(No Model.)

3 Sheets—Sheet 1.

T. L. JOHNSON.

CURVE RAIL FOR RAILROAD TRACKS.

No. 348,017. Patented Aug. 24, 1886.

Fig 2.

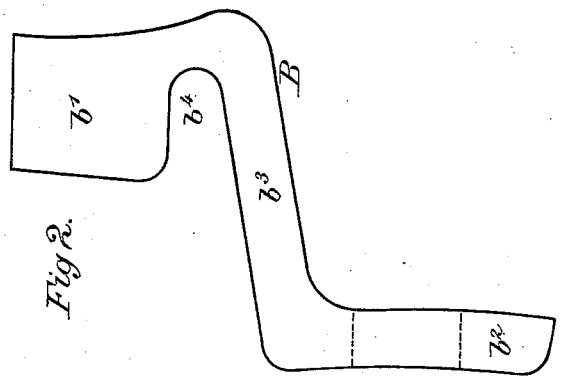
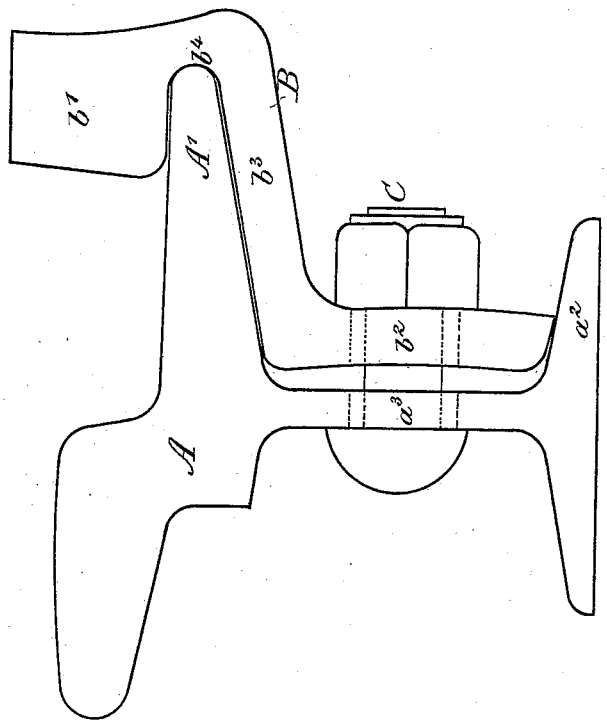


Fig. 1.



Witnesses:
Leo Von Rosenberg
Francis P. Reilly

Inventor:
Tom L. Johnson
by P. R. Voorhees
Atty.

(No Model.) 3 Sheets—Sheet 2.

T. L. JOHNSON.

CURVE RAIL FOR RAILROAD TRACKS.

No. 348,017. Patented Aug. 24, 1886.

Fig. 3.

