C. H. CORNELL.

RAILWAY FASTENER.

APPLICATION FILED JAN. 26, 1909.

943,520. Patented Dec. 14, 1909.

Fig. 1.

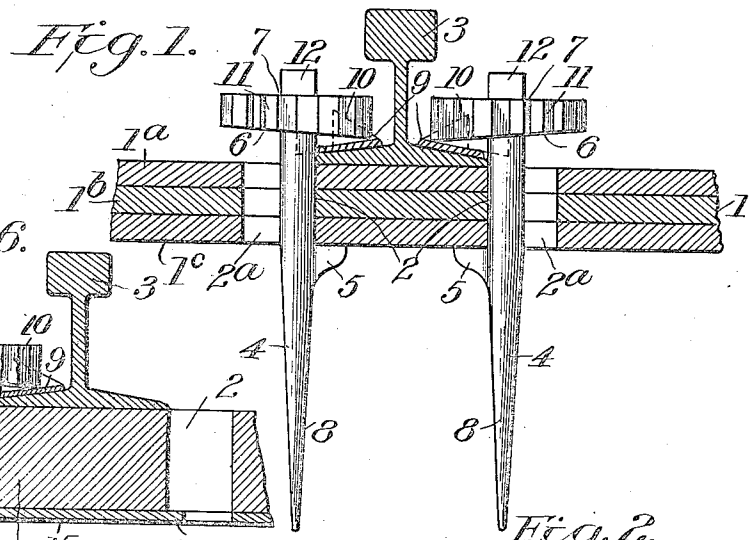


Fig. 6.

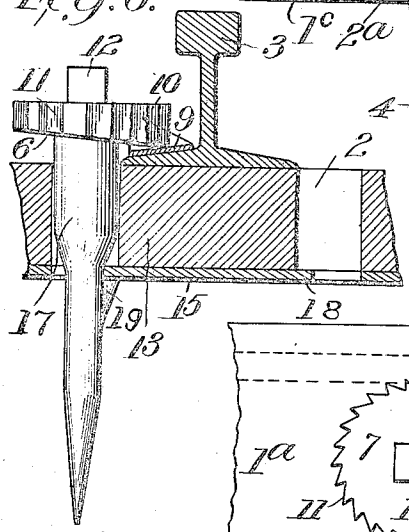


Fig. 2.

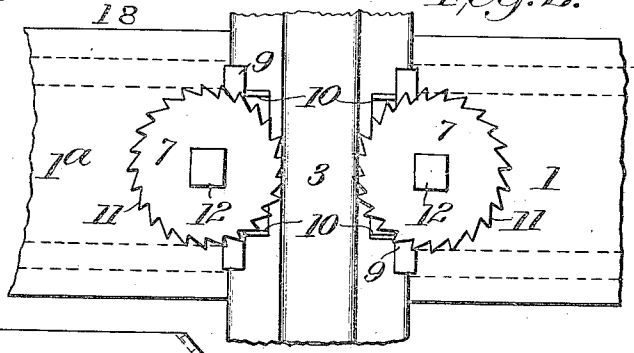


Fig. 5.

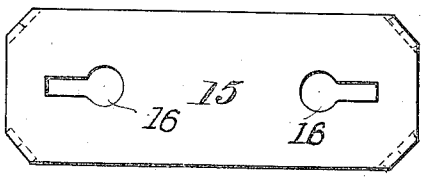


Fig. 4.

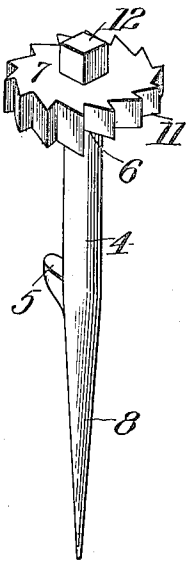
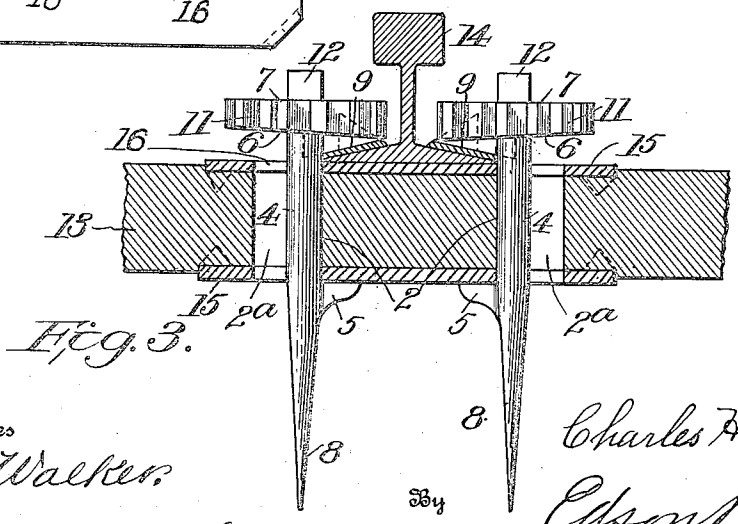


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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RAILWAY-FASTENER.

