A. C. CANDLAND.

METALLIC RAIL TIE AND FASTENER THEREFOR.

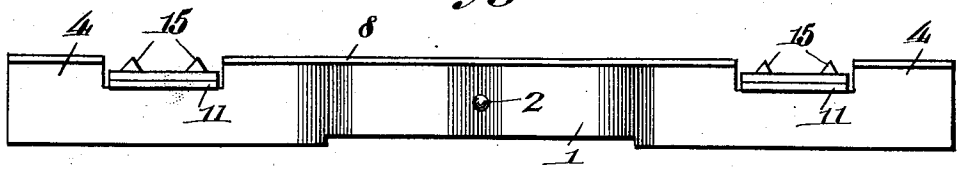
APPLICATION FILED MAY 27, 1911.

1,024,470.

Patented Apr. 23, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



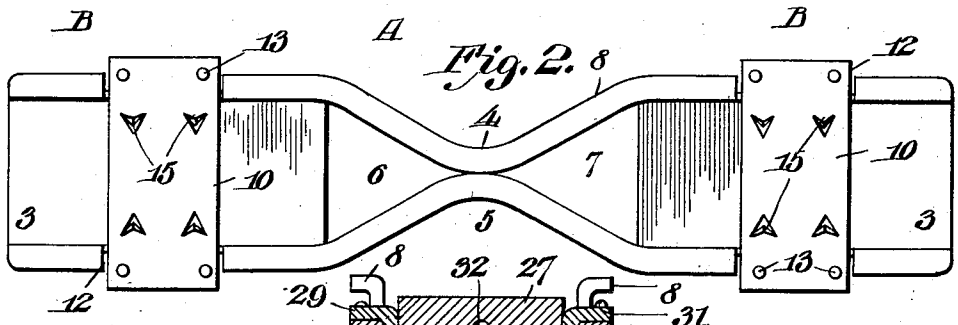


Fig. 2.

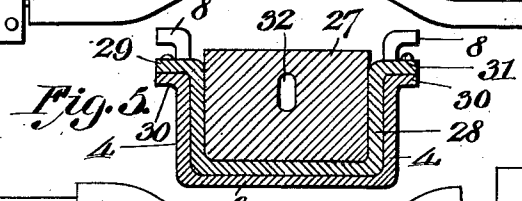


Fig. 5.

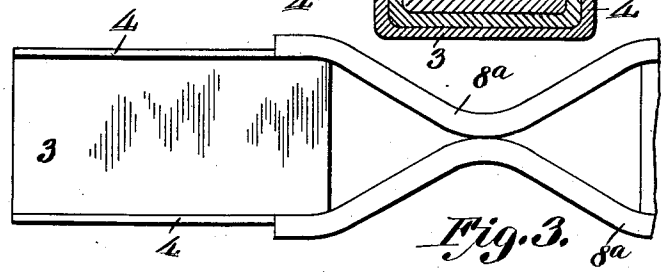


Fig. 3.

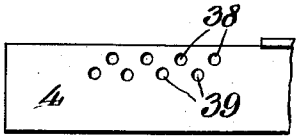


Fig. 4.

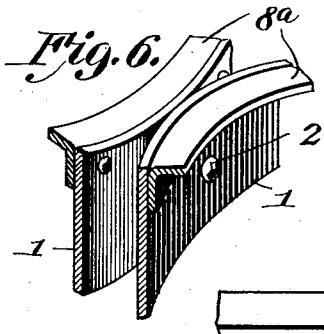


Fig. 6.

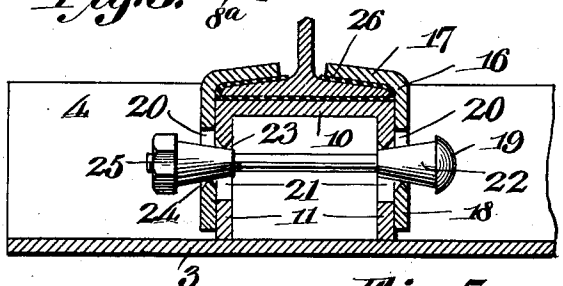


Fig. 7.

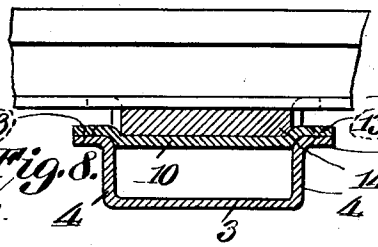


Fig. 8.

