W. H. MORGAN.

METAL TIE AND MEANS FOR SECURING RAILS THERETO.

APPLICATION FILED OCT. 11, 1909.

1,010,672. **Patented Dec. 5, 1911.**

3 SHEETS—SHEET 1.

Fig. 1.

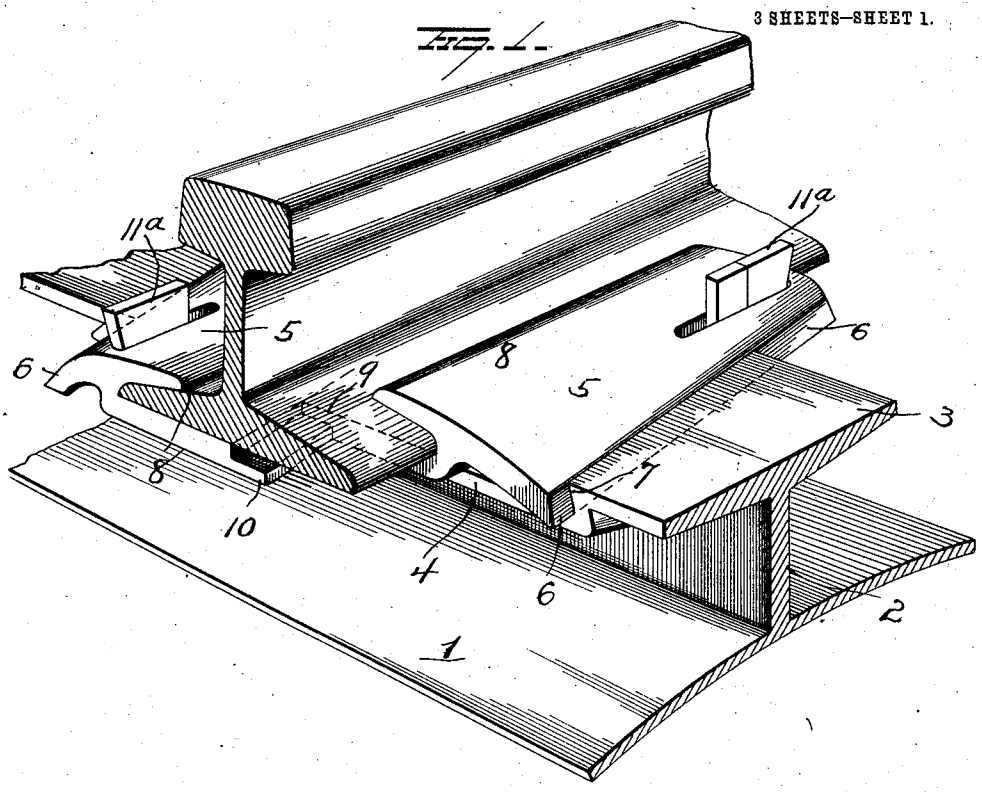
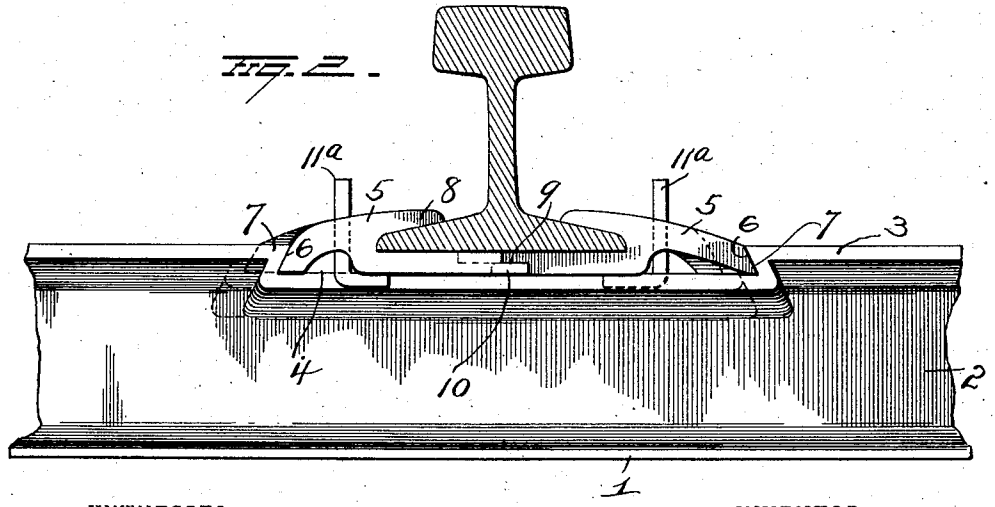


