

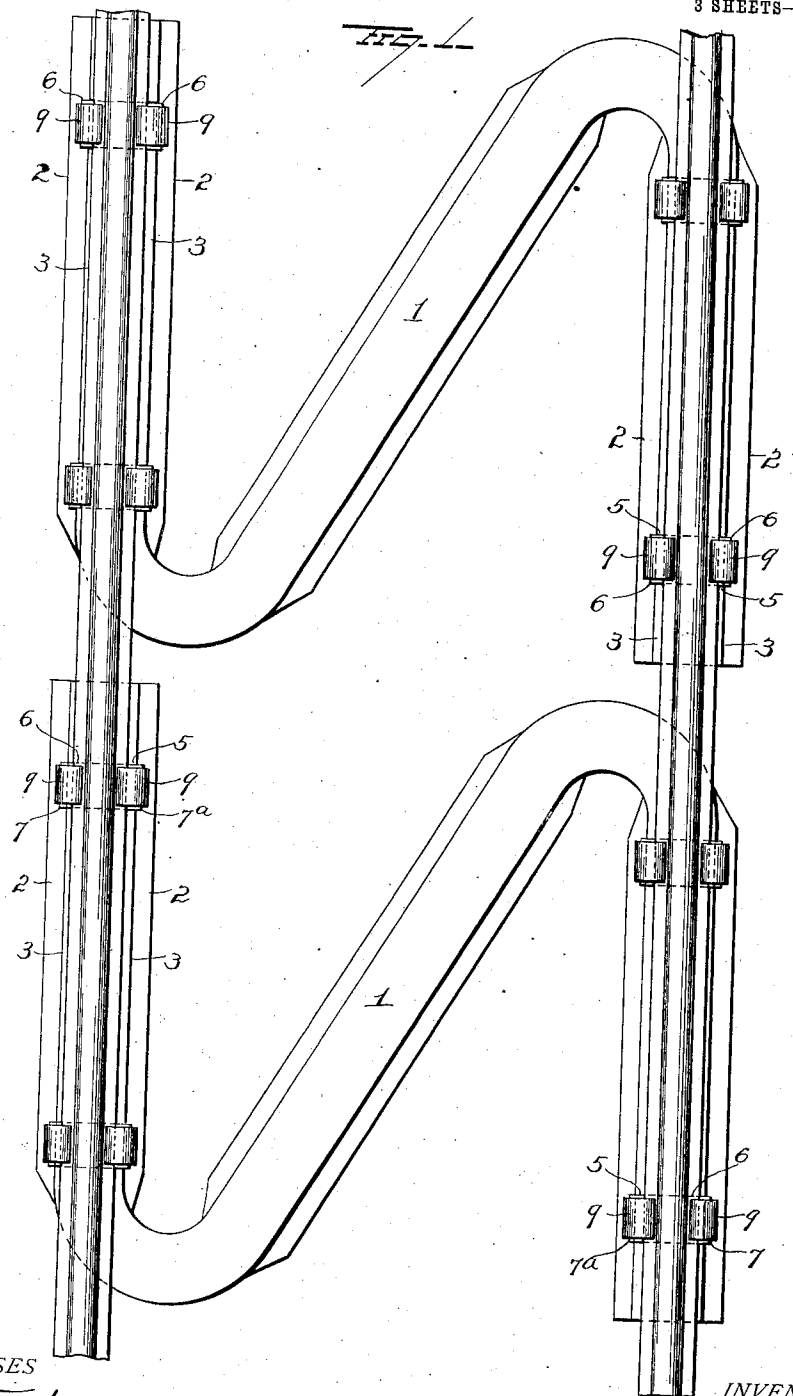
W. H. MORGAN & W. V. HARTZELL.
 MEANS FOR SECURING RAILS TO METAL TIES.

APPLICATION FILED JULY 18, 1911.

Patented May 14, 1912.

3 SHEETS-SHEET 1.

1,026,107.



