S. E. HILLIARD.
Railway Rail-Joint.

No. 207,180. Patented Aug. 20, 1878.

Fig. 1.

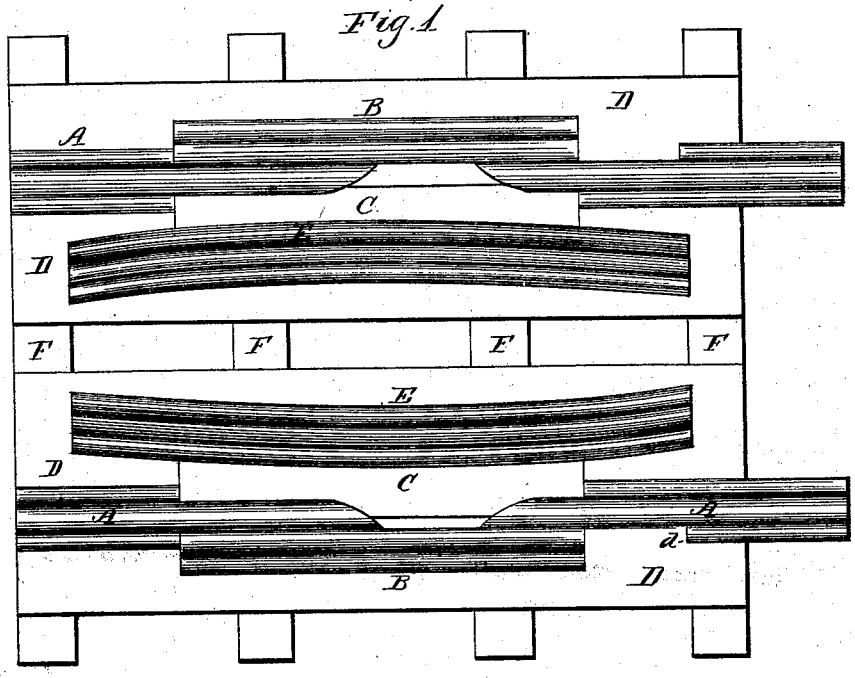


Fig. 2.

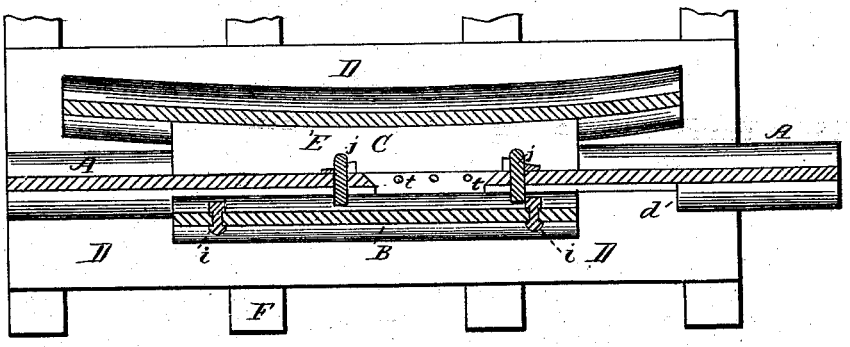
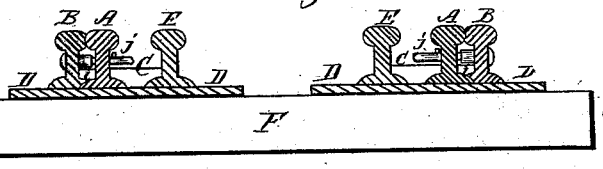


Fig. 3.



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SAMUEL E. HILLIARD, OF RENO, NEVADA.

IMPROVEMENT IN RAILWAY-RAIL JOINTS.

Specification forming part of Letters Patent No. **207,180**, dated August 20, 1878; application filed June 10, 1878.

To all whom it may concern:

Be it known that I, SAMUEL E. HILLIARD, of Reno, Washoe county, in the State of Nevada, have invented an Improved Expansion Joint and Chair for Railway-Tracks; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to certain drawings accompanying this specification and forming a part of the same.

My invention has reference to a novel construction and arrangement of railway-chairs and rail-joints, the object of which is to permit the rails to expand and contract freely without crowding upon the switch-rails, and to preserve the general alignment of the track.

My improved chair and joint are only required at those points where the crowding of the rails by what is known as the "crawling of the track down a grade" interferes with the movement of the switch-rails, and also at the ends of curves, where the expansion and contraction of the rails have a tendency to disturb the curvature or alignment of the tracks.

It will be noticed from the following description that all the parts of my chair can be made of old railway-rails and such other parts as can easily be found ready at hand.

Referring to the accompanying drawing, Figure 1 is a plan. Fig. 2 is also a plan, partly in section, showing the arrangement of the stops. Fig. 3 is a transverse vertical section.

