No. 799,032. PATENTED SEPT. 12, 1905.

H. W. CASE & F. X. DEVLIN.

RAILWAY CONSTRUCTION.

APPLICATION FILED AUG. 21, 1901. RENEWED FEB. 5, 1904.

3 SHEETS—SHEET 1.

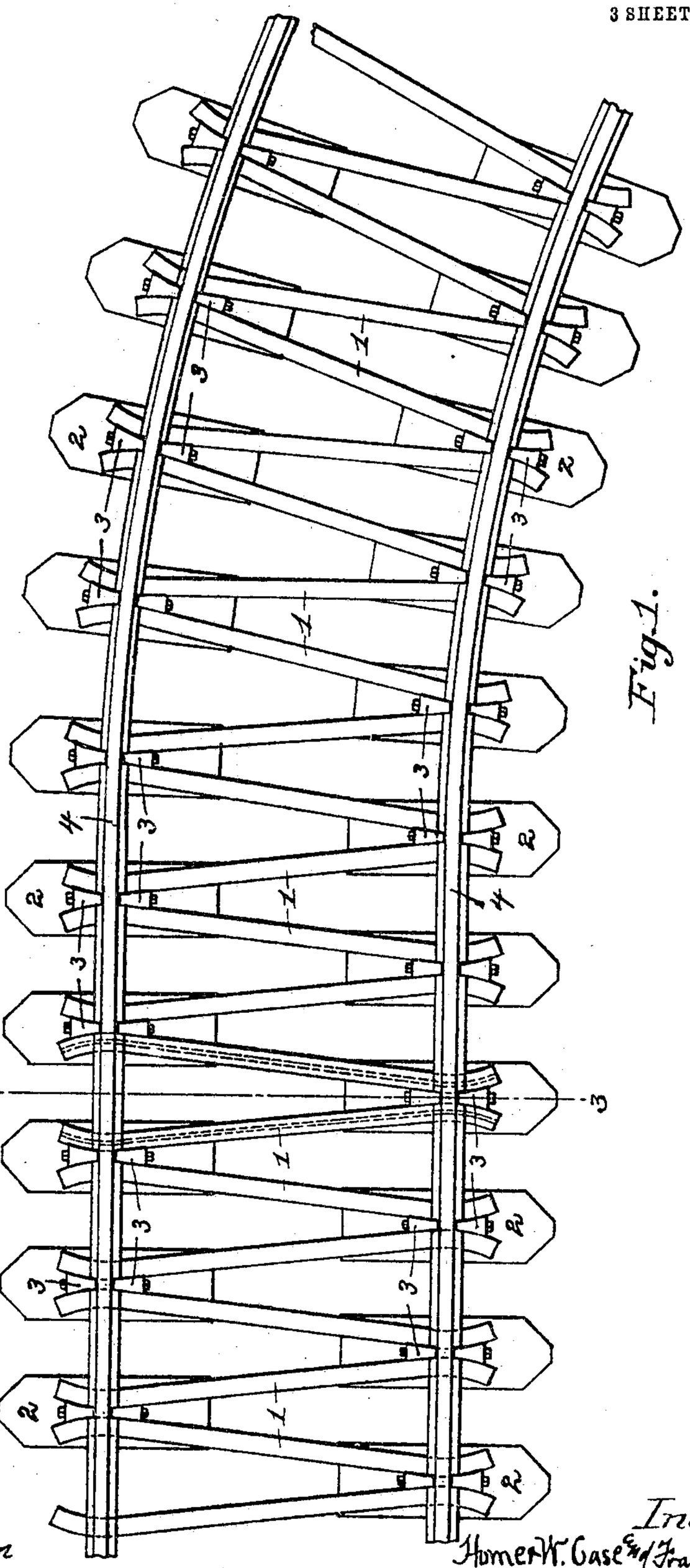

Fig. 1.

