H. F. ROACH.

RAIL JOINT.

APPLICATION FILED SEPT. 2, 1911.

1,013,852.

Patented Jan. 2, 1912.

2 SHEETS—SHEET 1.

Fig. 1.

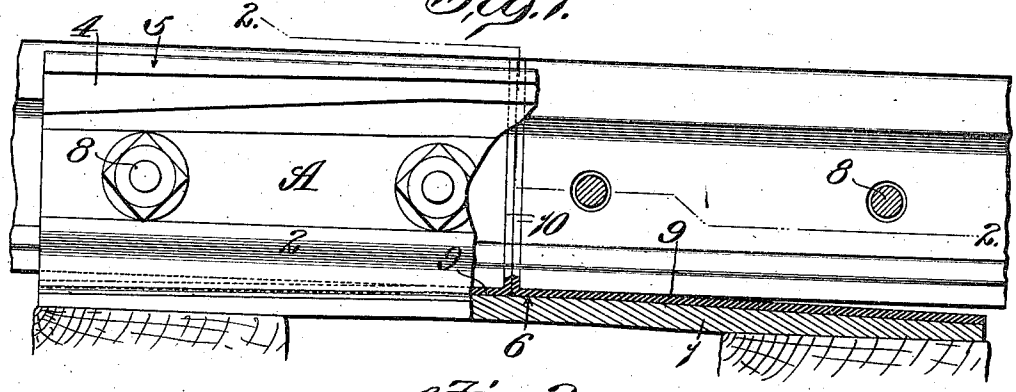


Fig. 2.

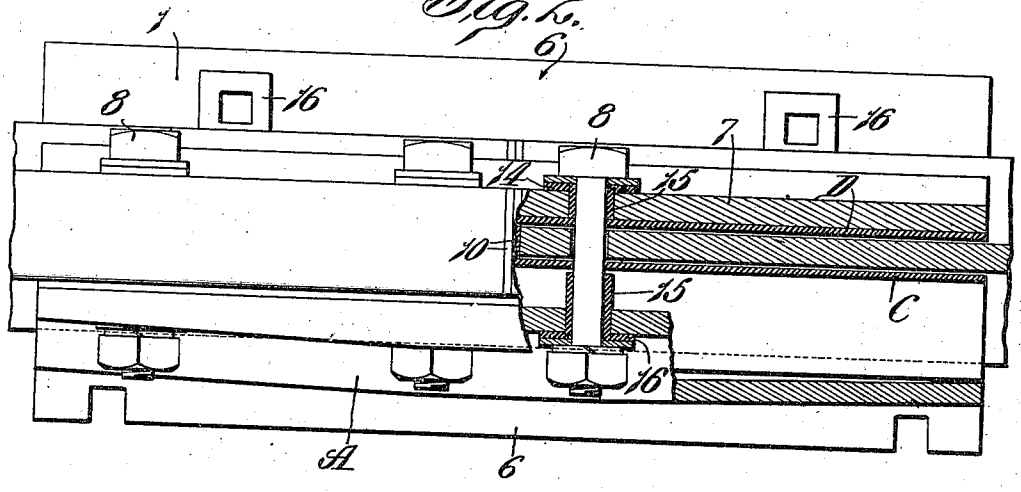


Fig. 3.

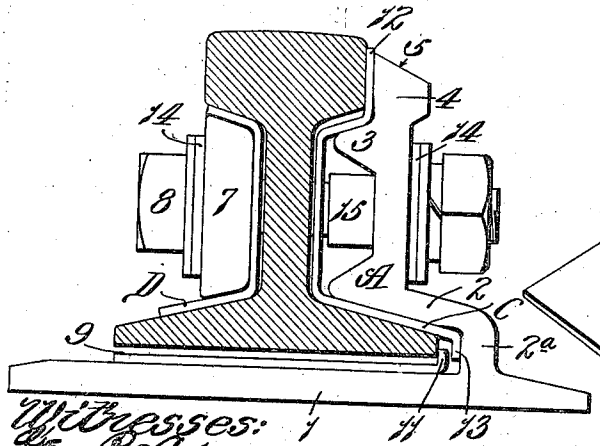
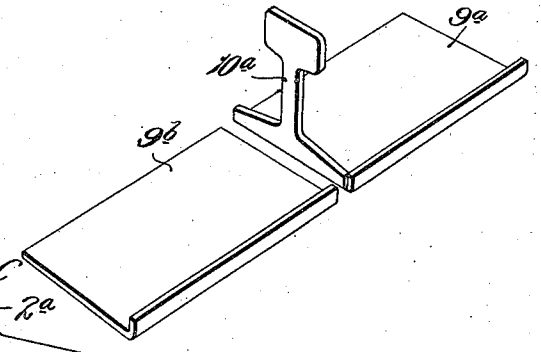


Fig. 3a.



