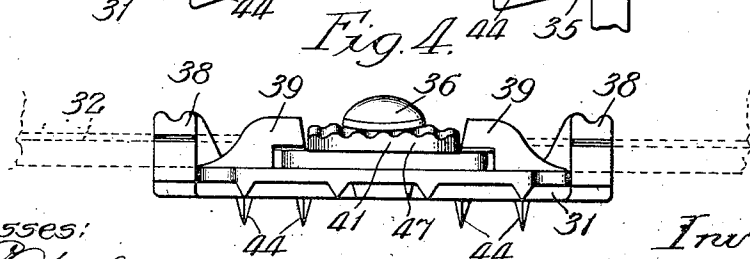
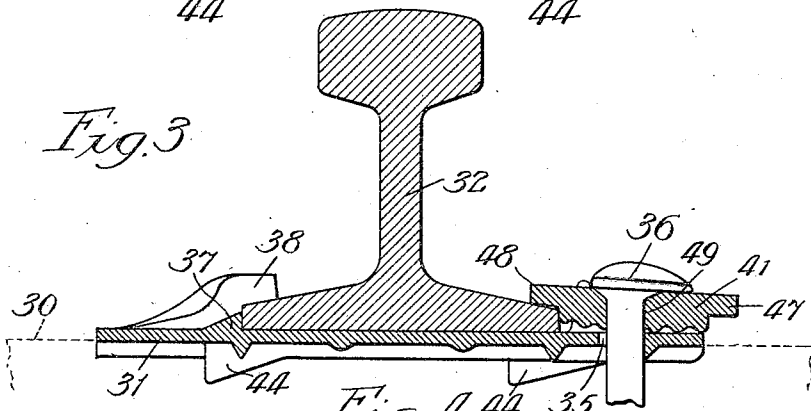
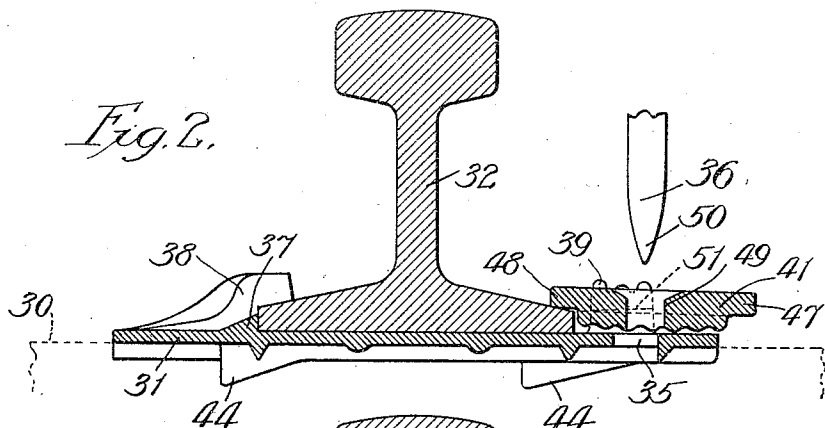
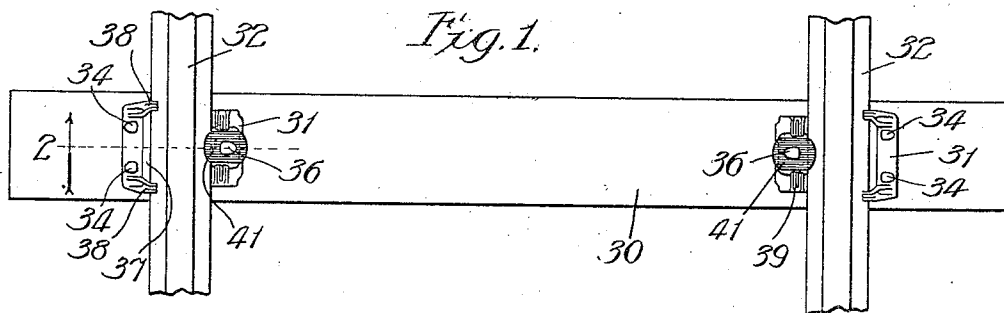


C. R. HOLDEN.
RAILWAY ROAD BED CONSTRUCTION.
APPLICATION FILED MAY 23, 1910.

987,988.

Patented Mar. 28, 1911.

5 SHEETS—SHEET 1.



Witnesses:
E. C. Chylord.
Chas. H. Buell.

