to permit the clip to be turned in the opening, a second abutment on the support adjacent to the clip, and a wedge-bar operating against the clip and said second abutment, said wedge-bar being adapted to afford a double wedging action, for the purpose set forth.
13. The combination of a support for a rail provided with an abutment for one side of a rail and containing an opening adjacent to the opposite side of the rail, a clip for the side of the rail opposite that engaged by said abutment movable in said opening longitudinally

nally of the support and carrying a rail-  
flange engaging portion, and means for en-  
gaging with the underside of said support  
for holding it against displacement, a  
5 second abutment extending into an opening  
in said support beyond said clip, and wedg-  
ing means above the level of said support

operating against said clip and said second  
abutment for moving the clip toward the  
rail.

CHARLES R. HOLDEN.

In presence of—

R. A. SCHAEFER,

JOHN SCHUCK.