

No. 686,111.

Patented Nov. 5, 1901.

E. B. MURRAY.
RAILWAY RAIL JOINT.
(Application filed July 17, 1901.)

(No Model.)

Fig. 1.

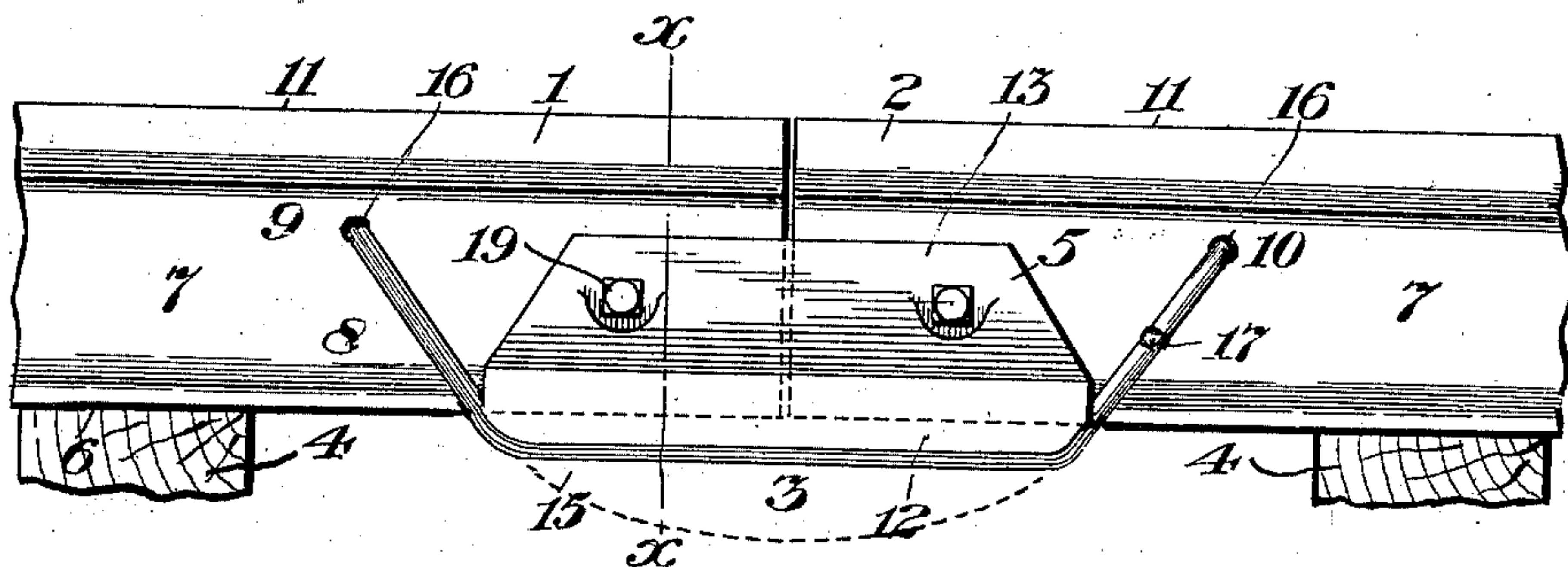


Fig. 2.

