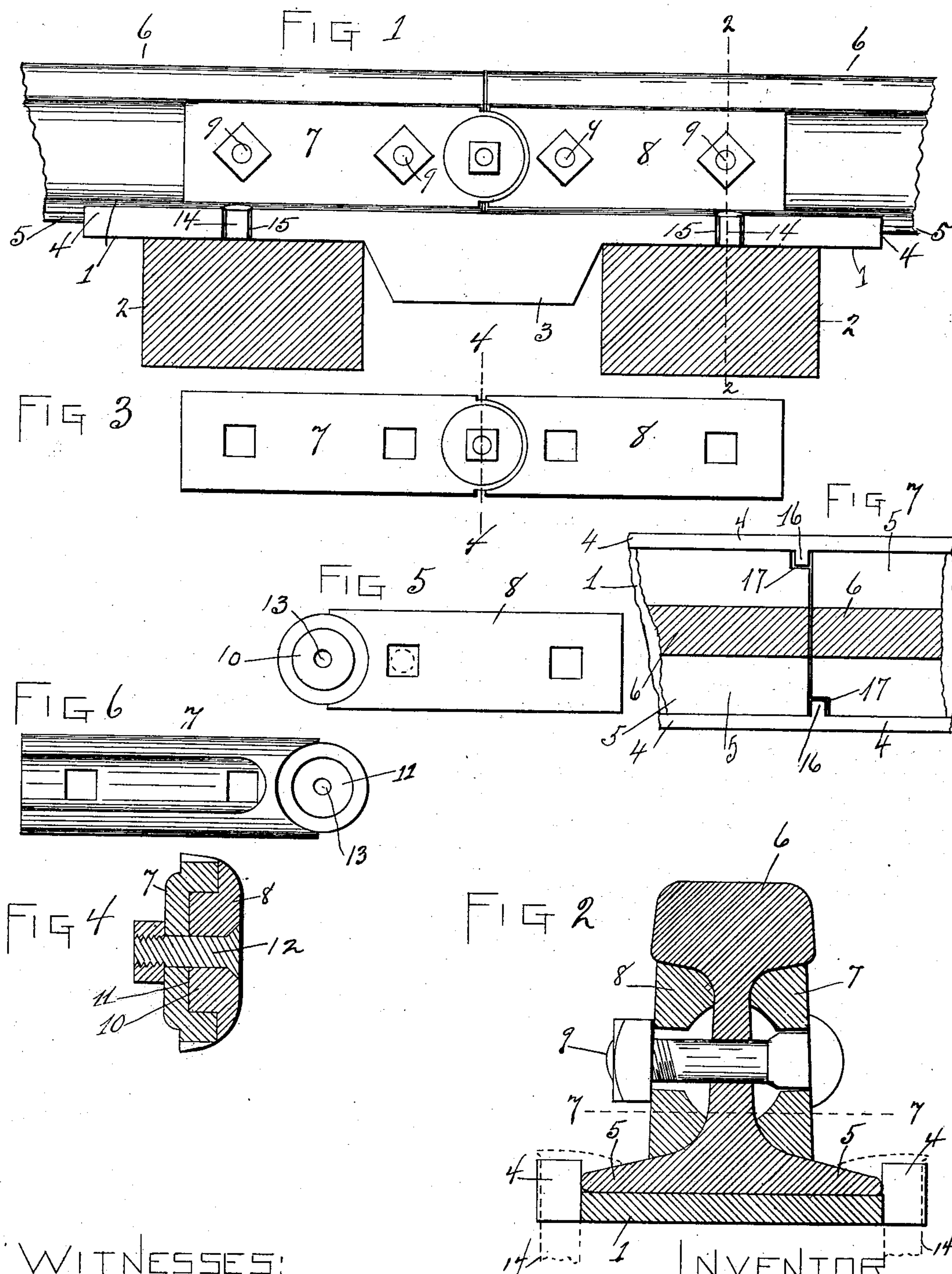


No. 699,124.

Patented Apr. 29, 1902.

I. LYND.
RAILWAY RAIL JOINT.
(Application filed Sept. 6, 1901.)

(No Model.)



WITNESSES:
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UNITED STATES PATENT OFFICE.

IVES LYND, OF TROY, NEW YORK.

RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 699,124, dated April 29, 1902.

Application filed September 6, 1901. Serial No. 74,520. (No model.)

To all whom it may concern:

Be it known that I, IVES LYND, a citizen of the United States, residing at Troy, county of Rensselaer, and State of New York, have
5 invented certain new and useful Improvements in Railway-Rail Joints, of which the following is a specification.

The invention relates to such improvements; and it consists of the novel construction and combination of parts hereinafter described and subsequently claimed.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this
15 specification.

Similar characters refer to similar parts in the several figures.

It is well understood by persons skilled in the art of railway construction that the passage of heavy trains along a railway-track causes a vertical wave motion or undulatory vibration in a vertical plane to be imparted to the track-rails, the degree of which varies in accordance with variations in the yielding
25 and elastic nature of the road-bed. When the meeting or adjacent ends of rails are supported upon an extended rigid base or chair and rigidly connected together by splice-plates or other mechanism, this undulatory
30 vibration tends to cause flexion of the rail-connecting mechanism, which being frequently repeated causes the rigid splice-plates to become ruptured and broken, the line of breakage usually beginning at the upper edge of the splice-plate about opposite
35 the junction of the rails. It is found difficult to overcome the injurious effects of this undulatory vibration by reinforcing the joint mechanism, for the reason that if the same be made sufficiently strong and rigid to
40 be wholly inflexible the injurious flexing strain will be transmitted to the connected rails themselves at points near the ends of the splice-plates.

