

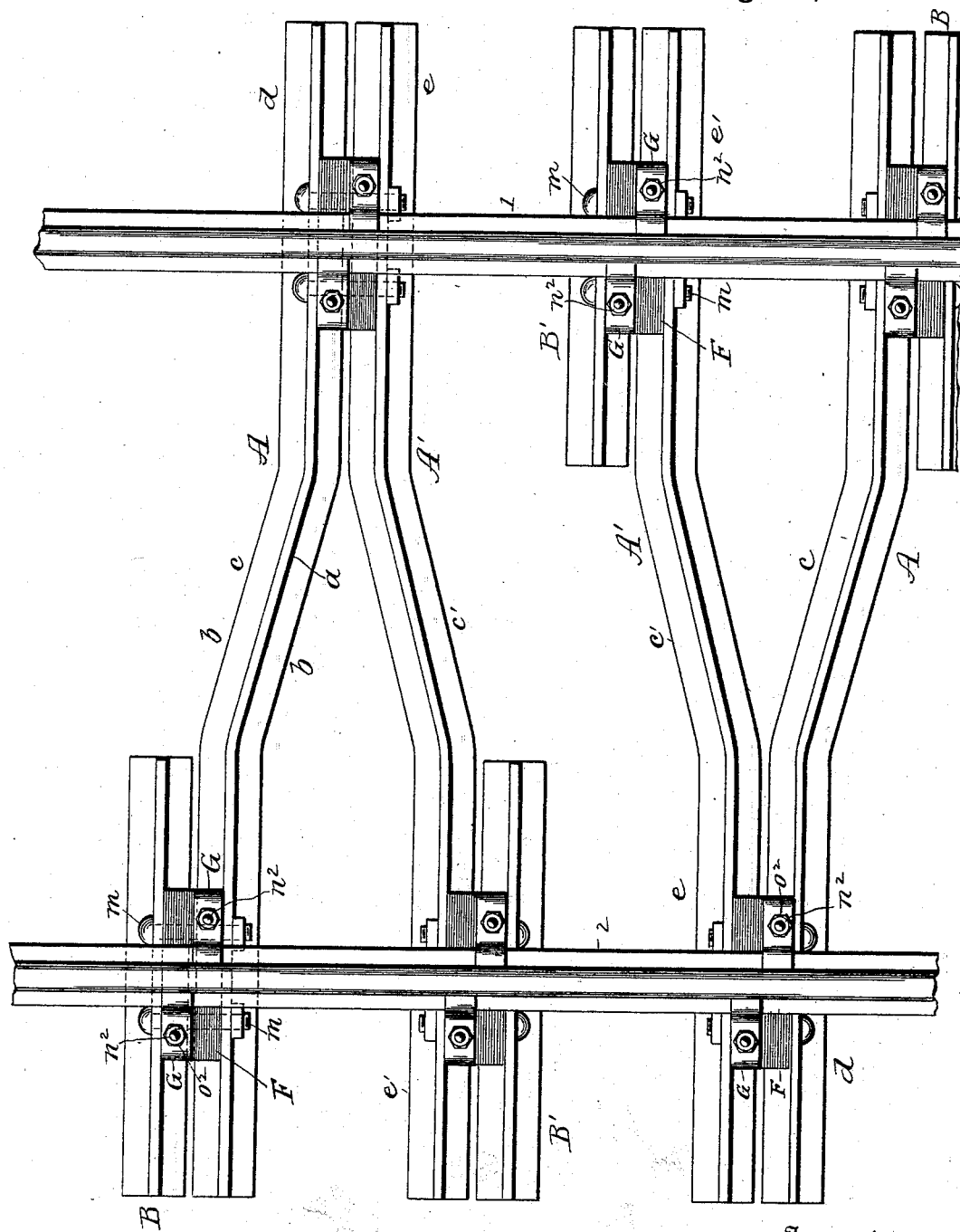
(No Model.)

N. BENJAMIN.
RAILROAD TIE.

3 Sheets—Sheet 1.

No. 524,999.

Patented Aug. 28, 1894.



Witnesses
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(No Model.)

3 Sheets—Sheet 2.

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Fig. 2.