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2 SHEETS—SHEET 2.

Fig. 4.

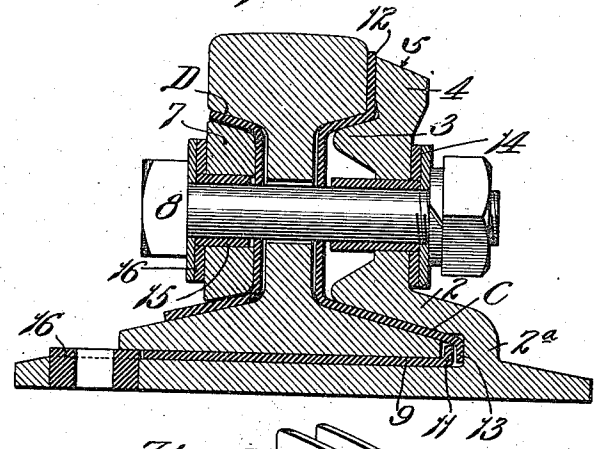


Fig. 5.

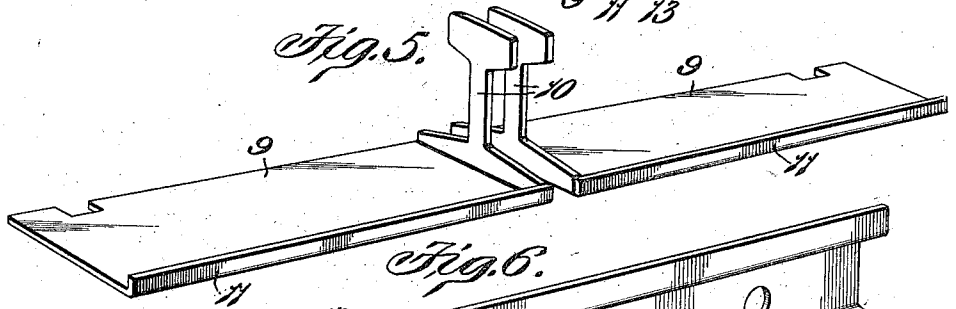


Fig. 6.

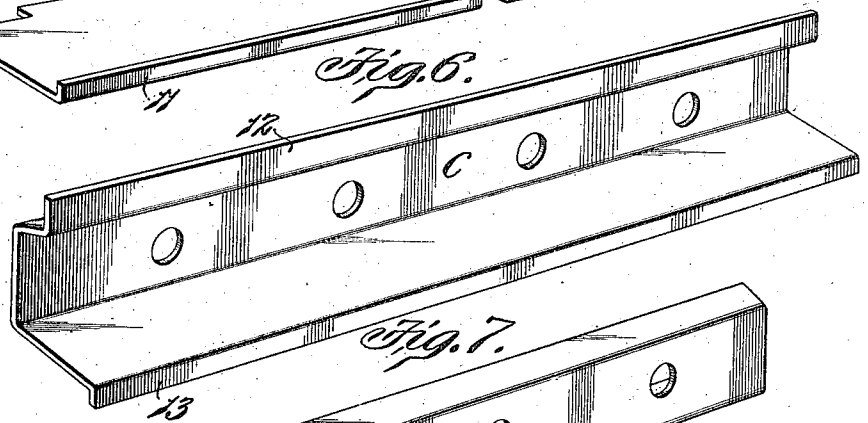


Fig. 7.

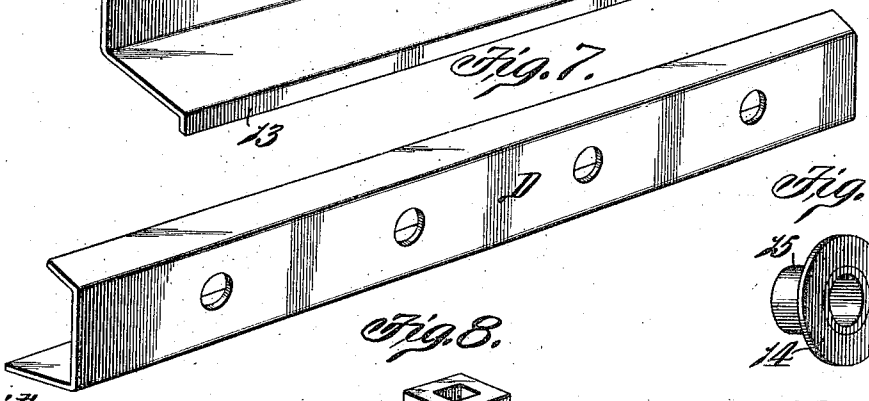
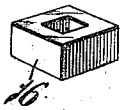


Fig. 9.