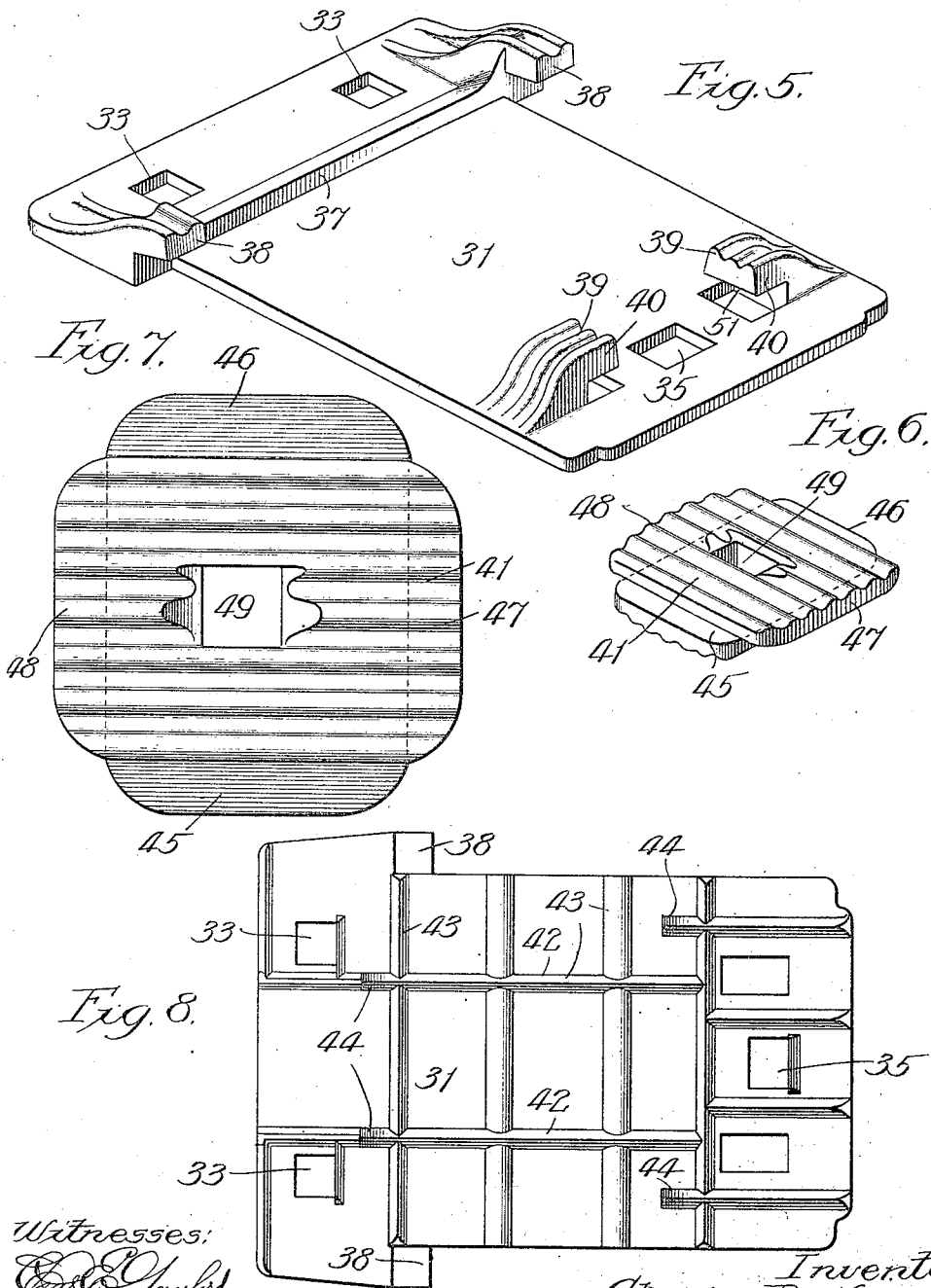
Inventor:
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5 SHEETS—SHEET 2.



