W. H. MORGAN.

METAL TIE.

APPLICATION FILED FEB. 2, 1911.

1,003,639. **Patented Sept. 19, 1911.**

Fig. 1.

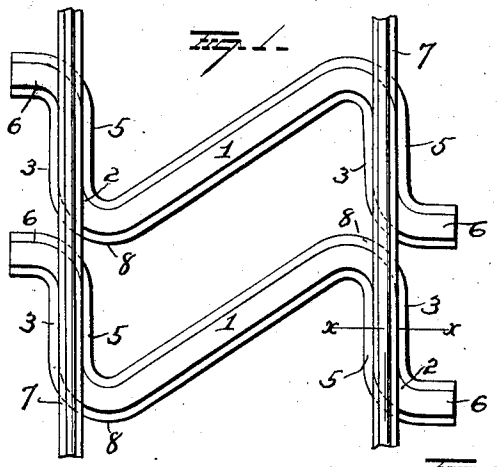


Fig. 4.

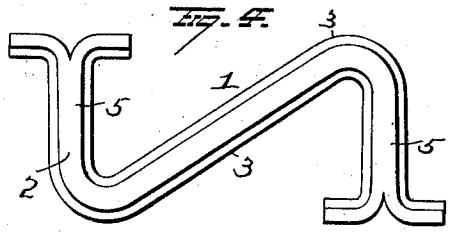


Fig. 2.

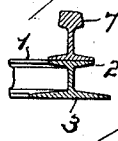


Fig. 5.

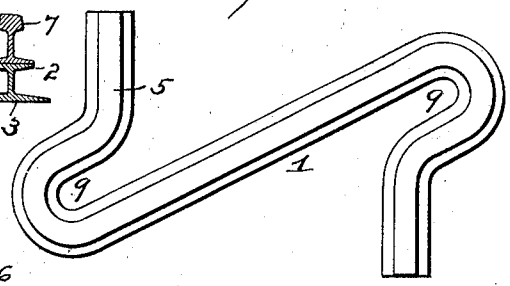


Fig. 3.

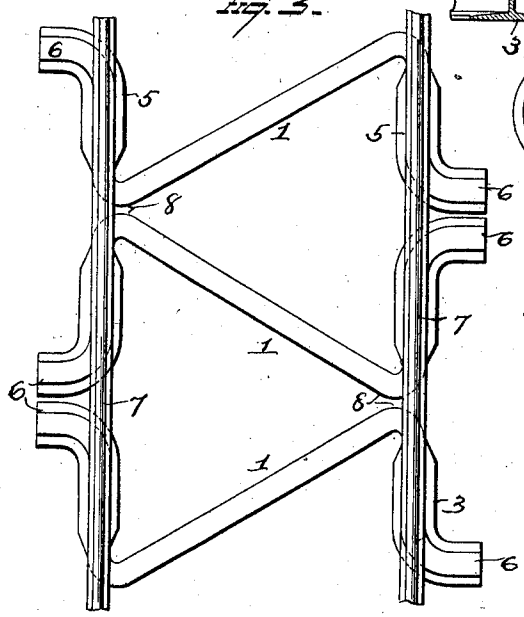
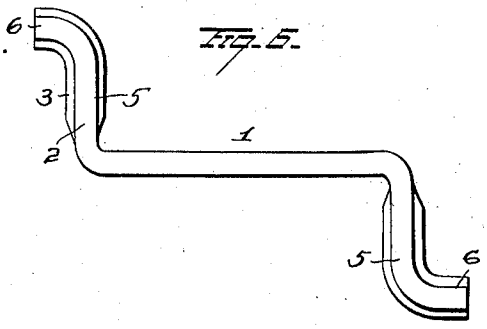


Fig. 6.



WITNESSES

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METAL TIE.

1,003,639. Specification of Letters Patent. Patented Sept. 19, 1911.

Application filed February 2, 1911. Serial No. 606,246.

To all whom it may concern:

Be it known that I, WILLIAM H. MORGAN, of Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Metal Ties; 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 it consists in the features of construction as will be more fully described and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in plan of two ties located in proper relative positions. Fig. 2 is a view in section on the line *x*—*x* of Fig. 1. Fig. 3 is a view in elevation showing another manner of assembling the ties, and Figs. 4, 5 and 6 are views in plan of modified forms of ties.

1 represents the tie, preferably and conveniently made from a section of old and discarded railroad rail, but which may be made of new material of any approved shape in cross section.