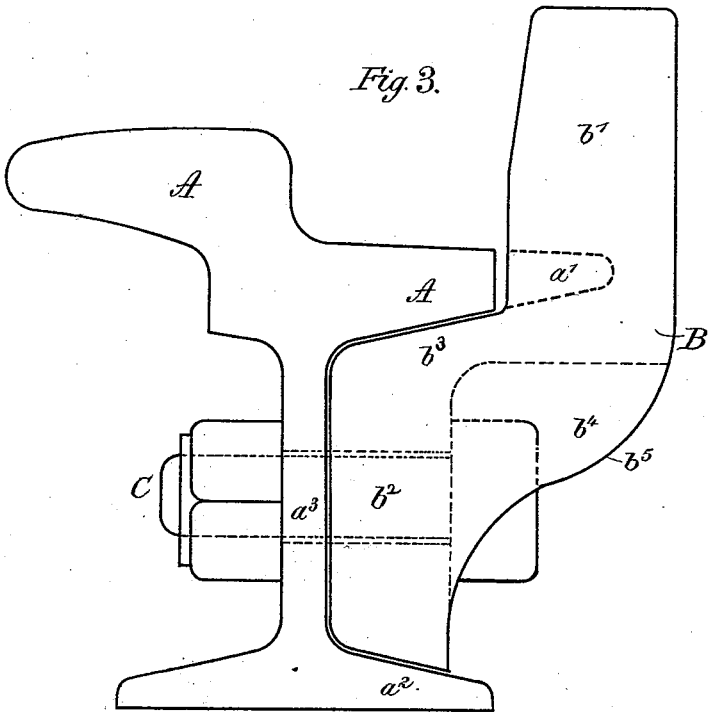
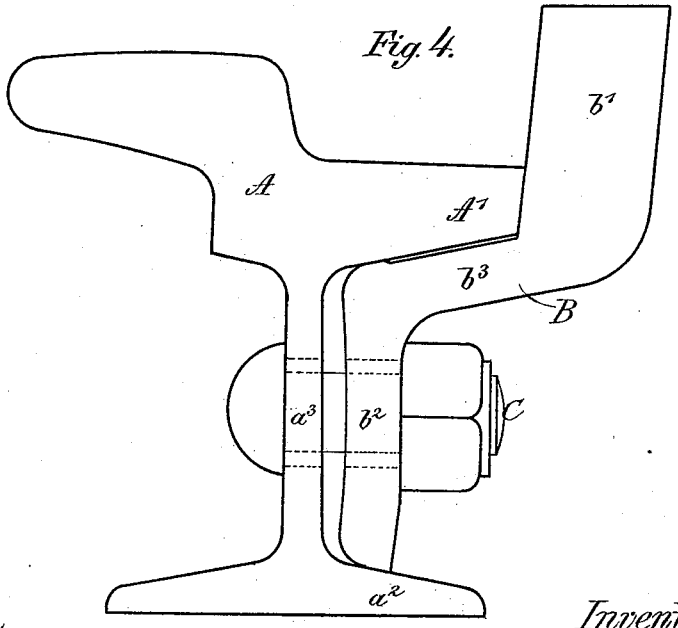


Fig. 4.



Witnesses:
Leo Von Rosenberg
Francis P. Reilly

Inventor:
Tom: L Johnson
by R. P. Townsend
Atty

(No Model.) 3 Sheets—Sheet 3.

T. L. JOHNSON.

CURVE RAIL FOR RAILROAD TRACKS.

No. 348,017. Patented Aug. 24, 1886.

Fig. 5.

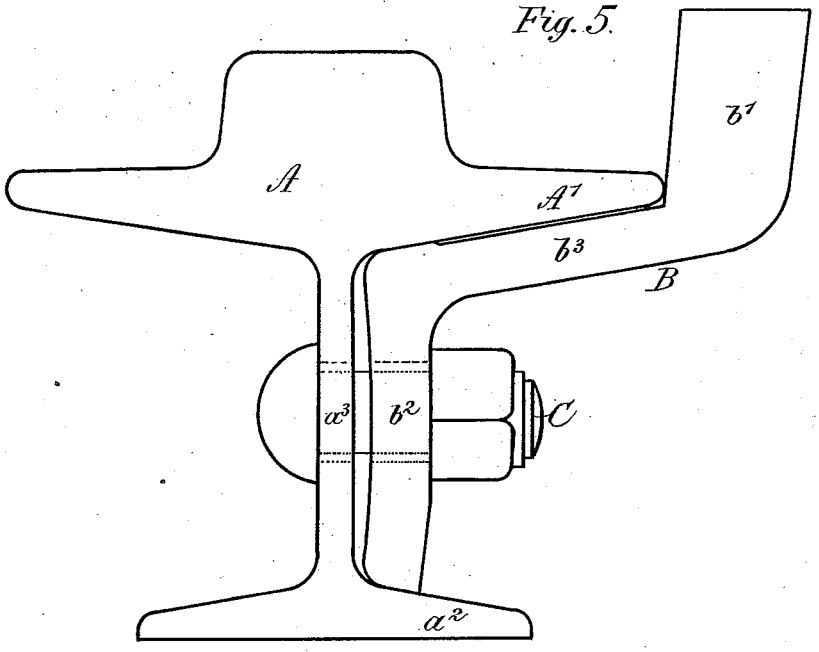
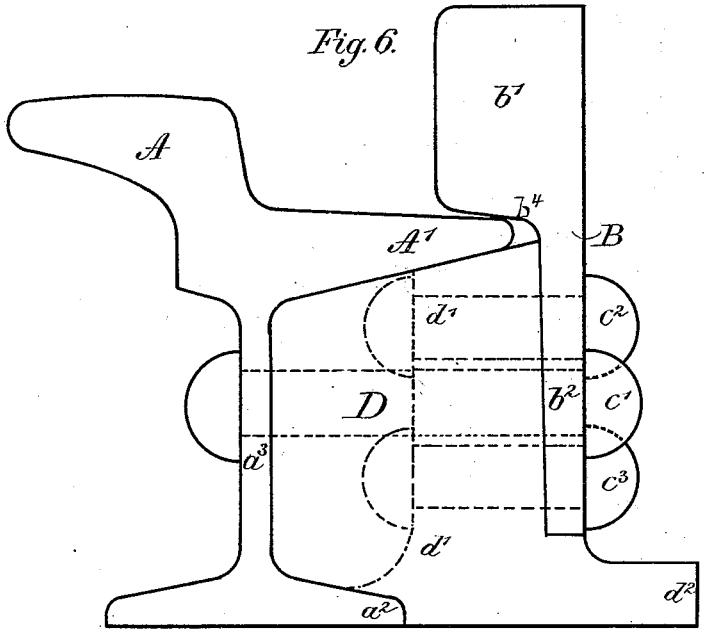


