

(No Model.)

G. STEVER.
RAIL JOINT.

No. 556,781.

Patented Mar. 24, 1896.

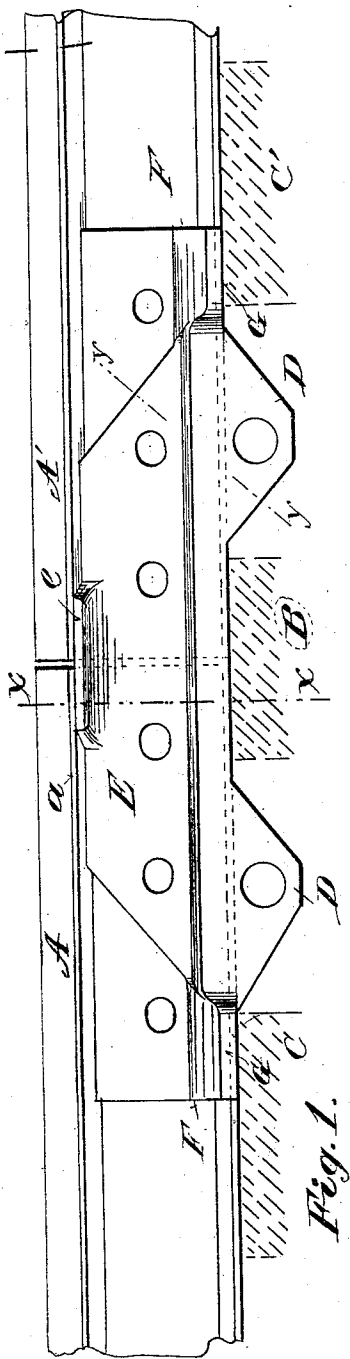


Fig. 1.

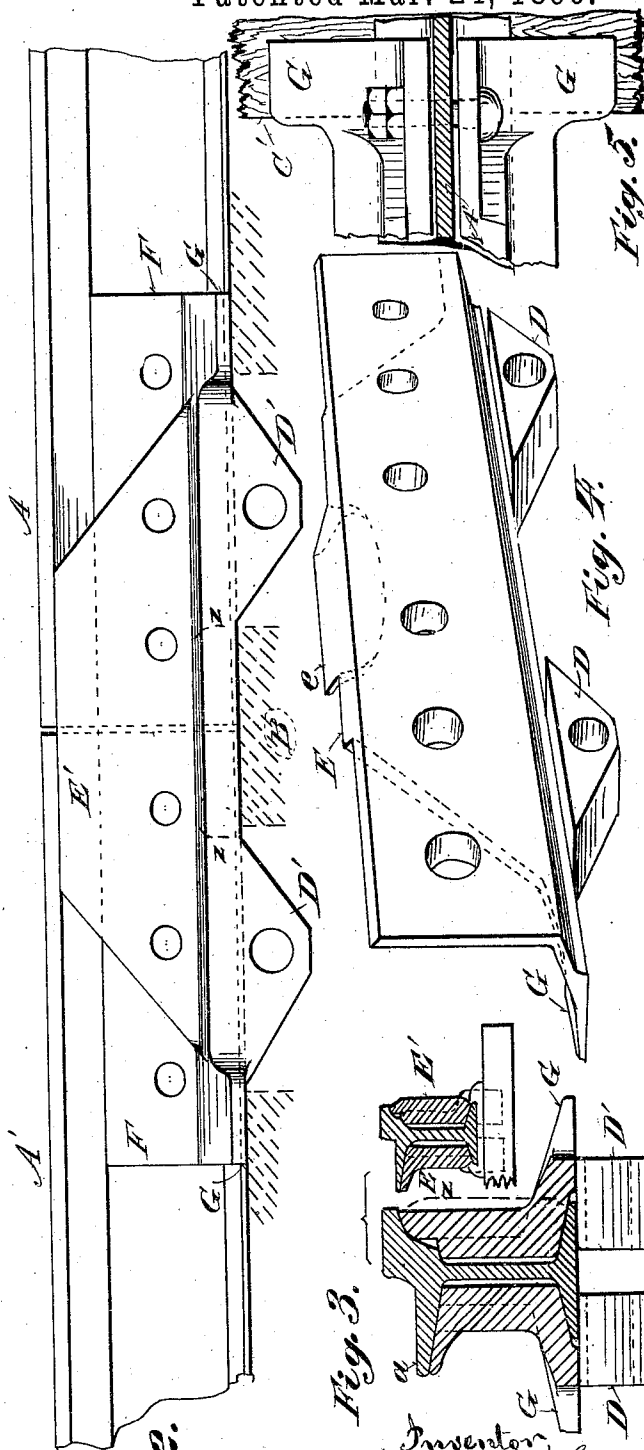


Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Witnesses.
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GEORGE STEVER, OF FAIRFIELD, IOWA.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 556,781, dated March 24, 1896.

