J. E. ATWOOD.

RAILROAD RAIL-JOINT.

No. 182,627. Patented Sept. 26, 1876.

*Fig. 1.*

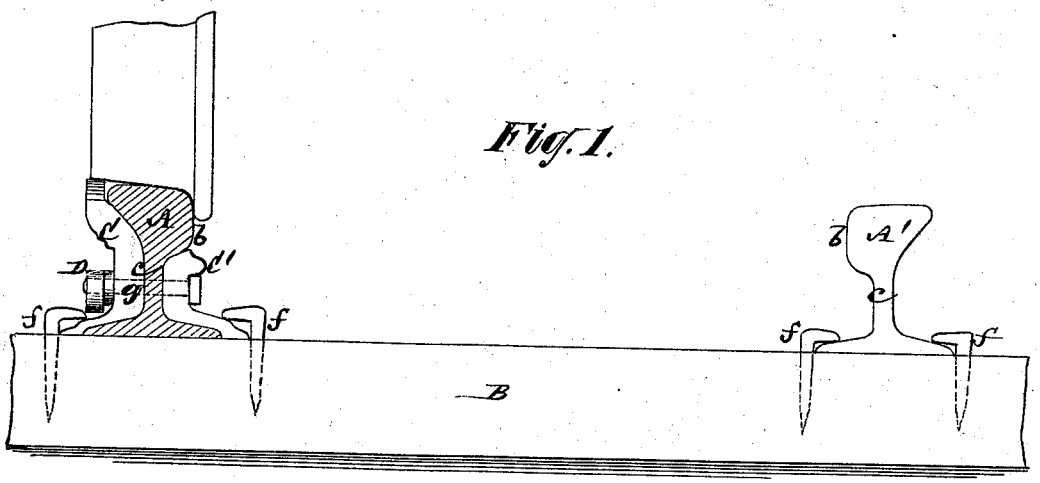



*Fig. 2.*

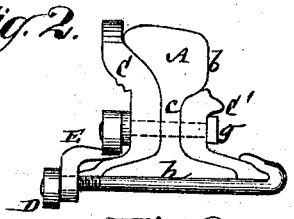



*Fig. 3.*

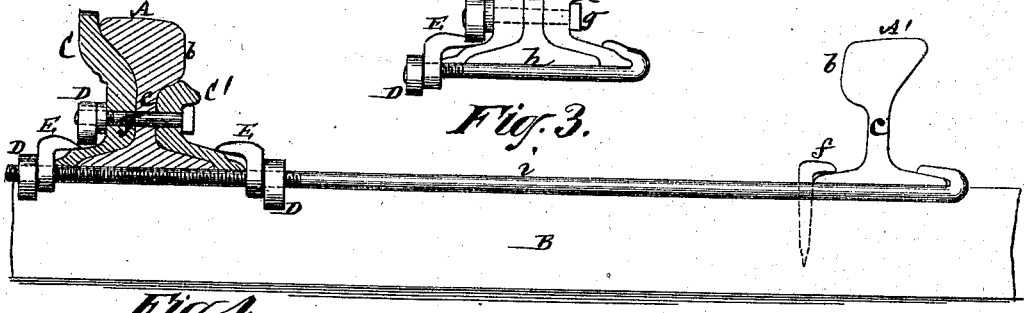



*Fig. 4.*

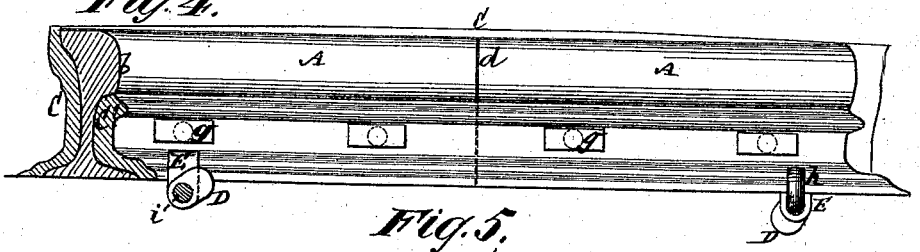
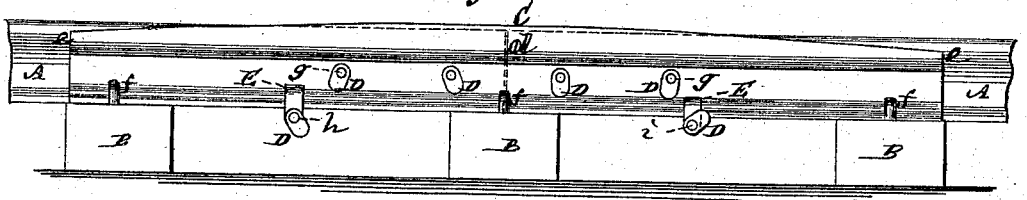



*Fig. 5.*




Witnesses.
John Becker
Fred. Haynes

John E. Atwood
by his Attorneys
Brown & Allen

# UNITED STATES PATENT OFFICE.

JOHN E. ATWOOD, OF STONINGTON, CONNECTICUT, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOSEPH W. STORRS, OF SPRINGFIELD, MASSACHUSETTS.

## IMPROVEMENT IN RAILROAD-RAIL JOINTS.

Specification forming part of Letters Patent No. **182,627**, dated September 26, 1876; application filed July 27, 1876.

*To all whom it may concern:*

Be it known that I, JOHN E. ATWOOD, of Stonington, in the county of New London and State of Connecticut, have invented certain new and useful Improvements in Railroad-Rail Joints; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which forms part of this specification.