WITNESSES
W. Nottingham
G. F. Downing

INVENTORS
W. H. Morgan
W. V. Hartzell
By H. A. Seymour
 Attorney

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Fig. 2.

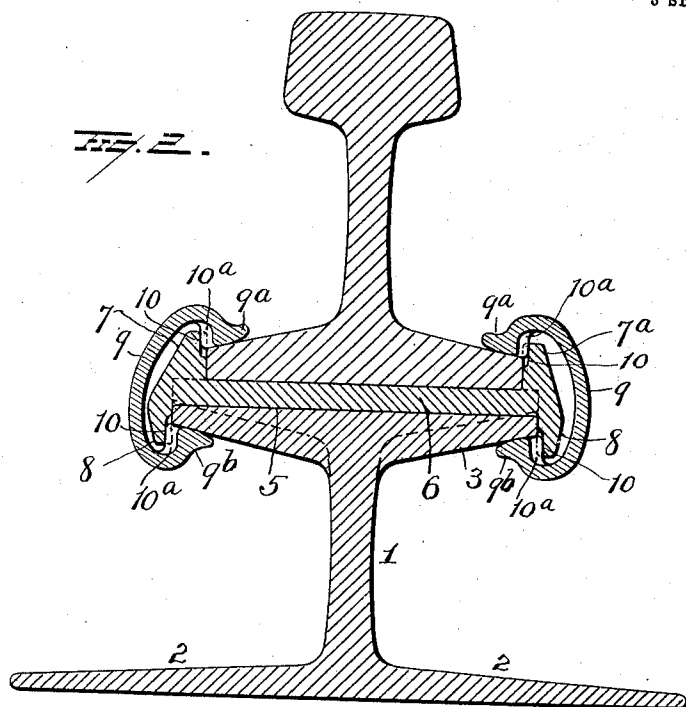
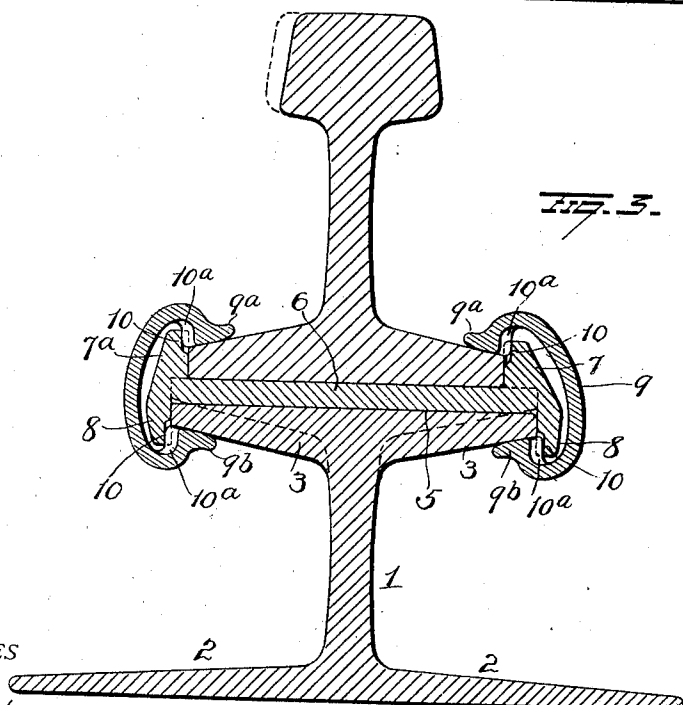


Fig. 3.