Witnesses:
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Inventors:
Homer W. Case and Frank X. Devlin
by John H. Roney
their
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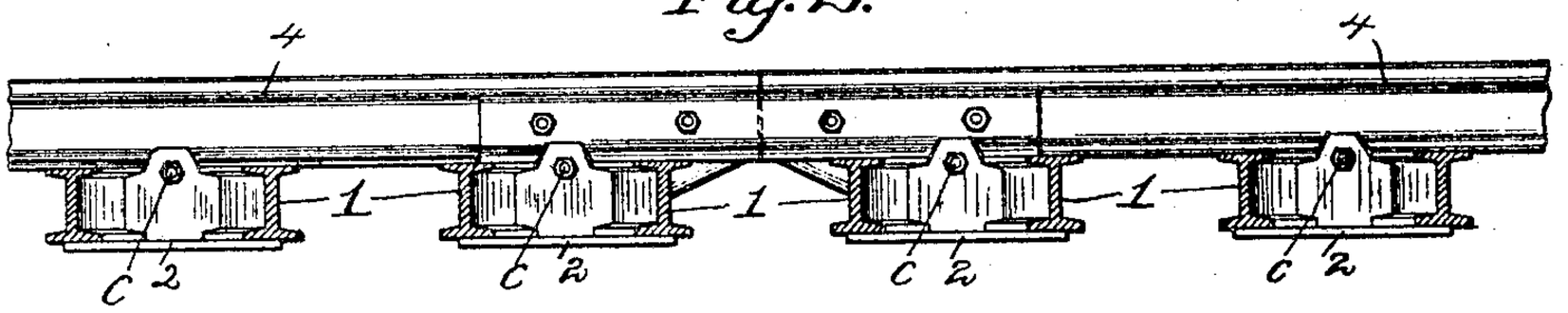
3 SHEETS—SHEET 2.

Fig. 2.



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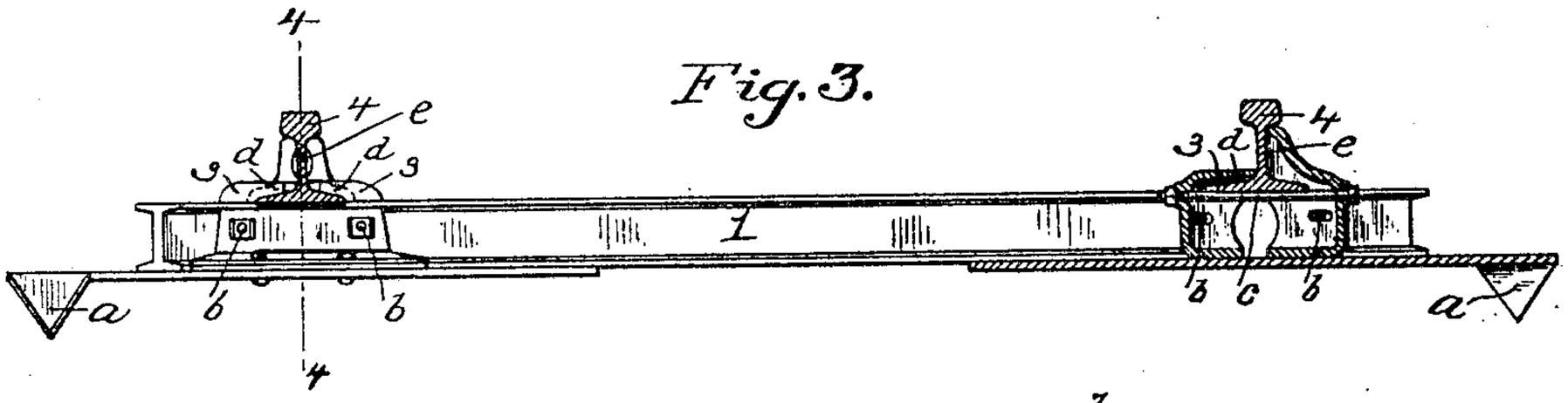

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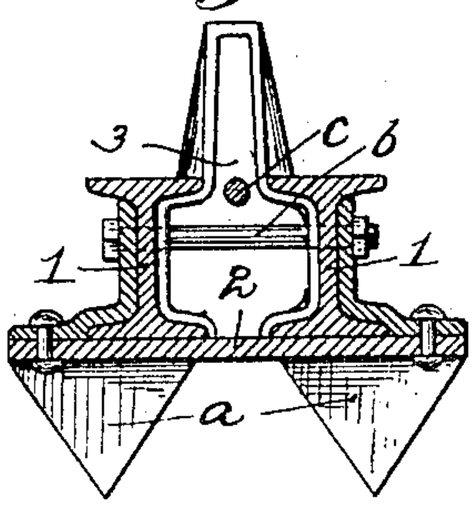