Witnesses:
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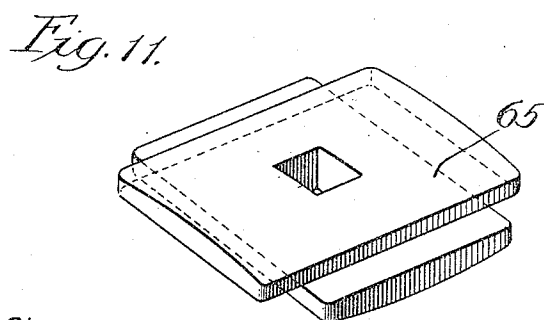
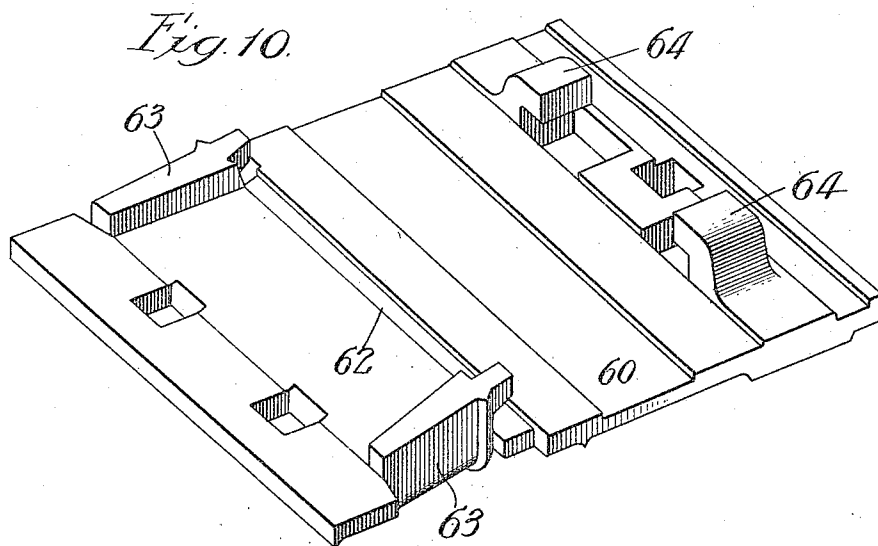
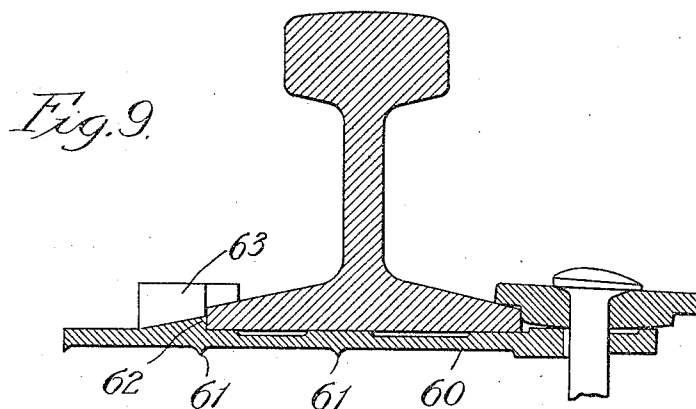
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987,988.

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5 SHEETS—SHEET 3.



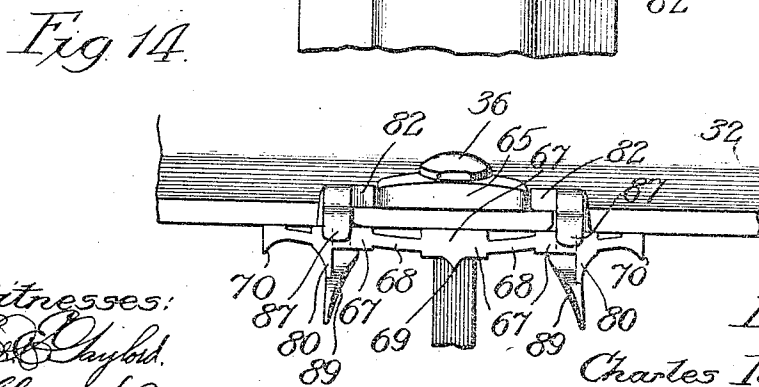
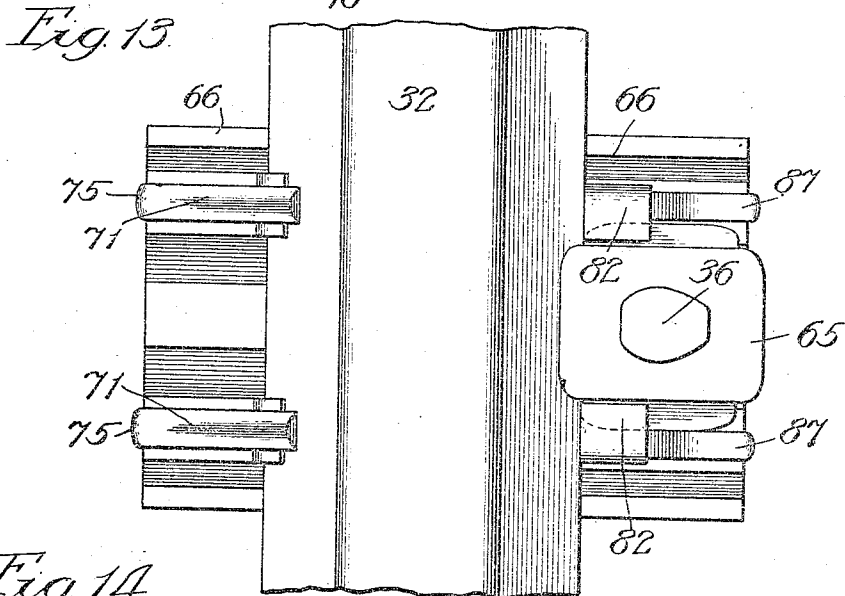
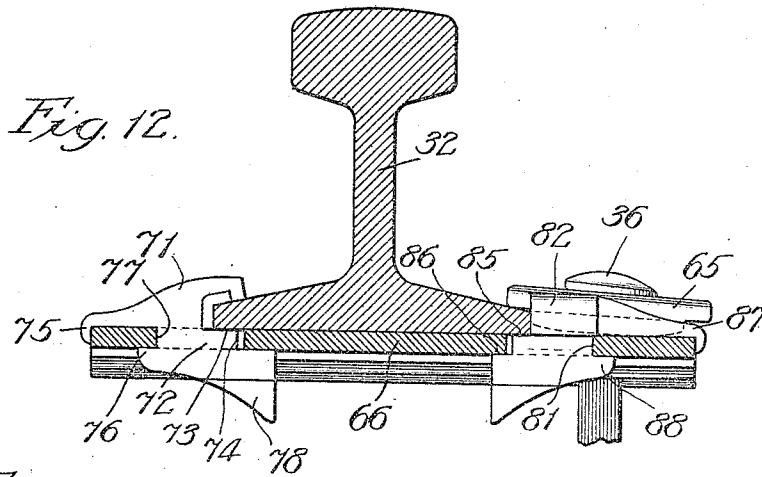
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987,988.