Application filed June 3, 1895. Serial No. 551,463. (No model.)

To all whom it may concern:

Be it known that I, GEORGE STEVER, a citizen of the United States, residing at Fairfield, in the county of Jefferson and State of Iowa, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in rail-joints.

The main object of my improvements is to clamp rails meeting above a tie or other support at points at each side of the tie or support, and connect such clamped points on the two rails rigidly, and so carry over the strain upon one rail to the other that the abutting ends of the rails will maintain their clamped position and will aid in supporting the other. In other words, I provide a straddle-tie joint that will give as much or more strength to the rail-joint as there is in the body of the rails themselves. Other peculiarities will be hereinafter described and claimed.

In the accompanying drawings, on which like reference-letters indicate corresponding parts, Figure 1 represents a view of my rail from the inside of a pair of abutting rails; Fig. 2, a similar view from the outside of the rails; Fig. 3, a section on the line *xx* of Fig. 1; Fig. 4, a perspective view of the inner face of the inside member of the joint, and Fig. 5 a plan view of the truss footing at one end of the joint.

This rail-joint is designed especially for rails that meet upon a tie or other support as distinguished from those that meet at a point between said ties or supports.

The letter A represents one rail and the letter A' a meeting rail of street-railway or other style, which meet above the tie B or other support for the joint. The ties C C' support the rails A and A', respectively, on each side of the joint. In the spaces between the tie B and the adjacent ties C C' are located the clamping-jaws D that drop below the rail and extend under it, as shown in Figs. 3 and 4, to clamp the base. These jaws are in duplicate and opposite each other on the two rails, as shown in Fig. 3, the jaws D' being connected by bolts with the jaws D through the holes indicated. A grip is thus exerted upon each rail at a distance from the meeting ends. In

order to carry the stress of traffic from one pair of jaw-clamps D D' to the other pair of clamps D D' on the opposite side of the tie or support B, I provide a truss-reinforcement E E' connecting the jaws D D and D' D', as shown in Figs. 1 and 2, and located above the top of the tie or support B. The extensions F from each end of the truss portions serve as fish-plates and lengthen the rail-joint, as indicated. These ends are preferably extended sufficiently and flanged down over the base to rest upon the adjacent ties C C' and assist in carrying the weight back to these ties from the joint. In other words, each rail is securely clamped at a distance from the meeting point, and these clamps are rigidly connected by a bridge-like truss that carries the stress of the weight from one clamp to the other and also to the ties adjacent to the joint tie or support. More or less of the stress is thus taken off from the tie B, and the metal at the meeting point of the rails is proportioned to give as much or more strength at this point as in the body of the rails themselves.

The two members of the rail-joint are bolted in the usual manner, as indicated, and are fitted at their upper edges to the overhanging flanges of the rail-tread, as shown in Fig. 3.

It has been found that rails that have been connected by other rail-joints have worked up and down upon the tie B or other support at the joint, so that the base has become thinned and worn away by this up-and-down motion caused by the passage of the wheels. It will be observed that my joint can be used upon these old rails as well as upon new rails, since the clamped portions are at a distance from the meeting ends and where the rail-base is not worn. This is an important feature and one of the special objects of my invention.

In street-railways where the inner flange, *a*, of Fig. 3, is subject to heavy traffic the ends of this flange are often broken away at the joint in ordinary forms. I provide an extension *e* from the face of the inner member, E, that supports the ends of these flanges on meeting rails, as indicated in Figs. 1 and 3. This extension or shelf is integral with the truss portion of the rail-joint, as shown. The fish-plate portion is also preferably integral

with the truss portion on each side, so that each member of the rail-joint forms one integral piece with the two corresponding jaws. The rail-joint complete thus consists of but two members besides the bolt connections.

Referring to the drawings, the outer ends of the jaw-clamps end substantially opposite the outer ends of the truss portions in the two members. This construction equalizes and balances the strain upon the clamp and truss portions of the members when the bolts are drawing the rail-joint to its seated position—that is, the tendency of the upper bolts to draw the joint out of shape is resisted by the jaws of the clamps, and the same tendency of the bolts through the jaws is balanced by the truss portions of the members.