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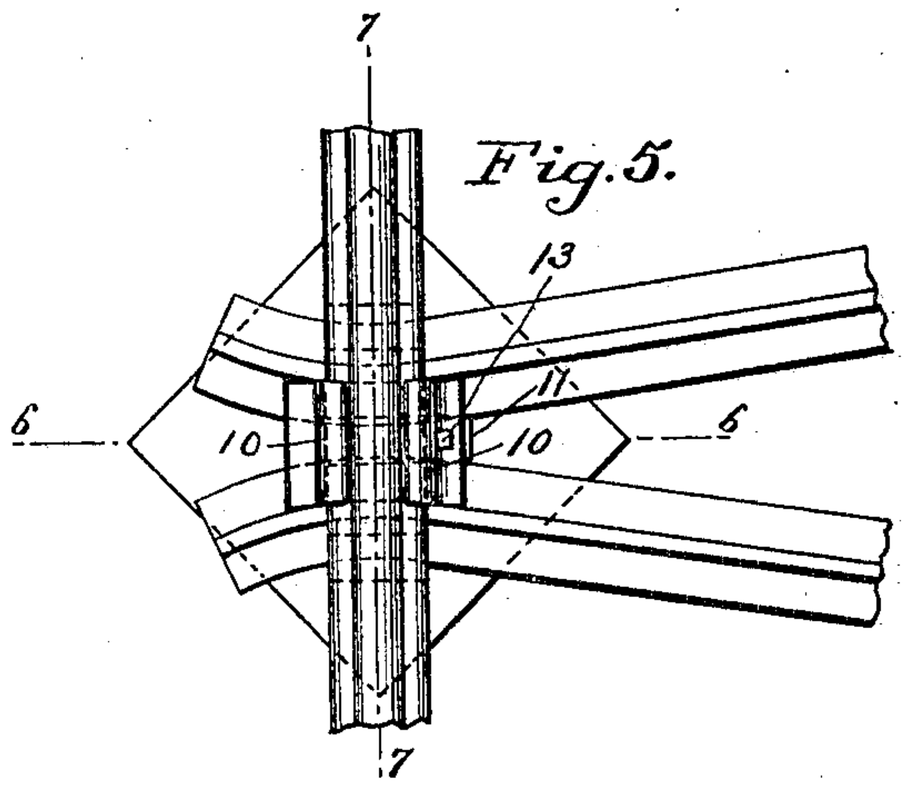

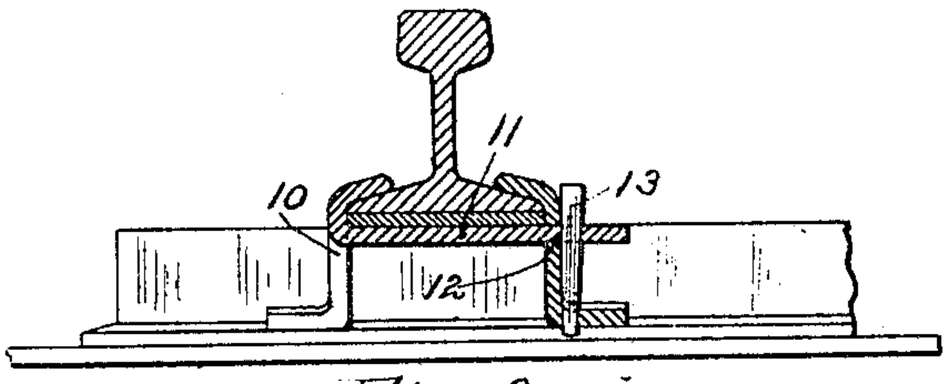

Fig. 6.

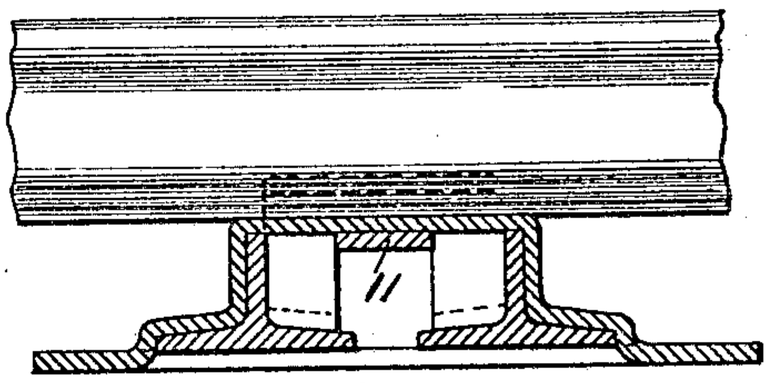

Fig. 7.