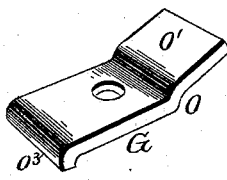
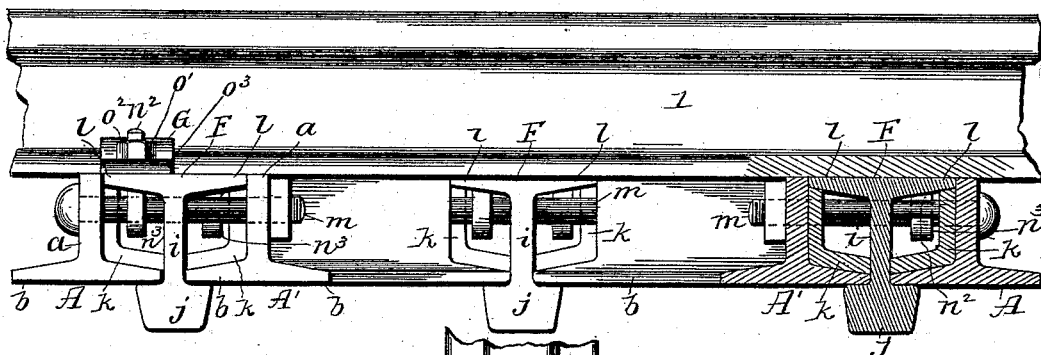


Fig. 4.

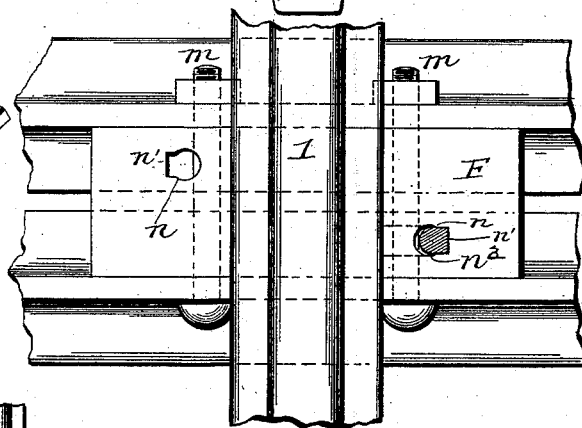


Fig. 3.

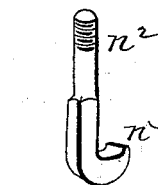


Fig. 5.

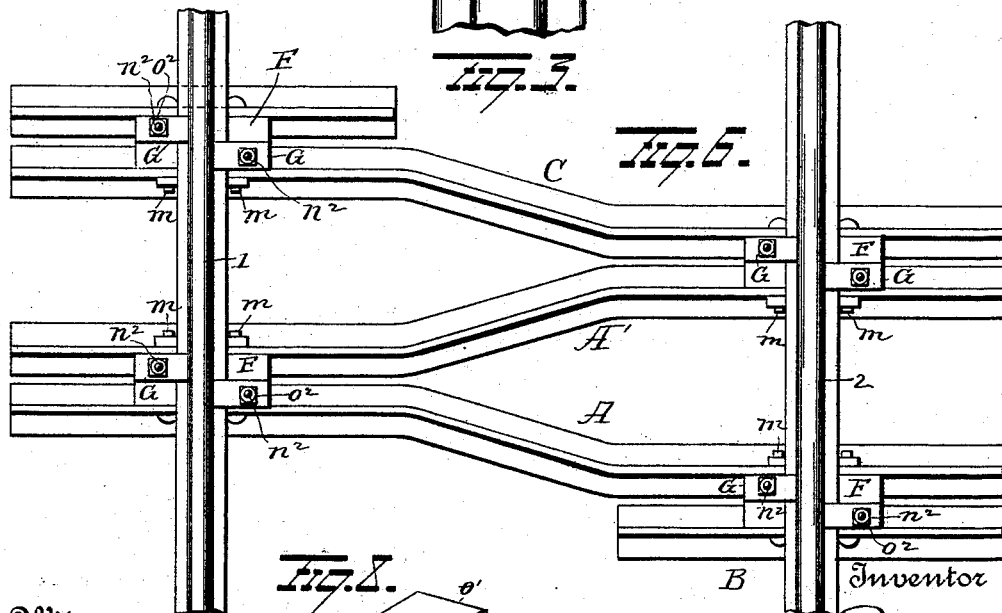


Fig. 6.

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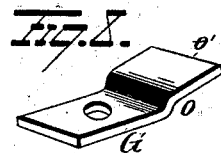


Fig. 7.