Patented Mar. 28, 1911.

5 SHEETS—SHEET 4.



Witnesses:

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Chas. H. Bull

Inventor:

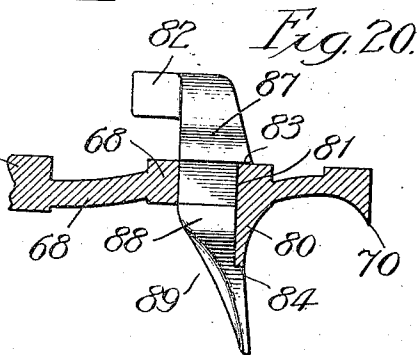
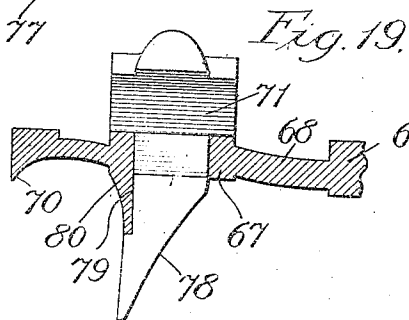
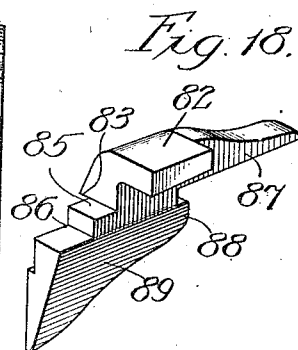
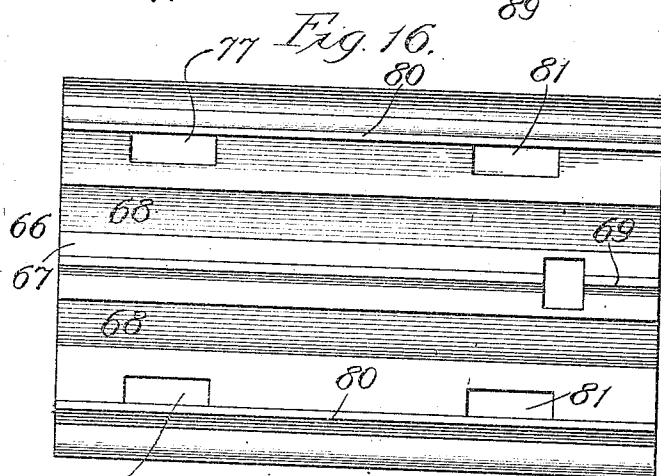
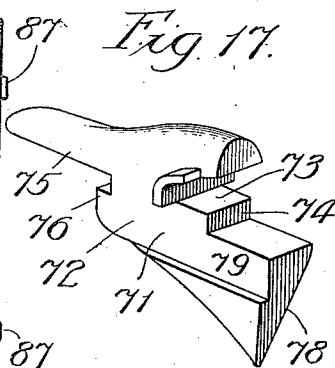
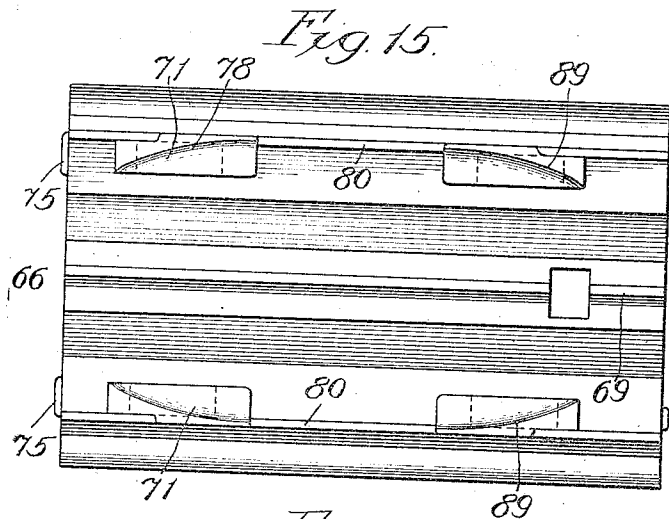
Charles R. Holden
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C. R. HOLDEN.
RAILWAY ROAD BED CONSTRUCTION.
APPLICATION FILED MAY 23, 1910.

