

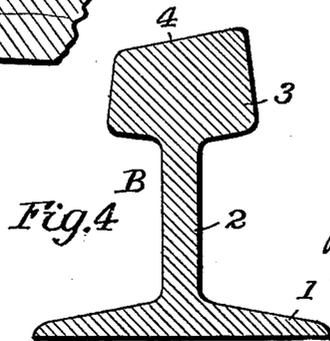
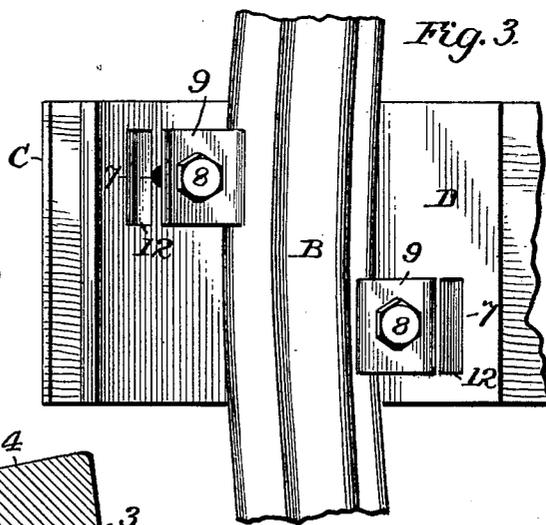
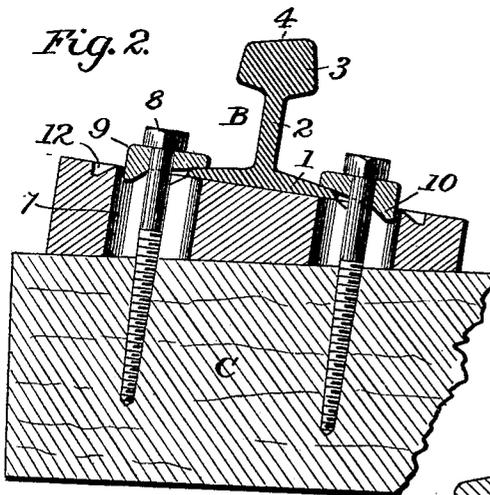
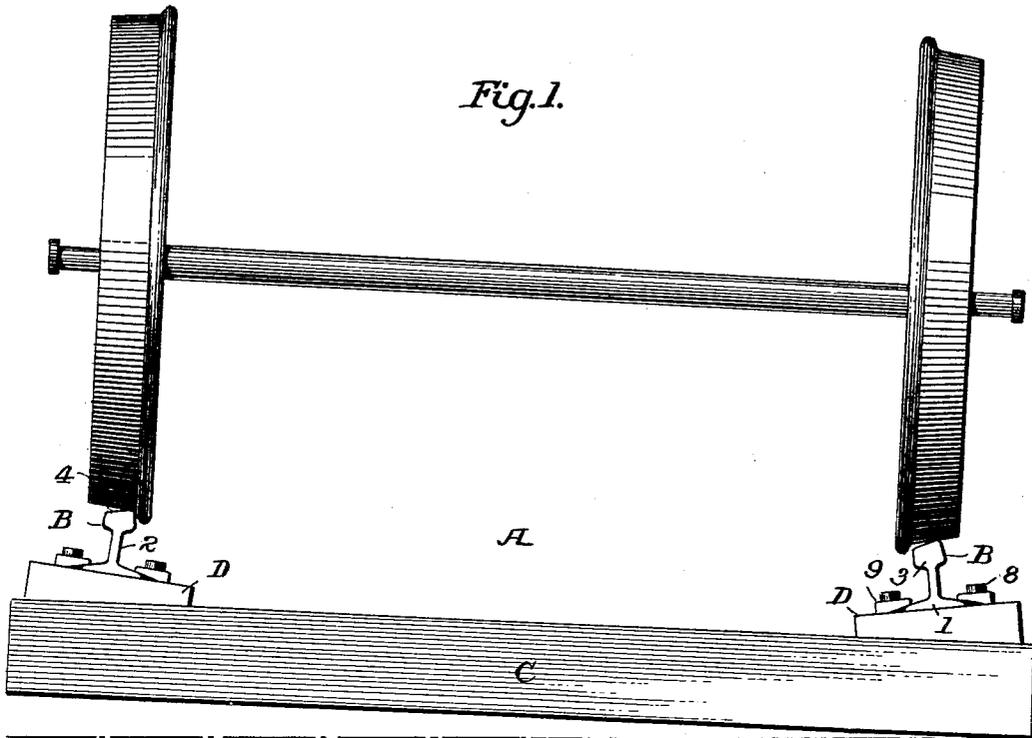
No. 638,827.