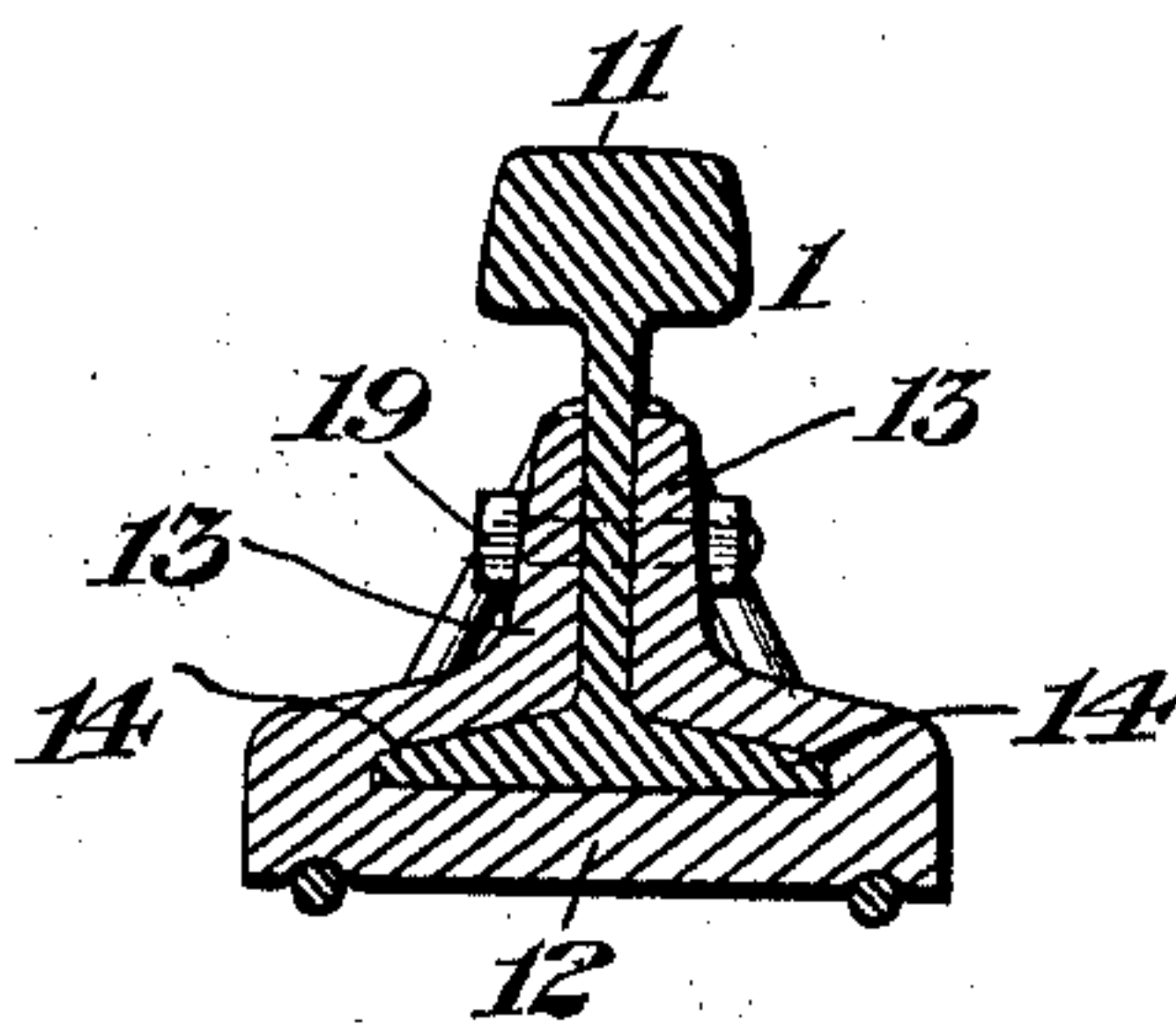
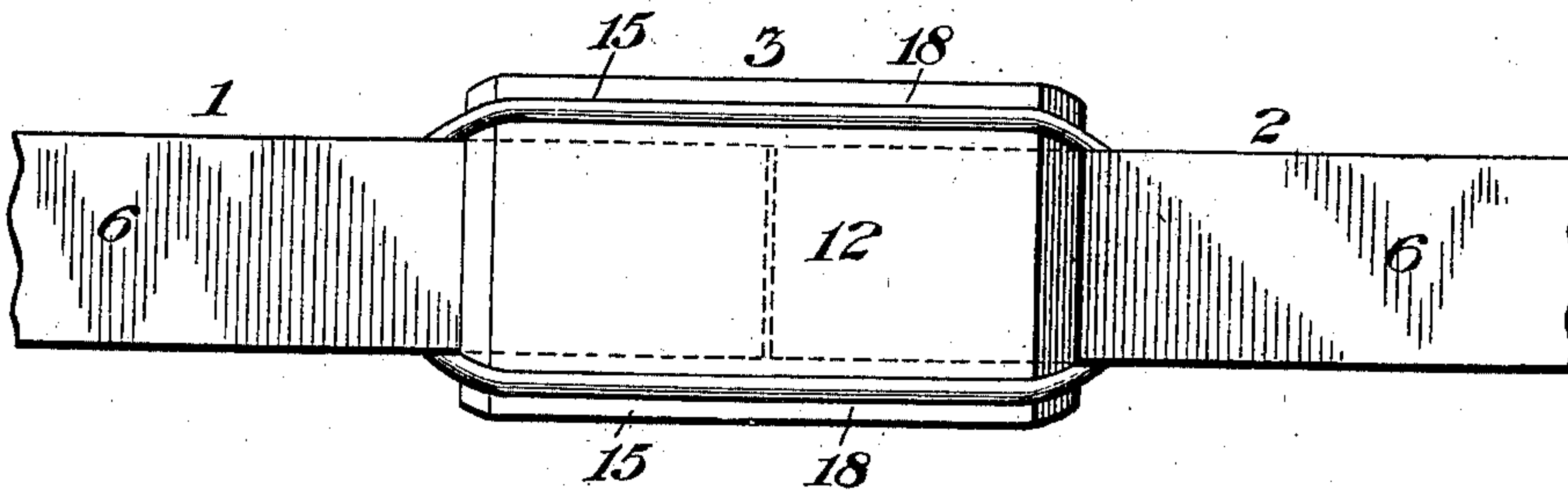


Fig. 3.



