

No. 714,010.

Patented Nov. 18, 1902.

A. MORRISON.

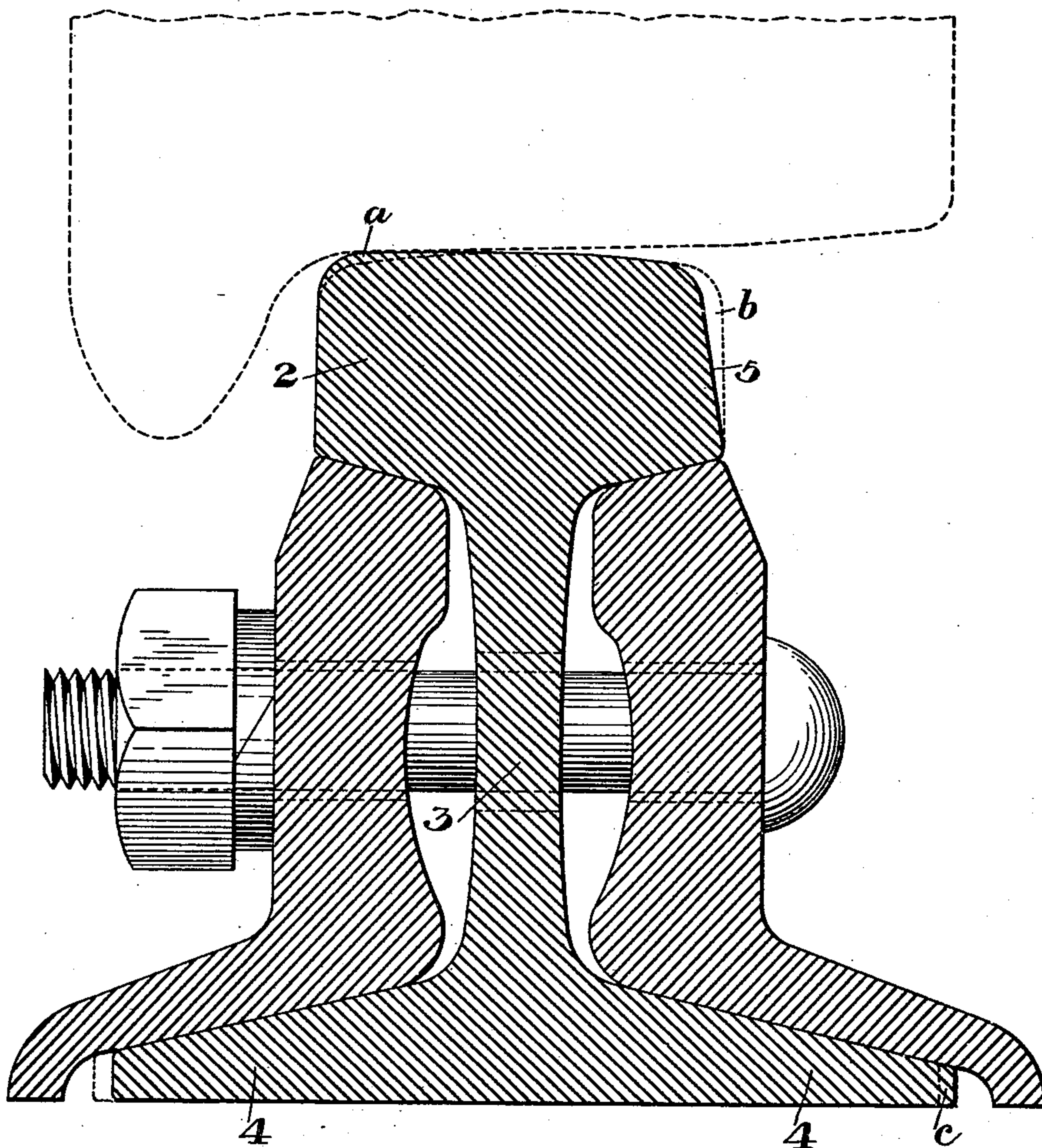
RAIL.

(Application filed July 10, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.