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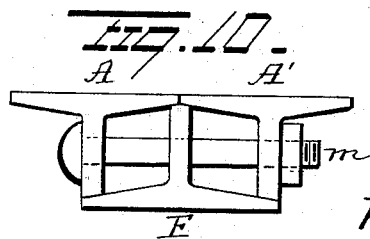
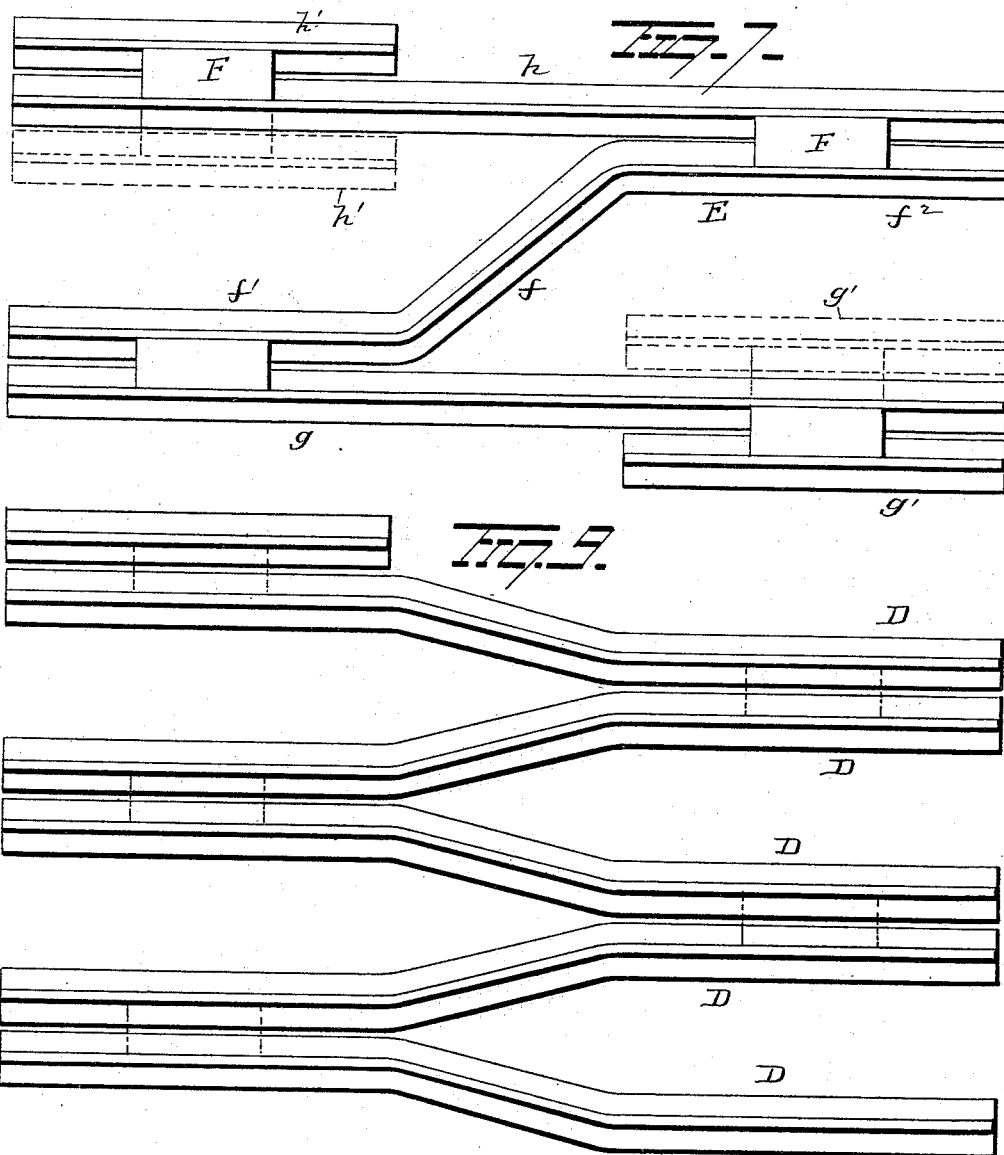
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3 Sheets—Sheet 3.

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UNITED STATES PATENT OFFICE.

NEWTON BENJAMIN, OF ELMIRA, NEW YORK.

RAILROAD-TIE.

SPECIFICATION forming part of Letters Patent No. 524,999, dated August 28, 1894.

Application filed October 24, 1893. Serial No. 489,046. (No model.)

To all whom it may concern:

Be it known that I, NEWTON BENJAMIN, a resident of Elmira, in the county of Chemung and State of New York, have invented certain new and useful Improvements in Railroad-Ties; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to an improvement in railroad ties,—the object of the invention being to produce a metallic railroad tie which shall be so constructed that any longitudinal movement thereof will be effectually prevented.

A further object is to construct a metallic tie in such manner that it cannot move laterally.