WITNESSES

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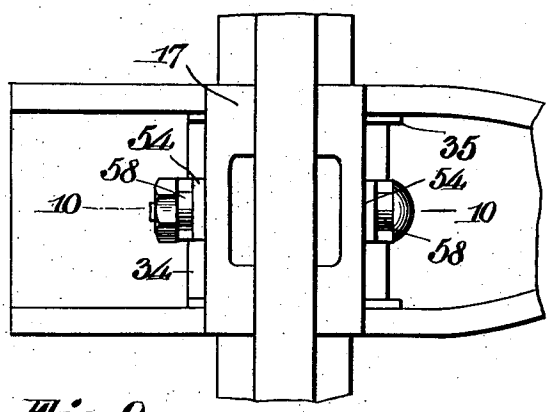


Fig. 9.

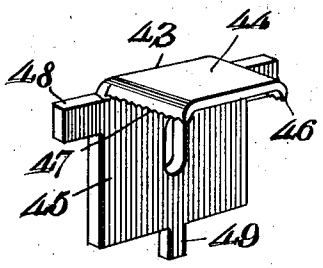


Fig. 12.

Fig. 10.

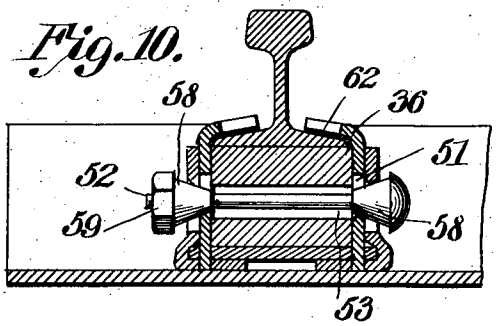
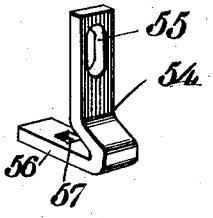


Fig. 13.



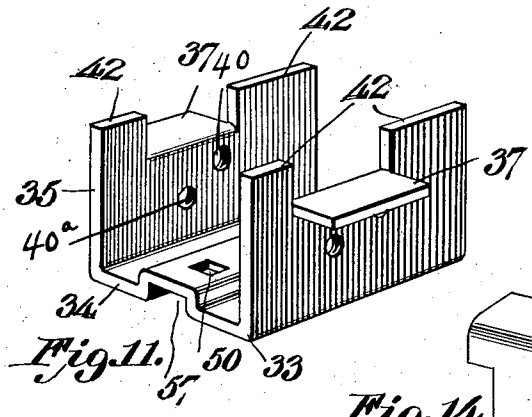
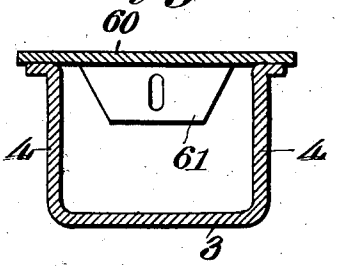


Fig. 11.

Fig. 15.



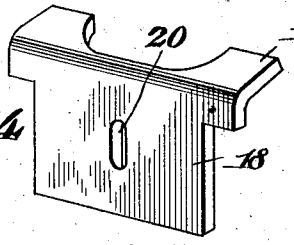


Fig. 14.

WITNESSES

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UNITED STATES PATENT OFFICE.

ARTHUR C. CANDLAND, OF PROVO CITY, UTAH.

METALLIC RAIL-TIE AND FASTENER THEREFOR.

1,024,470. Specification of Letters Patent. Patented Apr. 23, 1912.

Application filed May 27, 1911. Serial No. 629,787.

To all whom it may concern:

Be it known that I, ARTHUR C. CANDLAND, a citizen of the United States, residing at Provo City, in the county of Utah and State of Utah, have invented new and useful Improvements in Metallic Rail-Ties and Fasteners Therefor, of which the following is a specification.

My invention relates to improvements in metallic railway ties and rail fasteners therefor.

