No. 898,323. PATENTED SEPT. 8, 1908.

W. A. CLINE.

RAILWAY TIE AND RAIL FASTENING.

APPLICATION FILED JUNE 24, 1907.

2 SHEETS—SHEET 1.

Fig. 1.

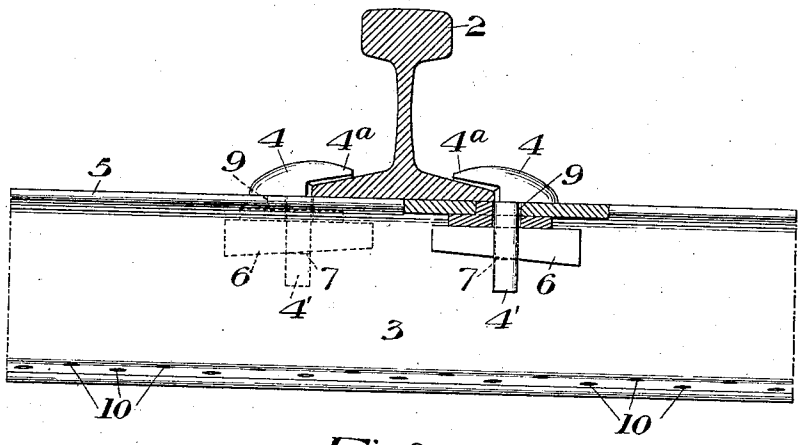


Fig. 2.

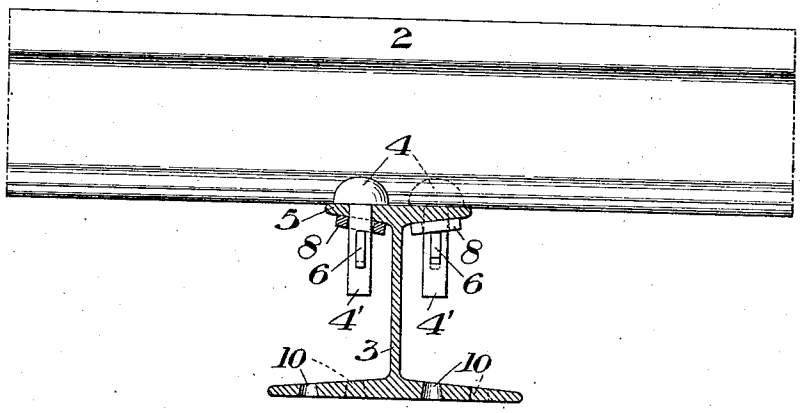


Fig. 3.

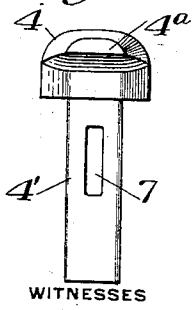


Fig. 4.

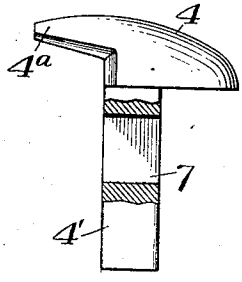


Fig. 5.

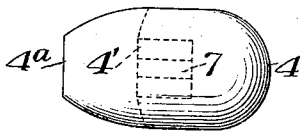
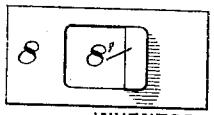


Fig. 6.



WITNESSES

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RAILWAY TIE AND RAIL FASTENING.

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2 SHEETS—SHEET 2.

Fig. 7.

