W. D. WILLIAMS.

RAIL JOINT.

APPLICATION FILED JUNE 27, 1911.

1,030,365.

Patented June 25, 1912.

Fig. 1.

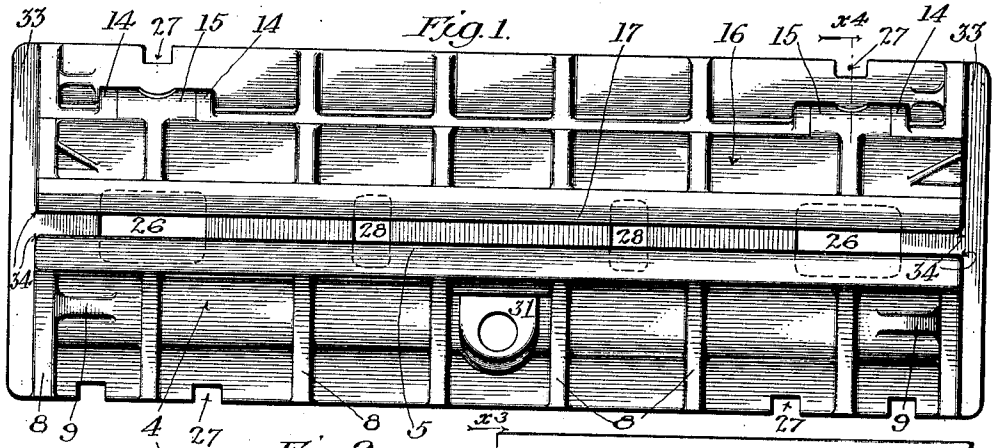


Fig. 2.

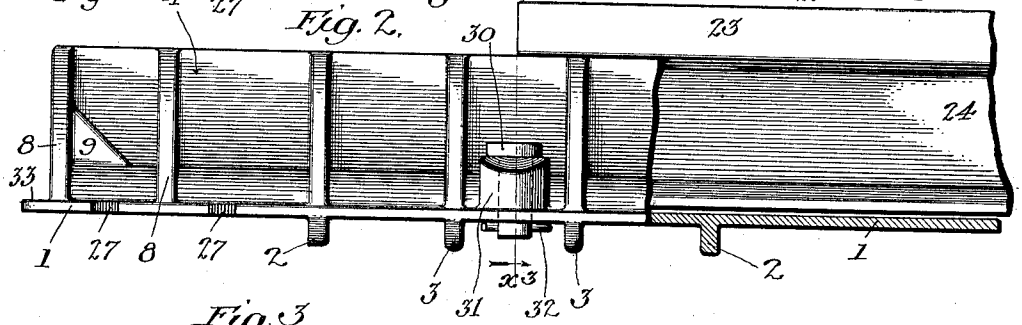


Fig. 3.

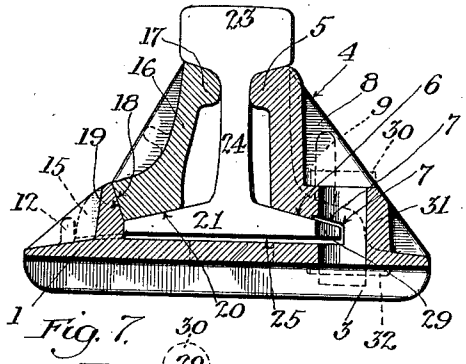


Fig. 5.

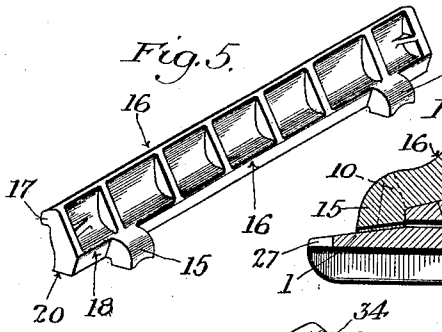


Fig. 4.

Fig. 7.

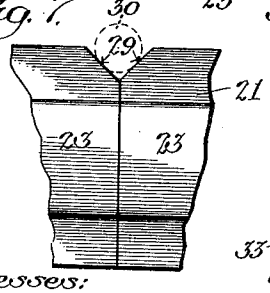
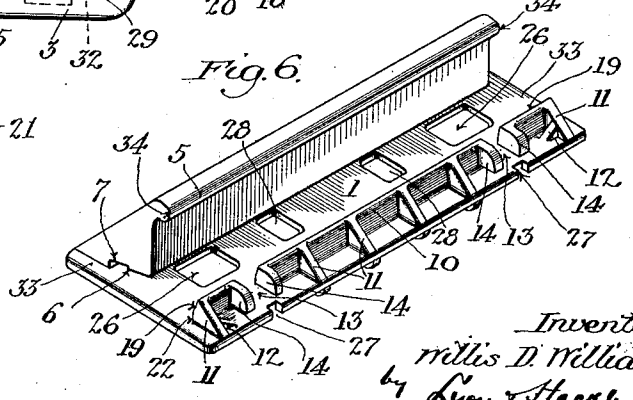


Fig. 6.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILLIS D. WILLIAMS, OF KIRKLAND, ARIZONA.

