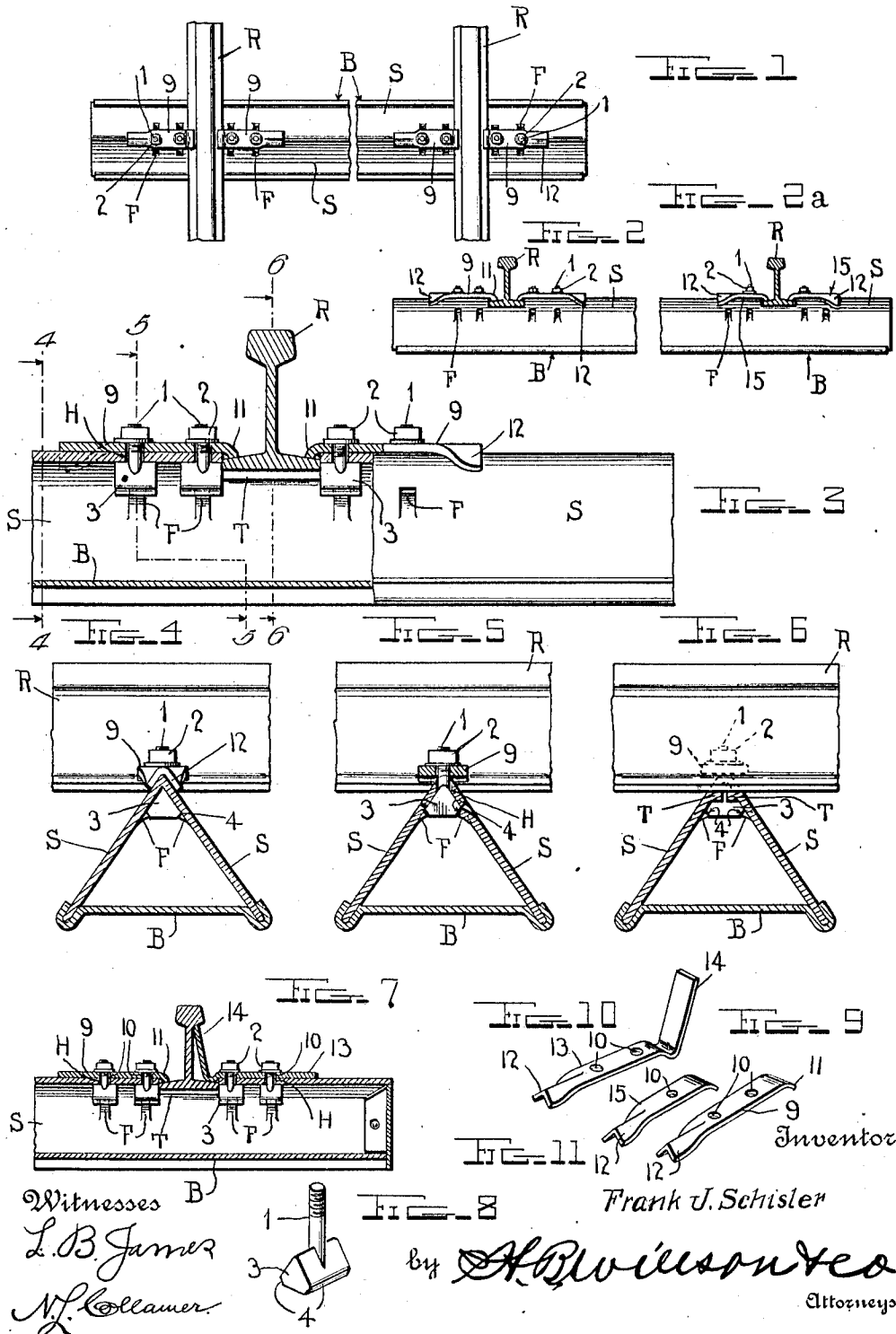


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RAIL FASTENER FOR METAL TIES.
APPLICATION FILED APR. 22, 1912.

1,048,594.

Patented Dec. 31, 1912.



UNITED STATES PATENT OFFICE.

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RAIL-FASTENER FOR METAL TIES.

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Specification of Letters Patent.

Patented Dec. 31, 1912.

