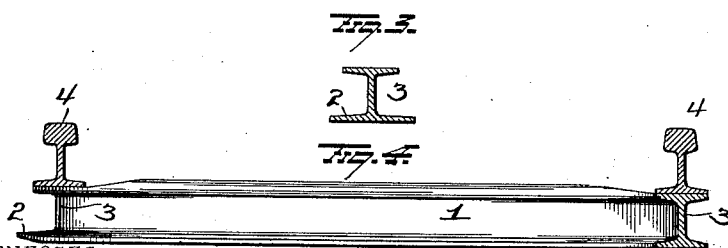
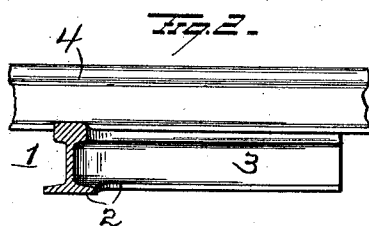
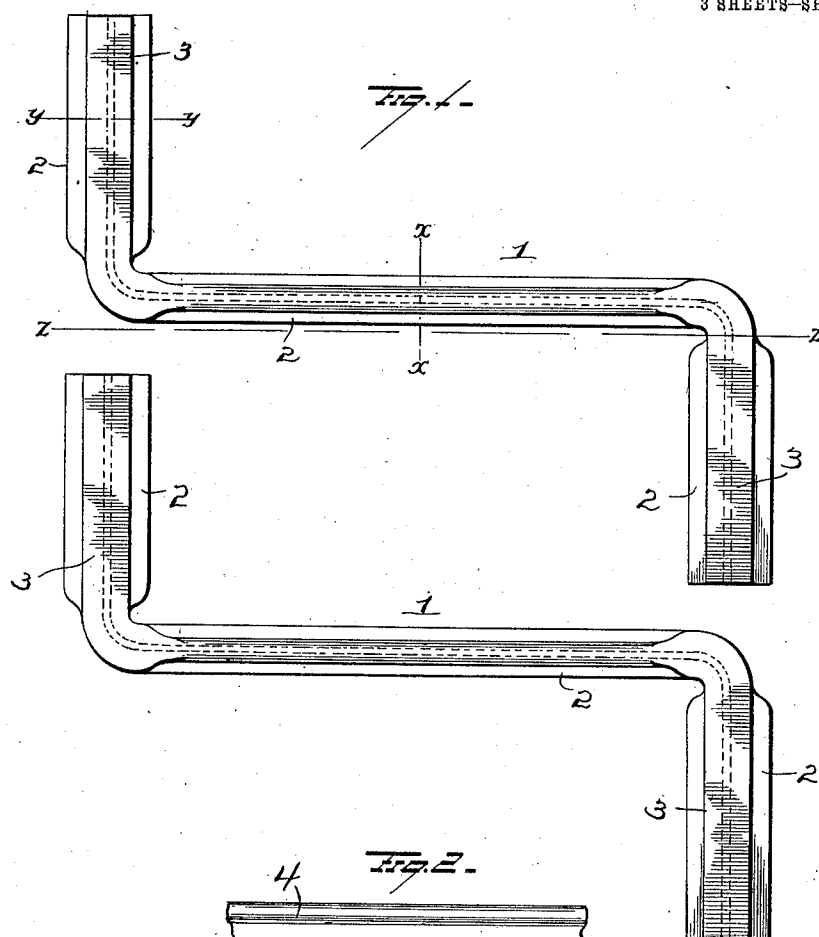


W. H. MORGAN.
METAL TIE.
APPLICATION FILED JAN. 14, 1911.

1,003,637.

Patented Sept. 19, 1911.

3 SHEETS-SHEET 1.



WITNESSES
E. J. Nottingham
C. J. Downing.