943,520. Specification of Letters Patent. Patented Dec. 14, 1909.

Application filed January 26, 1909. Serial No. 474,225.

To all whom it may concern:

Be it known that I, CHARLES H. CORNELL, a citizen of the United States, residing at Valentine, in the county of Cherry and State of Nebraska, have invented certain new and useful Improvements in Railway-Fasteners; 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 railway fasteners and is designed as an improvement upon the device shown and described in the patent to William Boyer, No. 895,949, and issued on August 11, 1908, of which I am a joint owner.

This invention may also be considered as an improvement on, or an adaptation of the forms of locking bolts shown in my pending applications, Serial No. 433,243, filed May 16, 1908, and Serial No. 461,403, filed Nov. 6, 1908.

It is the object of the present invention to simplify the construction of the securing devices shown in the patent to Boyer, referred to above, whereby the slabs or plates comprising the laminated steel tie may be made as thin as possible, thus saving weight in handling and expense in manufacturing said slabs, and at the same time to provide means for securely holding the tie in place so that it will not slip on the road bed.

The invention consists in the use of a rotatable bolt which is provided with a laterally projecting lug adapted to engage the under surface of the tie, a head having a cam-shaped under face adapted to clamp upon the foot of the rail, and a downwardly projecting portion or extension adapted to be driven into the road bed when the bolt is inserted through the opening provided therefor in the tie and before said bolt is turned to clamp the rail. This bolt may also be used in connection with an ordinary wooden tie, in which case it is preferable to place a metal plate on the top and bottom surfaces of the tie to hold the bolts up against the rail and prevent them from wearing away the wood which might happen if said metal plates were not used and result in the bolts slipping away and losing their grip upon the rail. The bottom plate also serves to protect the wood of the tie from engagement by the laterally extending lugs of the bolts and provides a non-yielding surface for them to bear against when the bolts are tightened.

The invention also consists in the features of construction and combinations of parts hereinafter described and specified in the claims.

In the accompanying drawing illustrating the preferred embodiment of my invention: Figure 1 is a broken longitudinal vertical section of a laminated steel tie showing a rail secured thereto by means of my improved fastener. Fig. 2 is a plan view thereof. Fig. 3 is a longitudinal vertical sectional view of a wooden tie showing the invention applied thereto. Fig. 4 is a detailed view of one of the bolts, Fig. 5 is a detailed view of one of the plates used with the wooden tie, and Fig. 6 is a broken sectional view showing a modification.

Referring more particularly to the drawing, and first to Figs. 1 and 2 thereof, 1 designates the laminated steel tie which is here shown as being composed of three plates or slabs 1^a, 1^b, and 1^c. It is of course understood that any desired number of plates or slabs may be used for constructing the tie according to the strength required or the strain to which it is to be subjected. Vertical key slots 2 are formed through the tie, one at each side of the foot of the rail 3. The extensions 2^a of the key slots are shown arranged at the sides thereof farthest from the rail but they may extend parallel to the edge of the rail or at any angles thereto desirable.

One of my improved bolts 4 is arranged in each of the key slots with its laterally extending lug 5 engaging the bottom surface of the tie and the cam-shaped under face 6 of its head 7 clamping upon the foot of the rail. The lower projection 8 of the bolt extends down into the roadbed, as shown in Fig. 1, thereby preventing the tie from moving or slipping from its proper position. A washer 9 may be interposed between the foot of the rail and the head of the bolt. The washer may be made of various thicknesses to take care of any discrepancy between the length of the bolt, between its head and the lateral lug, and the thickness of the tie and foot of the rail. The washer may also have portions thereof cut and bent up, as illustrated

at 10, to engage serrations 11 in the periphery of the head of the bolt to lock said bolt against reverse turning.

Each bolt is made sufficiently heavy and strong to permit its being driven into place with its downward extension 8 engaging the roadbed. The length of said downward extension of the bolt may vary to suit the physical condition of the roadbed, the cost of the material, etc. The head of the bolt is preferably formed with a square wrench-engaging portion 12 whereby it may be turned to obtain the desired clamping action after the bolt has been driven down into its proper position. When the bolt is driven in, its lateral lug 5 passes through the extension 2^a of the key slot 2. As soon as said lug reaches a position below the tie, it is disengaged from the extension of the key slot and may revolve out of line therewith when the bolt is turned.

In Fig. 3, 13 designates an ordinary wooden tie to which a rail 14 is secured by the same kind of fastener or bolt hereinbefore described in connection with the laminated steel tie. Metal plates 15 are preferably placed on the top and bottom surfaces of the wooden tie to protect it and form bearings for the shanks of the bolts, the bottom plate also forming a bearing for the lateral lugs of said bolts. These plates extend across both of the key slots in the tie and are of course provided with corresponding openings 16 therein as shown particularly in Fig. 5. Said plates may be secured to the tie in any suitable manner, such as by having their corners bent up and driven into said tie.