I have ascertained that by connecting together the adjacent rail ends by splice-plates each comprising members secured to the respective rails and connected together by a hinge-joint, the undulatory vibration of the
50 rails is freely permitted by the joint mechanism, which is not injured thereby.

Figure 1 of the drawings is a view in side elevation of my improved rail-joint. Fig. 2 is a vertical cross-section of the same, taken on the broken line 2 2 in Fig. 1, on an enlarged scale. Fig. 3 is a side elevation of a
55 hinge-jointed splice-plate detached. Fig. 4 is a vertical cross-section of the same, taken centrally through the hinge-joint, on an enlarged scale. Fig. 5 is a side elevation of
60 one of the members of the splice-plate. Fig. 6 is a similar view of the other member inverted. Fig. 7 is a horizontal cross-section, taken on the broken line 7 7 in Fig. 2, through the web of the connected rails, showing a
65 plan view of the base-flanges at the ends of the rails seated upon the chair, the rails and chair being partly broken away.

Referring to the drawings, 1 represents a chair or base having its ends adapted to rest
70 upon and be supported by the ties 2 2 and its intermediate portion between the ties reinforced, as shown at 3. The chair is also provided with upwardly-projecting longitudinal edge flanges 4 4, adapted to receive between
75 them the base-flanges 5 of the rails 6 6, a pair of which are shown in Fig. 1, with their adjacent ends seated upon the chair and maintained in alinement by said chair-flanges. On opposite sides of the rails so seated are applied my improved splice-plates, each consisting of two members 7 and 8, each of which
80 members is rigidly connected with one of the rails and with the corresponding plate member on the opposite side of such rail by means of
85 the bolts 9 passing through apertures in the respective plate members and rails. The members of each splice-plate are connected together by a hinge 5, with the axis thereof extending transversely of and between the ends
90 of the connected rails and in a horizontal plane.

The hinge connection between the rails may be formed in any known manner.

I have shown the plate member 8 provided
95 on its end with a laterally-projecting cylindrical boss or stud 10, adapted to enter and fit a circular recess 11, formed in the inner side of the other plate member 7.

The splice-plate members may be further
100 connected together by means of the bolt 12 passing through apertures 13, formed in the

several plate members centrally of the respective boss 10 and recess 11. When desired, the bolt 12 may be omitted.

The base or chair is secured to the ties in the usual manner by means of spikes 14, inserted through slots or recesses 15 in the edges of the chair in engagement with the base-flanges of the rail.

The chair may be of any known form or omitted.

The several members being combined and connected together, as above described, it will be seen that the rails are securely joined together, being held against lateral displacement in a horizontal plane by the chair-flanges and against displacement in a vertical plane by the chair and splice-plates, while at the same time a slight swinging movement is permitted between the members of the splice-plates in a vertical plane sufficient to accommodate the plates to the undulatory vibrations of the rails without strain upon the splice-plates, and that such vibration of the rails is not resisted by the joint mechanism in a manner to unduly strain the rails themselves at points near the ends of the splice-plates.

When the hollow of the vibratory wave passes the joint, the rails will be so supported by the chair and hinge-jointed splice-bars that their upper surfaces will be in perfect alinement, so that no pounding will be caused by the passage of the car-wheels over the joint.

For the purpose of preventing a creeping movement of the rails upon and relatively to the chair I have shown the chair provided with lugs 16 and the base-flanges of the rails provided with recesses 17, adapted to receive and fit said lugs, whereby when the parts are secured together in the manner above described longitudinal movement of the rails upon the chair is prevented.

I am aware that it has been proposed to connect rails endwise by two plates each connected by a single bolt to the web of a rail and pivotally connected to each other. By my improvement a plate is situated on one side of two rails and comprising two members each fixed to the web of the contiguous rail, preferably by two bolts, said members being joined at their contiguous ends and preferably by means of a boss on one member and a recess on the other and a bolt passing centrally through the boss and recess. This bolt is not essential in all cases. Preferably two oppositely-situated plates will be used. The ends of the plates overlap the rail ends and no bolt is interposed between the rails. In the prior construction a single

pair of plates each secured to the rail-web by one bolt only and pivoted together by a bolt situated between the ends of the rails requires such bolt to be of considerable, if not of an impracticable, size to act efficiently and of such size as to unduly separate the rails.

In case a chair is used in my construction it may act as a fulcrum for either rail when the proximate end of said rail is moved by force applied to its remote end.

In the prior construction above referred to the inter-rail pivot must sustain the pressure which by the present improvement is sustained by the bosses if no chair is used or by said chair in case one is used.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a railway-rail joint, the combination with lengthwise adjacent rails, of a splice-plate comprising members secured to the respective rails a member to each and connected by a hinge-joint between endwise contiguous members on one and the same side of the rails, substantially as described.

2. In a railway-rail joint, the combination with lengthwise adjacent rails, of a splice-plate comprising members secured to the respective rails a member to each and connected by a hinge-joint between endwise contiguous members on one and the same side of the rails, said joint comprising a boss on one member and a recess on the other member to receive said boss, substantially as described.

3. In a railway-rail joint, the combination with lengthwise adjacent rails, of a splice-plate comprising members secured to the respective rails a member to each and connected by a hinge-joint between endwise contiguous members on one and the same side of the rails, and a chair to sustain the inner end of each member when the outer portion of its corresponding rail is elevated, substantially as described.

4. In a railway-rail joint, the combination with lengthwise adjacent rails, of a pair of splice-plates each pair comprising members secured to the respective rails a pair of members to each and the members of each connected by a boss in one fitting a recess in the other, and a chair, substantially as described.

In testimony whereof I have hereunto set my hand this 4th day of September, 1901.

IVES LYND.

Witnesses:

FRANK C. CURTIS,
GEO. A. MOSHER.