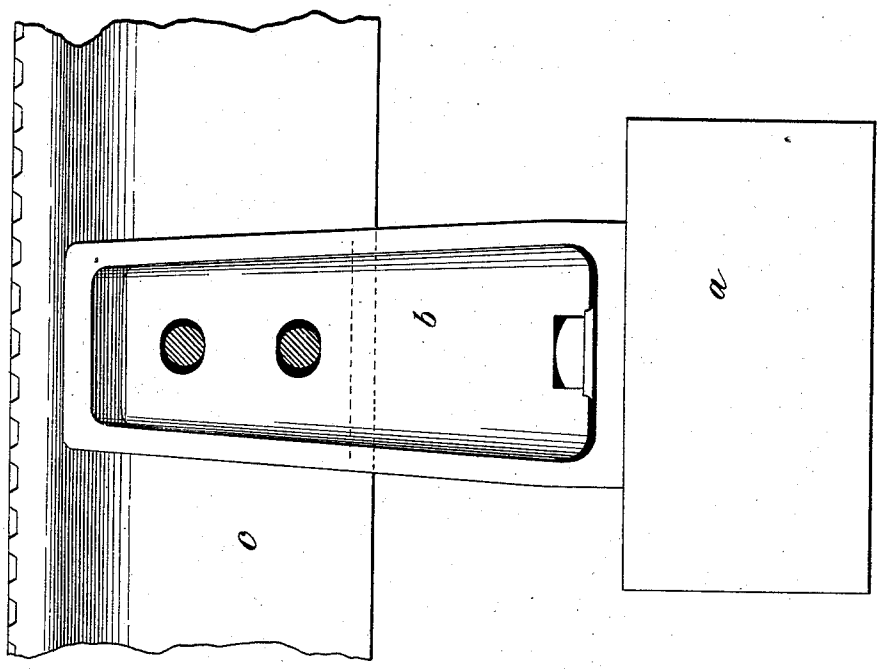
2 Sheets—Sheet 1.

H. VIGNOLES.

Rail-Joint.

No. 218,907. Patented Aug. 26, 1879.

Fig. 2.



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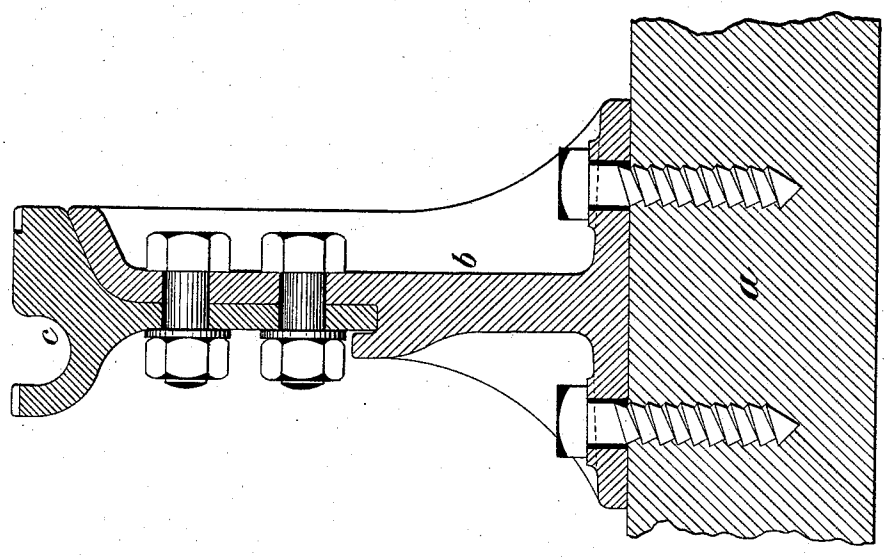

WITNESSES

Wm A. Skinkle.

Geo N Breck

INVENTOR

Henry. Vignoles.

By his Attorneys.