WITNESSES

E. Nottingham
G. F. Downing

INVENTORS

W. H. Morgan
W. V. Hartzell
By H. A. Seymour
Attorney

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FIG. 4

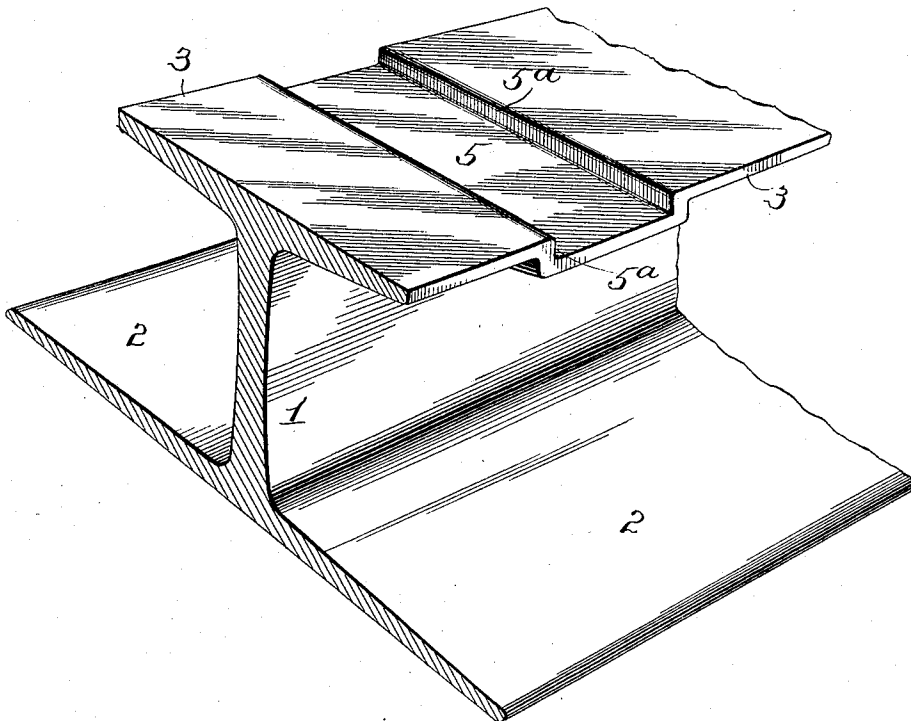
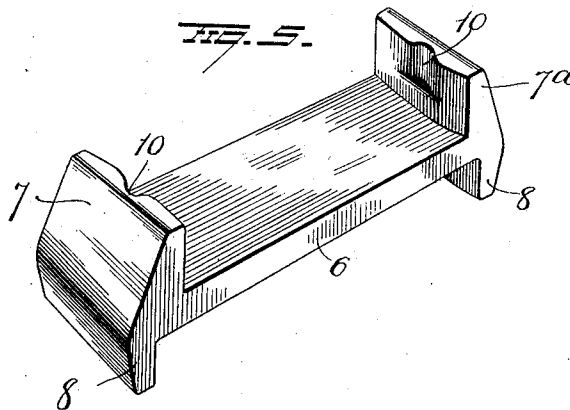


FIG. 5



WITNESSES

E. Nottingham
G. J. Downing

INVENTORS

W. H. Morgan and
W. V. Hartzell
By H. A. Seymour
Attorney

UNITED STATES PATENT OFFICE.

WILLIAM HENRY MORGAN AND WALTER VARIAN HARTZELL, OF ALLIANCE, OHIO;
SAID HARTZELL ASSIGNOR TO SAID MORGAN.

MEANS FOR SECURING RAILS TO METAL TIES.

1,026,107.

Specification of Letters Patent.

Patented May 14, 1912.

Application filed July 18, 1911. Serial No. 639,446.

To all whom it may concern:

Be it known that we, WILLIAM H. MORGAN and WALTER V. HARTZELL, both citizens of the United States, residing at Alliance, in the county of Stark and State of Ohio, have invented certain new and useful Improvements in Means for Securing Rails to Metal Ties; and we 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.

Our invention relates to an improvement in means for securing rails to metal ties.

In a pending application filed by us March 18, 1911 Serial Number 615,397, the rails are supported on parallel rail carrying members of Z-shaped ties, and are secured thereto by spring clamps engaging the base flange of the rail, and integral shoulders depending from the underside of the top flange of the tie. With such construction it is not possible to adjust the rails to compensate for wear, except by disconnecting the rail and turning it end for end, nor is any provision made for taking the side thrust on the rails except by the spring clamps.