Fig. 6.



Witnesses:
Leo Von Rosenberg
Francis P. Kelly

Inventor:
Tom. L. Johnson
by R. P. Dewhees
Atty

UNITED STATES PATENT OFFICE.

TOM L. JOHNSON, OF CLEVELAND, OHIO.

CURVE-RAIL FOR RAILROAD-TRACKS.

SPECIFICATION forming part of Letters Patent No. 348,017, dated August 24, 1886.

Application filed January 26, 1885. Serial No. 154,018. (No model.)

To all whom it may concern:

Be it known that I, TOM L. JOHNSON, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented a new and useful Improvement in Curve-Rails for Railroad Tracks, which improvement or invention is fully set forth and illustrated in the following specification and accompanying drawings.

The object of this invention is to provide a built-up curve-rail having its guard secured thereto by bolts or rivets, said guard being capable of removal when worn out, the rail proper being made of the same form of rail used in the straight parts of the track.

The invention consists of the parts as set forth in the claim.

In the accompanying drawings, Figure 1 shows an end view, in outline, of a side-bearing girder-rail having a superelevated guard or guard-piece bolted thereto. Fig. 2 shows in end view said guard-piece detached. Fig. 3 shows in end view a side-bearing girder-rail with the end of its tram cut off and a superelevated guard-piece of cast-iron bolted to the web of the rail. Fig. 4 shows in end elevation a side-bearing girder-rail having its tram cut off, and a superelevated guard-piece of wrought metal bolted to the web of the rail. Fig. 5 shows in end view a center-bearing girder-rail having a guard-piece bolted to the web of the rail. Fig. 6 shows in end view a side-bearing girder-rail having a superelevated guard-piece riveted or bolted to the web of the rail through chocks interposed at suitable intervals.

In said figures the letter A indicates the head proper of the respective rails shown; A′, the tram of said rails; B, the superelevated guard-piece in the varied shapes shown, and C the bolts or rivets. D indicates one of a series of chocks, Fig. 6, interposed between the guard B and the web of the rail a^3. The feet or lower flanges of the rails are indicated by the letter a^2. The guard part proper or superelevated part of the guard-piece is indicated by the letter b', its inclined part or offset under the tram of the rail by the letter b^3, and its vertical or angle web by the letter b^2. Said web, by breaking joints with the rails, will thus perform the office of a splice-bar.

In Fig. 3 the guard-piece B, being a casting, is considerably lightened between the bolts or rivets C, as shown in dotted lines at b^4; or said casting may be regarded as of regular shape, where cored out at b^4, and as thickened out or braced at regular intervals, as at b^5.