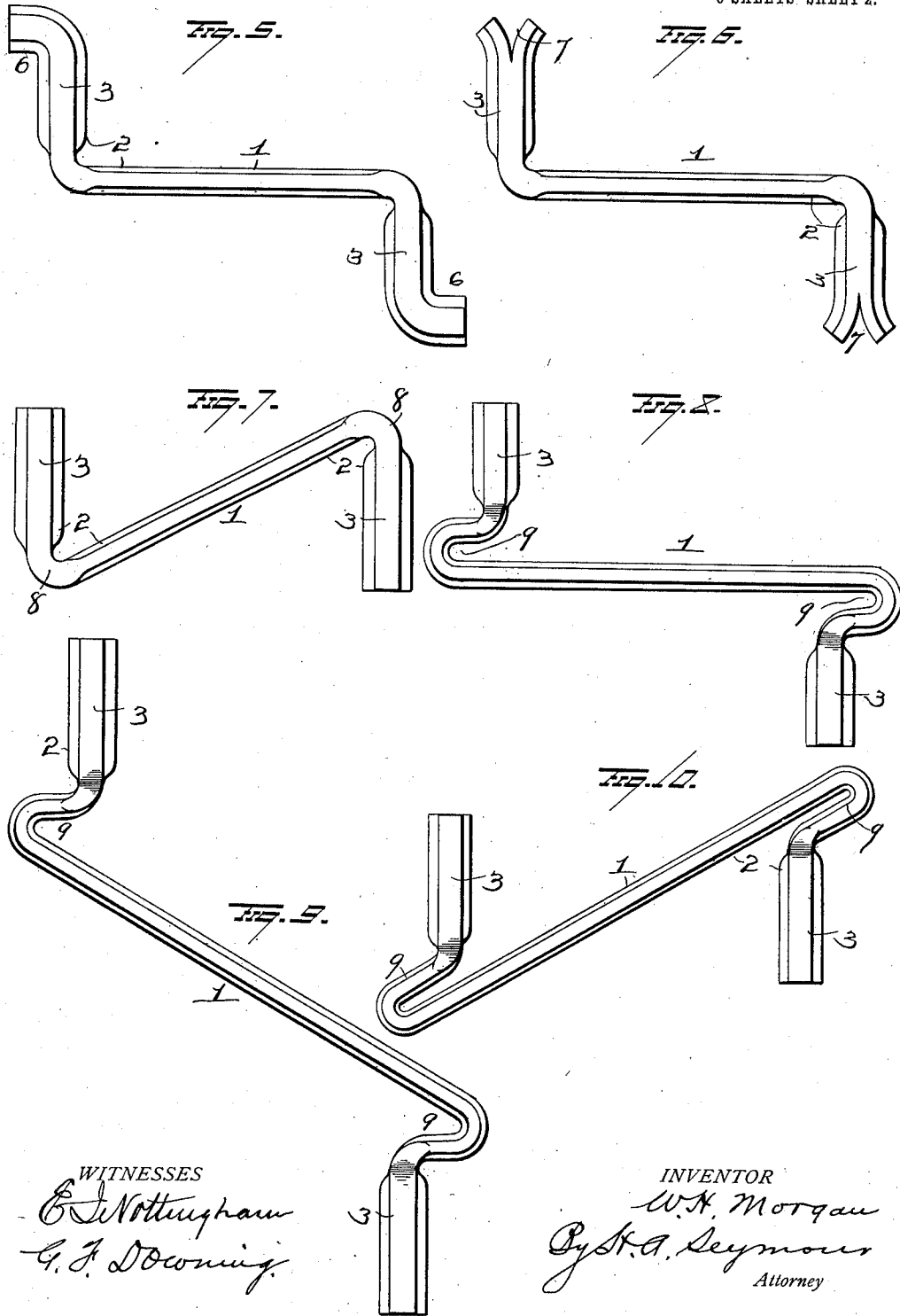
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3 SHEETS—SHEET 2.



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3 SHEETS-SHEET 3.

Fig. 11.

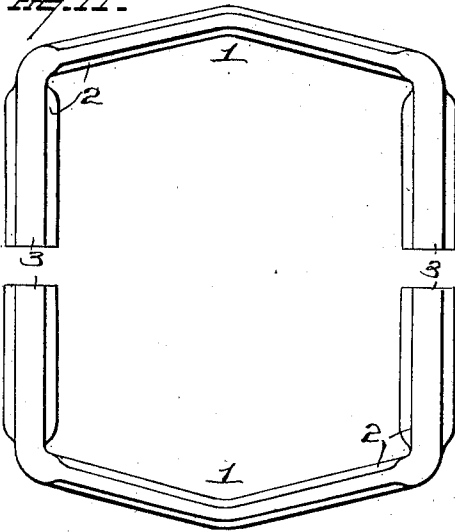


Fig. 13.

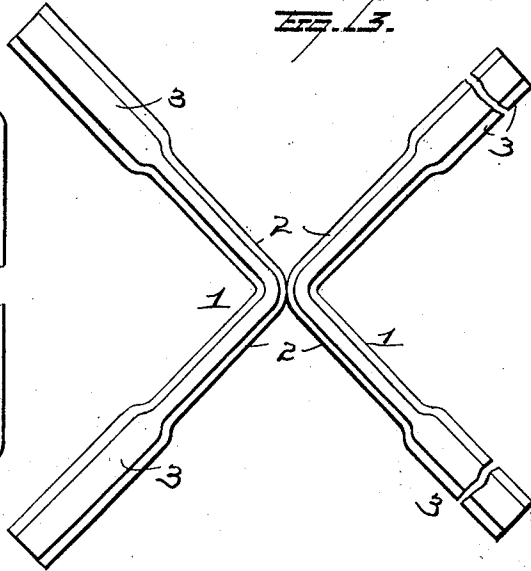


Fig. 12.

