

S. E. DUFF.
RAIL FASTENING.
APPLICATION FILED OCT. 26, 1907.

1,048,665.

Patented Dec. 31, 1912.

Fig. 1.

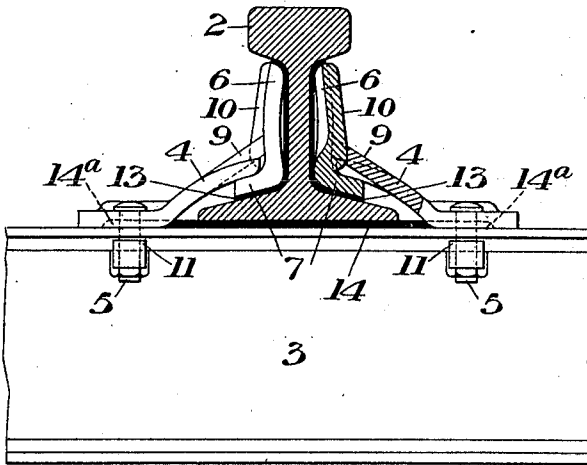


Fig. 2.

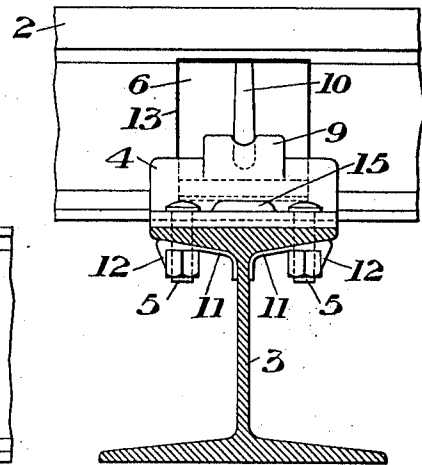


Fig. 3.

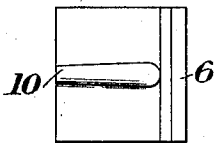


Fig. 5.

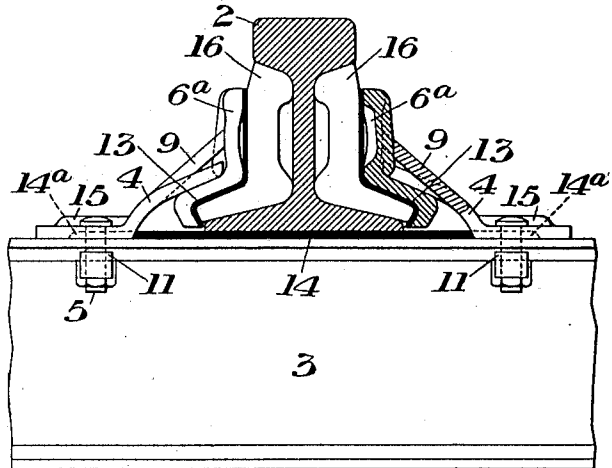
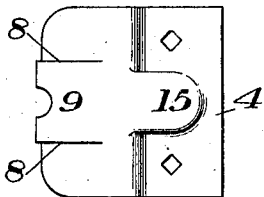


Fig. 4.



WITNESSES

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UNITED STATES PATENT OFFICE.

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RAIL-FASTENING.

1,048,665.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, SAMUEL E. DUFF, of Bellevue, Allegheny county, Pennsylvania, have invented a new and useful Rail-Fastening, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, in which—

Figures 1 and 2 are sectional elevations taken at right angles to each other, showing one form of my improved rail fastening; Fig. 3 is a detail view of one of the shoes; Fig. 4 is a detail view of one of the clamps and Fig. 5 is a view similar to Fig. 1, and showing the fastening applied at a rail joint.

My invention has relation to rail fastenings for metallic ties, and is designed to provide means of simple and practical character whereby the rails will be firmly fastened to the tie, but in such a manner that a slight movement of the rail in all directions is permitted, without impairing the efficiency of the fastening, or changing the designed normal position of the rails.