Let A A represent two meeting rails of a railway-track, the ends of which are supported in my improved railway-chair.

The chair consists of an outside short rail, B, and an inside split or half rail, C, between which two short rails or parts of rails the ends of the track-rails A A move as slides. The parts B C can be made longer or shorter, as desired; but from six to eight feet will be a convenient and suitable length. The inside flange of the short rail B I cut away so that its edge will be on a plane with the inside edge of its head. I also cut away a portion of the outside head and flange of each rail A, extending from its end to a distance along the rail equal to half the length of the short chair-rail B, and make a square shoulder, *d*, where the cut-away portion terminates. The cut-away portion or side of the rails A A will then fit close against the inner edges of the head and cut-away flange of the short rail B. It is evident, however, than any arrangement for fitting these parts of the rails together would answer—for instance, the short rail B need not have its flange cut off, but the flange or base of the rail A could be cut out to fit it. The arrangement herein shown, however, is simple and convenient.

The inside or split rail C of the chair is just as long as the outside short rail B, and it is made by splitting an old rail along the middle of its web, and taking the flange or base portion and turning it upside down, so that the cut edge of the web will rest upon the base D, on which the chair is fastened, allowing its outside flange to project over the inside flanges of the abutting rails A A, thus forming a groove in which the flanges of the rails can slide.

E is a bent guard-rail, which is secured to the base D inside of the split rail C, so that the inside flange of the split rail will overlap the outside flange of the guard-rail, as represented.

Near each end of the short rail B I make a hole through the middle of its web, and through this hole I put a bolt, *i*, which projects on the inside of the web, and either has a nut on it or is otherwise fastened, so as to form a stop or projection. I also make a hole through the web of each rail A near their adjoining ends, and after the ends of the rails have been slipped past the stops or projections on the chair-rail B, I secure a bolt, *j*, in the hole so that it will project on the inside of the web. These projections will then form stops, which will prevent the ends of the rails A from being drawn entirely out from between the slides, while the shoulders *d* will limit the movement of the rails in an opposite direction. These stops might be dispensed with, but I prefer to use them.

As a foundation for the chair and joint, I place a number of ties, F, close together, and secure one or more metal plates, D, upon them. For this purpose pieces of old boiler-iron, such as can readily be found about any railroad-shop, will answer. I shall usually rivet or otherwise secure the parts B C E of the chair to these plates before fastening them to the ties F, so that all that is necessary after the

plates have been placed in position and secured to the ties is to slip the prepared ends of the rails A into their places in the slides and fix the stops in the holes.

When the expansion-joint is used for the protection of a switch, one of the rails A of each chair will form a continuation of the main track, while the other connects with the switch-rail; but when it is used for protecting a curve or continuous line of track, each of the rails A will form a part of the main track.

In setting the rails A, I move them as far as their stops will allow in a direction contrary to that in which the track crawls, so that a sufficient space or length of movement will be provided in the joint to prevent crowding of the rails for several months at a time. When the crawling of the track has moved the rails A to the extent of the slide, a portion of one of the rails or of an adjoining rail can be cut off, and the rails A A reset in their expanded position.

To prevent the accumulation of dirt in the groove in advance of the ends of the rails A, I make holes *t t* in the plate or base D, through which the dirt will pass as the movement of the rails forces it in advance of them.

When a train is passing over this chair and joint the wheels of the cars, if the ends of the rails A A are separated, will bear on the short outside chair-rails B in passing from one rail to the other. To prevent the wheels from striking the ends of the rails, I bevel or round off their inside corners, as represented, so that the flanges of the wheels will move easily from one to the other.

This chair and expansion-joint has been in use for several months on the Virginia and Truckee railroad in the State of Nevada, and has given the utmost satisfaction. It insures a perfectly free movement of the switch-rail at all times, and saves a large amount of trouble and expense which has heretofore been necessary in cutting the rails and watching the track.

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

1. A railway-chair consisting of the outside short rails B and inside split rail C, arranged, as described, in combination with the sliding track-rails A A, substantially as and for the purpose described.

2. An expansion-joint for railway-tracks consisting of the rails A A, secured as slides between an outside short rail, B, and inside clamps or guards, C, which embrace the inside flanges of the rails, substantially as and for the purpose above described.

3. A railway-chair consisting of the base-plate D, with its short chair-rail B, half or split rail C, inverted and secured, as described, and the guard-rail E, all combined and arranged in connection with the track-rails A A, substantially as above specified.

4. The track-rails A A, arranged as slides in a chair, B C E, and having their inside corners rounded or beveled, substantially as and for the purpose above described.

5. The short chair-rail B, with its stops and the inside slide C, in combination with the sliding track-rails A A, with their stops *j*, substantially as and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

SAMUEL E. HILLIARD. [L. S.]

Witnesses:

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CHARLES E. SHERMAN.