

UNITED STATES PATENT OFFICE.

WILLIAM MINNICK, OF BARBERTON, OHIO.

RAIL-JOINT.

No. 839,616.

Specification of Letters Patent.

Patented Dec. 25, 1906.

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To all whom it may concern:

Be it known that I, WILLIAM MINNICK, a citizen of the United States, residing at Barberton, in the county of Summit and State of Ohio, have invented a new and useful Rail-Joint, of which the following is a specification.

This invention relates to a railroad-rail joint of that type in which the ends of adjacent rails are arranged to lap.

The invention has for one of its objects to provide a rail-joint of this character which is of simple and substantial construction and so designed that the fish-plates usually employed in connection with rail-joints may be dispensed with, thereby cheapening the joint and permitting the rails to be joined and disconnected more readily.

A further object of the invention is the employment of a longitudinally-extending tongue on one of the rails and a correspondingly-shaped groove on the other rail to receive the tongue, so as to cooperate with the bolts to firmly support one rail on the other, and thereby produce a substantially continuous and stiff joint.

Another object of the invention is the provision of a special form of fastening device to be used in connection with the bolts, so as to maintain the lapped ends of the rails permanently in contact and prevent accidental derailment of a train by the rails becoming disconnected.

With these objects in view and others as will appear as the nature of the invention is better understood the invention comprises the various novel features of construction and arrangement of parts which will be more fully described hereinafter and set forth with particularity in the claims appended hereto.

In the accompanying drawings, which illustrate one of the embodiments of the invention, Figure 1 is a plan view of the rail-joint with a portion of one of the overlapping ends of a rail broken away. Fig. 2 is a transverse section of the rail-joint, taken in the plane of one of the bolts. Fig. 3 is a fragmentary side elevation adjacent the end of one rail. Fig. 4 is a fragmentary perspective view of one end of the rail-joint.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Referring to the drawings, A and B designate the two rails whose adjacent ends are

joined together. These rails may be of any desired construction, size, and weight, those shown representing standard rails, each having a head 1, a web 2, and base 3. The adjacent ends of the two rails are cut away on opposite sides in a vertical plane extending longitudinally, so that by placing the remaining portions of the two rails together they will form a lap-joint, the cross-section of which is the same as that through the body portion of either rail. The longitudinal plane of the cut extends centrally through the head, web, and base, so that the joint is of substantially the same strength on both sides. The longitudinal walls 4 of the overlapping ends of the rails are held firmly in contact by the bolt, so that the head portion of the rails of the joint is practically solid and receives the wear uniformly. The transverse wall 5 at the ends of the cut-away portions of the rails join with the walls 4 by the fillets 6, and the ends 7 of the halved portions 8 of the rails are rounded at 9 to correspond to the fillets.

On the longitudinal wall 4 of one of the rails is provided a tongue 10, extending preferably, the full length of the joint, and in the wall 4 of the other rail is a correspondingly-shaped groove 11, in which the tongue snugly fits. The tongue and groove are preferably arranged at the region where the head and web of the rails connect. The tongue 10 is angular in cross-section with its under surface 12 extending horizontally, so as to provide a substantial means for holding the one rail in fixed relation to the other. The tongue 10 engaging in the groove 11 considerably stiffens the joint and prevents the ends of the rails from sagging, so that a smooth and continuous joint will always be maintained. The fastening-bolts also cooperate to accomplish the same end, so that fish-plates are rendered unnecessary.

The preferred form of fastening devices for holding the ends of the rails together comprise bolts 13, usually three in number, that extend through registering openings 14 in the web portion of the rails. Each bolt 13 is provided with a diametrically-extending slot 15, through which extends a wedge-shaped cotter-pin or key 16. The cotter-pin of each bolt is arranged with one of its edges bearing on the web portion of the adjacent rail and operates on the bolt so as to cause the head thereof to bear on the web of the adjacent rail and hold the lapped portions of the rails

firmly in contact, so that the rails cannot spread apart. Each key is provided with a suitable means tending constantly to draw the key farther into the slot 15 of its respective bolt, so that there is a constant tendency to hold the rails together. One simple way of accomplishing this is to form the narrow end of each cotter-pin into two legs 17, on the outer one of which is arranged a helical compression-spring 18. One end of the compression-spring abuts the bolt, and the opposite end bears against a suitable adjusting means, such as a nut 19 or equivalent device, whereby the spring can be held under compression. With a spring arranged in this manner the cotter-pin tends to wedge farther and farther into the slot of the bolt by reason of the spring tending to expand, so that the bolt and cotter-pin firmly hold the lapped ends of the rails permanently together. This special form of fastening device is of particular utility in connection with the form of rail-joint shown, since it holds the parts of the joint together, and thereby maintains the tongue 10 in the groove 11.

Sufficient clearance is provided between the ends of the rails and between the bolts 13 and openings 14 to permit the rails to contract and expand under changes in temperature.

At each end of the joint is a plate 20, that stiffens the joint, and both cooperate with the tongue and groove between the halved portions of the rails to materially assist in preventing sagging of the parts, thereby maintaining a practically continuous rail. These plates are adapted to be placed on the ties or sleepers adjacent the joint and are notched at 21 to receive spikes.

I have described the principle of operation of the invention, together with the apparatus which I now consider to be the best embodiment thereof; but I desire to have it understood that the apparatus shown is merely illustrative and that various changes may be made when desired as are within the scope of the invention.

What is claimed is—

1. A rail-joint comprising two rails cut away longitudinally in a vertical plane at adjacent ends to form overlapping portions having transverse end surfaces for permitting the rails to be united by a lateral movement, a tongue and groove on the opposed vertical surfaces of said portions and extending longitudinally thereof for engagement by the lateral movement of the rails, said tongue having a horizontal under surface and an inclined top surface, and bolts extending

through the web portions of the rails where the latter overlap.

2. A rail-joint comprising adjacent ends of two rails, slotted bolts connecting the rails, cotter-pins extending through the slots of the bolts, each pin being longitudinally slotted at its narrow end to form legs, a helical spring arranged on one of the legs of each pin so as to abut at one end on the bolt containing the pin, and a nut on the said leg forming an adjustable abutment for the spring to place the same under compression.

3. A rail-joint comprising two rails having their ends cut away and overlapping, a tongue-and-groove connection between the overlapping portions of the rails, bolts for holding the ends of the rails together, cotter-pins on the bolts which are split longitudinally at their narrow ends to form legs, and springs on the legs arranged to act through the cotter-pins and bolts to hold the tongue-and-groove connection in operative relation.

4. A rail-joint comprising two rails having their ends cut away and overlapping, a tongue-and-groove connection between the overlapping portions of the rails, slotted bolts for holding the rails together, wedge-shaped members in the slots of the bolts cooperating with the heads of the latter to prevent the rails from spreading apart, a spring on each of said members tending to wedge the latter and bolts tighter together, and means for adjusting the tension of the springs independently.

5. A rail-joint comprising two rails cut away longitudinally in a vertical plane at adjacent ends to form overlapping portions arranged to permit the rails to be united by a lateral movement, a plate at each end of the overlapping portions for supporting the rails, a tongue and groove on the opposed vertical surfaces of the said portions and extending longitudinally thereof for engagement by the lateral movement of the rails and supporting one overlapping portion throughout the distance between the plates, said tongue having a horizontal under surface and an inclined upper surface, and bolts extending through the web portions of the rail where the latter overlap.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

WILLIAM MINNICK.

Witnesses:

CHAS. AMMERMAN,
ANNA BERNARD.