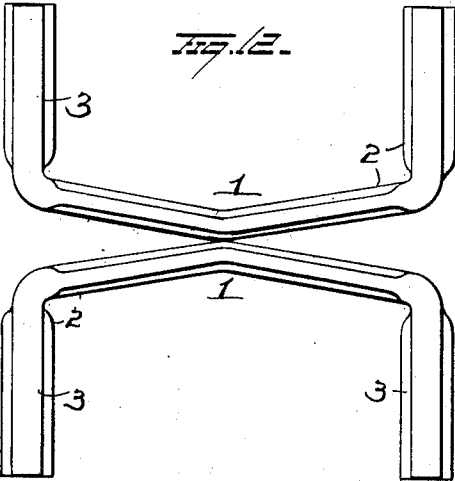


Fig. 14.

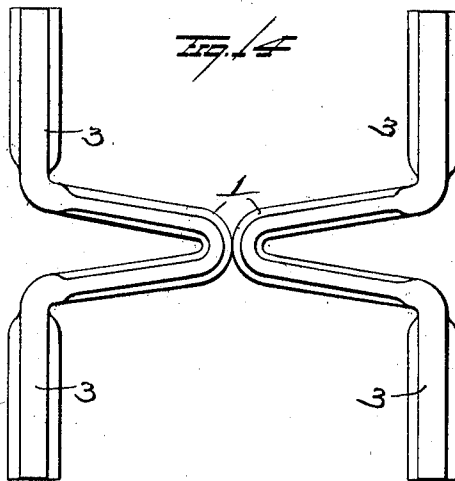
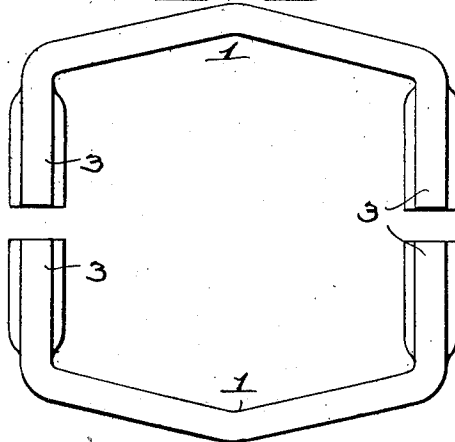


Fig. 15.



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UNITED STATES PATENT OFFICE.

WILLIAM HENRY MORGAN, OF ALLIANCE, OHIO.

METAL TIE.

1,003,637.

Specification of Letters Patent. **Patented Sept. 19, 1911.**

Application filed January 14, 1911. Serial No. 602,666.

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, the object being to take old and discarded rail road rails and by cutting them up into proper lengths, and bending the ends of the sections and flattening the heads at the extreme ends, produce road ties at a cost much less than they can be made from the raw material.

With this and other objects in view my invention consists in a tie made from a section of rail road rail, the ends of the head of the rail section being flattened to form seats for the rails.

My invention further consists in a tie made from a section of railroad rail, the ends of said section being bent so as to rest parallel or approximately parallel with each other, and flattened on top to form seats for the rails.

My invention further consists in the details of construction and combinations of parts as will be more fully explained and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view in plan of two ties located in the proper relative positions. Fig. 2 is a view in section of same on line $x-x$ of Fig. 1. Fig. 3 is a view in section on the line $y-y$. Fig. 4 is a view in section on the line $z-z$, and Figs. 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15 are views in plan of modified forms.

1 represents the tie preferably made from a section of old and discarded railroad rail. The base flange 2 of the rail section is preferably expanded laterally to produce a wide and comparatively thin base, but it may, if desired be left in its original shape. The ends 3 of the section are bent at right angles, or approximately so, to the central portion of the tie as shown in Fig. 1, and the tops of the bent ends, which tops were the head of the rail, are flattened by swaging or otherwise to produce widened seats on which the rails are supported. The bent ends 3 of each tie, are located the proper distance apart to support the rails 4 in proper posi-

tion, and as shown extend lengthwise the rails, while the main body portion of the tie, or that part intermediate the bent end, is at right angles to the rails.