The object of this invention is to provide for the ready and quick adjustment of the rails to compensate for wear without removing the rails, and also for taking the side thrust of the rails.

With these ends in view our invention consists in a chair intermediate the rail and tie and having oppositely disposed flanges which engage the outer edges of the base flange of the rail and the top flange of the tie, and spring clamps embracing said flanges and engaging the latter and also the adjacent flanges of the rail and tie.

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

In the accompanying drawings, Figure 1 is a view in plan showing several ties with rails thereon. Figs. 2 and 3 are views in section through the rail, tie, chair and securing devices. Fig. 4 is a view in perspective of a section of a tie showing the recess for the chair, and Fig. 5 is a view in perspective of the chair.

The tie 1 is preferably of I-shape in cross section, its base flange 2, being preferably

wider than its top flange 3. This tie is bent into Z or other shape which provides two parallel rail supporting sections. Each rail supporting section of the tie, is provided in its top flange or member, with a transverse recess extending throughout the width of said top member. These recesses are formed by swaging, pressing, rolling, or in any other approved manner, and form depressed seats for the chairs 6, one chair being located in each seat. Each chair is of a thickness equal to the depth of its recess, so that when seated therein it will rest flush with the top surface of the rail supporting section of the tie, and each is provided at one end with an upwardly projecting flange 7, and a depending flange 8, and at its other end with an upwardly projecting flange 7^a and a depending flange 8. The two depending flanges 8 are adapted to engage the side edges of the top flange 3 of the tie, and support the chair against endwise movement and side thrust of the rail, while the chair is prevented from moving or creeping in the direction of the length of the rail, or rail supporting member of the tie, by the side walls 5^a of the recess 5.

The upwardly extending flange 7 is of greater thickness than the flange 7^a, and in assembling the parts, the chairs 6 are so placed, that their thicker flanges 7 will be on the inner side of the rail. After the inner side of the rail has worn sufficiently to necessitate rearranging of the rails, the spring clamps to be hereinafter referred to are removed, and the rail jacked up thus releasing the chair and permitting the latter to be turned end for end, thus bringing its narrower flange 7^a to the inner side of the rail. This reversal of the position of the chair, shifts the rail toward its companion rail a distance equal to the difference in thickness of the flanges. By this means the wear may be taken up, first, by the adjustment of one rail, and subsequent wear, by the adjustment of its companion rail.

We have referred to the flanges 7 and 7^a as varying in thickness, and while we have so shown them, it is clearly evident that the results are not necessarily due to any differences in thickness of the flanges, but to the relative location of the inner faces of said flanges, to the inner face of the adjacent depending flange 8. In the present instance the vertical plane of flange 7, is

farther removed from the plane of the inner face of its depending flange, than the flange 7^a is from its companion flange 8 hence a reversal of the chair operates to set its rail nearer to or farther away, as the case may be, from its companion rail.

The lower flanges 8 are spaced to straddle the tie and bear against the side edges thereof, and project below the latter, and the top flanges 7 and 7^a, are properly spaced to receive the base flange of a rail, and project above the latter as shown in Fig. 2.

When the parts are thus assembled, the chair will be held in its seat by the rail, and will operate to take all the side thrust, and they are locked together by the clamps 9. These clamps are made preferably of vanadium steel, or other hard, tough and finely grained steel or iron alloy, heat treated if necessary, and of a size sufficient to withstand the strains and shocks to which they are subjected. Each consists of an upper jaw 9^a, adapted to bear on the upper surface of the base flange of the rail, and an integral lower jaw 9^b, adapted to bear against the underside of the top flange of the tie, the normal space between said jaws being somewhat less than the thickness of the assembled parts, so that when the clamps are in place they will be under tension.