Application filed April 22, 1912. Serial No. 692,341.

To all whom it may concern:

Be it known that I, FRANK J. SCHISLER, a citizen of the United States, residing at Winthrop, in the county of Sibley and State of Minnesota, have invented certain new and useful Improvements in Rail-Fasteners for Metal Ties; and I do 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.

This invention relates to metal railway ties, and more especially to the fastening devices for securing the rails thereon; and the objects of the same are to construct a fastening of this kind by means of which the rails will be prevented from spreading or slipping but will be permitted to expand and contract longitudinally, in which the rail bases are held by the heads of the bolts as well as by the edges of the seat in the tie, in which one fastening plate may be swung aside and the rail removed without moving the other fastening plate, in which the bolt heads are locked in place against rotation or displacement, but in which the bolts may be removed when they become broken or worn. The entire rail fastener is capable of use in connection with a metallic railway tie described and claimed more fully in a companion application filed by me April 22, 1912 and bearing Serial Number 692,340. These and other objects are accomplished by constructing my improved fastener in the manner hereinafter more fully described and claimed, and as shown in the drawings wherein—

Figure 1 is a plan view of a tie and a pair of rails fastened thereto by this improved device. Fig. 2 is a side elevation of the same, and Fig. 2^a is a side elevation of a slightly modified form. Fig. 3 is an enlarged central longitudinal section through the tie, showing the fastening device more in detail. Figs. 4, 5 and 6 are cross sections on the lines 4—4, 5—5 and 6—6 of Fig. 3 respectively. Fig. 7 is a longitudinal section through one end of the tie showing how one of the fastening plates may be amplified so as to brace the rail. Fig. 8 is a perspective detail of the bolt member of this improved fastening device. Figs. 9 and 10 are perspective details of the plate

members of this improved fastening device, and Fig. 11 is a slightly modified form of one of them.

The tie upon which this improved fastening device is employed and which forms the subject matter of the companion application above referred to, comprises a base B, two converging sides S slitted into tongues T which are bent inward to form seats for the base of the rail R and also slitted and formed into inwardly bent fingers F at opposite sides of said seats, and pierced through its ridge with holes H opposite each of said fingers, for a purpose to appear below.

Coming now more particularly to the details of the present invention, the bolt 1 best seen in Fig. 8 has one end of its shank threaded for reception of a nut 2, and its head 3 which stands at the lower end of the shank is of substantially triangular cross section as seen in Fig. 8 but with its lower angles beveled off as at 4 so that, when passed upward through one of the holes H in the ridge of the tie, the converging upper sides of the bolt head spring apart the two fingers F until the bolt head reaches its highest position as shown in Fig. 5, when said fingers F spring in under the beveled angles 4 to hold the head against rotation and to hold the bolt from falling out of position. The holes H next adjacent the tongues T are spaced from the edges of said tongues just such a distance that, when the bolts are in place within these holes, their heads 3 will stand against the side edges of the rail-base as best seen in Fig. 3; and the rail is thereby prevented from lateral movement by the fact that the edges of its base press against both the material of the tie and the adjacent ends of the bolt heads. The side faces of the bolt head preferably diverge downward at the same angle to each other as to the sides S of the tie, so that when said head is in place the ridge of the triangular tie-body is braced by the presence of the bolt heads, and the latter cannot rotate so long as they remain in place and are obviously held in place by the fingers F. Each bolt is inserted by passing it upward from below so that its shank is projected through the hole H, after which said shank is drawn upward or the head is pushed upward until the beveled angles 4 of the latter

slip past the fingers F. When the shank of a bolt becomes worn or broken off, it may be bodily driven out of place by means of a suitable tool, and a new bolt inserted by removing the end piece of the tie and reaching into the hollow body thereof and following the course just outlined.