In Fig. 6, I have illustrated a modified form of bolt adapted to be used with a wooden tie without any top plate. This bolt is made with the upper portion of its shank, that is, the part arranged within the opening in the tie, enlarged as at 17 while it is reduced in size where it passes through the opening in the bottom plate. The opening in the tie is round and of a size to fit the enlarged portion of the bolt but the opening in the bottom plate is smaller and shaped like a key slot so that a part thereof extends inward beyond the edge of the opening in the tie, as at 18, to provide a bearing for the projecting lug 19 which extends from the reduced portion of the shank and terminates within the plane of the peripheral surface of said enlarged portion of said shank. It will be noted that in this construction the opening in the tie is filled by the enlarged portion of the shank in such a manner as to prevent the bolt from slipping and that the bolt is also heavier and stronger.

I claim:

1. The combination, with a rail and a tie, the latter having an opening therethrough, of a rotatable bolt comprising a shank arranged in said opening in the tie, a head clamping the foot of the rail to the tie, a lug engaging the bottom of the tie, and a long downward extension from the shank engaging the roadbed for the purpose specified.

2. A bolt, for fastening a rail to a tie, having a laterally projecting lug adapted to engage the bottom surface of the tie, a cam-shaped head adapted to clamp upon the foot of the rail, and a downward extension adapted to engage the roadbed.

3. The combination, with a rail and a tie having a key slot therein, of a bolt having a laterally projecting lug adapted to be inserted through said key slot and engage the bottom surface of the tie, said bolt also having a head adapted to clamp upon the foot of the rail, and a downward extension adapted to engage the roadbed.

4. The combination, with a rail and a tie having a key slot therein, of a bolt having a laterally projecting lug adapted to be inserted through said key slot and engage the bottom surface of the tie, said bolt also having a head provided with a cam-shaped under face adapted to clamp upon the foot of the rail, and a downward extension adapted to engage the roadbed.

5. The combination, with a rail and a tie having a key slot therein, of a bolt having a laterally projecting lug adapted to be inserted through said key slot and engage the bottom surface of the tie, said bolt also having a head adapted to clamp upon the foot of the rail, and a downward extension adapted to engage the roadbed, the head of the bolt being serrated around its periphery, and a washer having a portion thereof adapted to engage said serrations to lock the bolt against reverse turning.

6. The combination, with a rail and a tie having a key slot therein, of a bolt having a laterally projecting lug adapted to be inserted through said key slot and engage the bottom surface of the tie, said bolt also having a head provided with a cam-shaped under face adapted to clamp upon the foot of the rail, and a downward extension adapted to engage the roadbed, the head of the bolt being serrated around its periphery, and a washer having a portion thereof adapted to engage said serrations to lock the bolt against reverse turning.

7. The combination, with a rail and a tie having a key slot therein, of a plate secured to the bottom surface of said tie and provided with a key slot registering with that in the tie, and a rotatable bolt having a laterally extending lug adapted to engage the under surface of said plate, said bolt also having a head adapted to clamp upon the foot of the rail.

8. The combination, with a rail and a tie having a key slot therein, of a plate secured to the bottom surface of said tie and pro-

vided with a key slot registering with that in the tie, and a rotatable bolt having a laterally extending lug adapted to engage the under surface of said plate, said bolt also having a head adapted to clamp upon the foot of the rail, and a downward extension adapted to engage the roadbed.

9. The combination, with a rail and a tie having key slots therein at opposite sides of the rail, of a plate arranged on the top of the tie below the rail and extending beyond said rail at both sides, said plate having key slots therein registering with those in the tie, and rotatable bolts having laterally extending lugs adapted to engage the under surface of said tie, said bolts also having heads formed with cam-shaped under faces adapted to clamp upon the foot of the rail.

10. The combination, with a rail and a tie having key slots therein at opposite sides of the rail, of a plate arranged on the top of the tie below the rail and extending beyond said rail at both sides, said plate having key slots therein registering with those in the tie and rotatable bolts having laterally extending lugs adapted to engage the under surface of said tie, said bolts also having heads formed with cam-shaped under faces adapted to clamp upon the foot of the rail, and downward extensions from said bolts adapted to engage the roadbed.

11. The combination, with a rail and a tie having key slots therein at opposite sides of the rail, of plates arranged respectively on the top and bottom of the tie and extending beyond the rail at both sides, said plates having key slots therein registering with those in the tie, and rotatable bolts having laterally extending lugs adapted to engage the plate on the bottom of the tie, said bolts also having heads formed with cam-shaped under faces adapted to clamp upon the foot of the rail.

12. The combination, with a rail and a tie having key slots therein at opposite sides of the rail, of plates arranged respectively on the top and bottom of the tie and extending beyond the rail at both sides, said plates having key slots therein registering with those in the tie, and rotatable bolts having laterally extending lugs adapted to engage the plate on the bottom of the tie, said bolts also having heads formed with cam-shaped under faces adapted to clamp upon the foot of the rail, and downward extensions from said bolts adapted to engage the roadbed.

In testimony whereof, I affix my signature, in presence of two witnesses.

CHARLES H. CORNELL.

Witnesses:
GLEN V. HOENIG,
M. V. NICHOLSON.