WITNESSES

B. D. Deodship
C. P. Byrnes.

INVENTOR

Andrew Morrison

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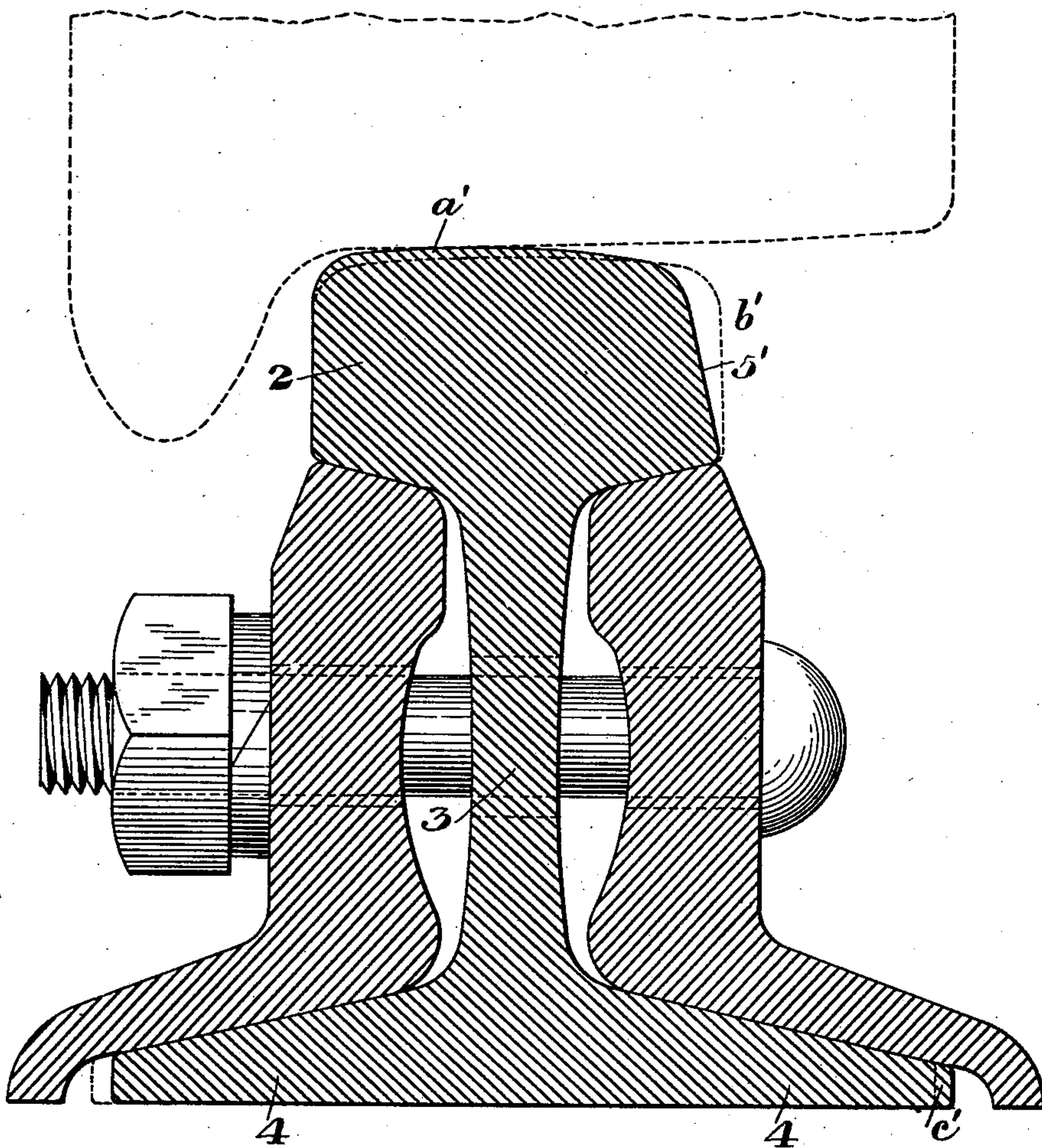
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2 Sheets—Sheet 2.

Fig. 2.



WITNESSES

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INVENTOR

Andrew Morrison

UNITED STATES PATENT OFFICE.

ANDREW MORRISON, OF PITTSBURG, PENNSYLVANIA.

RAIL.

SPECIFICATION forming part of Letters Patent No. 714,010, dated November 18, 1902.

Application filed July 10, 1900. Serial No. 23,120. (No model.)

To all whom it may concern:

Be it known that I, ANDREW MORRISON, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Rails, 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 cross-section showing one form of my improved rail, the flange and tread of the wheel being indicated in dotted lines, and Fig. 2 is a similar view showing another form of the rail.

My invention relates to the class of standard T-rails, and is designed to so improve the form of the rail that the vertical and lateral strains will be more evenly distributed over the base of the rail than with present forms of rails. Heretofore in the use of these T-rails both upon curves or tangents the resultant diagonal pressure of the flanged wheels has caused the outer portion of the rail-base to be pressed down into the tie, thus bringing the rail into an incorrect position and increasing the strain on the outer base portion, so that the tie is more rapidly cut on the outer than on the inner side. My invention is designed to reduce this action; and it consists in making the flange side of the rail-head higher than the other portion, in forming the outer side of the head with an upward and inward bevel or incline, and in making the outer half of the rail-base wider than the inner half, so as to increase the bearing-surface of this outer portion.