In the construction shown in Fig. 5, the rail sections are bent as at Fig. 1, and the extreme ends are then bent outwardly as at 6 so as to rest at right angles to the rails, for preventing any tendency to endwise tipping of the ties. Or I may if desired split the bent ends 3 as shown at 7, bending one portion of the split end outwardly and the other inwardly as shown in Fig. 6, thus overcoming any tipping of the bent ends either inwardly or outwardly. By making the tie Z-shape as shown in Fig. 7, the free end of one bent end will be approximately in line with the elbow 8 or bend at the opposite end, hence the weight on the truck wheels will come directly over and be borne by both ends of the tie simultaneously, thereby eliminating torsional strains which might be imparted to the body of the tie intermediate the bent ends by the weight falling first upon one bent end of the tie and then on the other. In the construction shown in Figs. 8, 9 and 10, I provide for the extra support of the ties at the end, to prevent endwise tipping, by bending the ends of the section into U-shape as at 9, and then bending the free ends at right angles to form the support for the rails. In Fig. 11, I have shown the body of the tie bent somewhat into V-shape, and Fig. 12 shows two such ties assembled. In Fig. 13 the ends of the ties are flattened but not bent, as in the previous construction, but the tie itself is bent into V-shape at the center, the two ties abutting or nearly so at the center between the rails. With this latter construction the track rails pass obliquely across the flattened ends of the ties. In Fig. 14 the ties are bent at their centers into U-shape with the points or apices abutting or nearly so, and the ends are bent to aline with the track rails, and the heads flattened to form seats for said rails. It is clearly evident however, as shown in Fig. 15, that ties may be used with the base flange uppermost, and forming seats for the rails, the heads of the rails, preferably being expanded as shown, and resting on and embedded in the ballast of the road bed. In Fig. 8 the bent ends on which the rails rest are at right angles to the main body of the tie, while in Figs. 9 and 10 the body of the tie is disposed obliquely to the bent ends.

In all these forms the free ends on which the rails are seated are flattened out. This necessarily carries the flattened surfaces on which the rails rest in planes below the plane of portions of the head that have not been flattened, and as the rail passes over the U-shaped bends, it necessarily follows that the tie must be bent so as to raise the flattened seats up to the plane of the top of the portions of the tie over which the rail passes, so that the rails will be supported not only by the flattened portions but also by the U-shaped bends over which they pass.

Ties thus constructed may be made to overlap, or the free ends of one may stop short of the next adjacent ties, but in either instance the rails will be supported approximately throughout their lengths. By this construction I not only save in the cost of the material, but also in the cost of keeping up the road bed, as the ends of the tie on which the rails rest are the only parts thereof that need be tamped.

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 rolled metal tie for rail roads having upper and lower flanges and an intermediate web, the said tie having its ends bent into parallel planes extending lengthwise the rails for supporting the latter.

2. A rolled metal tie for rail roads having upper and lower flanges and an intermediate web, the opposite ends of said tie being bent at right angles to its middle section, the said bent ends forming the supports for the rails.

3. A rolled metal rail road tie having upper and lower flanges and an intermediate web, the said tie having its ends bent in opposite direction and parallel with each other, the said bent ends forming elongated supports for the rails.

4. A railroad tie made from a section of old rail, the ends of said section being bent in opposite direction and in approximately

parallel planes to form supports for the rails, the heads of the bent ends being flattened.

5. A rail road tie made from a section of rail, the two ends of said section being bent into U-shape, and the free ends of bent portions bent into approximately parallel plane so as to form seats for the rails.

6. A rail road tie made from a section of rail, the two ends of said section being bent into U-shape, and the free ends of the U-shaped portions bent in opposite directions but in approximately parallel planes.

7. A rail road tie made from a section of rail, the two ends of said section being bent into U-shape and the free ends of the U-shaped portions bent into approximately parallel planes and flattened on top.

8. A rail road tie made from a section of rail, the two ends of said section being bent into U-shape and the free ends of the U-shaped portions bent in opposite directions in approximately parallel planes and flattened on top.

9. A metal tie for rail roads consisting of a body the end sections of which are bent into approximately parallel planes to form supports for the rails, the said end sections having portions projecting outwardly beyond the rail supports.

10. A metal tie for rail roads consisting of a body the end sections of which are bent into approximately parallel planes to form supports for the rails, the free end of each section being bent outwardly.

11. A metal tie for rail roads consisting of a body the end sections of which are bent into approximately parallel planes to form supports for the rails the said end sections being split and bent inwardly and outwardly.

12. A metal tie having upper and lower flanges and an intermediate web, its opposite ends being bent to form parallel supports for the rails, the base flanges of said parallel portions being wider than the base flanges at the bends in the tie.

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

WILLIAM HENRY MORGAN.

Witnesses:

A. W. BRIGHT,
N. C. FETTERS.