Baldwin, Hopkins & Peyton

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

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No. 218,907. **Patented Aug. 26, 1879.**

Fig. 3.

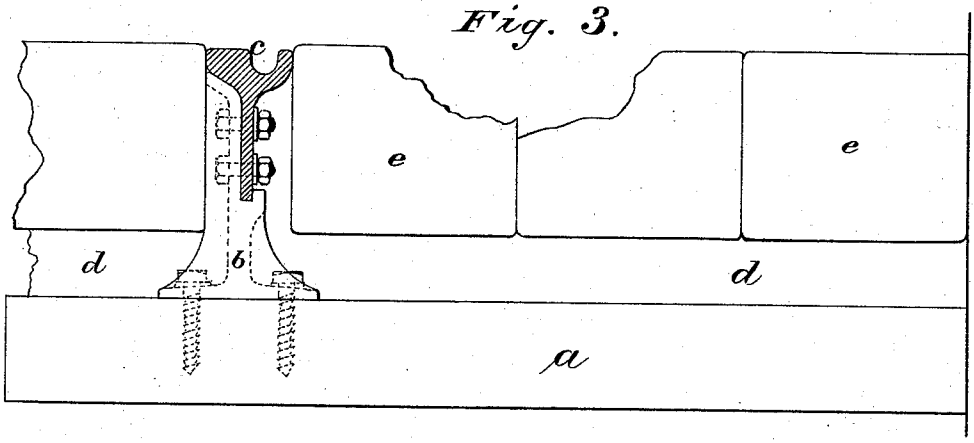


Fig. 4.

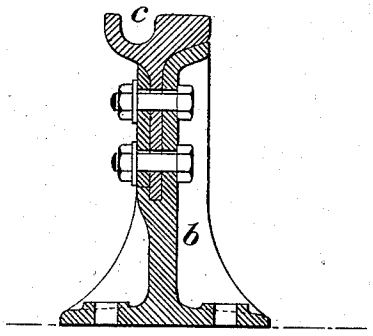


Fig. 5.

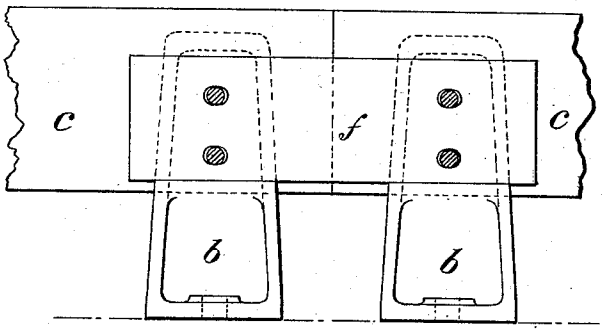
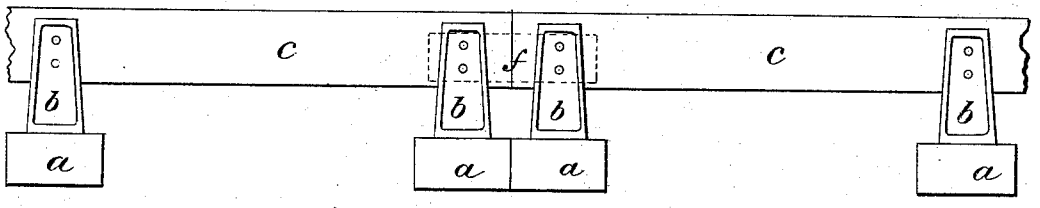


Fig. 6.



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UNITED STATES PATENT OFFICE.

HENRY VIGNOLES, OF WESTMINSTER, ENGLAND.

IMPROVEMENT IN RAIL-JOINTS.

Specification forming part of Letters Patent No. **218,907**, dated August 26, 1879; application filed May 19, 1879; patented in England, February 3, 1879.