RAIL-JOINT.

1,030,365. Specification of Letters Patent. Patented June 25, 1912.

Application filed June 27, 1911. Serial No. 635,675.

To all whom it may concern:

Be it known that I, WILLIS D. WILLIAMS, a citizen of the United States, residing at Kirkland, in the county of Yavapai, in the State of Arizona, have invented new and useful Improvements in Rail-Joints, of which the following is a specification.

This invention relates to improvements in rail joints and is an improvement on the boltless rail joint shown in a prior patent of mine, No. 883,601, dated March 31st, 1908, and the object of the present improvements are to support the rail from the head, whereby downward pressure on the head is transmitted to the supporting clamps and the latter are caused to press inwardly and tightly clamp the web of the rail.

Another object of the invention is to provide a square shoulder to fit one edge of the flange of the rail to assist in holding the rail in position against lateral swinging, as will be explained.

Another object is to provide a clearance at the right-hand edge of the base flange of the rail to facilitate the operation of molding in the construction of the rail joint and to also permit of the rail moving gradually to the right when forced down gradually under continued use.

Another object is to engage the adjoining ends of rails by a pin to prevent longitudinal movement thereof and cause each rail to expand and contract in its own length.

Another object is to provide ribs on the underside of the base plate to rest against two ties and prevent creeping of the rail joint in a longitudinal direction.

Another object is to provide a table at each end of the rail joint which facilitates placing the rail joint in position.

Another object is to improve the construction so that it will not be injured when being rammed into position.

Another important object is to provide a clearance between the base flange of the rail and the base plate of the joint to permit the rail to work downward under wear, and always be firmly secured by the clamping members.

Another object is to construct the two clamps with a slightly contracted rail aperture so that when rammed into position on the rail, the rail will act as a broach to cut its own way and thus produce a perfect fit between the rail and clamps.

Further objects of the invention relate to certain details for specific construction which will be brought out in the following description.

Referring to the drawings: Figure 1 is a plan view with the rail removed. Fig. 2 is a side elevation showing one rail in position. Fig. 3 is a section on line x^3—x^3 Fig. 2. Fig. 4 is a section on line x^4—x^4 Fig. 1. Fig. 5 is a perspective in detail on a reduced scale of the removable clamp. Fig. 6 is a perspective in detail of the base plate and fixed clamp. Fig. 7 is a plan view of adjoining ends of rails.

1 designates the base plate of the joint which on its underside is provided with two flanges 2 which are adapted to rest against the edges of two ties and thus hold the joint against movement in a longitudinal direction. Two flanges 3 are also formed on the underside for the purpose of strengthening the joint.

Formed integrally with the base plate 1 and on one side thereof is a fixed side clamp 4 which is formed with an inwardly projecting supporting flange 5 and is undercut to form a flange receiving recess 6, the upper wall of which is cut to form a clearance recess 7. Webs 8 are provided for strengthening the side clamp without adding undue weight to the joint and the end webs are further supported by longitudinal bracing webs 9.

On the opposite side of the base plate 1 as clearly shown in Fig. 6, is a retaining abutment 10 preferably formed integrally therewith and strengthened by lateral webs 11, the end webs being further supported by bracing webs 12. Two recesses 13 are formed in the abutment 10 and have webs 14 which form bearing faces. The recesses 13 receive lugs 15 formed on a detachable side clamp 16 shown in detail in Fig. 5 and having an inwardly projecting rail supporting flange 17, and also formed with a beveled edge 18 which is adapted to bear against a similarly beveled edge 19, formed on the abutment 10 and has a beveled lower face 20 which is adapted to fit the base flange 21 of the rail as shown in Fig. 3. Below the beveled portion 19 the abutment 10 is formed with a straight or vertical shoulder 22 which rests against the edge of the base flange 21 of the rail.

When the rail is in position, the head 23 is supported by the flanges 5 and 17 of the side clamps, while the web 24 is clamped

therebetween by the inward pressure of the two flanges 5 and 17, caused by the downward pressure on their upper beveled faces of the head 23 of the rail. The detachable side clamp 16 is capable of a rocking action whereby downward pressure of the rail tends to swing the upper end of the side clamp inward, so that the web 24 is tightly clamped between the two side clamps. Continued use of the rail and downward pressure thereon cause it to gradually move down closer to the base plate, the clearance space 25 permitting, and as this occurs, the removable side clamp 16 follows the rail and the beveled faces 18 and 19 coact to move the lower edge of the side clamp 16 to the right, and thus keep the same wedged tightly against the base flange 21 of the rail at all times. This wedging action of the clamp 16 forces the right-hand portion of the flange 21 of the rail firmly into the recess 6 under the fixed clamp 4 and the clearance space 25 permits of this slight necessary movement of the flange 21.