The invention will be hereinafter fully described, claimed, and illustrated in the accompanying drawings, wherein the preferred embodiment of the invention is disclosed, and wherein:—

Figure 1 is a view in side elevation of a railway tie constructed in accordance with my invention. Fig. 2 is a top plan view of the tie. Fig. 3 is a top plan view of a portion of the modified form of the tie. Fig. 4 is a view in side elevation of a portion of the modified form. Fig. 5 is a transverse sectional view illustrating a slightly modified form of rail seat. Fig. 6 is a detail perspective view illustrating a modification in the means for reinforcing the body of the tie. Fig. 7 is a vertical sectional view illustrating the preferred form of tie seat and rail fasteners. Fig. 8 is a vertical sectional view illustrating a slight modification of the preferred form of rail seat. Fig. 9 is a top plan view of a modified form of rail seat and fasteners. Fig. 10 is a sectional view on the vertical plane indicated by the line 10—10 of Fig. 9. Fig. 11 is a detail perspective view of the casing of this form of rail seat. Fig. 12 is a detail perspective view of one of the clamps of this form of rail seat. Fig. 13 is a detail perspective view of one of the locking members of this form of rail seat. Fig. 14 is a detail perspective view of one form of clamp, and Fig. 15 is a vertical sectional view of a seat for a switch point.

Broadly and generally speaking, my improved tie comprises a central body portion A, and end members B. The end members B support the rails, and the body portion A connects the end members. The body portion A comprises two vertically disposed arcuate plates 1 which have their convex sides disposed in opposition, and which are connected together at a point centrally between their ends by a suitable fastening element 2. The end members B are substantially U-shaped in cross section, presenting horizontal bottom plates 3 and vertical side plates 4. The side plates 4 are continuations of the arcuate plates 1, and the bottom plates 3 are disposed in a plane located below the lower edge of the arcuate plates 1.

The formation of the body portion A of the tie provides ballast receiving recesses 4 and 5 and ballast receiving pockets 6 and 7, which are fully open at their upper and lower sides. The ballast located in these pockets holds the tie from having any movement transversely, longitudinally or diagonally of the road bed. The formation of the body portion A also prevents the tie from rocking on the road bed. Ballast placed upon the bottom plates 3 of the end members B, will hold the tie against vertical movement.

To add strength and rigidity to the arcuate plates 1, and to the side plates 4, a reinforcing member 8 is provided. This member is formed by bending the upper edges of the plates 1 and 4 outwardly. As shown in Fig. 3 of the drawings, the arcuate plates 1 may only be provided with reinforcing members, such members being designated by the reference character 8^a. These reinforcing members may be formed by bending the upper edges of the plates 1 outwardly, or they may be formed separately and applied to the plates. When formed separately, the reinforcing members 8^a will each consist of an angle bar secured to the plates 1 by suitable fastenings.

The tie is provided with rail seats which are carried by the end members B. By reference to Fig. 7 of the drawings, it will be seen that each rail seat comprises top plate 10 and side plates 11. The top plate 10 is greater in length than the width of the end members B, whereby to provide an ample support for the rails. As the rails rest directly upon the top plates 10, the tie may have less transverse extent than that of the ties now employed, whereby to reduce the cost of the tie. The top plates 10 of the rail seats are located in the cut out portions 12 of the end members B, and the seats are secured in applied position by fastening elements 13, said elements passing through the top plates 10 and flanges 11 formed on the side plates 4. The side plates 11 of the rail seats rest at their lower edges upon the top of plates 3, and have their side edges lying in engagement with the side plates 4. The construction of the rail seats, and the man-

ner in which they are connected to the tie, greatly reinforce the end members B.

Blocks 14 of wood, rubber, or any other material suitable for the purpose, may be placed upon the top plates 10 beneath the rails, and to hold such blocks in applied position the top plates 10 are struck up to provide prongs 15 which engage the under sides of the blocks. In lieu of the prongs 15 the top plates 10 may be recessed as shown in Fig. 8 of the drawings, for the reception of the blocks 14 which are held against accidental movement by the end walls of the recesses.