In connection with the bolts I make use of certain of the plates best shown in Figs. 9, 10 and 11. The plate 9 in Fig. 9 has a flat body pierced with two bolt holes 10, its inner end 11 being bent down slightly so that it will engage the rail base, and its outer end being stamped into inverted V-shaped cross section as seen at 12 so that it will fit over the ridge of the tie. Two of these plates are shown employed in the fastening illustrated in Figs. 1, 2 and 3. The plate 13 shown in Fig. 10 has two of the same holes 10, the same shaped outer end 12, and its inner end bent upward into a finger 14 intended to stand at the outside of the rail R as illustrated in Fig. 7 and beneath its ball or head so as to brace the rail as on curves or switches. The plate 15 shown in Fig. 11 is substantially the same as the plate 9 excepting that it is shorter, and it has but one of the holes 10; its use is illustrated in Fig. 2^a. I forbear to illustrate a longer plate having three or more holes 10, but it is obvious that the number of holes is immaterial—one bolt hole and one bolt is usually sufficient on street railroads and those having light rolling stock and traffic, two are employed on the average railway; and a larger number may be required where the cars and traffic are very heavy, the grades steep, and the curves sharp and frequent. It will be obvious that a plate having a lesser number of holes than those pierced in the ridge in the tie may be employed, but in any event the head of a single bolt or the head of the innermost bolt if there are more than one at each side of the rail will stand against the edge of its base so as to prevent lateral movement thereof. As the bolts are inserted their shanks pass upward through the holes 10 in these plates and their washers and nuts are applied later in a manner which will be obvious.

When it is desired to remove a rail which has been fastened upon a tie by the means described, it is only necessary to loosen the nut of the bolt at one side of the rail if but one bolt be employed, then turn the plate aside, and then tilt the rail and lift it out of position. If more than one bolt is employed to hold the plate in place, it will be necessary to remove the nut from all bolts but one and to loosen that, then turn the plate aside and proceed as just mentioned.

A striking feature of this fastener lies in the fact that when the nut and washer are

removed from the shank of any bolt the latter does not fall into the hollow body of the tie and need not be supported by any artificial or temporary means, as the fingers F act as a support therefor and are intended to hold the bolt quite firmly so that a considerable blow upon the upper end of the shank is necessary to drive it past the fingers when it is desired to dislodge it. The fact that the nuts are uppermost and in plain view permits the application of any ordinary type of nut lock if one is deemed necessary. All the metallic parts of this fastener are made in the desired proportions and of any suitable materials and by any preferred process forming no part of the present invention.

In so far as the details of construction of the tie are concerned, the shape of its parts is immaterial to the present invention excepting where they coact with the parts of the fastening device itself.

What is claimed as new is:

1. In a rail fastener, the combination with a metallic tie having upwardly converging sides and a rail seat across its ridge, the latter being pierced with bolt holes at opposite sides of said seat and the sides being cut to form fingers which are bent inward; of a bolt whose shank passes upward through one of said holes and whose head is substantially triangular in cross section so as to fit the angle beneath said ridge and whose lower corners are beveled so as to rest above the tips of said fingers, a nut on the projecting end of the shank, and a rail-holding plate clamped under the nut.

2. In a rail fastener, the combination with a metallic tie having upwardly converging sides and a rail seat across its ridge, the latter being pierced with bolt holes at opposite sides of said seat and the sides being cut to form fingers which are bent inward; of a bolt whose shank passes upward through one of said holes and whose head is substantially triangular in cross section so as to fit the angle beneath said ridge and whose lower corners are beveled so as to rest above the tips of said fingers, a nut on the projecting end of the shank, and a plate having a hole in its body surrounding said shank below the nut, its inner end overlapping the rail-base, and its outer end formed into inverted V-shaped cross section so as to engage the ridge of the tie.

3. In a rail fastener, the combination with a metallic tie having upwardly converging sides connected in a ridge pierced with bolt holes and provided with a transverse rail seat between them; of bolts whose heads are at their lower ends and whose shanks pass upward through said holes, nuts on the upper ends of said shanks, and plates having holes in their bodies surrounding the shanks,

their inner ends overlapping the rail base, and their outer ends formed into inverted V-shaped cross section so as to engage the ridge of the tie.

5 4. In a rail fastener, the combination with a metallic tie having upwardly converging sides connected in a ridge pierced with bolt holes; of bolts whose heads are at their lower ends and whose shanks pass upward
10 through said holes, nuts on the upper ends of said shanks, and plates having holes in their bodies surrounding the shanks, their inner ends overlapping the rail base and the inner extremity of the inner end of one of
15 said plates being projected thence upward into a finger adapted to brace the head of the rail, and their outer ends formed into inverted V-shaped cross section so as to engage the ridge of the tie.