The side bearing-rail shown in Figs. 3 and 4 has its tram cut off, as shown at a' in dotted lines, Fig. 3. This is done in order that the guard may approach the head of the rail close enough to make the intervening space of proper width for the travel of the flange of the car-wheel when rounding the curve, and still retain the tread of the wheel upon the head of the rail. In Figs. 1 and 6 this is accomplished by causing the head b' of the guard-piece to project over and rest upon the end of the tram of the rail, as shown at b^4 in said figures. In Fig. 5 the width of the tram being less with the center bearing-rail than with the side bearing-rail shown in the other figures, no special provision for the width of curve-space between head of rail and head of guard is necessary. It will be noted that the superelevated part of the guard b' is, in all of the figures, thick-ended considerably more than its stem or web b^2 and inclined offset b^3. Said part b' has to sustain a considerable amount of wear, sometimes very excessive, whereas the rest of the guard is not subjected to wear. It is therefore proportioned solely with regard to necessary strength. As these guard-rails are seldom used except on curves, it can readily be seen that, taking the whole curve-shape of rail and guard together as an entirety, such structure will embody great stiffness and stability.

The advantages of this curve-rail will now be set forth more in detail. It is found in track construction that any cause which interferes with continuous track-laying is not only costly in itself, but involves additional cost, due to mere delay. In all cases where special parts are previously prepared at the factory, to be fitted afterward to the track during its construction, as at present customary in curve work, there has been found difficulty in making the connections perfect and much trouble in making them fit, owing to some small error or errors of calculation in shaping the corresponding parts; but with a built-up curve structure such as herein described and illustrated the work of track-laying can go on continuously without the interruptions incidental to such errors. The rails may be laid and jointed continuously both on

the straight track and on the curve. Should the curvature be slight—that is, the radius large—it will be found sufficient to curve the rails during the laying by means of an ordinary track-bar; but if the radius be small, an ordinary portable screw rail-bender can be used to bend the rails to the desired curvature, which being done and the curve made, the addition of the guard piece or pieces B can then be made. Said pieces can be furnished with the necessary holes ready punched or drilled in them, and in attaching said pieces it only remains to drill the webs of the rails proper and attach the guard piece or pieces to the rails by suitable bolts, as shown in the drawings. The joints between the rails and guards should be broken, in the usual manner, where splices are made. When it is necessary to shorten the tram of the rail, as shown in Figs. 3 and 4, this can be done feasibly and quickly, during the construction of the road, by means of an ordinary blacksmith's cold-chisel and a sledge-hammer. There is no machine fit or mathematical nicety required in the operation. There are cases of emergency sometimes arising when a curve-track of such construction would, by reason of the speed with which it could be laid, and its solidity and durability when laid, be an acquisition of great importance. Where time is an object of much importance, it will be found of advantage to use the construction shown in Fig. 6. In the constructions shown in the other figures the guard B has a large amount of stiffness both vertically and horizontally. If curving to a small radius, it will be found advantageous to curve the guard B to the same radius as that of the rail before connecting them. The shape of guard B, (shown in Fig. 6,) while flexible horizontally, is of ample stiffness vertically, and can be quickly bolted to any curve whatever without previous bending, its own flexibility permitting of accurate adjustment to the rail when the bolts take hold.

The construction of curve-rail herein described and illustrated offers the further advantage in those cases where, the wear being excessive, the guard is rapidly destroyed, that the guard can be quickly replaced, when worn out, without moving the rest of the track.

Having thus fully described my said improvement as of my invention, I claim—

A girder curve-rail for the curves of railroad-tracks, consisting of a curved girder-rail provided with a side flange or tram, as A′, and with an independent superelevated angle-guard abutted to said tram and secured by rivets or bolts to the web of the rail below said tram, whereby the whole line of track may be made of the same form of rail with removable and renewable guards at the curves, substantially as and for the purposes set forth.

TOM L. JOHNSON.

Witnesses:
L. A. RUSSELL,
WM. L. RICE.