The flanges 7 and 7^a, and 8 project, as explained, respectively above the base flange of the rail, and below the top flange of the tie, and are centrally concaved or dished as at 10, to receive the convex front edges or shoulders 10^a of the jaws 9^a and 9^b of the clamps 9. The clamps therefore bear directly against the rail and tie and hold the former down onto the latter, and also against the upper and lower flanges of the chair, and are prevented from outward displacement by the latter.

The jaws of the clamps 9 are, normally, not separated sufficiently to take in the flanges of the rail and tie, consequently are under tension when fully lapping both flanges, hence when the parts are assembled and locked by the clamps, the rail will be held solidly in place on the tie by the clamps, and the latter locked against the possibility of accidental displacement.

The clamps are driven on, lengthwise the flanges 7, 7^a and 8, until the shoulders 10^a thereon seat themselves in the concavities or recesses in the flanges. This endwise driving of the clips onto and along the inclined flanges of the rail and tie puts the clips under tension, which experiments have demonstrated is sufficient to hold the rail in place.

If a clamp should break, or become dislodged, there would be no chance for derailment, as the outer upper flange and lower inner flange of the chair would prevent spreading of the rail, and there would

be no tendency for the rail to turn, as the resultant of the wheel pressure on the rail always falls within the base of the rail, hence the only pressure to which the rail is subjected is an outward one which is taken care of by the flanges of the chair.

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 our invention; hence we would have it understood that we do not wish to confine ourselves to the exact construction shown and described, but consider ourselves at liberty to make such changes as fairly fall within the spirit and scope of our invention.

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

1. The combination of a rail, a tie, a chair located thereon and provided with upwardly and downwardly projecting flanges, the lower flanges engaging the sides of the tie and the upper flanges the edges of the base of the rail and a spring clamp at each end of the chair, each clamp engaging the adjacent edges of the tie and rail.

2. The combination of a metal tie, a chair thereon and provided at one end with two flanges, one projecting upwardly and the other downwardly, a rail resting on said chair and a spring metal clamp having two integral jaws, one bearing on the base flange of the rail and against the inner side of the upper flange on the chair and the other against the lower face of the top flange of the tie and the inner side of the lower flange on the chair.

3. The combination of a metal tie, a chair thereon and provided at one end with a flange to engage the edge of the rail and project above the latter and with a flange to engage the top member of the tie and depend below said member, both of said flanges being recessed on their inner faces, and a spring metal clamp having two separated jaws one to engage the rail, and the recess in the top flange, and the other to engage the under side of the top member of the tie and the recess in the lower flange.

4. The combination of a rail, a metal tie, a chair thereon, said chair having two flanges at each end, one flange at each end projecting upwardly above the base of the rail and the other flange at each end projecting below the top member of the tie, each flange having a recess in its inner face, and two spring metal clamps, each clamp having two jaws one of which engages the top of the rail and recess in the top flange, and the other the top member of the tie and recess in the lower flange.

5. The combination of a metal tie having a recess in its upper face, a chair seated in said recess and having depending end

flanges for engaging the opposite side edge of the tie and two upwardly projecting end flanges for engaging the opposite edges of a rail, and means engaging the rail and tie
5 for securing the rail to the tie.

6. The combination of a metal tie, and a reversible chair seated on said tie and having base flange for engaging the latter for preventing endwise movement of the chair,
10 and also provided with two upwardly projecting flanges, the inner faces of which are at unequal distances from the center of the chair intermediate the base flanges of the latter, whereby one rail may be adjusted
15 toward or away from its companion rail by reversing the position of the chair in its seat.

7. The combination of a rail, a metal tie

having a recessed seat, a chair in said seat having upper and lower flanges at each end, 20 and the spring clamps engaging the rail, chair, flanges and tie.

8. The combination of a rail, a metal tie having a recessed seat, a reversible chair in said seat, the said chair having upper and 25 lower flanges at each end, and spring clamps engaging the rail, chair flanges and tie.

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

WILLIAM HENRY MORGAN.
WALTER VARIAN HARTZELL.

Witnesses:

D. W. PATTERSON,
N. C. FETTERS.

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