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3 SHEETS—SHEET 3.

Fig. 8.

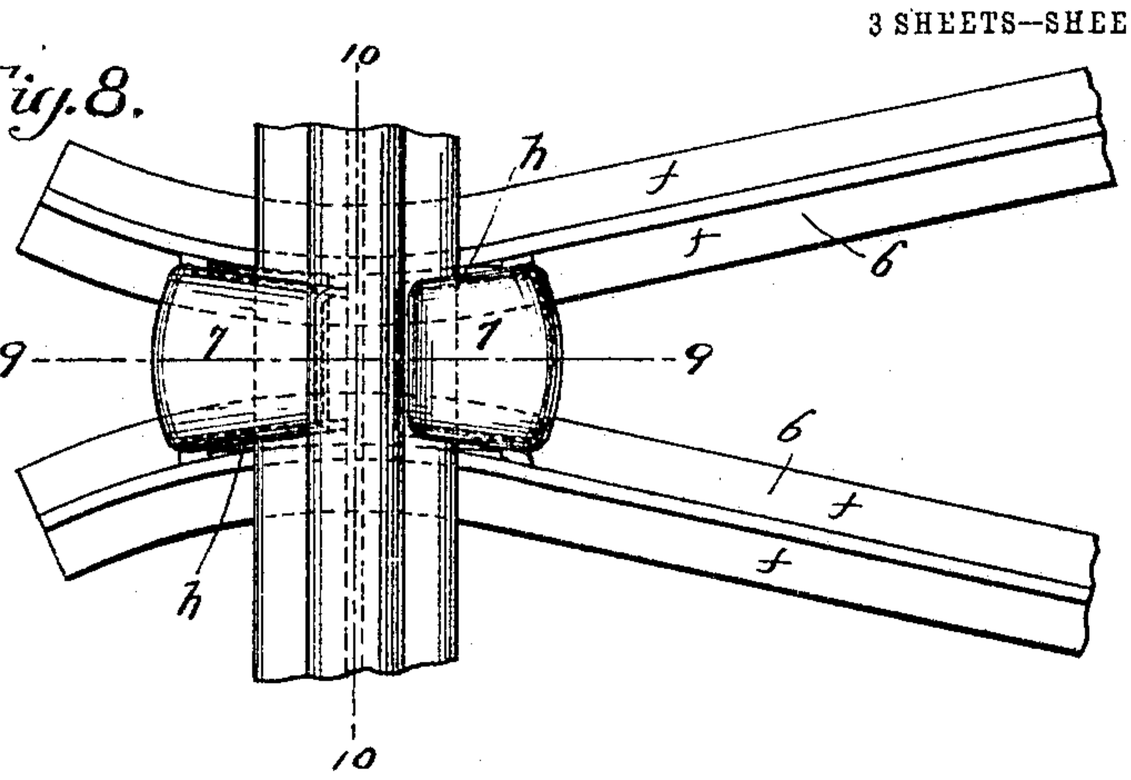


Fig. 9.

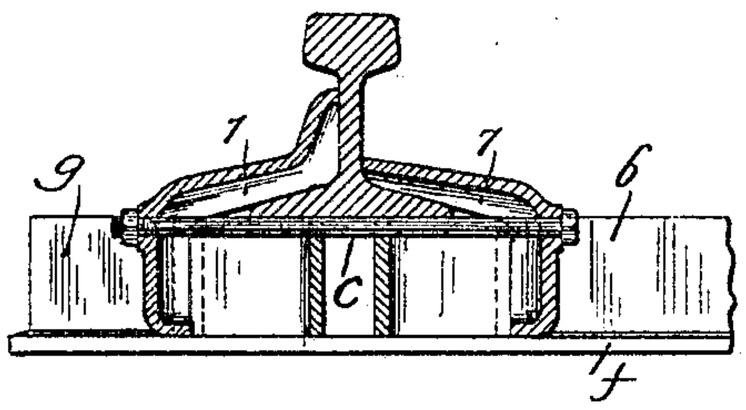


Fig. 10.

