(No Model.)

J. D. REED.

SUBSTRUCTURAL SUPPORT FOR RAILWAY SYSTEMS.

No. 526,054. Patented Sept. 18, 1894.

Fig. 2.

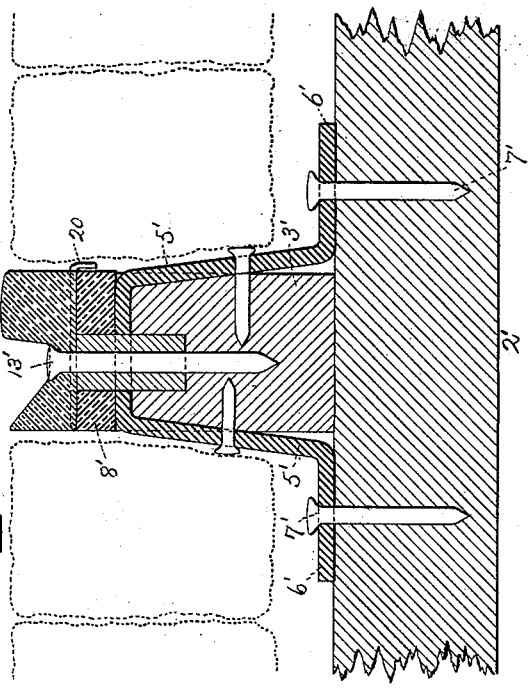


Fig. 1.

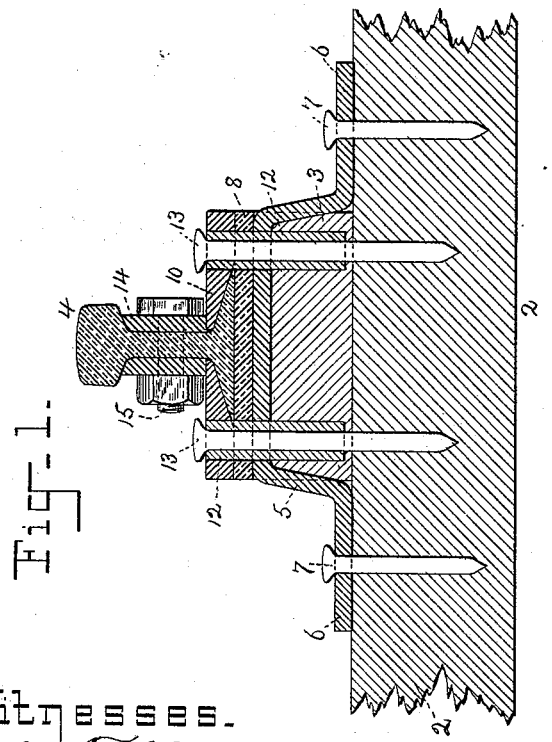
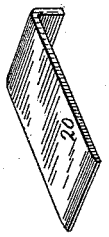


Fig. 3.



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UNITED STATES PATENT OFFICE.

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SUBSTRUCTURAL SUPPORT FOR RAILWAY SYSTEMS.

SPECIFICATION forming part of Letters Patent No. 526,054, dated September 18, 1894.

Application filed May 29, 1894. Serial No. 512,838. (No model.)

To all whom it may concern:

Be it known that I, JOHN DEERING REED, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Substructural Supports for Railway Systems; 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, reference being had to the accompanying drawings, and to figures of reference marked thereon, which form a part of this specification.

This invention relates to the substructure which is employed to secure in place the rails composing either street or steam railway systems, and furthermore which serves to prevent the rails from spreading and upholds the joints at the meeting points of the rails.

My improvements consist primarily in the substructural arrangement of parts which shall maintain the rails and rail-joints in proper alignment and position for the rail system, and includes a stringer longitudinally beneath the rail; secondly, in a series of steel chairs which serve to clasp the stringer and secure the latter to the ties, and further act as a metallic under-support to prevent the rail cutting into the stringer; thirdly, in the arrangement of elements which are located at the rail-joint to prevent the breaking down of the latter, and comprising in addition to the ties, the longitudinal stringer, and steel chairs of a supporting metallic bar of some four feet in length, which rests upon the stringer and the steel chairs, the latter being flush with the top surface of the stringer. Other characteristic features will be hereinafter fully described and set forth.

The method of fastening and securing the spikes which pass through metal parts which compose the structure has been fully set forth in a patent issued in my name on the 17th day of December, 1889, and numbered 417,283.

The drawings represent in Figure 1 a vertical transverse section of a steam railway supporting structure embodying my invention, the section being taken at a joint. Fig. 2 is a similar view as applied to a street railway system, likewise at a joint. Fig. 3 is a perspective view of the reinforce plates.