Fig. 8.



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UNITED STATES PATENT OFFICE.

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RAIL-JOINT.

1,013,852. Specification of Letters Patent. Patented Jan. 2, 1912.

Original application filed May 5, 1911, Serial No. 625,175. Divided and this application filed September 2, 1911. Serial No. 647,304.

To all whom it may concern:

Be it known that I, HARRY F. ROACH, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Rail-Joints, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to rail-joints, and is a division of my allowed application Serial No. 625,175, filed May 5, 1911.

One object of the invention is to provide an insulated rail-joint which is so designed that the insulation is not subjected to a hammering action when wheels pass over the joint.

Another object is to provide an insulated rail-joint which is so designed that ample provision is made for draining and ventilating the joint, thereby increasing the life of the insulating material and also reducing the cost of maintenance of the joint. And still another object is to provide an insulated rail-joint in which the insulating material is so formed that rust and "findings," namely, small metal grindings from the brake-shoes, wheels, and rails, cannot collect at such a point that a short circuit will be produced.

Other objects and desirable features of my invention will be hereinafter pointed out.

Figure 1 of the drawings is a side elevational view of an insulated rail-joint constructed in accordance with my invention, the girder being broken away so as to more clearly illustrate the base portion of the joint on which the sole plates rest; Fig. 2 is a top plan view partly in horizontal section; Fig. 3 is an end elevational view of the joint showing one of the rails in cross section; Fig. 3ª is a perspective view of one form of sole plate that can be used with the joint; Fig. 4 is a vertical cross sectional view; and Figs. 5 to 9, inclusive, are perspective views of the various insulating members which are interposed between the rails and the metallic parts of the joint.

Referring to the drawings which illustrate the preferred form of my invention, A designates a girder arranged at one side of the rails and provided with an integral horizontally disposed rail-supporting portion 1 that forms the tension member of the girder, said rail-supporting portion 1 being formed integral with a portion 2 that laps over the top faces of the base flanges of the rails and projects downwardly alongside of the edges of the base flanges of the rails, as shown in Figs. 3 and 4. The compression element of the girder consists of a member 3 that extends longitudinally of the web of the girder underneath the heads of the rails and a member 4 that extends alongside of the heads of the rails, the top face of said member 4 being lower than the tread surfaces of the rails.

The horizontally disposed rail-supporting portion 1 of the joint is provided at approximately its center with a flat surface 6 of relatively great area, and the end portions of the top face of this rail-supporting portion incline downwardly from said central flat face 6, as shown in Fig. 1. The area of the flat surface 6 is determined by the load which the rail is intended to carry. Consequently, said surface 6 can be so proportioned that it does not extend any farther in either direction from the center of the joint than is absolutely necessary, thereby making it possible to design the joint in such a manner that only the required supporting surface is provided for the base flanges of the rails. It is preferable to arrange a bar 7 alongside of the webs of the rails and connect said bar to the girder A by means of bolts 8 which pass through said parts and through the webs of the rails. The member 3 which lies under the heads of the rails is preferably so designed that it is spaced far enough below the heads of the rails at the ends of the joint to permit the rails to deflect downwardly when a load is imposed upon the same and thus bring the base flanges of the rails gradually into engagement with the portions of the sole plates that cover the inclined surfaces on the top face of the rail-supporting member 1 of the joint.

Suitable insulating members are arranged between the rails and the various elements which constitute the joint, and in the preferred form of my invention as herein shown, the insulating material which is interposed between the ends of the rails is

integrally connected to the insulating material that is interposed between the base flanges of the rails and the rail-supporting member 1 of the joint. I prefer to use a pair of sole plates 9 formed of insulating material and each provided at its inner end with an integral end-post 10, both of which lie between the ends of the abutting rails, but, if desired, sole plates, only one 9^a of which is provided with an integral end-post 10^a, may be used for this purpose, as shown in Fig. 3^a, the sole plate 9^a extending under one rail with the integral end-post 10^a lying between the abutting ends of the rails and the sole plate 9^b extending under the other rail. The sole plates 9 are provided at one edge with upwardly projecting flanges 11 which extend alongside of the edges of the base flanges of the rails, and the insulating member C, which is interposed between the rails and the girder A, conforms to the shape of one side of the rails and is provided with a depending flange 13 that lies between the upturned flanges 11 on the sole plates and the part 2^a of the girder that lies adjacent the edge portions of the base flanges of the rails. Preferably, the insulating member C is provided at its upper edge with a flange 12 that projects upwardly a slight distance above the top face 5 of the member 4 of the girder.