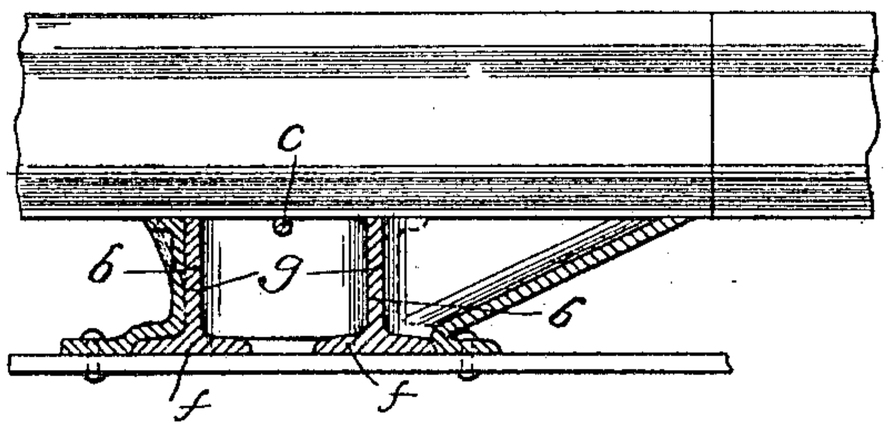


Fig. 11.

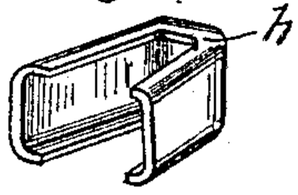


Fig. 12.

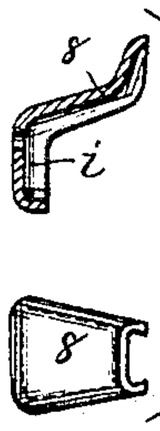


Fig. 13.

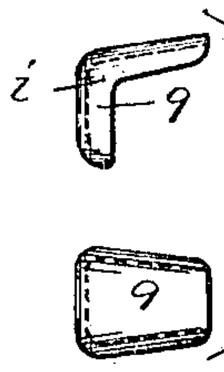


Fig. 14.

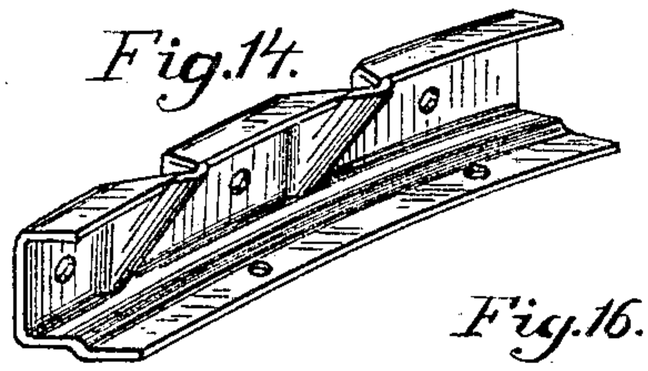


Fig. 15.

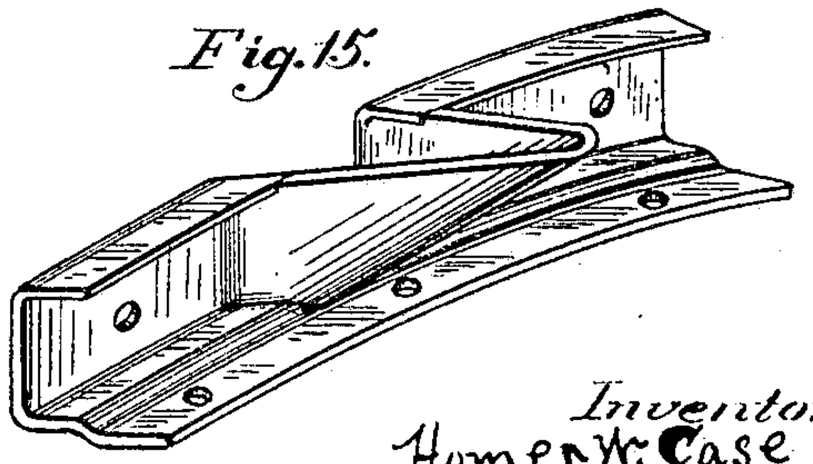
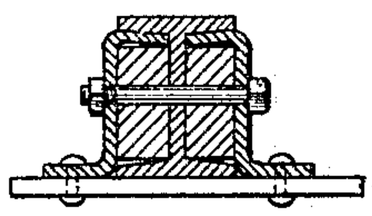


Fig. 16.