In the drawings, referring to the form of Fig. 1, 2 represents the head, 3 the web or body, and 4 4 the bottom flanges forming the foot of the rail. The dotted lines indicate the ordinary T-rail section, the metal of both the head and the foot flanges being symmetrically disposed on both sides of the central longitudinal plane. The full lines show my improved form, the inner portion of the head next to the flange of the wheel being higher than the outer portion by the amount of metal shown at *a* between the dotted line and the full line. The outer side of this head is formed with an inward bevel or incline 5, which leaves a full bearing for the angle-bar

upon the lower side of the head, but decreases the top bearing-surface for the wheel by the amount of metal *b* between the dotted and full lines. The outer flange 4 of the rail-base is wider than the inner flange by the amount of metal *c*, being equal to that removed from the inner flange 4 in the form shown, so that the entire width of the base is the same as in the standard rail.

In using this rail it is laid with the higher portion of the head on the inside or flange side of the tangent or curve, so that the wheel will bear thereon, as indicated in dotted lines. By making this head higher upon the inside the pressure upon the rail is more evenly distributed on the base, and this action is furthered by the increased width of the outer base-flange, as well as by the beveled outer face of the head. The embedding of the outer edge of the rail-base in the tie is therefore made more uniform with the inner edge. In the form of this figure I have shown the rail-head as of normal height at its center; but I may form this top with a continuous slight rise from one side to the other, as shown in Fig. 2. In this figure again the dotted lines indicate the normal T-rail section, while the full lines indicate my improved section. By comparing these it will be seen that the top of the rail is slightly inclined upwardly from the outside toward the inner or flange side, there being an added amount of metal *a'* distributed over the top of the head, so as to make the flanged side higher than the opposite side, the head being shown slightly thicker at the center than the ordinary rail and having a slightly-inclined upper face. The outer side of the rail-head is beveled at 5' the same as in the first form, and the outer flange of the rail-base is made wider than the inner flange by the amount of metal shown at *c'* beyond the dotted line.

In all rails under service the tread of the wheel gives a substantially vertical pressure, and the flange gives an outward lateral pressure, which is small in proportion to the vertical pressure, but which causes the resultant of the two forces to lie in a diagonal inclined downwardly and outwardly toward the outer rail-base. By each of the above items, especially the making of the head higher on the

inside and the widening of the outer flange, I make this resultant more nearly vertical and compensate for the difference in pressures by increasing the outer bearing-surface. As the head wears down and the inner top portion assumes more nearly the shape of the outer portion the reduced bearing-surface of the outer portion will still act to increase the pressure on the inner base-flange over that of the ordinary T-rail.

The advantages of my invention will be apparent to those skilled in the art, since the pressure of the wheels is given a more equal distribution over the base of the rail, the rail is made longer lived, and the embedding of the entire rail-base flange is made more uniform.

The amount of metal added or removed from the various parts of the rail may be changed and the form of the rail may be varied within the scope of my invention as defined in the claims, each of which covers an independent feature which may be employed in the absence of the other features.

I claim—

1. A railway-track having both rails formed with the flange side of their heads higher than the opposite sides; substantially as described.
2. A railway-track having both rails provided with heads which are beveled or cut away on their outer sides to increase the relative bearing-surface on the inner sides of the head; substantially as described.
3. A railway-track having both rails provided with heads, the inner sides of which are higher than the outer sides, said outer sides being beveled or cut away to increase the relative bearing-surface on the inner sides; substantially as described.
4. A rail having the flange side of its head higher than the opposite side, the top of the flanged side being substantially at an angle of ninety degrees from the central vertical plane of the web; substantially as described.
5. A rail having the top of its head narrower than the base of its head, one side of the head being substantially vertical, said rail

having a wider base-flange on one side than on the other; substantially as described.

6. A rail having its head higher upon the flange side than upon the opposite side, the opposite side of the head being upwardly and inwardly inclined, and the base-flange on said opposite side being wider than the base-flange on the flange side of the rail; substantially as described.

7. A railway-track having both rails formed with the flange side of their heads higher than the opposite sides, the base of said rails being in substantially the same plane; substantially as described.

8. A railway-track having both rails provided with outer base-flanges wider than their inner base-flanges, the webs of said rails being at right angles to their bases, substantially as described.

9. An integral T-rail having base-flanges and heads integral with the web, the said web being symmetrical and of the same form on both sides, the outer base-flange of the said rail being wider than the inner base-flange by less than fifty per cent.; substantially as described.

10. A railway-track having ballasted wooden cross-ties, and rails carried on said ties, said rails being of standard T form, with flanges and heads integral with the web, said web being of the same form on both sides, the outer base-flange being wider than the inner base-flange by less than sixty per cent.; substantially as described.

11. A railway-track having both rails provided with integral base-flanges, the outer base-flanges being wider than the inner ones by less than sixty per cent., the webs of said rails being at substantially right angles to the planes of their bases, and of the same form on both sides; substantially as described.

In testimony whereof I have hereunto set my hand.

ANDREW MORRISON.

Witnesses:

A. M. CORWIN,
G. B. BLEMING.