The rails are secured to the seats by clamps 16, each of which comprises a rail flange engaging member 17 and an attaching member 18. The clamps 16 are secured in applied position by bolts 19 which pass through openings 20 in the members 18 and openings 21 in the plates 11. Each bolt 19 is provided with wedge sleeves 22 which enter the openings 20 and 21. The upper and lower inclined surfaces of the wedge sleeves 22 engage the top walls 23 of the openings 21 and in the bottom walls 24 of the openings 20. The construction just described is such that when the nuts 25 are turned upon the headed bolts 19 the wedge sleeves 22 are drawn within the openings 20 and 21, causing the flange engaging members 17 to be pulled down and held firmly in engagement with the base flanges of the rails. When the blocks 14 are not employed, strips of insulation 26 are used to completely insulate the rails from the ties, whereby to adapt the ties for use on those roads employing block signal systems. The strips of insulation 26 fully cover the upper and lower sides of the base flanges of the rails. If the blocks 14 are used it is only necessary to insert strips of insulation between the members 17 and the base flanges of the rails, as shown in Fig. 10 of the drawings.

In Fig. 5 of the drawings I have shown a slightly modified form of rail seat. This seat comprises a block 27 of wood or any other suitable material, and a casing 28. The casing 28 contains the block 27 and fits snugly within the end member B of the tie. The casing 28 is provided at its upper edges with flanges 29 resting upon flanges 30 formed on the side plates 4. The casing is secured in applied position by suitable fastening elements 31 passing through the flanges 29 and 30. The rail fastening means above referred to are employed in connection with this type of rail chair, and to permit the passage of the headed bolt 19 the block 27 is provided with an opening 32. The casing 28 is fully open at its ends, and the flanges 29 thereof rest in the cut-away portions 12 of the end members B.

In Figs. 9, 10 and 11 of the drawings is shown a further modified form of rail seat. This rail seat comprises a casing 33 consisting of a bottom wall 34 and side walls 35, the ends of the casing being fully open. The rail seat also comprises a block 36 of wood or any other material suitable for the purpose, which is contained within the casing. This type of rail seat is especially adapted for use in connection with that form of tie disclosed in Figs. 3 and 4 of the drawings, and is adjustably contained therein. The side plates 35 of the casing 33 are formed to provide horizontal flanges 37 which rest upon the upper edges of recesses formed in the side plates 4. The bottom wall of the casing 33 rests upon the bottom plate 3 and the side walls 35 of the casing 7 engage the side walls 4. The rail seat is secured in adjusted position by bolts, not shown, which pass through openings formed in the side plates 4 and 35. The openings in the side plates 4, as shown in Fig. 4 of the drawings, comprise an upper series 38 and a lower series 39 extending longitudinally of the tie, the opinings of the series being arranged in staggered relation so as to permit of a very fine adjustment of the rail seats. The plates 35 of the casing 33 are provided with openings 40 adapted to be brought into registration with a pair of the openings 38, and with openings 40^a adapted to be brought into registration with a pair of the openings 39. The formation of the flanges 37 provides the plates 35 with rail guards 42 located on opposite sides of the base flange of the rail. The inner guards 42 are larger than the outer guards 42, whereby to reinforce the seat at the side receiving the greatest strain. This type of rail chair is provided with clamps 43, as shown in detail in Fig. 12 of the drawings. Each clamp is provided with a rail engaging member 44 which overhangs the base flange of the rail, and a locking member 45. The side edges of the rail engaging members 44 are formed to provide flanges 46 having serrated under edges 47, these serrated under edges 47 engaging the rail in such a manner as to hold it against creeping. The locking members 45 are provided at their side edges with extensions 48 which rest upon the flanges 37. At their lower edge the locking members 45 are provided with depending lugs 49 which pass through openings 50 formed in the bottom plate 34 of the casing 33. Like the clamps 16 heretofore fully described, the clamps 43 are provided with openings 51 through which passes the bolt 52. To permit of the passage of the bolt 52 the block 36 is provided with an opening 53. Two members 54 are used in connection with the clamps 43, as fully disclosed in Figs. 10 and 13 of the drawings. The members 54 are provided with openings 55 for the passage of the headed bolt 52 and are provided with

horizontal extensions 56 which enter a groove 57 formed in the under side of the plate 34. The lugs 49 pass through openings 57 formed in the extensions 56, holding the members 54 in applied position. The headed bolt 52 is provided with wedge sleeves 58 which enter the openings 55 and 51, the inclined faces of the wedge sleeves 58 engaging the upper walls of the openings 51, whereby when the nut 59 is turned upon the bolt, said sleeves are drawn within the openings, causing the clamps 36 to be moved down into firm engagement with the base flanges of the rail.