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and

Frank X. Devlin

by John H. Roney

Attorney.

UNITED STATES PATENT OFFICE.

HOMER W. CASE AND FRANK X. DEVLIN, OF PITTSBURG, PENNSYLVANIA; SAID CASE ASSIGNOR TO AMBROSE E. ANDERSON, OF PITTSBURG, PENNSYLVANIA.

RAILWAY CONSTRUCTION.

No. 799,032. Specification of Letters Patent. Patented Sept. 12, 1905.

Application filed August 21, 1901. Renewed February 5, 1904. Serial No. 192,177.

To all whom it may concern:

Be it known that we, HOMER W. CASE and FRANK X. DEVLIN, citizens of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have jointly invented or discovered a new and useful Improvement in Railway Construction, of which improvement the following is a specification.

Our invention relates to improvements in railway construction and to improvements in metallic ties applicable thereto.

The objects of our invention are, first, to interconnect all the ties in such manner as to form a truss construction—*i. e.*, a construction in which the strains laterally and otherwise are equalized and distributed over the entire section instead of being localized to the portion of railway and ties supporting the same actually occupied, and, due to this equalizing and distribution of the strains, the rails are always maintained in exact alinement, insuring easiness, smoothness, and greater security in riding and lessening the wear and tear of the rails where two adjacent rails are connected.

Another object of our invention is to produce a tie and mechanism to connect the same which are interchangeable in every feature of construction as to enable practically unskilled workmen to erect and repair the same and at the same time construct a tie and fastening devices therefor that may be readily used in connection with the ordinary tie and fish-plate now in use.

A further object of our invention is to produce a tie or series of ties adapted to be interconnected, so that a curve or the arc of a circle may be produced by the adjustment of the ends of the ties without varying the alinement of the same from the ties forming the main track.

A further object of our invention is to obtain the greatest possible bearing-surface of the rail clamping or fastening mechanism upon the web of the rail, so as to insure the utmost solidity of construction.

A very good feature of our improved construction is that it enables the ballast to be tamped around the ties quickly and easily and secures at the same time the greatest possible effectiveness therefrom.

To accomplish these several objects, our invention consists in the novel construction and arrangement of parts hereinafter set forth, reference being had to the accompanying drawings, which form a part of this specification, in which—

Figure 1 indicates a plan view of a section of our improved railway. Fig. 2 is a central longitudinal section of same. Fig. 3 is a cross-section on line 3 3 of Fig. 1. Fig. 4 is a section taken on the line 4 4 of Fig. 3, the rail being omitted. Fig. 5 is a plan view of modified detail of construction. Fig. 6 is a section taken on the line 6 6 of Fig. 5. Fig. 7 is a section taken on the line 7 7 of Fig. 5, the rail being shown in outside view. Fig. 8 is a plan view of another modification. Fig. 9 is a section taken on line 9 9 of Fig. 8. Fig. 10 is a section taken on line 10 10 of Fig. 8. Figs. 11, 12, 13, 14, and 15 are details of construction shown in Figs. 8, 9, and 10. Fig. 16 is a cross-section of **I**-beam construction with **Z**-bar support.

Like reference characters indicate like parts throughout the several views.

Referring to said drawings, 1 1 are series of interconnected metallic ties the ends of which are oppositely curved and rest upon plate-supports 2 2, the outer ends *a a* of which are bent to enter the ground for the purpose of anchoring or securing the same. The said ties are preferably formed of **I**-beams, although other forms of beams may be used and a very efficient railway construction produced. The adjacent ends of the ties are fastened together and the rails secured thereon by the fastening-blocks 3 3, the sides of which adjacent to the sides of the ties conform therewith in curvature or contour and are provided with bolt-holes longitudinally and transversely the same, through which the bolts *b c* are inserted and fastened, thus drawing the blocks laterally and longitudinally, causing the same to be secured wedge-like between the ends of the said adjacent ties at opposite sides of the track, forming an interconnected-truss railway road-bed in which the strains are equalized and distributed throughout a considerable distance instead of being localized at the points actually occupied by moving trains, as in the present construction. The rails 4 4 are supported upon

the ties and are secured thereto by the clamps or braces 3 3, which are provided with extensions *d d*, which are adapted to fit over and neatly inclose the web *e* and base of the rails, the said clamps 3 being interchangeable, so that the same can be applied to either side of the rail indifferently. They are also heavy and of considerable cross-section to insure solidity and strength.