987,988.

Patented Mar. 28, 1911.

5 SHEETS—SHEET 5.



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UNITED STATES PATENT OFFICE.

CHARLES R. HOLDEN, OF CHICAGO, ILLINOIS.

RAILWAY-ROAD-BED CONSTRUCTION.

987,988.

Specification of Letters Patent. Patented Mar. 28, 1911.

Application filed May 23, 1910. Serial No. 562,817.

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 to improvements in means, cooperating with tie-plates, or chairs, supported on ties of wood, or other material of a character adapting them to receive spikes, for fastening the rails upon such tie-plates; my primary object being to provide fastening means for this purpose which shall be readily applicable to the plates and rails for holding the latter to the plates, shall be simple of construction, economical of manufacture, shall operate to hold the rails securely in position on the plates, shall be adapted to be moved into such rail-securing position by the act of spiking the plate to the tie and shall be adapted to be secured on the plate in varying positions of adjustment.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a tie showing a pair of rails secured thereto on plates by means constructed in accordance with my invention; 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, the rail-securing clip being shown in the position it assumes before being moved into final clamping-engagement with the rail; Fig. 3 is a view like that of Fig. 2 showing the clip in final clamping position; Fig. 4 is an end view of the construction illustrated in Fig. 3 viewed from the right-hand side of this figure; Fig. 5 is a perspective view of the tie-plate of the preceding figures; Fig. 6, a perspective view of the clip of these figures, and Fig. 7 an enlarged plan view of the same; Fig. 8 is a bottom plan view of the tie-plate; Fig. 9 is a section taken through a construction of tie-plate, rail and fastening means therefor, constituting another embodiment of my invention, this section being vertical and taken longitudinally of the plate and transversely of the rail; Fig. 10 is a perspective view of the tie-plate of Fig. 9; Fig. 11 is a perspective view of the clip shown in Fig. 9; Fig. 12 is a view in side elevation of a tie-plate and securing means

for the rail constituting still another embodiment of my invention, involving the use of removable tie-penetrating abutments, the rail secured thereon being illustrated in section; Fig. 13 is a plan view of the construction illustrated in Fig. 12; Fig. 14 is a view in end elevation of the construction illustrated in Fig. 13, this view being taken from the right in this figure; Fig. 15 is a bottom plan view of the plate of Fig. 12, Fig. 16, a bottom plan view of the same, with the abutments removed; Fig. 17, a perspective view of one of the pair of removable abutments for engaging with the flange of the rail, and Fig. 18, a similar view of one of the other pair of abutments for the clip; Fig. 19 is a broken view in elevation of the tie-plate and removable abutment cooperating with the rail, and Fig. 20, a similar view of the opposite end of the plate and removable abutment for the clip, the plates of these last two-referred-to figures being shown in section.

Referring to Figs. 1 to 8 inclusive, a tie, which may be of wood or any other suitable material capable of receiving spikes and otherwise adapted for use as a tie, is represented at 30. The tie is shown as supporting on its upper side toward its opposite ends plates 31 of metal, which are considerably longer than the width of the rails supported thereon and represented at 32, each of these plates containing in one end portion, beyond the sides of the adjacent rails, spike-holes 33 through which spikes 34 are driven, and toward its opposite end beyond the rail supported thereon a single aperture 35 located midway between the plate-sides through which the spike 36 for securing the plate at this end thereof extends. Each plate 31 which, when formed of malleable iron or other cast metal, may take the form illustrated, is provided, adjacent to the spike-holes 33, with a transversely-extending rib 37 terminating in undercut abutments 38 located beyond the lateral edges of the plate, into engagement with which preferably the outer flange of the rail is adapted to extend, and adjacent to the aperture 35 and at equal distances therefrom with a pair of undercut lugs 39 disposed on opposite sides of the median line of the plate with the undercut portions thereof extending longitudinally of the plate and the overhanging portions thereof extending toward such median line to afford oppositely opening undercut abut-

