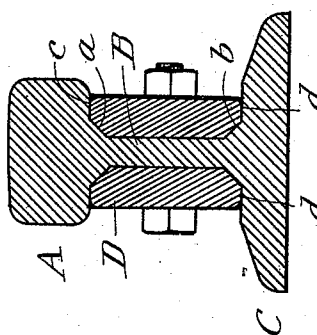
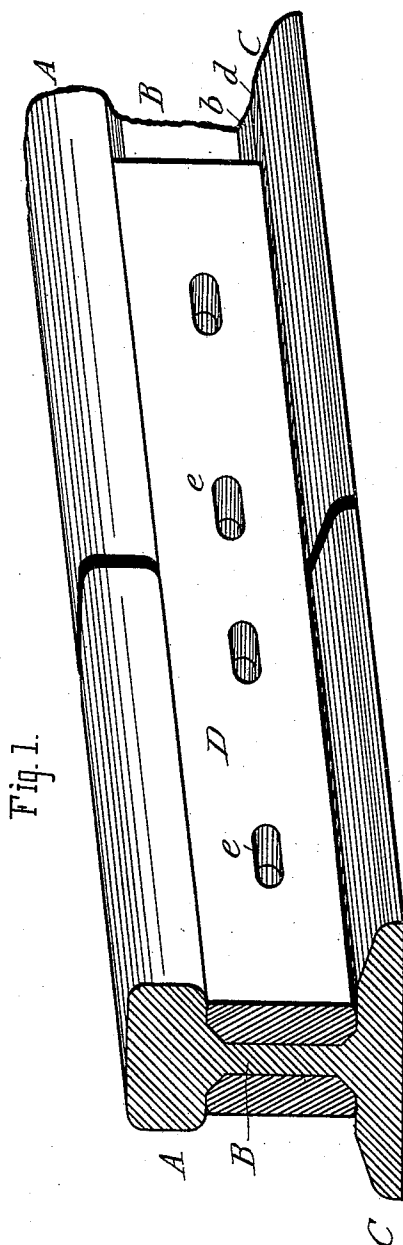


(No Model.)

W. CURTIS.
RAIL JOINT.

No. 483,993.

Patented Oct. 11, 1892.



Witnesses:
St. L. Gladden
Stanley W. Hada

Inventor:
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UNITED STATES PATENT OFFICE.

WINFIELD CURTIS, OF OAKLAND, ASSIGNOR OF ONE-HALF TO E. F. MAY,
OF SAN FRANCISCO, CALIFORNIA.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 483,993, dated October 11, 1892.

Application filed November 16, 1891. Serial No. 412,051. (No model.)

To all whom it may concern:

Be it known that I, WINFIELD CURTIS, a citizen of the United States, residing at Oakland, in the county of Alameda and State of California, have invented certain new and useful Improvements in Rail-Joints; and I do hereby declare that the following is a full, clear, and exact description thereof.

This invention relates to improvements in means for joining together the abutting ends of railroad-rails, ordinarily known as "rail-joints."

The object of my invention is to provide a joint which will resist the jar and pounding to which it is ordinarily subjected, the effect of which is, as is well known, to loosen the fish-plates and in some cases to break the bolts which secure them.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view; Fig. 2, a cross-section of the rail and fish-plates.

The ordinary railroad-rail consists of a head, web, and base, the web having straight vertical faces, against which plane flat fish-plates abut at each joint, secured by bolts passing through the plates and web. In forming the rail the web at top and bottom joins the head and base, respectively, on curved or inclined lines, as viewed in cross-section, so that the fish-plate, although abutting squarely against the web, is not squarely seated upon the base, nor does it have a square bearing against the lower part of the head. The pounding of the wheels at the joints has a tendency to push the lower edge of the fish-plate outward, and as this edge rests upon a curved or inclined surface it is permitted to yield slightly, putting a great strain on the bolts, sometimes bending them and sometimes breaking off the bolt-heads.

I have provided a rail and fish-plate of improved cross-section by which this difficulty is entirely obviated.

My invention can be applied either to new rails when being rolled or to old ones by planing or shaping them to conform to the cross-section required.

A represents the head of the rail, B the web, and C the base. The sides of the web are, as

usual, vertical; but at the intersection of the web and head and of the web and base instead of a curve or incline is a flat bevel, as shown at *a b*. Adjoining this beveled surface on both the head and the base is a horizontal flat face, as shown at *c d*. The object of the beveled surfaces is to strengthen the web, as a right-angled intersection of the web and head would tend to weaken the rail.

D represents the fish-plate, which is a straight iron bar provided with elongated slots *e* for the fastening-bolts, such slots permitting the rails to contract and expand, according to temperature. The cross-section of the fish-plate is such as to accurately fit the web and the surfaces *a b c d*, so that the upper and lower edges have a square bearing at top and bottom, respectively. It is thus enabled to resist the pounding much better, as well as the tendency to be pushed outwardly at the bottom, and in this way not only makes a more secure joint, but causes a great saving in bolts now destroyed or rendered useless. In other words, the vertical strain caused by the pounding of the wheels is transmitted vertically through the fish-plate on the line of the flat surfaces *c d*, so that a large part of the strain is resisted by the surface *d*, which will not permit the fish-plate to yield. When the lower edge of the plate rests upon an inclined or curved surface, as usual, the greater part of the strain is brought upon the bolts, as they are the only means for keeping the lower edge of the plate from slipping outward.

What I claim is—

The combination, with two abutting rails having the vertical webs B, the beveled surfaces *a* and *b*, and the flat horizontal surfaces *c* and *d*, of fish-plates of such shape in cross-sections as to fit the said web and said beveled and horizontal surfaces, substantially as set forth.

In testimony whereof I have affixed my signature, in presence of two witnesses, this 4th day of November, 1891.

WINFIELD CURTIS.

Witnesses:

L. W. SEELY,
E. F. MAY.