We have heretofore described our system of railway-tie construction as comprising I-beam ties and fastening clamps or blocks formed of cast metal. In Figs. 8 to 15, inclusive, we show modified forms of tie and fastening clamps or blocks therefor. The tie 6, instead of being formed of I-beam, comprises a beam having a flat and comparatively wide base *f*, provided with an upwardly-extending longitudinally-disposed rib *g*—such, for example, as an inverted-T form. The fastening devices of blocks or clamps 7 comprise two interchangeable sections 8 and and 9, comprising the substantially wedge-shape part *h*, adapted to be inserted between the ends of the rails and the end pieces *i*, which are provided with extensions exactly similar to that of the cast-metal block for the purpose of engaging over the web of the rail to secure the same upon the ties. Both sections are provided with bolt-holes for the reception of fastening-bolts similar to those heretofore described for the purpose of drawing the part *i* into the open outer end of the wedge-shape part *h* and at the same time force the extension of the part *i* over the web of the rail.

In Figs. 5, 6, and 7 we show a further modification of our device for fastening the ties and clamping the rails thereto. In this construction we use a vertical plate 10, the upper edge of which engages over the web of the rail having the lower central section cut out in the form of a tongue 11 and bent inward under the support-plate and projected through the slot 12 in a similar vertical plate on the opposite side of the rail, a wedge-shape pin 13 being inserted through an opening in the outer end of the tongue to draw both vertical plates tight against the web of the rail on opposite sides thereof.

In Figs. 10 and 15 we show a form of support for the ends of the rail supplemental to the usual fish-plate, if desirable, although when this form of support is used the usual fish-plate may be dispensed with.

Fig. 14 is another form of rail-support. It will be observed that the ties are, when connected, in close juxtaposition on one side the track and more widely separated on the opposite side of the track and that every two are immediately connected at opposite sides of the track. This construction enables the construction of the acutest curves without difficulty and still preserves the advantage obtained by interconnecting all the ties, the fastening-blocks being provided with elongated orifices which admit of either of the ties to be adjusted to the arc of the circle or radius of the curve.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. In a system of railway construction, the combination with a series of intertruss-connected ties, means for securing said ties together at their opposite ends, of plates on which the ties rest, means whereby the plates are secured to the ties, and means preventing the slipping of the plate on the ground.

2. In a system of railway construction, the combination with a series of intertruss-connected ties, having oppositely-curved ends, means for securing said ties together at their opposite ends, of means for holding the rail on the ties and for holding the ends in proper relation to each other, and means for securing the before-mentioned means in place.

3. In a system of railway construction, the combination with a series of intertruss-connected ties having oppositely-curved ends, wedge members adapted to hold the ends of the ties in proper relation, said wedge members having tongues to hold the rail to the ties, of slots in said wedge members adapted to receive bolts to hold the ties together, and means whereby the wedge members are forced into contact with the ties.

4. In a system of railway construction, the combination with a series of intertruss-connected ties having oppositely-curved ends, said ends so disposed as to form wedge-shaped spaces, of wedge-shaped members adapted to fit in said spaces, said members comprising a body portion and an overlapping tongue adapted to engage the said rail, and a bolt adapted to hold the wedge members in engagement with the ties and the overlapping tongue with the rails.

5. In a system of railway construction, the combination with a series of intertruss-connected ties having oppositely-curved ends, of plates forming a bearing therefor, means secured to the plates and forming a support for the ties, and means integral with said supporting means for sustaining the end of the rail at its joint.

6. A system of railway construction comprising a series of angularly-disposed interconnected metallic ties, the connected ends of which are oppositely curved.

7. A system of railway construction comprising a series of angularly-disposed interconnected metallic ties, the ends of which are uniformly curved and when connected so disposed that a curve or arc of a circle may be readily made by adjustment of the ends of said ties without varying the disposition of the ties forming the curve from those constituting the main portion of the track.

8. A system of railway construction com-

prising a series of interconnected metallic ties, the ends of which are uniformly curved and when connected the curve oppositely disposed, in combination with rails mounted thereon, and means to fasten said rail upon said ties.

In testimony whereof we have hereunto signed our names in the presence of two subscribing witnesses.

HOMER W. CASE.
FRANK X. DEVLIN.

In presence of—
CLARENCE A. WILLIAMS,
JOHN H. RONEY.