It should be noted that the outer edge of one wedge sleeve is engaged by the head of the bolt, and that the outer edge of the other wedge sleeve is engaged by the nut, whereby the turning of the nut upon the bolt will cause the sleeves to approach each other.

The clamp 16 may be used in connection with the type of rail seat just described, as shown in Fig. 9 of the drawings, this clamp being shown in detail in Fig. 14 of the drawings.

In Fig. 15 of the drawings I have shown a seat for a switch point. This seat comprises a top plate 60 slidably mounted upon the upper edges of the side plates 4, and flanges 61, said flanges providing means by which the clamps may be secured to the seat. The flanges 61 are located between the side plates 4 and are small enough to permit the seat to move in the arc of a circle, having for its center the pivot and the switch point. The switch point may be secured to the seat by either form of the clamps described.

The clamps used in connection with that type of rail seat employing the wooden block, are insulated from the rail by suitable insulating material 62, see Fig. 10 of the drawings. The switch point may be insulated from the plate 60 in any suitable manner.

It should be apparent from the above description, taken in connection with the accompanying drawings, that I have provided a metallic railway tie, and rail fastenings therefor, which may be manufactured and sold at a comparatively low cost, which are admirably adapted for accomplishing the purposes sought, and which are simple, durable and efficient.

Changes in the form, proportions and minor details of construction may be made within the scope of the claims, without departing from the spirit, or sacrificing any of the advantages of the invention.

Having thus described the invention, what I claim as new is:—

1. A railway tie comprising U-shaped end members, arcuate plates connecting said end members, rail seats comprising side walls and top, the top being extended without the side walls and means to secure one of said rail seats within each of said U-shaped members.

2. A railway tie comprising U-shaped end members and arcuate plates connecting the end members, the upper edges of the plates being provided with horizontally disposed reinforcing flanges.

3. A railway tie comprising U-shaped end members and arcuate plates connecting the end members, the upper edges of the side plates of the U-shaped members and the upper edges of the arcuate plates being provided with horizontally disposed reinforcing flanges, and the bottom plates of the U-shaped members being disposed in a plane below the lower edges of the arcuate plates.

4. A railway tie comprising U-shaped end members and arcuate plates connecting the end members, the upper edges of said end members being provided with horizontally disposed flanges, rail seats comprising side walls and top, the top being extended without the side walls, and means to secure said rail seats to the said flanges.

5. A railway tie comprising U-shaped end members and arcuate plates connecting the end members, the upper edges of the plates being provided with horizontally disposed reinforcing flanges, rail seats secured to said flanges consisting of top and side walls with the side walls resting on the bottom of said U-shaped member.

6. A railway tie comprising U-shaped end members and arcuate plates connecting the end members, the upper edges of said end members being provided with horizontally disposed flanges, a rail seat comprising top and side walls, the side walls having elongated openings therein, flanges formed on said rail seat by extending the top thereof without the side walls, means to secure one of said rail seats within each of said U-shaped end members, clamps engaging the base flange of a rail, each having an elongated opening therein with the bottom thereof outwardly beveled and with the sides of said opening registering with the sides of the elongated opening in said rail seat and with the top and bottom not registering, a bolt through said clamps and said rail seats having a conical head, a conical washer on said bolt and a nut on said bolt adapted to draw said conically headed bolt and conical washer slidably within said elongated opening to cause said openings to more nearly register and to draw said clamps downward and inward in gripping contact with a rail.

7. A railway tie comprising U-shaped end members and arcuate plates connecting the end members, the upper edges of said end members being provided with horizontally disposed flanges, a rail seat comprising top and side walls, the side walls having elongated openings therein, flanges formed on said

rail seat by extending the top thereof without the side walls, means to secure one of said rail seats within each of said U-shaped end members, clamps engaging the base flange of a rail, and means to draw said clamps inward and downward in gripping contact with said rail.

8. A railway tie comprising U-shaped end members and arcuate plates connecting the end members, the upper edges of said end members being provided with horizontally disposed reinforcing flanges, a rail seat comprising a top and side walls, and means to secure one of said rail seats within each of said U-shaped end members, and means to draw said clamps in pairs inward and downward in gripping contact with said rail.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ARTHUR C. CANDLAND.

Witnesses:
JOHN F. BYRNE,
HENRY ORME TOWLES.