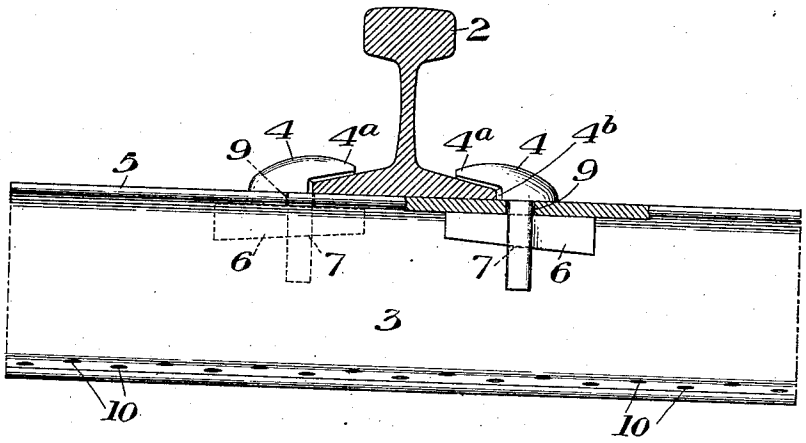
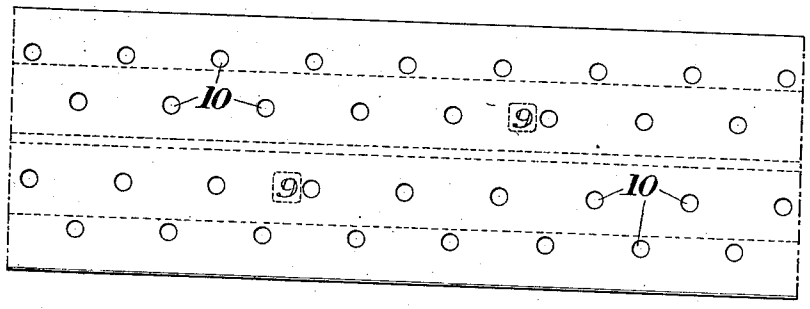


Fig. 8.



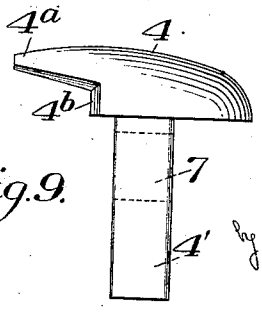


Fig. 9.

WITNESSES

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UNITED STATES PATENT OFFICE.

WILLIAM ALBERT CLINE, OF MUNHALL, PENNSYLVANIA.

RAILWAY-TIE AND RAIL-FASTENING.

No. 898,323. Specification of Letters Patent. Patented Sept. 8, 1908.

Application filed June 24, 1907. Serial No. 380,420.

To all whom it may concern:

Be it known that I, WILLIAM ALBERT CLINE, of Munhall, Allegheny county, Pennsylvania, have invented a new and useful Railway-Tie and 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—

Figure 1 is a side elevation of a portion of a metal railway tie provided with my improved rail fastening; Fig. 2 is a sectional end elevation of the same; Figs. 3, 4 and 5, are detail views showing the construction of the bolt used in fastening the rails to the ties; Fig. 6 is a detail plan view of the adjustable washer forming part of my invention; Fig. 7 is a side elevation of the tie showing a modified form of a fastening bolt; Fig. 8 is a bottom plan view of the bottom flange of the tie; and Fig. 9 is a detail view of the modified form of bolt shown in Fig. 7.

My invention relates to improvements in metallic railway ties and rail fastenings by which the rails are secured in place on such ties and the object of the invention is to provide an improved tie having means on its bottom surface or flange by which creeping of the ties in the road bed of the track is prevented and which permits of the rails and ties being easily and quickly shifted on the road bed whenever it becomes necessary or desirable.

A further object of the invention is to provide an improved rail fastening adapted to permit of sidewise adjustment of the rails on the ties and having a clip or head of such shape as will prevent shearing or breaking of these heads by the flanges of the wheels in the event of the wheels becoming derailed on the track.

The invention consists in providing the bottom surface of the ties with a series of openings or perforations which by engagement with various kinds and sizes of ballast will prevent shifting of the ties and rails on the road bed.

The invention also consists in the fastening bolt having a head of peculiar shape integral with its shank and a bolt which is adjustable in the openings provided for the fastening in the ties, together with the construction of the tie by which shifting of the tie in the road bed is prevented.

In the drawings, 2 represents the rail of a railway track which is secured in place to a metallic tie 3 by means of my improved bolts 4. These bolts as shown in Fig. 1 extend through suitable slots located in the top flange 5 of the tie and the bolts are held in place by means of tapered keys 6 which are inserted in the slots 7 located in the shank portion 4′ of the bolts. Means for adjusting the rails toward and away from each other on the tie 3 are provided by the washer 8, this washer having a projection 8′ which is inserted in the slot 9 located in the top flange 5 of the tie. By placing the projection 8′ on the washer 8 so as to bring it on opposite sides of the bolts, the gage of the rails may be changed as is required. After the keys have been driven into the slots 7, they are preferably bent or curved so as to prevent their shifting in these slots, and loosening the fastening.

The head 4 of the bolt forming the rail fastening is curved or rounded on its top face in all directions and the head 4 is wedged down tightly upon the top flange 5 of the tie by means of the key 6, the nose 4^a projecting over the top face of the flange of the rail 2 so as to retain the rail securely in place.