Witnesses
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UNITED STATES PATENT OFFICE.

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RAILWAY-RAIL JOINT.

SPECIFICATION forming part of Letters Patent No. 686,111, dated November 5, 1901.

Application filed July 17, 1901. Serial No. 68,640. (No model.)

To all whom it may concern:

Be it known that I, EDWARD B. MURRAY, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Railway-Rail Joints, of which the following is a specification.

This invention relates to railway-rail joints; and it has for its object to provide an improved railway-rail joint, whereby the wheels of rolling-stock may pass with less jar and friction over the meeting ends of jointed rails, thus providing for a more smooth and even movement of the rolling-stock and obviating a considerable percentage of the wear and tear upon the jointed rail ends. The device also operates as an efficient rail-bond under all conditions of use and is relatively simple and inexpensive in construction and operative installation and superior in point of positiveness and general efficiency.

In the drawings, Figure 1 is a side elevation of portions of two railway-rails united at their ends by means of my improved rail-joint. Fig. 2 is a detail transverse sectional view taken upon the line $x x$, Fig. 1. Fig. 3 is a bottom plan view of the rails and the improved joint shown in Fig. 1.

Corresponding parts in all the figures are denoted by the same reference characters.

Referring to the drawings, 1 and 2 designate, respectively, the end portions of two railway-rails provided with my improved joint 3. As illustrated, the rails 1 and 2 are supported adjacent their ends by ties 4, so that the joint 3 is arranged between the ties and is not interfered with in its installation or operation by the same. The ends of the rails in operative opposed relation are received in a chair or cradle 5, which extends across the bases 6 and up around the sides 7 of the rails. The chair or cradle 5 rests upon a truss or hanger 8, which is connected at its ends, as at 9 and 10, with the respective end portions of the rails at points intermediate of the chair or cradle 5 and the ties 4. The end portions of the rails are fitted into the chair or cradle 5 at opposed ends of the same and brought into operative opposed relation, and the truss or hanger 8 is then stretched or tautened beneath the chair or cradle and

secured at its ends to the respective rails, as above stated. The truss or hanger 8 passes loosely over the lower surface portion of the chair or cradle 5, so as to be free of moving relatively to the same when the end of one of the rails is depressed by a wheel of the rolling-stock, and this depression of the end of one rail causes the corresponding depression of the end of the other rail through the medium of the truss or hanger 8, so that the upper surface of the crowns 11 of the rails are brought into perfect fitting relation at their meeting edges, obviating the formation of a step between the upper surfaces of said crowns, which step or inequality of altitude of the surfaces of the crowns of the rails causes, under ordinary circumstances, the jar or shock customarily sustained by the wheel in passing over the rail-joints.

In the preferred form of construction, the chair or cradle 5 consists of an elongated base member 12, which fits beneath the bases 6 of the rails, and upright side members or flanges 13, which closely fit around the base-flanges 14 and the sides of the rails beneath the crowns 11 of the same. When the ends of the rails are fitted into the chair or cradle 5 at opposite ends of the same, the rails are maintained in operative relation and are prevented from relative displacement. The truss or hanger 8 may consist of a single length of wire or metallic cable 15, which is passed through suitable openings 16 in the ends of the rails, and after being tautened or stretched across and beneath the base member 12 of the chair or cradle 5 is connected together at its ends, as at 17. The base member 12 of the chair or cradle 5 is provided with parallel spaced longitudinal grooves 18, in which the parallel strands or portions of the wire or cable 15 are seated, the portions of the wire or cable which are passed beneath the chair or cradle 5 being thus prevented from displacement from operative position. The bottom surface of the base member 12 may be longitudinally curved, as indicated in dotted lines in Fig. 1. As above stated, the truss or hanger 8 is capable of endwise movement across the lower surface of the chair or cradle 5, the parallel portions of the same which lie within the grooves 18 in the base member 12 of said chair or cradle being free to move

across the lower surface of the base member 12 in the depression of the end of one of the rails 1 and 2 by the wheels of the rolling-stock.

It is manifest that the side members 13 of the chair or cradle 5 may be bolted to the ends of the rails, as at 19, said side members 12 thus serving as fish-plates for connection of the rail ends; but this feature is only incidental to my improved construction.