To all whom it may concern:

Be it known that I, HENRY VIGNOLES, of 15 Delahay street, in the city of Westminster, England, have invented new and useful Improvements in the Rail-Joints of Tramways and Railways, which improvements are fully set forth in the following specification, reference being had to the accompanying drawings.

This invention has especially for its object to provide a more substantial and durable permanent way for street-tramways, and for tramways or railways upon which horses or steam or other locomotive power may be used for hauling purposes.

I employ tram-rails, such as are shown on the drawings, with a longitudinal groove in the head for the flanges of the tram car-wheels to run in, and with a plain vertical web; but for railways the groove would not be necessary.

I also employ chairs for holding these rails having an upright piece fitted against one side of the web and under the head of the rail. The rail is bolted to the upright piece of each chair, either by a single bolt or by a pair of bolts, as shown on the drawings, spring-washers being used to keep the bolts tight. The chairs are formed with a ledge for the web of the rail to rest on, and also it may be with a projection rising up from this ledge to come against the side of the web, as shown.

Figure 1 shows a cross-section, and Fig. 2 a side view, of a rail and chair attached to a cross-sleeper. Fig. 3 shows a cross-section, on a smaller scale, of a roadway with a tramway of this construction laid along it; but these figures show only old elements and organizations.

a is one of the cross-sleepers; *b*, a chair; *c*, the rail; *d*, a layer of concrete; *e e*, ordinary paving-blocks, which, as the drawings show, can be laid close up to the sides of the head of the rail. Two chairs are placed in close proximity to each other at the joints, the rails being bolted to each chair about eight and a half centimeters from the end of each rail, which, for horse-traction, would make a perfect joint, while for steam-traction one fish-plate, about thirty centimeters in length, can be placed, as shown at Figs. 4, 5, and 6, on the inside of the rail, and made to rest on the projection of each chair, while the top of such fish-plate fits under the head of the rails. The holding-bolts at each of these chairs will pass through the chair, through the web of the rail, and through the fish-plate, thus securing a solid joint equal in strength to any part of rail.

Fig. 4 is a cross-section taken through a joint formed in this manner. Fig. 5 is a side view of the joint, and Fig. 6 an opposite side view on a smaller scale.

a are the cross-sleepers; *b*, the chairs; *c*, the rails; *f*, the fish-plate.

Instead of the fish-plate being made to bear on its under side upon the chair, as shown, the rail might be made with a projecting flange along the bottom of the web, and the under side of the fish-plate made to bear upon this flange. The flange may be on the inside only of the rail, or, if desired, it might be on both sides.

The paving-blocks of the ordinary roadway can, as shown by the drawings, be laid close up to both sides of the rail, as neither the chair, the fish-plates, nor the heads of the bolts project beyond the sides of the head of the rails.

The chairs can be of cast-iron or wrought-iron, but by preference of malleable cast-iron, while the rails are of wrought-iron or steel.

The chairs are to be fixed to the sleepers by means of coach-screws or bolts, as shown on the drawings.

If longitudinal sleepers are to be used in place of transverse sleepers, then the base or foot of each chair is made of a proper form for attaching to such sleepers; or the chairs may be fixed to asphalt or concrete blocks by means of bolts embedded in or passing through such blocks.

The sleepers may also be embedded in concrete, over which may be a layer of asphalt, more especially if timber paving-blocks be

used for paving the surface of the roadway, thus protecting the sleepers from the destructive effects of the changes of temperature.

For light railways or tramways where the roads are macadamized and not paved, the chairs will be made of less height than shown in the drawings.

I do not claim any of the elements of my improved rail-joints to be new *per se*, because I am aware that they are not new; but

What I claim as an organization of parts forming my improved rail-joint is—

The combination of two abutting rails, two supporting-chairs in close proximity to each other, and a fish-plate extending from chair to chair, all so arranged as to be secured together by bolts passing through the chair, rail, and fish-plate, substantially as described.

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Witnesses:

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