This invention relates to certain improvements in railroad-rail joints; and it consists of a novel construction and combination of parts, which will be fully hereinafter described, and specifically pointed out in the claims, a preliminary description being therefore deemed unnecessary.

In the accompanying drawing, Figure 1 represents a transverse section of the permanent way of a railroad, in part, illustrating the rails with the fish-plates applied to one of them, and certain means of securing said plates and rail at the web of the latter. Fig. 2 is an end view of said rail, fish-plates, means of securing the latter at the web of the rail, and certain means of securing and locking the fish-plates and rails together at their base. Fig. 3 is a section similar to Fig. 1, but in a different plane, and showing the means, illustrated in Fig. 2, for securing the fish-plates and rail extended, so as also to tie the two rails together. Fig. 4 is a longitudinal inside face view of a rail with its attached fish-plates and means of securing the same in accordance with my invention, and Fig. 5 is a longitudinal outside view, upon a reduced scale, of the same.

A A′ are the two rails of a railroad-track resting on cross-ties B B. Said rails are single-faced—that is, are formed with an inside face, *b*, only—whereby a longer rail can be rolled from a bloom of a given weight without materially, if at all, diminishing the strength of the rail, and making a less number of joints necessary, also reducing the cost per mile. Furthermore, by this form or construction of rail, to which this invention, as a general thing, is not restricted, however, the face *b* on the inside of the rail may be placed nearer to the web *c* than in the double or inside and outside faced rail, and it will be less liable to be hammered down by the wheels of the cars or trucks running over it, particularly at the ends of the rail; also the outer side of the rail which is not exposed to the same severe service is proportionately reduced, as regards its weight of metal. C is the outer fish-plate, and C′ the inner fish-plate, both of which are only here shown as applied to the one rail A.

To make an effective joint at the junction of the rail-sections, it is proposed to make the ties B at the joint longer than usual, or to extend them to a greater distance beyond the rails than the other ties, when practicable to do so, thereby giving more base and tie support, and reducing the tendency to sink into the ground. The fish-plates C C′ should also be of sufficient length to cover at least three ties, B, with the joint *d* over the center one. Said fish-plates extend down to, and, together with the rail which they clamp or hold in between them, rest upon, the ties, as clearly shown in Figs. 1, 3, and 5 of the drawing, thereby giving the whole structure a wider and better base at such place of rest, and reducing the tendency to cut into the ties. Nor by this construction is it necessary to increase the height of the rails from the ties, and the general grade of the ties is not disturbed, chairs being dispensed with, and the rails with their fish-plates resting only on wood, the same will not be as readily pounded out of shape as if resting on metal. Neither will the adjacent ends of the rail-sections sink one below the other and be exposed to battering by the wheels of the cars or trucks running over them.

The outside fish-plate C is made heavier than the inside one, and extends to or above the rail at the joint *d*, to prevent the wheels which run over it from striking the ends of the rails; but it is made of less depth or height at its ends *e* than the rails, to ease contact of the wheels when riding onto or over said fish-plate. This extension of the fish-plate C at its center above the rail or joint *d* of the rail-sections, while its ends fail to reach the top surface of the rail, and the extension of both inner outer fish-plates at their bases so as to rest upon the

ties, may either be used separately or conjointly, as desired, and in connection with the form of rail shown or any other.

The rails may be held down to the ties B by spikes *f*, and the fish-plates be united with the rails, and, if desired, the opposite or parallel rails forming a single track, tied together by bolts and nuts. Said nuts, however, as also certain washers used in connection with them, it is proposed to peculiarly construct and apply without restriction to the precise form of rail and fish-plates here shown. Thus, the bolts *g*, which pass through the web *c* and fish-plates of the rail, also the bolts *h*, which bind the fish-plates and rail together, at or below the base of the latter, in between the ties B, likewise the bolts *i*, which are but extensions of the bolts *h*, for the purpose of performing the additional duty of connecting the opposite rails together, are tightened up or secured, and have applied to them nuts D, which are not only made heavier on their one side than on the other, but are of an eccentric or other equivalent shape, with flat or angular sides, adapted to be received within or grasped by a wrench for the purpose of tightening up the nuts.

By this construction, when said nuts are in proper position upon the bolts, they not only serve, by their overhanging weight, to tighten up the fastenings rather than to unscrew therefrom by the vibrations on the bolts and nuts consequent upon the running of trains over the tracks, but they may be adjusted from time to time, as required, by applying to them a positive wrench on opposite ends of a bar, which wrench may have its opposite ends reversed, to enable the operator to turn the nut as desired. The desired position of the nuts to suit varying requirements can be secured by changing them or the nuts and washers; but the construction of the nuts is such that, in the case of their becoming loose from any cause, they will not unscrew when in an approximately horizontal position.

A washer, E, is also shown applied to the nuts or certain of them. This washer is of a hook shape or construction, so as to hook at its one end onto the base-flange of the fish plates or rails. Such washer serves to hold the bolt to which the nut is applied in place, and to more securely unite and support the rails and fish-plates.

I claim—

1. The combination, with the rails and the fish-plates resting on the sleepers, of the hooked bolts *h*, connecting and holding the fish-plates at their lower ends below the rails, the bolts *g* passing through fish-plates and the rails, and nut D applied to the said bolts, substantially as and for the object specified.

2. The hook-shaped washers E of the bolts which unite the fish-plates with the rails or the opposite rails with each other, in combination with the base-flanges of the rails and of the fish-plates, over which the hooked ends of said washers are arranged to lap, essentially as described.

JOHN E. ATWOOD.

Witnesses:

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EUGENE ATWOOD.