A further object is to provide a fastening of this character, which will permit of the adjustment of the rails for the purpose of adjusting the gage of the track; also to provide a fastening which will permit the rail to be readily insulated from the ties when the rails are required to carry an electric current for signaling or other purposes.

The precise nature of my invention will be best understood by reference to the accompanying drawings which will now be described, it being premised, however, that various changes may be made in the details of construction and arrangement by those skilled in the art, without departing from the spirit and scope of my invention, as defined in the appended claims.

In the drawing, the numeral 2 designates a track rail and 3 a metallic tie. This tie is shown as being of well known I-beam form.

4 designates rail clamps which are firmly secured to the top flange of the tie at opposite sides of the rail by means of bolts 5, or other suitable fastenings.

6 designates shoes, which are placed against opposite sides of the web of the rail, and preferably formed with foot portions 7, which bear upon the upper surfaces of the base flange of the rail. These shoes are en-

gaged by the clamps 4 in the manner now to be described. That end portion of each clamp which bears against the shoe is formed with two parallel slits or cuts 8, so arranged as to divide the end of the clamp into three tongues or strips which are free to move in a vertical direction independently of each other at the end next the shoe, but are rigidly fastened together at their other ends by the body of the clamp about midway of its length. The center tongue or strip 9 of each clamp has its end portion concaved or otherwise shaped to fit raised rib 10 on the outer face of the shoes 6, so as to firmly hold the shoes and retain the same in a direction transversely to the clamp. This center tongue 9 is also raised above the outside tongues and is longer than the outside tongues, so as to permit a vertical movement of the tongue at the end next the shoe, for the purpose of effecting a movement of the shoes longitudinally with the clamp. The two outer tongues of each clamp are arranged to bear on the base portion of the rail shoe independently of the position of the center tongue, for the purpose of preventing movement of the rail shoe and rail in a vertical direction.

The base portion of the shoe which bears upon the surface of the rail base should be of sufficient longitudinal extension to engage the three tongues of the clamp in the manner described. The shape of the rib 10, which is preferably at the center portion of the shoe, is such as to provide a means for moving the rail shoe in a direction longitudinally with the clamp and transversely with the rail by a vertical movement of the end of the center tongue of the clamp, and to maintain the relative locations of the rail shoe and clamp, for the purpose of firmly holding the rail at any desired location on the cross tie, and thus preventing a change in the gage of the two rails forming the track. The engagement of the outer tongues of the shoe, holds the rail shoe down independently of the position of the center tongue of the clamp.

The securing bolts 5, which fasten the clamp to the tie, are preferably formed with flat heads so as to offer the smallest possible obstruction to derailed wheels or other moving bodies which may pass over the ties. They are provided with square neck or

shank portions, engaging square holes in each clamp, so as to prevent them from turning. The nuts at their lower ends are preferably secured by locking devices 11, best shown in Fig. 2. These consist of small
 5 plates which are perforated for the passage of the bolts and of such form that one end is squarely braced against the web of the tie while the other end is bent down over
 10 the nut, as indicated at 12, so as to prevent the turning of the nut and the consequent loosening of the bolt.

13 designates insulating material placed between the inner surfaces of the shoes 6 and
 15 the web of the rail, and 14 is an insulating strip interposed between the rail base and the top flange of the tie. These insulating pieces are of such form and dimensions as to thoroughly insulate the rail from the tie and
 20 prevent the passage of an electric current from one to the other. The insulating strip 14 is formed with extensions 14^a at opposite edges, which enter recesses formed in the
 25 under sides of the outer portions of the clamps 4, said recesses being preferably formed by striking upwardly or outwardly the metal of the clamp, as indicated at 15 in Fig. 4. This serves to retain the insulating material in place. The insulating material 13 and 14 is, of course, required only
 30 when the rails carry an electric current for signaling or other purposes. In other cases, it may be omitted.