ments for receiving a clip illustrated at 41 and adapted to engage with the flange of the rail opposed to that which engages with the abutments 38. The underside of the plate is provided with longitudinally and transversely extending ribs 42 and 43 respectively, and below the abutments 38 and 39 with spurs 44, for a purpose hereinafter explained. The clip 41 is of cast metal and is provided on opposed edges with flanges 45, 46, 47 and 48, the flanges 45 and 46 opposing each other and being located on one side of the plane bisecting the clip horizontally, and the other flanges 47 and 48 likewise opposing each other but arranged at right angles to the flanges 45 and 46 and disposed on the opposite side of said plane whereby two pairs of opposed flanges are provided either pair of which is adapted to be inserted into engagement with the undercut portions of the abutments 39. The clip 41 contains a square opening 49 for receiving the spike 36, this opening being located at variable distances from the inner edges of the flanges 45 to 48 inclusive, as illustrated in Figs. 6 and 7, for a purpose hereinafter fully explained. When it is desired that a rail be secured to the tie it is seated upon the plate 31 with one flange thereof in engagement with the rib 37 and undercut abutments 38. The clip 41, which is preferably corrugated on its opposed faces as represented, and convexed transversely of such corrugations, is then introduced at opposed flanges thereon, such as for instance the flanges 45 and 46, under the abutments 39 and the clip then initially forced, as by striking it with a sledge, into position of engagement at its flange 48 with the other of the rail-flanges, with the openings 35 and 49 in the plate and clip respectively, non-alining as illustrated in Fig. 2. The spike 36 which has its penetrating end beveled as represented at 50 is then introduced into the openings 49 and 35 and driven therethrough and into the tie crosswise of the grain thereof to the position indicated in Fig. 3. The spike 36 in being driven through the openings 49 and 35 exerts at its beveled end a wedging action upon the clip 41, forcing the latter toward the rail with great force and into intimate rail-flange-engaging position, in which position it is held by the embedding of the spike in the tie, the spike not only serving to force the clip into final position as described but operating to spike the tie-plate at this point to the tie. The horizontal walls 51 of the undercut lugs 39 preferably incline upwardly from the center of the plate toward the end thereof at which these abutments are located which serve to permit the clip 41 to be inserted into position on the plate without danger of wedging of the clip between these abutments and the plate, upon the act of manually applying the clip to the plate pre-

paratory to its being forced into rail-flange-engaging position as described. The forming of the walls 51 as described affords the additional advantage of permitting the clip to turn upon the inner corner-portions of these abutments as fulcrum and rock upon its convexed bottom as the clip is wedged into rail-flange-engaging position, to cause the rear end portion of the clip to bear against the plate, as illustrated somewhat exaggeratedly in Fig. 3. The construction thus afforded is in the nature of a truss the parts thereof under tension counteracting the tendency to bending or buckling of the plate downward between its ends, when in use. The spurs 44 on the plate which penetrate the tie when downward pressure is applied thereto penetrate the latter and serve to reinforce the plate at the points where the greatest strain occurs.

From the foregoing description it will be understood that by positioning the opening 49 in the clip as described, the clip by being turned end for end or inverted to cause its opening to assume any one of four positions relative to the rail-flange is adapted to be used where proportions of parts are such as to render necessary the use of a clip having its aperture at different distances from the rail-engaging flange for effecting the non-alining condition of the clip and plate apertures when the clip bears against the rail-flange preparatory to inserting the wedge-spike.

In Figs. 9 to 11, inclusive, is illustrated another embodiment of my invention. The plate of this construction, represented at 60, is formed by the rolling process to produce transverse ribs 61 on its underside, and the rail-engaging rib 62 on its top, the undercut abutments 63 for the flange of the rail being formed by cutting the metal of the plate at its opposed edge-portions and bending up the portions thereof so partially severed, and the opposed abutments 64, like the abutments 39 of the preceding figures for the rail-engaging clip, likewise being formed of portions of the plate struck up to the positions represented in Fig. 10. The clip of this construction represented at 65 is the same in construction and operation as that of the preceding figures excepting that its faces are uncorrugated, the omission of such corrugations permitting it to be formed by the rolling process.

The construction illustrated in Figs. 12 to 20, inclusive, involves the use of a rolled plate represented at 66 and formed with thickened sections 67 and webs 68 connecting them together and extending longitudinally of the plate, the central one of the sections 67 being provided on its underside with a beveled rib 69 and the extreme edges of the plate with beveled ribs 70 adapted to penetrate the tie. The abutments for the outer

