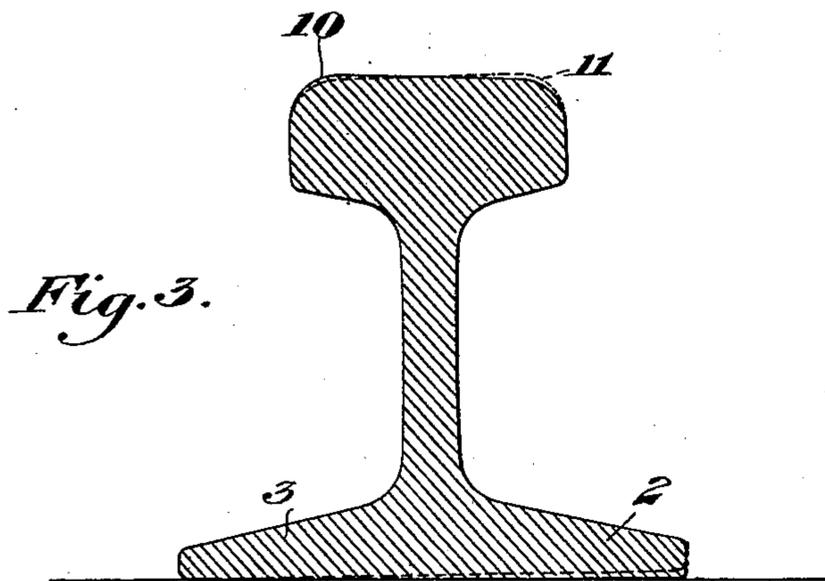
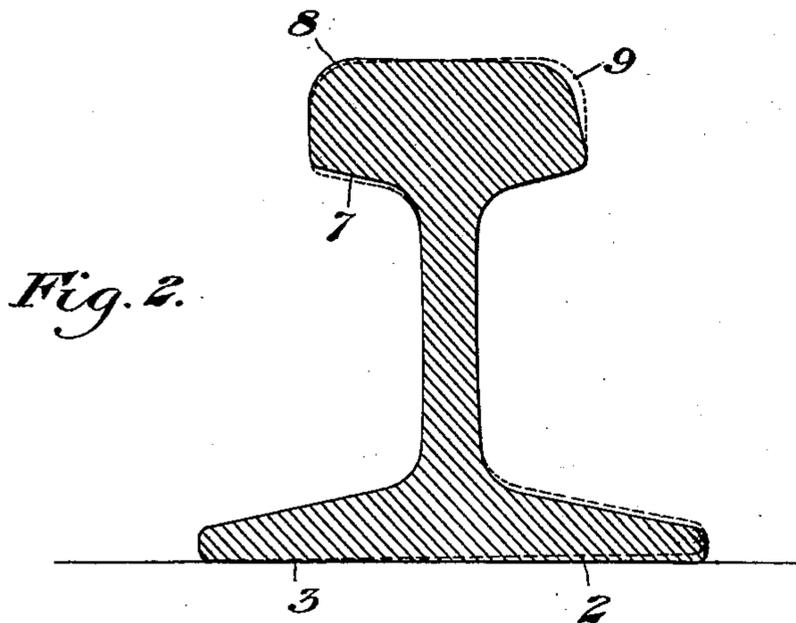
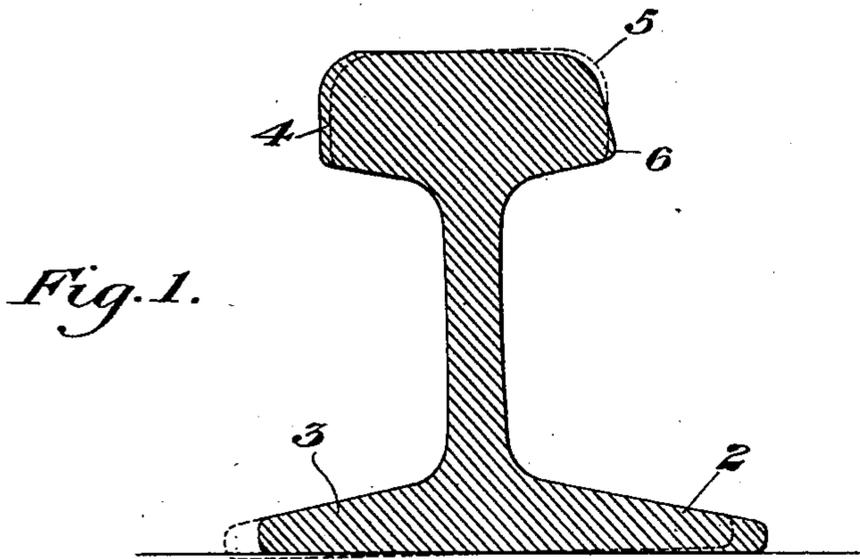


A. MORRISON.  
RAIL.

(Application filed Apr. 22, 1901.)

(No Model.)



WITNESSES

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# UNITED STATES PATENT OFFICE.

ANDREW MORRISON, OF PITTSBURG, PENNSYLVANIA.

## RAIL.

SPECIFICATION forming part of Letters Patent No. 714,011, dated November 18, 1902.