The operation and advantages of my improved railway-rail joint will be readily understood by those skilled in the art to which it appertains. The chair or cradle 5 maintains the opposed ends of the rails in proper operative relation, but under the pressure of the wheels of rolling-stock there exists a tendency for the end of the rail which the wheels are leaving to be depressed to such an extent that the planes of the upper surface portions of the crowns 11 of the rails are forced out of operative edge-to-edge arrangement, forming a step between the end of the rail which the wheels are leaving and the opposite end of the rail upon which the wheels are advancing. This step, which is caused by the relative elevation of the end of the rail onto which the wheels are passing, causes the jar customarily sustained by the wheels of rolling-stock in passing over the rail-joints. In the operation of my improved rail-joint as a car or other wheel reaches a point intermediate of the extreme end of one of the rails and the respective end 9 or 10 of the truss or hanger 8 and intermediate of the end of the respective rail and the adjacent tie 4 upon which it rests the end of the respective rail is depressed adjacent the end of the opposed rail, and the pressure of said depressed rail end upon the chair or cradle 5 puts the truss or hanger 8 under sufficient tension to cause the latter to depress the end of the opposed rail to a degree equivalent to the degree of depression of the end of the rail which the wheel is leaving. The planes of the surfaces of the crowns of the rails are thus brought into convergence at the ends of the rails, and the step which would otherwise exist between the upper surfaces of the crowns of the rails is destroyed, permitting the wheel to pass smoothly and without material jar from one rail to the other. In this operation of the truss or hanger 8, in which by its tension it causes an equal depression of the ends of both rails, the wire or cable 15 of which the truss is constructed slides or moves freely in the grooves 18 in the base member 12 of the chair or cradle, permitting the required compensation of movement of parts. It follows that as soon as the wheel of the car or rolling-stock has passed beyond the tie 4, which is disposed beneath the end of the rail onto which the wheel passes over the joint 3, the freedom of the truss or hanger 8 to move across the lower surface of the chair or cradle permits the opposed ends of both rails to rise into normal position of equal elevation of the crowns of the rails.

It is manifest from the above that after the

provision of an integral or otherwise absolutely rigid rail-joint, such as is produced by welding together the ends of the rails, I am enabled by the combined use of my improved chair or cradle and truss or hanger to provide a rail-joint over which the wheels of rolling-stock may pass in a smooth and even movement and without material jar or shock, this being provided for by the features of convenience and prevention of wear and tear incidental to such movement of the wheels.

The device in its entirety is relatively simple and inexpensive in construction and may be installed with little labor, and a provision of a yielding relation between the several parts causes a length of life and security against fracture and displacement of parts which would be lacking in the existence of a more rigid and unyielding relation between the several parts.

I do not desire to be understood as limiting myself to the details of construction and arrangement as herein described and illustrated, as it is manifest that variations and modifications may be made in the features of construction and arrangement in the adaptation of the device to various conditions of use without departing from the spirit and scope of my invention and improvements. I therefore reserve the right to all such variation and modification as properly fall within the scope of my invention and the terms of the following claims.

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

1. An improved rail-joint, comprising a chair adapted to receive the opposed ends of the rails, and to extend under the bases and around the flanges and up along each side of the webs of the rails, and a truss extending beneath said chair and connected at its ends with the rails at each side of the chair.

2. An improved rail-joint, comprising a chair adapted to receive the opposed ends of the rails and to extend under the base and around the flanges and up along the webs of the rails, and a truss extending beneath said chair and through transverse openings in the rails on each side of said chair.

3. An improved rail-joint, comprising a chair adapted to extend under the bases, around the flanges and up along the webs of the opposed ends of the rails, said chair provided with longitudinal grooves in its bottom surface, and a cable passing through transverse openings in the rails at each side of the chair and having its ends connected to form a continuous cable, said cable being slidable in said grooves.

4. An improved rail-joint, comprising a chair or cradle in which the opposed ends of the rails are received, said chair or cradle consisting of a base member which extends beneath the bases of the rails and side members which extend upwardly and around the base flanges and the sides of the rails, and a

truss which is connected at its ends respectively with the ends of said rails at either side of said chair or cradle and extends beneath said chair or cradle in slidable contact
5 with the same, said base member of said chair or cradle being provided with a longitudinal groove in which said truss is fitted.

5. An improved rail-joint, comprising a chair or cradle in which the opposed ends of
10 the rails are received, and a truss extending between the rails and beneath said chair or cradle, said truss being connected with the

rails at each side of said chair or cradle and consisting of a wire or cable which is passed through transverse openings in the rails and
15 the ends of which are connected to form a continuous entirety.

In testimony whereof I have signed my name in the presence of the subscribing witnesses.

EDWARD B. MURRAY.

Witnesses:

J. R. LITTELL,
M. M. DURKIN.