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

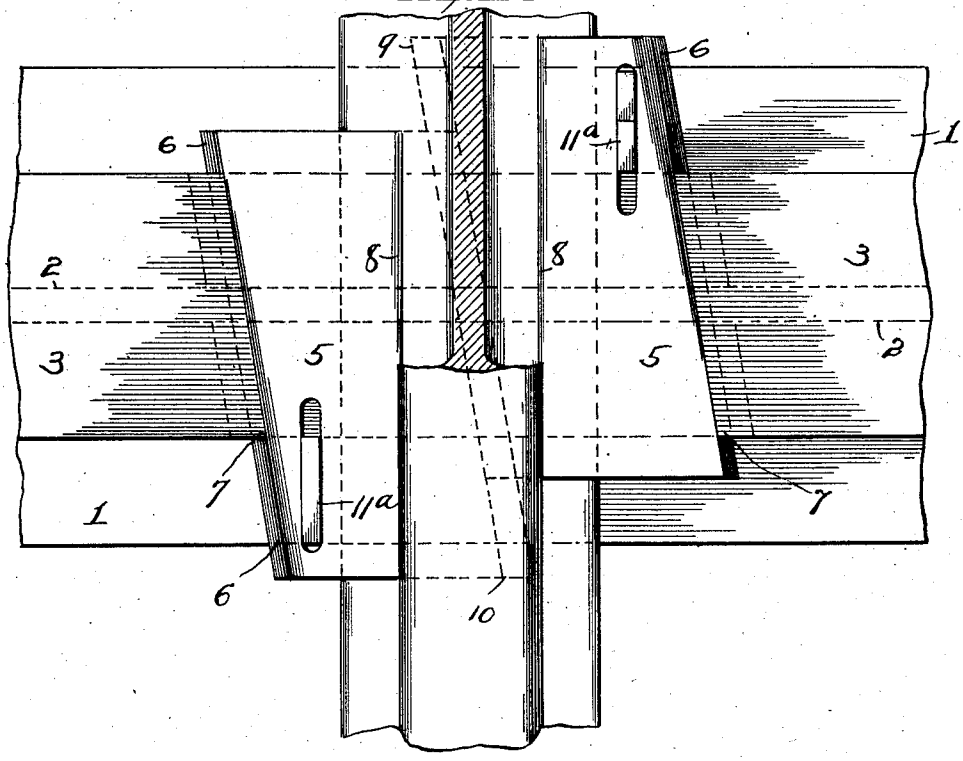
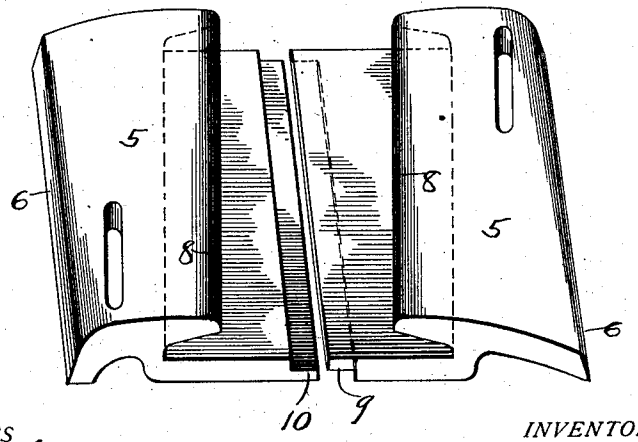


Fig. 4.