Application filed April 22, 1901. Serial No. 56,839. (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 Rail, 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—

Figures 1, 2, and 3 are cross-sections showing different forms of rails constructed in accordance with my invention.

My invention is designed to overcome the embedding of the outer flanges of rails in their supporting-ties, which results from the fact that the resultant of pressures from the wheel is inclined slightly to the vertical, thus increasing the relative pressure on the outer base-flange, tending to embed this flange.

To that end the invention consists, broadly, in a rail having a flange slightly inclined toward the inner side, the head, or at least the inner portion thereof, being substantially parallel with the base, so that the vertical central plane of the rail makes an angle slightly greater than a right angle to the plane of the rail-base.

It further consists in the above construction, wherein the outer base-flange of the rail is wider than the inner base-flange, and, further, in the construction and arrangement of the parts, as hereinafter more fully described, and set forth in the claims.

In the drawings, in each of which the dotted lines indicate the standard T-rail section, referring to Fig. 1, I show a rail as having the base extending at a slight angle to that of the normal rail-base, so that the outer angle between the central plane of the web and the rail-base is slightly greater than a right angle. I have also shown in this form the outer base-flange 2 as wider than the inner base-flange 3, thus further equalizing the pressures upon the two flanges. The outer flange 2 is also made slightly thicker than the ordinary T-rails of similar size by adding metal along the under surface of the base, while the inner flange is made correspondingly thinner by removing metal from the under surface of the base. In this form, therefore, the thickness of the base is changed in the various parts for facilitating the rolling of the rail and for providing proportionate strength for

the narrowed or widened parts of the base. In this form the inner part of the head extends substantially parallel with the base and is made wider than the inner portion of the standard T-rail, as indicated at 4, and the outer part of the rail-head is cut away somewhat from the normal section, as shown at 5, the head being widened at the lower outer corner, as at 6. A full bearing is thus made for the angle-bar on the outer side of the head, while the top bearing-surface for the wheel is decreased in the outer part of the head.

In the form of Fig. 2 the base-flanges 2 and 3 are bent down or lowered, as shown by the dotted line, so as to change the base of the rail from a right-angular position to the center line of the rail, giving the base an inward bevel, which will tilt the rail inward when used on the track. The inner half of or the entire head is practically parallel with the base to prevent the load from riding on the outer corner of the rail, and thus causing the rail to tilt outwardly. In this form the under part of the inner half of the head is cut away, as shown at 7, in order to make the angle-bars interchangeable on both sides of the rail, and metal is correspondingly added to the upper part of this inner half, as shown at 8, to increase the bearing on the inner half of the rail-head, and thus further gaining the object desired. The outer part of the head is cut away or beveled, as shown at 9.

In the form of Fig. 3 the outer flange 2 is thickened by adding metal along the under side of the outer base, so as to tilt the rail inward and at the same time maintain equal depths of angle-bars. The top of the rail is made practically parallel with the beveled base, and metal is preferably added to the upper side of the inner half of the head at 10 and removed from the outer half, as shown at 11.

In the second and third forms the base-flanges are of substantially equal width.

The advantages of my invention flow from the making of the outer angle between the vertical plane of the web and the plane of the base greater than a right angle, while the inner half of the head is substantially parallel with the base, and hence also forms an obtuse angle to the vertical plane of the web.

The rail is so proportioned that the same depth of angle-bars may be used on both sides and the embedding of the outer flanges is greatly decreased, the pressure being substantially equalized over the entire rail-base.

Many changes may be made in the form and size of the rail without departing from my invention.

I claim—

10 1. A rail having a web whose plane forms an outer angle with the plane of the base which is greater than a right angle, the inner part of the rail-head being substantially parallel with the base of the rail; substantially  
15 as described.

2. A rail having a T-shaped head, and an inclined web the said web forming equal angles with the under sides of the head and also equal angles with the upper sides of the base;  
20 substantially as described.

3. A rail having a web forming an obtuse outside angle with the plane of the base, the outer base-flange being thicker than the inner base-flange; substantially as described.

25 4. A rail having a web forming an obtuse inner angle with the head, and an obtuse outer angle with the base, the outer base-flange being thicker than the inner base-flange, said rail being arranged to receive angle-bars of even depth on both sides; sub-  
30 stantially as described.

5. A rail having a T-shaped head, and an

inclined web, said web forming equal fishing angles on both sides, the outer base of the rail being deeper than the inner base; sub- 35 stantially as described.

6. A rail having its web forming an obtuse inner angle with the head, and an obtuse outer angle with the base, the inner part of the rail-head having metal added to its top  
40 portion over the normal T-head rail; substantially as described.

7. A rail having a web whose plane forms an outer angle with the plane of the base which is greater than a right angle, the inner part  
45 of the head being substantially parallel with the base of the rail, the outer base-flange being wider than the inner base-flange; substantially as described.

8. A rail having a T-shaped head, and an  
50 inclined web forming an inner angle with the plane of the head and an outer angle with the plane of the base, both of which angles are greater than a right angle, the web forming equal angles with the under sides of the head,  
55 and also equal angles with the upper sides of the base; substantially as described.

In testimony whereof I have hereunto set my hand.

ANDREW MORRISON.

Witnesses:

H. M. CORWIN,  
C. P. BYNES.