

(No Model.)

D. N. HURLBUT.
RAILWAY RAIL JOINT.

No. 544,099.

Patented Aug. 6, 1895.

Fig. 1.

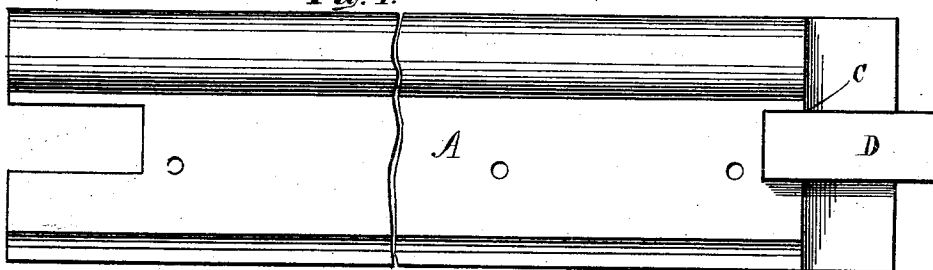


Fig. 2.

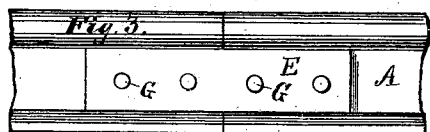
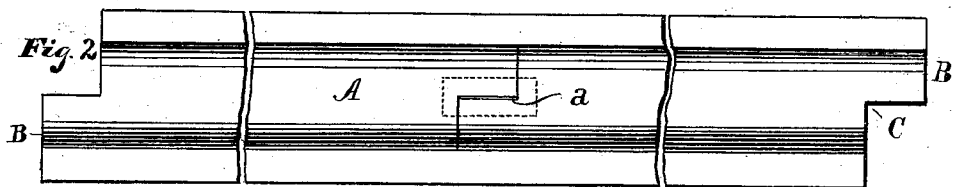


Fig. 5.

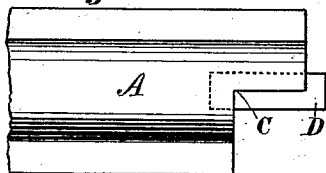


Fig. 7.

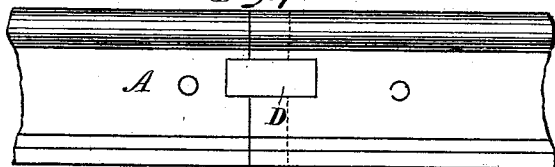
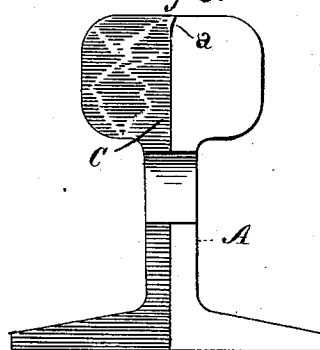


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE,

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RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 544,099, dated August 6, 1895.

Application filed October 16, 1894. Serial No. 528,110. (No model.)

To all whom it may concern:

Be it known that I, DANIEL N. HURLBUT, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Railway-Rail Joints; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention which is covered by the present application for a patent is concerned with an improved rail-joint, and has for its object the preventing of the lateral deflection and the sagging, rocking, or tilting of railway-rails and the destructive battering of the ends of the rails and the accompanying noise and injury to the rolling-stock, affording a continuous and even rest for the wheels while passing the joint. I am aware that a great deal of attention has been given to this line of invention, but I believe that I have hit upon a novel device which will serve the purposes of a good rail-joint better than previous devices.

My invention is further concerned with the matter of providing means whereby overlapping portions of the rails may be prevented from being forced apart laterally by the breaking down of the metal in the ordinary course of traffic. This last is an important desideratum, in view of the fact that hitherto it has been found impracticable to employ overlapping rails or portions of rails, by reason of the circumstance that the broken-down metal at the edges of the overlapping portions would separate the joints and thus destroy the unity and strength of the rail considered as a whole. I prefer to employ rails which overlap each other for a short distance at their ends, but I provide against their being forced apart laterally by making a slight bevel in the upper overlapping edges, thus leaving a space for the broken-down metal to occupy without separating the joint. As to the joint itself, I make use, preferably, of a lap-joint, and I provide the ends of the rails with mortises running through the webs and I furnish a key which precisely fits the mortises and thus makes the joint rigid and inflexible in a vertical direction, while the usual fish-plates, in-

closing the key and at the same time binding the rail ends, serve as a protection against lateral deflection. It will be seen later on that the key, when in place, provides an L-shaped seat for each of the rails which it unites. In other words, the key forms a sort of step upon which each rail bears both at the top and the bottom. In order to break down the key, as I arrange it, it would not only have to be broken transversely, which would be a comparatively easy matter, but it would also have to be broken lengthwise, which is practically out of the question. This is a very different thing from a key set into two abutting rail ends, where a transverse fracture of the key would render it entirely useless.