The base plate 1 is provided with two openings 26 which come directly over the ties on which the rail joint rests, and the wood of the ties under the weight of traffic protrudes slightly into the orifices 26 and thereby serves to aid in holding the joint in position. Notches 27 are provided to receive spikes. Orifices 28 are also provided to permit water and dirt to escape, thus keeping all of the contacting surfaces of the joint and rail in perfect fit and securely holding the rail.

The ends of the adjoining rails as shown in Fig. 7, are beveled at 29 to permit of the passage of a retaining pin 30 indicated by dotted lines, the pin 30 extending down through a perforated boss 31 and being secured by a key 32 as shown in Fig. 2. The pin 30 prevents endwise movement of the rails with respect to the joint and causes the contraction and expansion of the rails to take place within their own length. The square shoulder 22 fits the edge of the flange 21 of the rail and prevents the rail from rocking laterally, whereas in my former patent, the beveled faces 19 extended to the base plate 1, and there was a tendency of the left edge of the flange 21 to rise, which in the present construction is obviated by the square shoulder 22.

The lugs 15 as clearly shown in Fig. 4, have a clearance at the bottom so that they do not touch the base plate 1. This takes the weight off the lugs while the lugs hold the clamp against endwise movement. The extra thickness at the boss 31 between the two center ribs 8 gives strength at this point so that the perforation which receives the pin 30 does not weaken the joint.

An important feature of the present invention is that I preferably construct the two clamps so that their flanges 5 and 17 are a trifle over-size to form the aperture which receives the rail web 24 of, for example, one-thirty-second of an inch smaller than the actual size of the web, so that as the joint is moved into position over the end of the rail, the end edges of the rail act as a broach to cut its own way through the flanges 5 and 17, thus forming a perfect fit between the flanges 5 and 17 and the head 23 and web 24. In moving the joint onto the rail it is forced on by ramming against the end of the side clamp. This ramming action is resisted by the webs 9 which prevent injury to the joint. It should be understood that I do not consider this cutting action of the rail in driving the joint into position, as a necessary feature, but as a valuable one in securing a perfect fit.

The ends of the base plate 1 are extended to form tables 33 which are of use in placing the joint in position, as after the joint has been slid over one rail, the end of the adjoining rail may be rested on the table 6 which will bring the rail into perfect vertical alinement, whereupon by swinging the rail laterally, it will be brought into horizontal alinement. In order to facilitate the entrance of the rail into the joint, the ends of the clamps are slightly rounded as at 34.

What I claim is:

1. A base plate, a clamp on one side thereof, a removable clamp on the other side thereof, said clamps having flanges at their upper ends for supporting the head of the rail, there being a space between the lower flange of the rail and the base plate, said base plate having ribs on the underside adapted to bear against the inner edges of the supporting ties and having ribs between said first ribs, said base plate having orifices over the ties.

2. A base plate, a clamp on one side thereof, a removable clamp on the other side thereof, said clamps having flanges at their upper ends for supporting the head of the rail, there being a space between the lower flange of the rail and the base plate, said base plate having ribs on the underside adapted to bear against the edges of the supporting ties, that portion of said base plate between the ties having orifices near the center for the escape of water and dirt.

3. A base plate, a clamp on one side thereof, a removable clamp on the other side, said clamps having flanges at their upper ends for supporting the head of the rail, there being a space between the lower flange of the rail and the base plate, the first clamp having a clearance space to receive the edge of the base flange of the rail, the removable clamp having a beveled side edge, and a retaining abutment on the base plate having a beveled edge coacting with the beveled edge of the side clamp, said abutment hav-

ing recesses and lugs formed on said removable clamp engaging said recesses, there being a clearance between said lugs and the base plate.

4. A base plate, a clamp on one side thereof, a removable clamp on the other side, said clamps having flanges at their upper ends for supporting the head of the rail, there being a space between the lower flange of the rail and the base plate, said flanges being formed with a rail aperture smaller than the actual rail, whereby the joint is forced on, and the rail cuts its own way.

5. A base plate, a clamp on one side thereof, a removable clamp on the other side, said clamps having flanges at their upper ends for supporting the head of the rail, there being a space between the lower flange of the rail and the base plate, the first clamp having a perforated boss, a pin extending through said boss, the lower base flanges of adjoining rails having beveled corners to engage said pin.

6. A base plate, a clamp on one side thereof, a removable clamp on the other side, said clamps having flanges at their upper ends for supporting the head of the rail, there being a space between the lower flange of the rail and the base plate, the first clamp having a clearance space to receive the edge of the base flange of the rail, the removable clamp having a beveled side edge, and a retaining abutment on the base plate having a beveled edge coacting with the beveled edge of the side clamp, said abutment having a square shoulder to receive the edge of the lower flange of the rail and being beveled above said square shoulder to coact with the beveled face of the removable clamp.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 22d day of June, 1911.

WILLIS D. WILLIAMS.

In presence of—
G. T. HACKLEY,
GLADYS RUSSELL.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."