flange of the rail which are formed separately from the plate and are represented at 71, each comprises a body portion 72 recessed as indicated at 73 and provided forward of said recess with a shoulder 74 and on the rear thereof with spaced rearwardly-extending lugs 75 and 76, each of these abutments when positioned on the plate extending through openings 77 therein and engaging at their lugs 75 and 76 with the upper and lower sides, respectively, of the plate, and at their shoulders 74 with the underside thereof as represented in Fig. 12. The lower ends of these abutments, which are tapered as represented at 78 extend below the plate and penetrate the tie longitudinally thereof, the outer faces of these abutments being provided with shouldered recesses 79 adapted to interlock with a pair of longitudinally-extending flanges 80 provided on the underside of the plate as clearly represented in Fig. 19. The abutments for the clip 65 which are likewise formed separately from the plate and fit into openings 81 in the latter each comprises a body-portion provided on one side with a shoulder 82 for engaging with the clip 65, on its opposite side with a shoulder 83 for engaging with the upper surface of the plate, and on the side carrying the shoulder 83 with a shoulder 84 adapted to engage with the underside of the plate. The sides of the abutments nearest the rail are provided with stepped shoulders 85 and 86 adapted to interlock respectively with the undersides of the rail and plate; and these sides of the abutments which are farthest from the rail carry lugs 87 and 88 for engaging with the upper and lower surfaces, respectively, of the plate. The lower portions of the clip-abutments are tapered, as illustrated at 89, to permit them to penetrate the tie longitudinally thereof.

In practice the abutment devices for engaging with the rail and clip will be first seated on the plate, as described, and the ends of the lugs 75 and 87 then bent down to overlap the ends of the plate for holding these abutments against displacement. The rail will then be applied to the plate to cause one of its flanges to engage with the abutments 71, whereupon the clip 65 will then be driven into engagement with the other flange of the rail, as described of the preceding construction. When pressure is brought to bear against the rail, as by running a construction train over it, the depending portions of the abutments and the ribs on the plate will be forced into the tie for holding the plate securely in place thereon. It will be understood that, if desired, screw-spikes may be used in place of the ordinary drive-spike.

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

1. In railway-roadbed construction, the

combination of a tie, a metal-plate, a rail secured to the plate at one flange, a pair of undercut abutments on the plate opening toward each other and extending lengthwise of the plate, means for securing the plate to the tie near its opposite ends, with such means adjacent to the pair of undercut abutments presenting a wedge-surface, and a rail-engaging clip engaging with the undercut portions of said pair of abutments and adapted to be engaged by said wedge-surface for forcing said clip crosswise of the rail into engagement with the other flange of the rail by the application of said plate-securing means to the plate.

2. In railway-roadbed construction, the combination of a tie, a metal-plate, a rail secured to the plate at one flange, a pair of undercut abutments on the plate opening toward each other and extending lengthwise of the plate and having their under sides inclined upwardly away from the rail, means for securing the plate to the tie near its opposite ends, with such means adjacent to the pair of undercut abutments presenting a wedge-surface, and a rail-engaging clip engaging with the inclined surfaces of said pair of abutments and adapted to be engaged by said wedge-surface for forcing said clip cross-wise of the rail into engagement with the other flange of the rail by the application of said plate-securing means to the plate.

3. In railway-roadbed construction, the combination of a tie, a rail, a metal-plate provided near one end with means for engaging with a flange of said rail and near its opposite end with abutments opening toward each other, means for securing said plate to the tie having a wedge-shaped surface, and a rail-securing clip engaging with said abutments and with the other flange of the rail and adapted to be engaged by the wedge-surface on said plate-securing means for forcing the clip crosswise of the rail into rail-flange-engaging position by the application of the plate-securing means to the plate.

4. In railway-roadbed construction, the combination of a tie, a metal-plate, means for securing the plate to the tie, a rail on said plate secured thereto at one flange, and a clip engaging with the other flange of the rail and movable crosswise of the rail into such position by engagement with said plate-securing means upon the application of the latter to fasten the plate on the tie, said clip being constructed and arranged to be applied to the rail in varying positions of adjustment with relation thereto, for the purpose set forth.

5. In railway-roadbed construction, the combination of a tie, a metal-plate, means for securing the plate to the tie, a rail on said plate secured thereto at one flange, and

a clip for engaging with the other flange of the rail formed on opposite edges with rail-flange-engaging shoulders either of which is adapted to be positioned for engagement with the rail, said clip containing an opening located non-centrally of the shoulders thereon, a wall of said opening being adapted to be engaged by said plate-securing means for forcing the clip crosswise of the rail into engagement with the latter upon the application of said plate-securing means to the plate.

6. In railway-roadbed construction, the combination of a tie, a metal-plate spiked thereto, a rail on said plate secured thereto at one flange and a clip for engaging with the other flange of the rail formed on opposite edges with rail-flange-engaging shoulders either of which is adapted to be positioned for engagement with the rail, said clip containing an opening located non-centrally of the shoulders thereon and adapted to receive the plate-securing spike, a wall of said opening being adapted to be engaged by the wedge-portion of the spike for forcing the clip crosswise of the rail into rail-flange-engaging position.