A further object is to produce metallic railroad ties which shall be simple in construction; which will, when in use, become firmly and immovably seated on the road bed and which will, in every respect, be effectual in the performance of their functions.

With these objects in view the invention consists in certain novel features of construction and combinations of parts which will be hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1 is a plan view illustrating my improvements. Fig. 2 is an end view, partly in section. Fig. 3 is a plan view. Figs. 4 and 5 are views of certain details. Figs. 6, 7, 8, 9 and 10 are views illustrating modifications.

A represents a bar having a central vertical portion *a* and laterally projecting flanges *b, b*,—said bar being, in effect, a railroad rail having the tread removed. The bar A is so bent as to have a diagonal portion *c* between its ends, the ends *d, d'* of said bar being disposed in parallel planes, each end constituting a half tie or bearing. Another bar A' similar to the bar A but having its diagonal portion *c'* running in opposite direction to the diagonal portion *c* of the bar A, is placed in proximity to the latter, the end *e* thereof lying in close proximity to the portion *d* of the bar A and constituting, with said portion *d*, a complete tie or bearing. From this construction and arrangement of parts it will be

seen that when the two bars A, A' are thus disposed, one complete and two half-ties or bearings will be produced.

Adjacent to the ends *d', e'*, of the bars A, A' which, as before stated constitute half ties or bearings, bars B, B' are placed and, with the portions *d', e'*, constitute two ties or bearings, the construction of said bars B, B' (in cross section) being the same as the bars A, A', but are only of a length equal to the portions *d', e'* of said bars A, A'.

The next three ties or bearings, constructed in the same manner as above described, may be located in proximity to the first and the position of the same reversed as shown in Fig. 1. By thus arranging the ties, it will be seen that no two ties or bearings will be in line with each other, and undue rigidity of the ties will thus be avoided and as no two fastenings of the rails will come opposite each other, lateral movement of the ties will be prevented.

Instead of arranging the bars as above set forth, the arrangement shown in Fig. 6 may be adopted. In this form of the invention, the bars A, A' and the bar B will be employed, but in lieu of the short bar B', a bar C, similar in all respects to the bars A, A' will be used, and adjacent to the opposite end of the bar C a short bar C' similar to the bars B, B' will be placed. A series of such ties may be placed on the road bed successively, the adjacent sets of ties being reversed in position in the same manner as above explained in connection with the form of the invention shown in Fig. 1.

In the form of the invention shown in Fig. 9 all the ties of the road are produced by bars D, of a construction identical with the bars A, A', C,—the respective ends of said bars D being connected together (in a manner hereinafter described), thus constituting a continuous series of ties connected together, and the ties for supporting one rail alternating with those supporting the other rail.

In the form of the invention shown in Fig. 7, a bar E having a diagonal central portion *f* and ends *f', f''* in parallel planes, is employed. A bar *g* extending from one side of the road bed to the other is adapted to lie adjacent to and parallel with the end *f'* of the bar E and constitute therewith a com-

plete tie for supporting one of the track rails. A short bar g' lies adjacent to the other end of the bar g , thus completing a tie for supporting the other track rail. Another straight bar h is located adjacent to the end f^2 of the bar E and thus constitutes another tie. The bar h extends to the opposite side of the road bed and, with a bar h' , constitutes another tie. Instead of locating the bars g' and h' outside the bars g, h , they may be located inside the same as indicated by dotted lines in Fig. 7.

In order to produce a broad, firm foundation for the rails 1, 2, on the ties, and that said rails shall be properly secured in place, the devices now to be described will be employed. Between the bars (in all the forms of the invention) constituting a tie, a short section of rail F is located and inverted, the bottom of said rail section being adapted to lie flush with the upper edges of the vertical portions a of said bars. The web i of the rail section or base F projects between the lateral flanges b of the bars constituting a tie and the tread j of said rail section or base is disposed under the tie, thus constituting an anchor.

In order to properly take up the strain brought to bear on the rail section or base F and to insure its maintenance in proper position, curved plates or angle irons k are located under the flanges l, l' of the same, said curved plates or angle irons conforming to the contour of the portions a, b , of the bars constituting the tie, and bearing at their respective ends against the flanges l of the rail section or base F , and the web of the same. Tie bolts m are passed through the vertical portions a of the bars of the tie and through the web of the rail section or base F . The flanges l of the rail section F , on which the rails of the track rest, are made with perforations n , a portion of the wall of which is made straight as shown at n' . Through each of these perforations, a bolt n^2 having a screwthreaded upper end, and a hook-shaped lower end n^3 , is passed, each hook n^3 being adapted to engage or embrace one of the tie bolts m . The body of each bolt n^2 is made angular and, when said bolt is in position, enters the angular or straight portion n' of the perforation n , thus preventing said bolt n^2 from turning and maintaining the hooks always in proper engagement with the tie bolts. The bolts n^2 also pass through clamps G located on the rail section or base F , said clamps being made with a shoulder o adapted to bear against the edge of the flange of the track rail, and with a portion o' adapted to rest on said flange and extend to the web of said track rail.