When the fastening is placed at or near
 35 the rail joints and thereby comes in contact with the rail splice bars, the form of the shoe requires to be changed somewhat on account of the impossibility of placing the upper edge of the shoes underneath the
 40 rail head. The arrangement in such cases is shown in Fig. 5. The shoes 6^a are placed outside of the fish-plates 16, and their lower edges are carried around the lower edges of the fish-plates, so as to prevent any vertical
 45 movement of the shoe when pressed upon by the center tongue of the clamp. The upper edge portions of the shoes are also cut away or made of less height than those which are used intermediate of the joints; so as to provide a flangeway for the wheels moving on
 50 the rails. In this arrangement, the insulating strips 13 are preferably placed between the shoes and the outer faces of the fish-plates or splice bars.

55 In use, the clamps are fastened to the top of the cross ties, and the rail shoes are then inserted between the clamps and the rail, and the tongues 9 on the clamps driven down to a tight bearing on the web projections or ribs 10 of the shoes. This firmly
 60 secures the rails to the ties, while at the same time the character of the fastening is so elastic that the rail is permitted to move in all directions to a slight extent, without
 65 impairing the efficiency of the fastening

or changing the designed normal position of the rail. If it is necessary to change the normal position of the rail in a direction longitudinal of the tie, for the purpose of adjusting the gage of the track, this may be
 70 readily accomplished by causing the center tongue of one clamp to be driven farther down than the center tongue of the opposing clamp. The construction is such that this
 75 eccentric position of the rail with reference to the clamps will be as firmly maintained as if the center of the rail corresponded to the center of the distance between the corresponding parts of the two opposing clamps. In case the use of insulation is necessary,
 80 the insulating material is, of course, inserted before the tongues are driven against the shoes, and the construction is such that this insulating material is firmly held in its proper place without piercing it in any way.
 85 This is an important feature, since the piercing of insulation is extremely objectionable by reason of the fact that it forms channels for water carrying rust, which destroys the efficiency of the insulation.

90 The advantages of my invention result from the construction and arrangement of the rail fastenings whereby the rails are free to move slightly under the action of the car-wheels, thereby overcoming the rigidity
 95 which is present in fastenings in which the rails are tightly clamped without capability of yielding under load.

While I prefer to use the form of tie which I have shown and described, it will
 100 be readily understood that my improved fastening may be used in connection with ties of other forms. Instead of bolting the clamps to the tie, they may be secured in any other suitable manner. The form and
 105 construction of the shoes and clamps can also be changed without departing from my invention.

I claim:

1. In a rail fastening for metallic ties, 110 a rail-bearing plate or shoe, and a clamping member having a portion secured to the tie and a plurality of free yielding portions bearing against the plate or shoe; substantially as described. 115

2. In a rail fastening for metallic ties, a shoe or bearing plate seated against the rail, and a clamp rigidly secured to the tie, and having a free portion which bears against the shoe or plate, said free portion being formed
 120 of a plurality of independently yieldable tongues or fingers; substantially as described.

3. In a rail fastening for ties, a shoe or bearing plate seated on the rail between its
 125 head and base, and having a rib or projection on its outer surface, and a clamp member rigidly secured to the tie and having a free portion which bears against the shoe or plate, said free portion having a
 130

flexible tongue which engages said rib or projection; substantially as described.

4. In a rail fastening, a shoe or bearing plate having a vertical rib or projection on its outer face and a longitudinally extending base portion, and a clamp rigidly secured to the tie and having a tongue engaging said rib and other tongues engaging said base portion; substantially as described.

5. In a rail fastening for metallic ties, a pair of shoes or bearing plates applied to opposite sides of the rail and having vertical ribs or projections and longitudinally extending base portions, and clamps rigidly secured to the tie and having separate tongues engaging said rib and base portion; substantially as described.