7. In railway-roadbed construction, the combination of a tie, a metal-plate provided near one end with means for engaging a flange of a rail and near its opposite end with a pair of undercut abutments opening toward each other and extending lengthwise of the plate, means for securing the plate to the tie near its opposite ends, with such means adjacent to said abutments presenting a wedge-surface, and a rail-engaging clip formed on opposite edges with rail-flange-engaging shoulders either of which is adapted to be positioned for engagement with the rail, said clip fitting under said abutments and containing an opening located non-centrally of the shoulders on said clip, a wall of which opening is adapted to be engaged by said wedge-surface for forcing said clip into rail-flange-engaging position by the application of said plate-securing means to the plate.

8. In railway-roadbed construction, the combination of a tie, a metal-plate, means for securing the plate to the tie having a wedge-surface, a rail on said plate secured thereto at one flange, and a clip engaging with the other flange of the rail of rectangular form provided on its four sides with flanges any one of which is adapted to be positioned against the rail, said clip containing an opening located at varying distances from said flanges, a wall of which opening is adapted to be engaged by the wedge-surface of the plate-securing means, for the purpose set forth.

9. In railway-roadbed construction, the combination of a tie, a metal-plate provided near one end with means for engaging with

a flange of a rail and near its opposite end with a pair of undercut abutments opening toward each other and extending lengthwise of the plate, means for securing the plate to the tie toward its opposite ends, with such means adjacent to said abutments presenting a wedge-surface, and a rail-engaging clip of general rectangular form provided on its four sides with flanges, either pair of which is adapted to fit under said abutments, said clip containing an opening through it located at varying distances from the flanges, a wall of which opening is adapted to be engaged by the wedge-surface of the plate-securing means, for the purpose set forth.

10. In railway-roadbed construction, the combination of a tie, a metal-plate provided near one end with means for engaging with a flange of a rail and near its opposite end with a pair of undercut abutments opening toward each other and extending lengthwise of the plate, means for securing the plate to the tie toward its opposite ends, with such means adjacent to said abutments presenting a wedge-surface, and a rail-engaging clip of general rectangular form for engaging with the other flange of the rail, provided on its four sides with shouldered-flanges, the two pairs of which are located on opposite sides of the plane bisecting the clip horizontally, the clip being constructed to engage at either of its pairs of flanges with said abutments and containing an opening a wall of which is adapted to be engaged by said wedge-portion of the plate-securing means, for the purpose set forth.

11. In railway-roadbed construction, the combination of a tie, a metal-plate secured to the tie, a rail on said plate secured thereto at one flange, the plate-securing means adjacent to the other flange of the rail being formed with a wedging-surface, and a clip engaging with said last-referred to rail-flange having an even number of sides with its opposing sides parallel and formed with shouldered flanges, the clip being constructed and arranged to engage at any of its flanges with the rail and containing an opening a wall of which is adapted to be engaged by said wedge-portion of the plate-securing means, for the purpose set forth.

12. In railway-roadbed construction, the combination of a tie, a metal-plate provided near one end with means for engaging with a flange of a rail and near its opposite end with a pair of undercut abutments opening toward each other and extending lengthwise of the plate, means for securing the plate to the tie toward its opposite ends, with such means adjacent to said abutments presenting a wedge-surface, and a rail-engaging clip for engaging with the other flange of the rail having an even number of sides with its opposing sides parallel and formed with

shouldered flanges, the clip being constructed and arranged to engage at opposed flanges thereon with said abutments, and containing an opening a wall of which is adapted to be engaged by said wedge-portion of the plate-securing means.

13. In railway-roadbed construction, the combination of a tie, a metal-plate provided at one end with means for engaging a flange of a rail and near its opposite end with a pair of undercut abutments opening toward each other and extending lengthwise of the plate with the undersides of said abutments inclining upwardly from their inner toward their outer ends, means for securing the plate to the tie toward its opposite ends, with such means adjacent to said abutments presenting a wedge-surface, and a rail-engaging clip engaging with the undercut portions of said abutments and adapted to be engaged by said wedge-surface for forcing said clip into engagement with the other flange of the rail by the application of the plate-securing means to the plate.

14. In railway-roadbed construction, the combination of a tie, a metal-plate provided near one end with means for engaging with a flange of a rail and near its opposite end with abutments formed separately from said

plate and interlocking therewith, means for securing said plate to the tie having a wedge-shaped portion, a rail on said plate engaging with said rail-engaging means, and rail-securing means cooperating with said abutments and adapted to be engaged by the wedge-surface on said plate-securing means for forcing it into engagement with the other flange of the rail by the application of said plate-securing means to the plate.

15. A clip for the purpose set forth having its plate-engaging surface convexed and provided on an edge thereof with a flange.

16. A clip for the purpose set forth having flanges on its opposite edges and on opposite sides of its horizontal center and containing an opening arranged non-centrally of said flanges.

17. A clip for the purpose set forth having flanges on its opposite edges and on opposite sides of its horizontal center with its opposed faces convexed, said clip containing an opening arranged non-centrally of said flanges.

CHARLES R. HOLDEN.

In presence of—

R. A. SCHAEFER,
J. WILSON.