Instead of having a detachable washer as is shown in Figs. 1, 2 and 5, I may form the adjusting means integral with the bolt 4 as is shown in Fig. 9. When this construction is employed the rail will be secured by means of one bolt as is shown in Fig. 9 and one as is shown in Fig. 4. It will be noted that in Fig. 4 the inner edge of the nose portion is flush with the shank portion 4′ while in Fig. 9 the inner edge 4^b of the nose portion forms a projection or shoulder on the inner edge of the shank portion 4′. By interchanging these bolts having the different construction of the nose portions, the required adjustment of the rail on the tie is secured.

The bottom flange of the tie, which is preferably of the I-beam form shown, is provided with a plurality of holes or openings 10, these openings being preferably formed so as to taper outwardly toward the outer surface of the flange as is clearly shown in Fig. 2. In this way a larger surface of the tie is brought into contact with the ballast and the finer portions of the ballast will pass through the openings, giving the tie a firm seat on the road bed. The size and location of the openings may be varied as desired. When the tie is placed in the road bed these openings will become filled with portions of the ballast and will prevent endwise or sidewise move-

ment of the tie, the greater the weight put upon the rails the tighter the tie is held in place on the ballast. When it is desired to shift the rails forming the track on the road bed as is frequently the case, a slight lift upon the ties will loosen them and will permit of their being easily shifted to the desired position, while the under surface of the tie will permit the tie being tamped at all points in its length.

The advantages of my invention will be apparent to those skilled in the art. A fastening is provided which securely holds the rails in position without the necessity of frequent adjustments to tighten up the bolts forming the fastening. The rail is free to move lengthwise in the grooves formed by the nose or lip 4^a of the bolts. The apparatus is simple and can be easily and cheaply manufactured. The liability of destroying the fastening by the flange or flanges of a wheel or wheels which becomes derailed or other parts of the rolling stock which become displaced is greatly reduced.

Modifications in the construction and arrangement of the parts may be made without departing from my invention. Instead of using the keys for holding the bolts in position screw threads or other equivalents may be employed.

I claim:—

1. A railway tie of I-beam form having a top and bottom flange, means for securing the rails to the top flange and a series of tapering openings or holes in the bottom flange of the tie, the large end of said openings being on the outer surface of said flange; substantially as described.

2. An adjustable rail fastening comprising a tie having slotted openings therein, bolts in said openings for securing the rails to the tie, means in said openings permitting adjustment of the bolts in said slotted openings, heads on said bolts having a bearing portion contacting with the top surface of said tie and a nose portion engaging with and retaining the rails in place on the tie and means for holding the bolts in place on the tie; substantially as described.

3. In a rail fastening the combination with a tie having slotted openings therein, of bolts adjustably located in said openings, heads on the bolts having bearing portions adapted to bear on the top of said tie and nose portions engaging with and retaining the rails in position on the tie, the heads of the bolts having an oval upper surface, slots in the shanks of said bolts, and tapered keys in the slots by which the bolts are secured in place in the slotted openings in the tie; substantially as described.

4. In a rail fastening the combination with a tie having slotted openings therein, of bolts adjustably located in said openings, heads on the bolts having bearing portions adapted to bear on the top of said tie and nose portions engaging with and retaining the rails in position on the tie, the heads of the bolts having an oval upper surface, slots in the shanks of said bolts, and tapered keys in the slots by which the bolts are secured in place in the slotted openings in the tie, said keys being bent to prevent their withdrawal from the slots in the shank of said bolts; substantially as described.

5. In a rail fastening the combination with a tie having slotted openings therein, of rail securing bolts in said openings, having oppositely facing nose portions adapted to engage with and hold the flanges of the rail in position on the tie, means in said openings permitting the location of the bolts and the rail being shifted lengthwise on the tie, and means for securing the bolts in place on the tie; substantially as described.

6. In a rail fastening the combination with a tie having slotted openings therein, of rail securing bolts in said openings, having oppositely facing nose portions adapted to engage with and hold the flanges of the rail in position on the tie, means in said openings by which the location of the bolts and the rail is shifted lengthwise on the tie, key slots in the shanks of said bolts and bent keys in said slots for securing the bolts in place on the tie; substantially as described.

In testimony whereof, I have hereunto set my hand.

WILLIAM ALBERT CLINE.

Witnesses:

WILLIAM J. CRAWFORD,

KATHERINE D. CLINE.