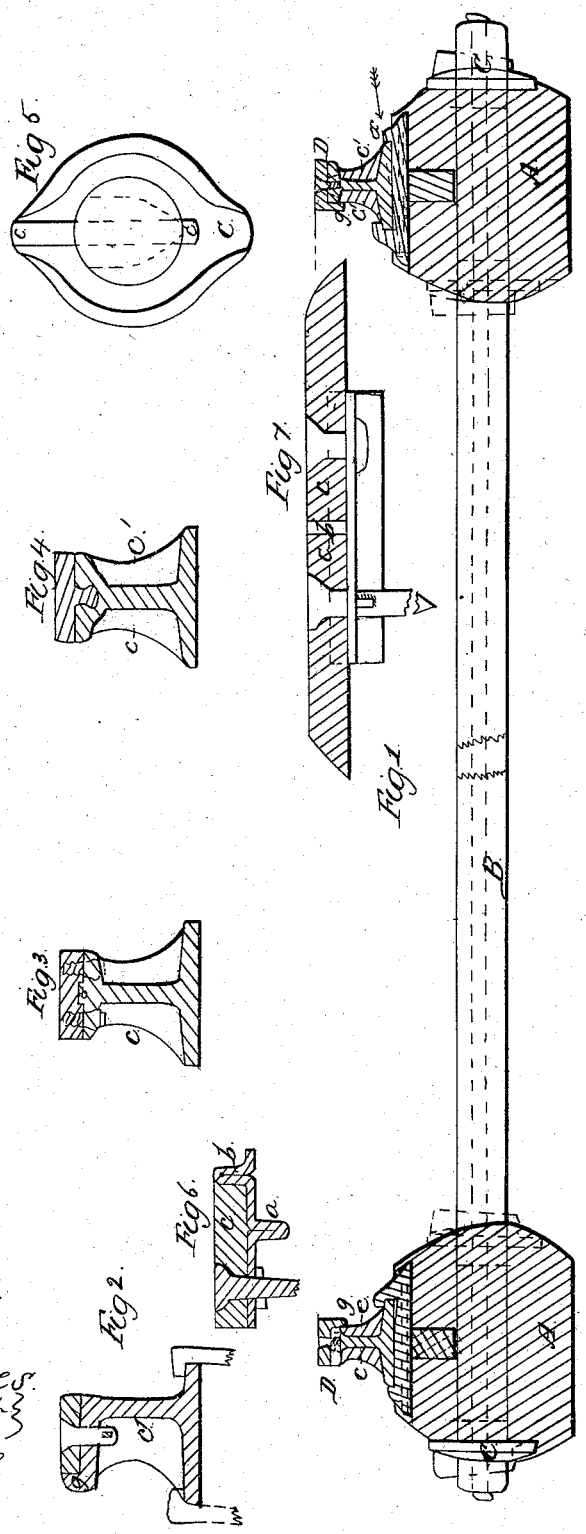
W. M. C. Cushman.

Railroad Track.

No. 3,889. Patented Jan. 16, 1845.



Witnesses.
William Usbrwright
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UNITED STATES PATENT OFFICE.

WILLIAM M. C. CUSHMAN, OF ALBANY, NEW YORK.

IMPROVEMENT IN RAILS FOR RAILROAD-TRACKS.

Specification forming part of Letters Patent No. **3,889**, dated January 16, 1845; antedated July 16, 1884.

To all whom it may concern:

Be it known that I, WILLIAM M. C. CUSHMAN, of the city and county of Albany and State of New York, have invented several new and useful Improvements in the Construction of Railways; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, which illustrate the same, in which—

Figure 1 is a cross-section of the track through both rails, chairs, and string-pieces, and showing one of the cross-ties; Figs. 2, 3, and 4, modifications of the combination of rails; Fig. 5, washer and key for the cross-ties.

In using cast-iron or malleable-iron rails in the different modes heretofore adopted they are liable to fracture and misplacement, or the lengths are so short as to cause great inconvenience from numerous joints, while on the other hand the flat-bar rail is insufficient to sustain the downward pressure, and the ends, by the passage of trains of cars over them, are constantly liable to be turned upward, presenting the obstacle well known as the "snake's head," one of the most dangerous ones on railroads.

My improvements are for combining the advantages of both systems with remedies for the inconveniences attending either.

The construction of my improved railway is as follows, viz: The string-pieces A are laid on any sub-base and are connected by rods B, which run straight across the track at right angles to them from one to the other. This rod passes through the string-pieces and has washers C on it that are keyed up to the string-pieces to secure them to the proper gage. (One of these washers and keys are shown enlarged, Fig. 5.) Upon the above-named or any other suitable structure I fasten cast-iron rails of any convenient shape, having a flat top either with a flange on the outer edge projecting upward, as shown at *g*, Fig. 2, or with a small rib along its center, as at *g*, Fig. 3, or having a depression for the reception of a tongue from the wrought cap-rail, hereinafter named, (see Fig. 4,) or it may be plain and the cap-rail fastened on by means of screws, bolts, and keys, rivets, or any other similar device, all of which I deem but modifications of my general principle.

In Fig. 1 is represented a flat-top rail, on which is fastened a flat bar D, the inner edge of which projects over the edge of the cast-iron rail and is turned down, forming a flange *g*. This is for the purpose of guarding against the lateral thrust to maintain the gage of the track and to guard the wheels from the cast-iron base-rail at its joints, and at fractured points this cap is fastened to the base-rail in any convenient way known to mechanics, so as to allow for the difference of expansion and contraction of the wrought and cast iron. When a flange is cast on the base-rail, as in Fig. 2, that on the cap can be dispensed with and if the projection is in the center, as in Fig. 3, a corresponding groove is made in the under side of the cap-rail to fit, and where the groove is made in the base-rail a tongue of similar cross-section is required on the under side of the cap-rail, as shown in Fig. 4.

It will be obvious from the above examples that the construction and fastening of these combined rails may be varied in a great many ways while the same combination is retained. They may be fastened by the side flange of the cap-rail by a common gib and key bolt or screws.

In fastening down the ends of bar-rails to the sills I employ the following fixture, represented in Figs. 6 and 7: Fig. 6 shows a plate which is to be bolted or screwed down to the sill. On the under side of this plate, directly under the center of the rail, there is a rib *a*, that is let into the sill, (see Fig. 6,) and near the outer edge of said plate another rib *b* projects upward just outside of the rails *c*, which are bolted to said plate near thin ends and are firmly connected thereto by key-bolts or screws, which also serve to fasten down said plates.

In constructing cast or malleable iron T-rails I form the neck of the rail very thin, as shown in the drawings, and add thereto supports laterally, which I denominate "buttresses," (shown at *c'* in the various drawings,) either on one or both sides and at distances

sufficient for the purpose intended, by which I am enabled to make a lighter and stronger rail.

I am aware that cast-iron base-rails have been capped with wrought-iron rails, and therefore I do not claim this as my invention; but

What I do claim as new, and desire to secure by Letters Patent, is—

Connecting the cap-rails with the base-rails by means of a fillet, flange, or rabbet, as herein described, so that by breaking joints the base and cap rails will be retained in their proper lines at the joints and the cap-rail may be extended up to or beyond the inner edge of the base-rail and thus prevent the flanges of the wheels from acting against the base-rail, as described.

WM. M. C. CUSHMAN.

Witnesses:

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