6. In a rail fastening for metallic ties, a pair of shoes or bearing plates applied to opposite sides of the rail and having vertical ribs or projections and longitudinally extending base portions, and clamps rigidly secured to the tie and having separate tongues engaging said rib and base portion, the tongues which engage the ribs being of greater length than those which engage the base portions; substantially as described.

7. In a rail fastening for metallic ties, the combination with a tie, a rail seated thereon and insulated therefrom, of shoes or bearing plates seated against the rail, and clamps rigidly secured to the tie at opposite sides of the rail and having upwardly and inwardly extending elastic tongues which bear against the plates, said tongues having their entire bearing upon said shoes; substantially as described.

8. In a rail fastening for metallic ties, the combination with a tie, a rail seated thereon and insulated therefrom, of shoes or bearing plates seated against the rail, and clamps rigidly secured to the tie at opposite sides of the rail and having upwardly and inwardly extending yielding tongues which bear against the plates, said tongues having their entire bearing upon said shoes, together with insulating material interposed between the shoes and the rail; substantially as described.

9. In a rail fastening for metallic ties, a shoe or bearing plate seated against the rail, a clamp rigidly secured to the tie and having a plurality of yielding free ends, the free ends of the clamp engaging different faces of the shoe; substantially as described.

10. In a rail fastening for metallic ties, a tie having a horizontal upper flange forming a seat for the rail clamps, bolts securing the clamps to said flange and having nuts at their lower ends at the under side of the flange, and locking strips bearing against the web of the rail and having their outer ends bent into engagement with the nuts of the bolts, substantially as described.

11. In a rail fastening for ties, rail bear-

ing members seated against the rail, and clamping members rigidly secured to the tie at opposite sides of the rails and bearing against the rail bearing members, said clamping members having flexible portions bearing against the rail bearing members which can be moved to permit lateral adjustment of the rails between the bearing members; substantially as described.

12. In a rail fastening device for metallic ties, fastening devices having inclined inner edges, means to secure the fastening devices to the tie at opposite sides of the rails, and insulating material interposed between the rail and fastening devices and between the rail and the tie, and clamped at each of its edge portions between the inclined inner edges of the fastening devices and the tie; substantially as described.

13. In a rail fastening for metallic ties, clamping devices secured to the tie at opposite sides of the rail, and insulated from the rail, and insulating material between the rail and tie, and having edge portions secured between the clamps and tie without piercing the insulation, said clamps having pockets to receive and confine the edge portions of the insulation between the clamps and the upper surface of the tie; substantially as described.

14. A rail fastening for metallic ties, comprising a bearing shoe, and a clamping member having a portion rigidly secured to the tie and yielding portions arranged to clamp the shoe against the rail by engaging different faces thereof; substantially as described.

15. A rail fastening for metallic ties, comprising a bearing shoe, and a clamping member having a portion rigidly secured to the tie, and a plurality of vertically yielding portions, the ends of some of the yielding portions engaging an approximately horizontal portion of the bearing shoe and the other yielding portion engaging an approximately vertical portion of the shoe to clamp said shoe against the rail; substantially as described.

16. A rail fastening for metallic ties, comprising a bearing shoe having a vertical rib, and a clamping member having a portion rigidly secured to the tie and a slotted yielding portion to engage the rib on the shoe to clamp it against the rail; substantially as described.

17. In a rail fastening for metallic ties, a pair of shoes or bearing plates applied to opposite sides of the rail and having vertical ribs or projections, and clamps rigidly secured to the tie and having free yielding portions engaging said shoes; substantially as described.

18. In a rail fastening for metallic ties, a shoe or bearing plate applied to the side of the rail and having a vertical rib or projec-

tion and a longitudinally extending base
portion, and a clamp rigidly secured to the
tie and having separate tongues engaging
said rib and base portion, the tongue which
5 engages the rib being of greater length than
the tongue which engages the base portion;
substantially as described.

In testimony whereof, I have hereunto
set my hand.

SAMUEL E. DUFF.

Witnesses:

H. M. CORWIN,
GEO. H. PARMELEE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."