The clamp G is retained in place by means of a nut o^2 screwed on the bolt n^2 . In order to constitute said clamp a washer to assist in preventing the loosening of the nut o^2 , the outer end of the horizontal portion of said clamp is bent to produce a downwardly projecting lug o^3 which rests on said base, so that

said horizontal portion o^3 will be disposed slightly above the base. The horizontal portion of the clamp thus constitutes a spring, which bears firmly against the under face of the nut o^2 , the nut depressing said horizontal portion somewhat, thus effectually retaining said nut in place. Instead of thus constructing the clamp, the portion thereof which rests on the base F may be made straight throughout its whole length, as shown in Fig. 8.

By constructing a tie as above described, the soil of the road bed will bear against both faces of the vertical flange a of the bars constituting the ties and thus prevent the lateral movement of the ties. The lateral movement of the ties will also be prevented by the anchors formed by the treads j of the rail sections F . The soil will also bear against the faces of the diagonal portions of the bars, thus effectually preventing longitudinal movement of the ties. In the form of the invention shown in Fig. 9 the diagonal portions of the bars are disposed in V-shape and the position of these V-shaped figures alternate, so that the pressure of the soil against the diagonal portions of the bars constituting adjacent V-shaped figures will be in opposite directions, thus securely locking the ties against longitudinal movement.

Instead of arranging the bars constituting the ties in the manner above set forth, they may be transposed, as shown in Fig. 10.

Various slight changes, other than those which I have above described, may be resorted to without departing from the spirit of my invention or limiting its scope, and hence I do not wish to limit myself to the precise details of construction herein set forth, but,

Having fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination of two ties adapted to support the two rails at opposite sides of the track, said ties composed of two approximately parallel bars and located out of alignment with each other, and a diagonal connecting bar extending diagonally from one tie to the other and uniting with each tie, substantially as set forth.

2. Two metallic bars having diagonal central portions, said bars being so disposed as to constitute a tie or bearing at one end and two half ties or bearings at the other end, substantially as set forth.

3. The combination with two metallic bars having diagonal central portions, said bars being so disposed that the ends of said bars will lie adjacent to each other to produce a tie or bearing, of short bars placed adjacent to the separated ends of said first mentioned bars and adapted to complete two ties or bearings, substantially as set forth.

4. The combination with two bars placed coincident with each other, each of said bars having a vertical central portion and lateral flanges, of an inverted rail section located between said bars and constituting a base for

supporting a track rail, the web of said rail section projecting between the flanges of said bars and the tread of said rail section being disposed beneath the said bars, said rail section 5 having perforations having an angular wall, tie bolts passing through said bars and rail section, and hook shaped bolts passing through said perforations and adapted to engage said tie bolts, the body portion of said 10 hook-shaped bolts being angular in cross section and adapted to enter the angular portion of said perforations, substantially as set forth.

5. The combination with two bars placed parallel with each other, each of said bars 15 having a vertical portion and flanges projecting laterally from said vertical portion, and an inverted rail section disposed between the vertical portions of said bars, of angle irons adapted to lie coincident with the vertical 20 portion and lateral flange of said bars and bear at their respective ends on the flanges and web of said rail section, substantially as set forth.

6. The combination with two parallel bars, 25 each having a central vertical portion and

lateral flanges, of inverted rail sections disposed between said bars, tie bolts passing through said bars and rail sections, a hook-shaped bolt passing through said rail section and adapted to engage said tie bolts, a clamp 30 on said hook-shaped bolt, said clamp having a shoulder adapted to bear against the flange of the track rail and having a portion adapted to rest on the flange of the track rail and extend to the web thereof, and a nut on said 35 hook-shaped bolt and adapted to retain said clamp in place, substantially as set forth.

7. The combination with a railway tie comprising a pair of flanged bars placed side by side, and a seat placed between them, of plates 40 interposed between the seat and the flanges, said plates engaging said seat and flanges, substantially as set forth.

In testimony whereof I have signed this specification in the presence of two subscrib- 45 ing witnesses.

NEWTON BENJAMIN.

Witnesses:

M. A. SMITH,

H. B. CLEVELAND.