Referring to Fig. 5, it will be seen that the fish-plate extension F' of the truss portion E is flared out laterally to form a footing G upon the ties C C' for the ends of the truss E. The truss portion E E' of each member is in a vertical plane to resist the weight, and the foot portions G are horizontally located to receive the weight and brace the rail-joint upright. Not only then are the ends of the rails firmly clamped and the joint made as strong or stronger than in the body of the rails themselves, but the rails and the joint are braced to withstand the torsion or twisting effect due to traffic thereon. Furthermore, the bracing, flanges G are located at the ends of the rail-joint and not upon the joint-tie B. The truss portion E spanning the center tie and rigidly connecting the clamped portions of the rails at the jaws is braced and supported by these foot-flanges and fish-plate extensions.

It will be seen from Figs. 1 and 2 that the truss tapers upward toward the center and leaves substantially the same amount of metal diagonally across the truss and jaw on the line *y y* as at the center. The rigidity of the joint between the jaws is thus secured, while the clamping effect tapers off beyond the truss, since the points of grip-release of the top flange and bottom flange of the rail are not directly opposite each other. The effect of this is to allow a certain amount of spring in the rail as soon as the base passes the jaw at each end, which spring begins at the head or top of the rail at a point nearer the ends than at the base. The practical result of this is to prevent the rail receiving the grip of the joining members in one vertical plane, concentrating the stress in that plane and thereby breaking the rail. I avoid this difficulty by distributing the gripping effect along a considerable distance at the base of the rail, while taking in a smaller portion nearer the head of the rail at the center of the joint. Thus in the figures the flange *e* receives the stress on the end flanges *a* of the rail and carries it down in both directions through the truss to the jaw-clamps and the footings G. On the other side of the joint the truss portion E' fits up tightly against the under side of the tread for a short distance in the center, from

which the stress of traffic is carried in diverging lines to the ties C C' or to the base of the rails, as the case may be.

I do not limit myself to the footings G or for the same as resting on the ties, as the said ties or supports may be a greater distance from the meeting rails than the rail-joint extends.

In some old constructions the meeting ends of the rails rest in a chair or channeled or recessed bracket upon the tie B. My joint is readily adapted to this construction by cutting out the projecting portion of the flange over the tie B back to or beyond the base of the rail, as indicated in Figs. 2 and 3 by the line *z z*. The amount of metal thus cut away at the flange may be added to the truss portion in the middle, as indicated in Fig. 3, to maintain the same amount of metal as before, if it be thought desirable.

Thus it will be seen that my form of rail-joint forms practically a continuous girder and brings no more and practically less stress upon the tie B than upon the adjacent ties C C' and others beneath the body of the rails; also, that while gripping the rail rigidly at the base and top flange of the meeting ends the grip is diminished gradually at each side of the center of the joint to retain a certain amount of spring to the tread, as herein described. Furthermore, the projecting flanges *a* are supported at their ends and the torsional effect is resisted by the footings G above described.

While I have shown and described this joint as applied to a street-railway rail, it will be understood that I do not confine myself to the particular style of rail herein shown, as my invention can be adapted to suit any style of rail.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with rails meeting above a support or tie, of a rail-joint comprising a truss portion fitting against the under side of the top flange or head at the joint and straddling said center support or tie, and provided with a depending jaw-clamp embracing the base of the rail at each side of said support and integral with said truss portion, a matching member on the opposite side of the rails and fastening-bolts below and above the rail-base to connect said members and rails rigidly.

2. The combination with rails meeting above a support or tie, of a rail-joint comprising a truss portion fitting against the under side of the top flange or head at the joint and straddling said center support or tie, and provided with a depending jaw-clamp embracing the base of the rail at each side of said support, and integral with said truss portion, and having also an integral fish-plate extension beyond the truss portion and jaw-clamps, and a matching member on the other side of the rails having matching clamps

and fish-plate extensions, and fastening-bolts above and below said rail-base.

3. The combination with rails meeting upon a support, of a rail-joint comprising a truss
5 portion fitting against and under the top flange or head of the rails at and near their meeting point, and diverging downward toward separate jaw-clamps for the base of the rail on each side of said support, the truss
10 portion thus extending above said support

rigidly connecting the jaw-clamps on each side thereof, a matching member on the other side of the rail, and connecting-bolts for said members.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE STEVER.

Witnesses:

D. P. LITTLE,

H. M. PLAISTED.