In said drawings 2 represents the ordinary cross ties upon which heretofore, particularly in steam railway systems, it has been customary to lay the rails and spike them directly to said ties. Under this method the rail meets a wooden surface and the ties soon cut out and become worthless. In lieu of this construction I propose to provide a longitudinal stringer 3 beneath the rail 4, while to firmly unite these two elements together I place steel chairs 5 of such form that they clasp about the girder and extend over upon the tie in the shape of an angle foot 6. Spikes 7. 7. 7. secure the whole rigidly together. By the arrangement, as above premised, it will be seen that the rail is given an underneath metallic support, which prevents said rail from cutting into and destroying the wood. Furthermore to give greater support to the rail the steel chairs are let into the girder, so that practically the girder has a uniformly level top surface with transverse metallic plates at intervals, or wherever a chair may be located. Thus in the substructural system above premised the rail not only has a continuous rest in the shape of the girder, but it has an underneath metallic support at intervals, and there is no tendency to rock or tip, since the steel chairs obviate this action to a great extent, while the stringer can not be cut. Thus a very heavy rail can be employed without liability of injury or rapid deterioration to the road-bed structure.

In the proper maintenance of a rail system, it is very necessary that the rail-joint should have a firm solid support, to overcome the pounding action of the wheels in passing this point. In my present improvements, I employ a supporting bar 8, so termed, which is preferably some two and one-half feet in length, eight and one-half inches in width and one-half inch in thickness. This is laid upon the girder and is supported conjointly by the latter and the steel chairs before mentioned. Above this is placed the rail, while laterally of the rail are secured gage-plates 10, these latter being of the same length as the supporting bar. These several elements—the chairs, the supporting bar, and the gage-bars—are all bored, as shown in Fig. 1, and plugged at 12 with some kind of wood. Spikes 13 driven therethrough and which pass into the stringer and cross tie serve to

hold these parts rigidly in position. The ordinary fish-plate 14 and bolts 15 are employed to unite the rails longitudinally. By this method in the use of the stringer and the chairs, the latter being the rigid joint and upon which rests the supporting bar, I create a firmly suspended joint support. The ordinary gravel tamping as employed in steam railways serves to hold the entire structure in place. In order to maintain the rail approximately in a horizontal plane and to enable it to rest upon the stringer at all points, except at the joint where the supporting bar occurs, the stringer is cut out to admit of the supporting bar in order to offset this increase in height occasioned by the thickness of the said supporting bar, while the chairs are positioned under the bar.

In Fig. 2 is shown a portion of a street railway system in which the same arrangement of parts is employed. Here the improved street rail is shown at 4′, the ties at 2′, the stringer at 3′, holding spikes at 7′, the supporting bar at 8′, which is of greater thickness to compensate for the flat rail which is of less depth in cross section than the T rail in Fig. 1. Furthermore a plugged hole is extended through the bar 8′ and the chair, while a spike 13′ which is driven into the plug serves to hold the rail in place and bind the latter, the supporting bar, and the chair, all to the girder. Where the improved rail 2′ is used the pavements (indicated in broken lines) can be laid up snugly as shown.

It will be understood that since the stringers are rigidly attached by the steel chairs to the cross ties, no cross-tie rods are required, as heretofore, to prevent the stringers and rails from spreading.

In some instances where my system is adapted to be substituted for the ordinary joint, and to remedy the defects in a rail-joint where one end of the rail has been pounded down I propose to employ a "reinforce plate" so called. This is a thin steel blank 20, shown at Fig. 3 with a turned up or transversely bent end. In repairing a joint this plate 20 is adjusted across and beneath the low end of the rail and between said rail and the supporting-bar, as shown in Fig. 2. This serves to raise the end of the rail a trifle high and thus causes it to meet the wheel, and since the rail end has a firm metallic support, the pounding action of the wheel now tends to straighten the rail at this point and the defect is gradually remedied. In the drawings this reinforce plate 20 is shown in position beneath the rail end in Fig. 2, but the form of said plate 20 is adapted for use in the steam rail system as illustrated in Fig. 1, and will have the same relative position, that is between the rail 4 and the supporting bar 8.

What I claim is—

1. The structural support for railway systems consisting of a series of cross-ties, stringers longitudinally beneath each rail and which rest upon the ties, metal chairs which span the girders and are adapted to unite each girder with the cross-ties, said girders and chairs being adapted to form a continuous level surface, comprising alternate surfaces of wood and metal upon which the rails rest, substantially as and for purposes explained.

2. In structural supports for railway systems, the combination with cross-ties, stringers which rest upon the cross-ties and extend longitudinally beneath the rails, of metallic chairs which extend over and about the stringers, and a supporting-bar located beneath the rail and which rests upon the upper surface of the stringers here composed of alternate surfaces of wood and metal, substantially as specified.

3. In structural supports for steam railways, the combination with cross-ties, longitudinal stringers, metallic chairs which pass about said stringers and unite them with the cross-ties, of a supporting-bar, gage-plates laterally of the rail, and devices for uniting the supporting-bar, gage-bars, and chairs with the stringers and cross-ties, substantially as set forth.

4. The combination with suitable cross-ties, stringers which rest thereon and extend longitudinally beneath each rail, of a metallic supporting-bar beneath a rail-joint, a reinforce plate between the rail end and said supporting-bar, and chairs which span the stringers and unite them with the cross-ties, substantially as set forth and stated.

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

JOHN DEERING REED.

Witnesses:
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