20 5. In a rail fastener, the combination with a metallic tie having upwardly converging sides connected in a ridge pierced with bolt holes and cut out between them to provide a transverse rail seat; of bolts whose heads
25 are at their lower ends and whose shanks pass upward through said holes, nuts on the upper ends of said shanks, and a plate having a hole in its body mounted on the shank of each bolt below its nut and resting over
30 the ridge of the tie, its outer end shaped to fit said ridge, and its inner end bent downward into contact with the base of a rail.

6. In a rail fastener, the combination with a metallic tie having upwardly converging
35 sides united in an angular ridge, the latter pierced with bolt holes and cut out between the holes to form a transverse rail-seat, and the rail whose base rests on said seat with its side edges depending below the interior
40 angle formed beneath said ridge; of a fastening device including members overlying the ridge and overlapping the base of the rail, and bolts whose shanks project through the holes in the ridge and engage said mem-
45 bers, the heads of the bolts contacting with the side edges of the rail base.

7. In a rail fastener, the combination with a metallic tie having inturned fingers, of a bolt having its shank passed through the
50 body of the tie and provided with a head supported by said fingers, and rail fastening means cooperating with said bolt.

8. In a rail fastener, the combination with a metallic tie, of a rail fastening device, said
55 tie being provided with inturned fingers for supporting said fastening device.

9. In a rail fastener, the combination with a metallic tie having inturned fingers; of a bolt having its shank passed through the
60 body of the tie and provided with a head supported by said fingers, rail fastening plates engaging said bolt, and a clamping nut working on said bolt.

10. In a rail fastener, the combination

with a metallic tie of inverted V-shape in 65 cross section having inturned fingers, of a bolt having its shank passed through said body and provided with a head conforming to the sides of said body, said head being supported by said fingers, and rail fasten- 70 ing means cooperating with said bolt.

11. In a rail fastener, the combination with a metallic tie having inturned fingers, of a bolt having its shank passed through the body of the tie and provided with a 75 head supported by said fingers, the underside of said bolt head being beveled, and rail fastening means cooperating with said bolt.

12. In a rail fastener, the combination with a metallic tie of inverted V-shape in 80 cross section having inturned fingers, of a bolt having its shank passed through said body and provided with a head conforming to the sides of said body, the underside of said bolt head being beveled, said head be- 85 ing supported by said fingers, and rail fastening means cooperating with said bolt.

13. In a rail fastener, the combination with a metallic tie of inverted V-shape in cross section, of rail fastening plates having 90 their outer ends bent to conform to the apex of said tie, and means for removably securing said plates to said tie.

14. In a rail fastener, the combination with a metallic tie of inverted V-shape in 95 cross section and having inturned fingers, of fastening plates having their outer ends bent to conform to the apex of said tie, and means supported by said fingers for secur- 100 ing said plates to said tie.

15. In a rail fastener, the combination with a metallic tie of inverted V-shape in cross section and having inturned fingers, of fastening plates having their outer ends bent to conform to the apex of said tie, and 105 securing bolts for said plates, said bolts being supported by said fingers.

16. In a rail fastener, the combination with a metallic tie of inverted V-shape in cross section and having inturned fingers, of 110 fastening plates having their outer ends bent to conform to the apex of said tie, and securing bolts for said plates, said bolts having heads conforming to the apex of said tie and supported by said fingers. 115

17. In a rail fastener, the combination with a metallic tie of inverted V-shape in cross section and having inturned fingers, of fastening plates having their outer ends bent to conform to the apex of said tie, the 120 inner ends of said plates being turned downwardly to engage the base of a rail, and means supported by said fingers for securing said plates to said tie.

18. In a rail fastener, the combination 125 with a metallic tie of inverted V-shape in cross section and having inturned fingers, of fastening plates having their outer ends

bent to conform to the apex of said tie, the
inner ends of said plates being turned down-
wardly to engage the base of a rail, and then
turned upwardly to engage the web of the
5 rail, and means supported by said fingers
for securing said plates to said tie.
In testimony whereof I have hereunto set

my hand in presence of two subscribing wit-
nesses.

FRANK J. SCHISLER.

Witnesses:

N. L. COLLAMER,
L. O. HILTON.

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