Patented Dec. 12, 1899.

H. M. WILLIAMS.  
RAIL AND RAILWAY CURVE.

(Application filed Dec. 17, 1898.)

No Model.)



Witnesses

*J. Hinkel*  
*James Stearns*

Inventor

*Henry M. Williams*  
by *1 J. W. Freeman*  
Attorneys

# UNITED STATES PATENT OFFICE.

HENRY M. WILLIAMS, OF FORT WAYNE, INDIANA, ASSIGNOR OF ONE-  
FOURTH TO FRANZ BURGER, OF SAME PLACE.

## RAIL AND RAILWAY-CURVE.

SPECIFICATION forming part of Letters Patent No. 638,827, dated December 12, 1899.

Application filed December 17, 1898. Serial No. 699,588. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY M. WILLIAMS, a citizen of the United States, residing at Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Rails and Railway-Curves, of which the following is a specification.

This invention relates to certain new and useful improvements in railway-tracks and rails therefor, having for its object to provide an improved rail adapted for use at the curves in railway-tracks, whereby the liability of the derailment of trains passing around curves is materially reduced and the strain and wear upon the rails and friction between the same and the car-wheels are lessened.

With this object in view the invention consists in the novel construction and arrangement of parts hereinafter more particularly described.

In the accompanying drawings, forming a part of this specification, and in which like letters and numerals of reference indicate corresponding parts, Figure 1 is a cross-sectional view of a railway-track constructed in accordance with the invention. Fig. 2 is a transverse sectional view of one of the rails and tie-plates. Fig. 3 is a detail plan view of a portion of a cross-tie, rail, and a tie-plate; and Fig. 4 is a detail cross-sectional view of a rail constructed in accordance with the invention.

Briefly stated, the invention consists of a rail formed with a base, a web extending at right angles to the base, and a head having its tread-surface at an angle to the under face of the base, and such rails are preferably curved laterally in the direction of their lengths and laid parallel to form curved sections of a railway-track. The rails, too, are arranged in different horizontal planes relative to each other, as is usual, and are seated upon tie-plates, by means of which they may be raised or lowered, as occasion may demand.

Referring more particularly to the drawings, A designates a railway-track comprising rails B B, cross-ties C, and tie-plates D, upon which the rails are seated. Each of the rails is formed with a base 1, from which extends at right angles a web portion 2, carrying the head 3 of the rail at its upper end,

the said head being formed with its upper face or tread-surface 4 at an angle to the under face of the rail-base instead of parallel thereto, as is ordinarily the case.

Each of the rails B is preferably, though not necessarily, bent to a greater or less degree, depending, of course, upon the radius of the curve of the track, and said rails rest at intervals upon tie-plates and are secured to the cross-ties by suitable securing devices.

As shown, the tie-plates are vertically beneath the rails in order that the rails may be elevated or lowered relative to the cross-ties. It will be understood, however, that any desired form of adjustable or non-adjustable tie-plate may be substituted for the one illustrated.

Any desired construction of tie-plate may be employed, but preferably a plate such as is illustrated having its upper surface inclined with respect to its base is used. As shown, the tie-plates D are formed in a single piece and are wedge-shaped in cross-section. Upon opposite sides of the base-flanges of the rails the tie-plates are formed with elongated openings through which headed lag-screws 8 are adapted to pass, the said screws entering the cross-ties and serving to hold the tie-plate sections firmly against accidental shifting. At their upper ends the lag-screws pass through openings in clamping-plates 9, adapted to overlap and conform to the upper faces of the rail-flanges and hold them firmly in contact with the upper tie-plate section, the said clamping-plates themselves being securely held by the heads of the lag-screws, which engage their upper faces.