The tie comprises a base flange, a web and a head, and when made from a section of old rail, the base flange of the latter constitutes the head 2 of the tie, and the head of the rail section is wholly or partly swaged so as to expand same laterally on both sides of the web 4, thus producing a base flange 3 preferably wider than the head of the tie. The ends 5 of the section thus shaped are bent at right angles or approximately so to the central portion of the tie as shown in Fig. 6, or the whole section is bent into Z-shape as shown in Figs. 1, 3 and 4, and the extreme portion 6 of the bent ends are again bent outwardly at right angles to the ends 5, so as to project at both ends beyond the rails 7 carried by the ties.

When the tie is made from old rails, instead of swaging or flattening the head of the rail section throughout the length of the tie as shown in Figs. 1, 4 and 5, to form the base flange 3 of the tie, the bent ends 5 and 6 only may be swaged or expanded laterally as shown in Figs. 3 and 6, thus leaving the central portion of the tie in its original condition.

The bent end portions 5 of each tie, are located the proper distance apart to support the rails 7 in proper position, and as shown, extend lengthwise the rails, while the body of the tie or that portion connecting the ends, extends crosswise the track.

In the construction shown in Fig. 6, the body portion of the tie is at right angles to the ends 5, and also at right angles to the rails 7, whereas with the Z-shaped tie the body portion thereof is arranged obliquely to the rails. With the Z-shaped tie the free end of one bent end will be approximately in line with the elbow 8 of the bend at the opposite end of the tie, hence the weight on the truck wheels will come directly over, and be borne by both ends of the tie simultaneously, thereby eliminating strains which would be imparted to the body of the tie intermediate the bent ends of the weight falling first upon one bent end of the tie and then on the other. Again by using the base flange of the rail section for the head of the tie, I secure a flat bearing surface which conforms in size to the base flange of the rail seated thereon.

Instead of arranging the ties as shown in Fig. 1, I may assemble them as shown in Fig. 3, that is to say arranging them elbow to elbow and end to end, forming a triangular space between two adjacent ties, thus practically confining the ballast and preventing the possibility of any lateral movement of the track. Instead of bending the ends 6 outwardly as shown in Fig. 1, these ends may be split as shown in Fig. 4, one portion of each split end being bent outwardly and the other inwardly, or I may, as shown in Fig. 5, provide for extra end support for the ties, by bending the ends of the section into U-shape as at 9, and then bending the free ends parallel to each other to form the seats for the rails. In this last construction the rails would also be supported on the body of the tie intermediate the U-shape bends. In all these instances the head of the tie is flat and of uniform width from end to end and when made from old rails, this head, which as before stated was the base flange of the rail, will conform as to shape and size to the base flange of the rails supported thereon.

It is evident that many slight changes might be resorted to in the relative arrangement of parts shown and described without

departing from the spirit and scope of my invention. Hence I would have it understood that I do not wish to confine myself to the exact construction and arrangement of parts shown and described, but

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

1. A metal tie of approximately Z-shape, the extreme ends of the tie being bent outwardly beyond the rail supporting sections of the tie.

2. A metal tie of substantially I-shape in cross section and bent into substantially Z-shape in plan, the parallel members of the tie forming rail supports, the free ends of the latter being bent outwardly.

3. A metal tie for rail roads made from a section of a rail, the ends of said section being bent into approximately parallel planes to form supports for the rails, and the head of the rail section flattened at the bent ends so as to form a widened base flange.

4. A metal tie for rail roads made from a section of a rail, the ends of said section being bent into approximately parallel planes to form supports for the rails, and the head of the rail section expanded laterally to form a widened base flange for the tie.

5. A metal tie for railroads made from a section of rail, the said tie being approximately Z-shape in cross section, and the head of the rail section expanded laterally to form a widened base flange for the tie.

6. A metal tie for rail roads made from a section of rail, and comprising a body, the end sections of which are bent into approximately parallel planes to form supports for the rails, the free ends of said section having portions projecting outwardly beyond the rail supports, the head of said rail section being flattened to form a widened base flange for the tie.

7. A series of approximately Z-shaped metal rail road ties, each arranged with its free ends adjacent the free ends of the next adjacent ties whereby a substantially triangular space is inclosed by each pair of ties.

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

WILLIAM HENRY MORGAN.

Witnesses:
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N. C. FETTERS.