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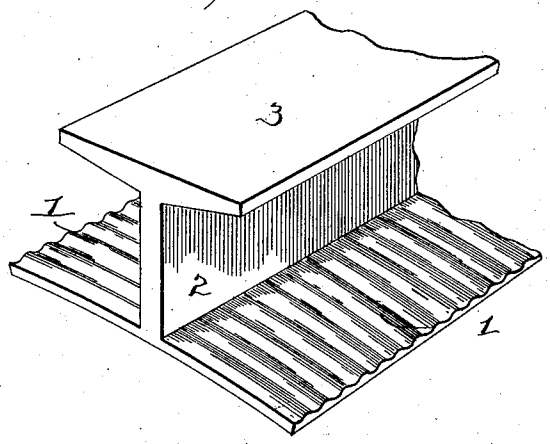
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3 SHEETS—SHEET 3.

Fig. 5.



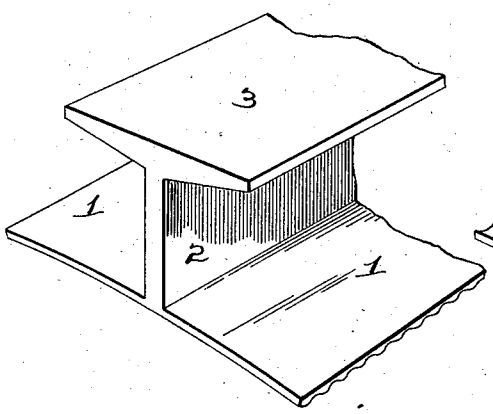


Fig. 6.

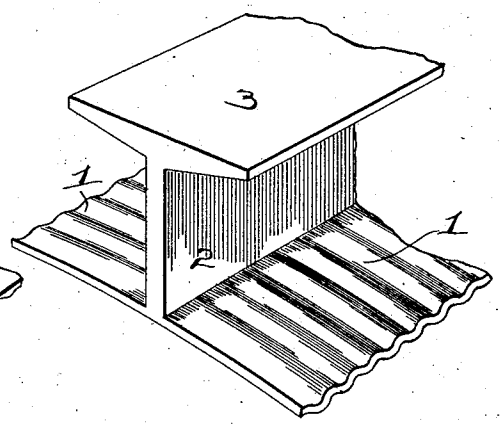


Fig. 7.

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UNITED STATES PATENT OFFICE.

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METAL TIE AND MEANS FOR SECURING RAILS THERETO.

1,010,672. Specification of Letters Patent. Patented Dec. 5, 1911.

Application filed October 11, 1909. Serial No. 522,084.

To all whom it may concern:

Be it known that I, WILLIAM H. MORGAN, a citizen of the United States, and a resident of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Metal Ties and Means for Securing Rails Thereto; 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 metal ties, and means for securing rails thereto and it consists in the details of construction as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in perspective of my improved tie and rail securing devices. Fig. 2 is a side view of same. Fig. 3 is a plan view. Fig. 4 is a view of the rail securing wedges detached and Figs. 5, 6 and 7 are views of modified forms of tie.

My improved tie comprises a base flange 1 a web 2 and top flange 39, the base flange being wider than the top flange, and slightly concaved transversely on its lower face, the concavity being preferably in the arc of a circle. This tie is made by laterally expanding the head of a rail, to form the base flange of the tie, and before, or after, the rail has been rolled to form the base flange of the tie, portions of the base flange of the rail (which is the top flange of the tie) are recessed as at 4 to form seats for the rails. These recessed seats are disposed obliquely as shown and the end walls of the recesses converge upwardly so as to overlap the rail holding plates 5. The rails rest on the ties at right angles thereto, consequently triangular spaces are left in each recess on opposite sides of the rail for the reception of the securing plates 5.

By providing recesses for the rails, all lateral shearing action of the rails is borne directly by the tie, and not by fastening means or abutments secured to the tie. The base flange of the tie is slightly curved, and its surfaces may be grooved on its upper face or on its lower face or on its upper and lower face as shown in Figs. 5, 6 and 7.

By curving the base flange as shown, its shape tends to force the dirt or broken stone under it, toward the center thus insuring a solid bed, and by grooving one or both faces of the base flange I provide against the possibility of any endwise creeping of the tie.