Another feature of my invention is that I make the half-cuts or lapping portions at either end of any given rail on opposite sides thereof, so that the ends of the rail are interchangeable.

I have illustrated my invention in the accompanying drawings, in which—

Figure 1 is a side elevation of one of my rails, showing also the key in place. Fig. 2 is a plan of two rails joined together. Fig. 3 shows my rail-joint at one side; and Fig. 4 shows the same at the other side, the object being to show the fish-plates. Fig. 5 is a detail plan view showing the way the end of a rail fits upon the key. Fig. 6 is an end view of one of my rails, and Fig. 7 is a side view of a pair of rails joined together with the fish-plates removed.

Referring to the drawings by letter, A is a rail, in each end of which a half-cut has been made, preferably by means of a milling device. The simple fact is that for a short distance one side of the rail has been cut away, so that it is adapted to fit against the corresponding end of the next rail. The overlapping portions of two succeeding rails are shown at B B' in Fig. 2. It is also clear from Fig. 2 that the cuts in the same rail are made on opposite sides to admit of the interchanging of the rail ends whenever it may be found convenient. Each end of every rail is further provided with a mortise C, which is cut by any suitable machinery through the web of the rail.

At D, I show a key adapted to fit the corre-

sponding mortises very tightly. The manner of inserting the key is by forcing it in with a hammer or other tool after the ends of adjoining rails have been matched. It will be
 5 seen that the bearing of each rail end upon the key both above and below is L-shaped, from which it follows that the key cannot be broken down without crushing or splitting
 10 the said key through a considerable portion of its length. That such a thing should happen is extremely unlikely, and the described construction reduces very considerably the danger of the key failing to do its work. The key is held in place by fish-plates E and F on
 15 opposite sides of the rail-webs, the said fish-plates being held together and to the rails by suitable bolts G G and suitable nuts H H.

It being understood that my arrangement of parts permits the expansion and contraction of the rails under the influence of heat and cold, we may inquire a little further what is the action of my key in combination with the structure and arrangement of the rest of the apparatus. In the first place it holds the
 25 parts in perfect alignment when the joint is first made. Now, assuming that a railway-truck passes over the joint, it finds each of the overlapping half-rails supported throughout its entire length by a long bearing upon
 30 the upper surface of the key, the key itself being fully supported upon the rails below the mortises. There is, therefore, no tendency to wear upon one side of the rail more than upon the other, nor upon one of the overlapping halves more than the other. In other
 35 words, I provide, by means of my key, a long well-supported bearing-surface which cannot be twisted, rocked, bent, or broken in ordinary traffic, and which will necessarily hold

the rail so as to present a smooth and even tread to the rolling-stock.

In describing the bearings of the rail ends upon the key as L-shaped I refer more particularly to the fact that the butt of the L extends back of the overlapping part and all
 45 the way across the web, where it has its full thickness, and thereby prevents the rocking or tilting of the key or of the rails with relation to the key. It is in this sense that I wish the reference to an L shape to be understood.

At a I show beveled edges, which leave a slight opening between the overlapping edges of successive rails at the top, in order to admit of some slight breaking down of the straight edges without the necessary separation of
 55 the rail ends by reason of such breaking down.

Having described my invention, what I claim is—

1. A pair of overlapping railway rails having mortises in the overlapping ends, in combination with a key fitting into the said mortises, the said overlapping ends having L-shaped bearings upon the said key.

2. A pair of overlapping railway rails having mortises in the overlapping ends, in combination with a key fitting into the said mortises, the said mortises being so cut that the key, in fitting them, will extend at each end into the solid web and entirely across the
 70 same.

In testimony whereof I have signed my name, in the presence of two witnesses, this 3d day of October, A. D. 1894.

DANIEL N. HURLBUT.

Witnesses:

G. H. STOCKBRIDGE,
 C. M. CATLIN.