In order that the clamping-plates 9 may be held positively against lateral shifting, they are provided upon their under faces with projections 10, adapted to engage with teeth 12, formed at the longitudinal edges of the slots 7 of the tie-plate. The tie-plate and securing devices above described are simple in construction and effective in operation and are preferred for this reason.

Obviously various forms of tie-plates and securing means might be employed without departing from the spirit of the invention or in some instances tie-plates might be dispensed with altogether. It will be obvious also that

tie-plates having openings just large enough to admit the shanks of ordinary railway-spikes might be used and the said spikes driven into the cross-tie through said openings, with their heads overlapping the base-flanges of the rails.

In constructing the curves of railway-tracks in accordance with this invention the cross-ties are preferably inclined downwardly from the outer to the inner rail of the track, as shown, in order that the outer track-rail may occupy a higher plane than the inner rail, as usual. The tie-plates D are so arranged upon opposite sides of the track that their upper faces incline toward each other, and in consequence the rails incline one toward the other. The opposite rails of the track are so arranged, however, that their tread-surfaces incline downwardly in the same general direction toward the outer curve of the track and lie in planes which converge toward the inner curve of the track and diverge toward the outer curve of the track. In this way when a train is passing over the curve the flanges of the outside wheels thereof are brought into engagement with the side of the outer rail-head, as shown, and the direct downward thrust thereon is imposed inside of the transverse center of the rail. The inner wheels of the car having but a slight engagement with the inner rails by reason of the arrangement of the latter, friction between the rails and wheels is reduced to a minimum and the consequent slipping of the wheels and wear of the rails are materially reduced.

As is well known, railway cross-ties sink under the weight imposed thereon by passing trains, and it has heretofore been customary to bring ties that have settled to their proper level by packing earth beneath them. This is unnecessary, however, in the present invention, since the rails of the track may be raised and lowered relative to the cross-ties by simply shifting the positions of the tie-plates beneath the rails. Moreover, it will be noted that by constructing a curved track in the manner shown and described it is unnecessary to widen the gage, as is usual, as the flanges of the inner car-wheels are not brought into contact with the sides of the rail-heads.

Without limiting myself to the precise con-

struction and arrangement of the parts shown and described, what I claim is—

1. A railway-track having parallel rails formed with their upper or tread surfaces at an angle to the under surface of their bases, the highest point of the tread-surface of one rail being at the outside of the track and the corresponding surface of the opposite rail being at the inside of the track, substantially as described.

2. A railway-track having parallel rails formed with their upper or tread surfaces at an angle to the under surface of their bases, and inclined bearing-surfaces to support the rails with the tread-surfaces of the latter inclining downwardly in the same general direction toward the outer curve of the track.

3. A railway-track having parallel rails formed with their upper or tread surfaces at an angle to the under surfaces of their bases, and wedge-shaped tie-plates adjustably secured below the rails to support the latter with their tread-surfaces inclining downwardly in the same general direction toward the outer curve of the track.

4. A railway-track having parallel rails formed with their upper or tread surfaces at an angle to the under surface of their bases, the highest point of the tread-surface of one rail being at the outside of the track and the corresponding surface of the opposite rail being at the inside of the track, and oppositely-inclined bearing-surfaces to support the rails to incline inwardly toward each other, for the purpose specified.

5. A railway-track comprising cross-ties, separated tie-plates having longitudinal slots and having their upper faces inclined toward each other, rails seated upon the tie-plates, and adjustable securing devices engaging with the rail-bases and passing through the slots of the tie-plates to the cross-ties in which they are embedded, substantially as described.

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

HENRY M. WILLIAMS.

Witnesses:

GEO. K. TORRENCE,  
H. W. NISWONGER.