The rail securing plates 5, are adapted to be driven in the recessed seats on opposite sides of the rail, and lock the latter securely in place. The outer edge of each securing plate is beveled as at 6 to conform to the overlapping beveled face of the wall 7 of the recessed seat, and each plate is provided with an upwardly and inwardly projecting lip 8, which rests over and in contact with the top face of the base flange of the rail, one on one side of the rail and the other on the other side. The two plates 5 for each recessed seat meet at the center under the rail, and one is provided with a lip 9 that overlaps a lip 10 on the other plate. The inner or meeting edges of the two plates are parallel with the end walls of the recess, and the width of the two plates combined is approximately equal to the length of the recessed seat, hence it will be seen that when the rail is seated on the plates, it locks the plates in place against the possibility of tilting and prevents all lateral displacement. The plates 5 are not of themselves wedge-shape, but on the contrary have parallel side edges, but the upwardly and inwardly projecting lips 8 which overhang the base flange of the rail, are diagonally disposed on the plate so as to bring the free edges of these lips at right angles to the length of the tie, and parallel with the rail, hence the portion of the plates between the lips 8 are wedge shape, and by their endwise movements with relation to each other increase or decrease the space between the flanges thus releasing or locking the rail as the case may be. It will also be apparent that by moving one plate 5 in one direction, or by moving both plates in opposite directions the rail will be firmly clamped between the two plates, and the latter wedged against the end walls of the recesses, or by moving the plates in the opposite direction the rail will be released, or rather the plates released from the rail and end walls of the seat, so as to permit the plates to be withdrawn. By this same method of adjusting the wedges, either rail may be moved toward the other so as to compensate for wear of the rail. After the rails have been properly placed and secured by the rail securing plates 5 the latter are locked in place by the wedges 11ª which are passed through slots in the securing plates 5 and bent up at their lower ends, rectangu-

lar plates being used in connection with the wedges as shown, where a wedge alone is not of sufficient width to fill portions of the slots in the rail securing plates that project beyond the side edges of the tie. The base members of the securing plates 5 are preferably not as thick as the depth of the seats, so as to bring the bottoms of the rails in a plane below the tops of the ties, so that all side thrust, or shearing action of the rails will be in a plane below the top of the ties and be largely borne by the latter. Instead of beveling the end walls of the recessed seats they may have angular lips to overlie similar lips on the adjacent wedge plate 5.

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

1. A rolled tie of I-beam shape the top flange of which is provided with transverse depressed seats formed by displacing the metal of the said flange.

2. A rolled tie of I-beam shape, the top flange of which is provided with transverse depressed seats formed by displacing the metal of said flange, and the lower or base flange with transverse grooves.

3. A rolled tie of I-beam shape, the top flange of which is provided with depressed seats formed by displacing the metal of said flange, the lower flange being concave in cross section on its under face and convex on its upper face.

4. The combination with a metal tie having diagonally disposed recessed seats, of two wedge shaped rail securing plates located within each seat, the outer edge of each plate being overlapped by the adjacent end wall of the seat and both plates terminating under the rail and supporting the latter, and each having an upwardly and inwardly projecting lip adapted to overlap the base flange of the rail, and a bendable wedge passing through each securing plate adjacent one end of the latter.

5. The combination with a metal tie having diagonally disposed recessed seats, of two wedge shaped plates for each seat on which the rail rests, each plate having a lip adapted to overlap the base flange of the rail, and each plate being overlapped at its outer edge by the end wall of the recessed seat and having a slot and a bendable wedge in said slot.

6. The combination with a metal tie having a depressed seat, the latter extending obliquely across the tie and having integral overhanging end walls, of two rail securing plates within said seat, each plate having parallel side edges, one edge of each plate being overlapped by an overhanging end wall of the seat, the other edges of the two plates abutting under the rail, and each plate also having an upwardly and inwardly projecting lip adapted to overlap the base flange of the rail.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

WILLIAM H. MORGAN.

Witnesses:
WILBUR ZIMMERMAN,
A. W. BRIGHT.

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