The insulating member D which is arranged between the bar 7 and the rails, conforms to the shape of the rails, and suitable washers 14 and sleeves 15 of insulating material are provided for insulating the bolts 8 and the nuts thereon from the metallic parts of the joint. I also prefer to arrange bushings 16 of insulating material in openings in the rail-supporting member 1 of the joint for receiving the spikes or fastening devices that secure the joint to the ties, said bushings 16 also operating to prevent the sole plates from moving laterally relatively to the joint. By forming the joint in this manner, namely, providing the rail-supporting member 1 with a flat surface of relatively great area, and having the remaining portions of the top face of said rail-joint incline downwardly from said central flat face so that the base flanges of the rails will not normally rest upon the downwardly inclined portions of the rail-supporting member, I practically eliminate reverse strains and distribute the load to the ties on which the joint rests without making a fulcrum of the ties and without causing a pumping up and down of the ties due to fulcruming. The flange 2, or portion of the girder which laps over the base flanges of the rails, holds the end portions of the rails firmly down upon the portions of the sole plates that cover the flat supporting surface 6 of the member 1 and thus securely clamps the end portions of the rails in position and prevents them from rising upwardly off the sole plates at the center of the joint.

An insulated rail-joint of the construction above described has a relatively large area of insulation, and as the joint is designed in such a manner that the pressure of the load is applied gradually to the rail-supporting member 1, the sole plates will not receive sudden shocks or be hammered when wheels pass over the joint. Another desirable feature of such a joint is that rust and "findings," namely, small metal grindings from the brake-shoes, wheels, and rails, cannot collect and form a bridge across the ends of the rails and thus produce a short circuit owing to the fact that the end-posts are formed integral with the insulating sole plates. There is sufficient space between the girder A and the insulating member C to insure proper ventilation and drainage, and as said member C laps over the sole plates and terminates at the rail-supporting member 1 whose top face inclines downwardly from the central portion thereof, ample provision is made for drainage. Consequently, the cost of maintaining an insulated rail-joint of the character above-described will be very low because the joint is so designed that there is comparatively little wear on the insulating material and water cannot collect and stand on said insulating material.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An insulated rail-joint comprising a rail-supporting member provided with a portion that extends alongside of the rails, an insulating member arranged upon said rail-supporting member under the base flanges of the rails and provided with an integral portion that lies between the terminals of the rails, and a separate and distinct insulating member arranged between the rails and the portion of said rail-supporting member that extends alongside of the rails.

2. In an insulated rail-joint, a metallic rail-supporting member, and a pair of sole plates of insulating material arranged between the base flanges of the rails and said rail-supporting member and provided with integral end-posts that lie between the terminals of the rails.

3. An insulated rail-joint consisting of a horizontally disposed rail-supporting member provided adjacent one edge with a portion that extends alongside of the rails, the top face of said horizontally disposed member being flat at approximately its center and inclined downward toward its ends, an insulating member arranged between said portion and the rails and provided at

its lower edge with a depending flange, sole plates arranged under the base flanges of the rails, and upwardly projecting flanges on said sole plates which lie adjacent the dependent flange on said insulating member.

4. An insulated rail-joint consisting of a member having a horizontally disposed rail-supporting portion and a portion which extends alongside of the rails, the top face of said rail-supporting portion being flat at approximately the center and inclined downward toward its ends, and insulating material arranged between said member and the rails.

5. An insulated rail-joint consisting of a member having a horizontally disposed rail-supporting portion and a portion which extends alongside of the rails, the top face of said rail-supporting portion being flat at approximately the center and inclined downward toward its ends, insulating sole plates arranged between said horizontally disposed portion and the base flanges of the rails and provided with integral end-posts which lie between the terminals of the rails, upturned flanges on one edge of said sole plates, an insulating member arranged between the rails and the portion of said member which extends alongside of the rails, and a depending flange on said insulating member which laps over the upturned flanges on the sole plates.

6. An insulated rail-joint having a horizontally disposed rail-supporting member provided with a portion which laps over part of the base flanges of the rails, a sole plate for insulating said member from the base flanges of the rails, and an insulating bushing arranged in said member for receiving a fastening device and operating to retain said sole plate in position.

7. An insulated rail-joint consisting of a girder having a horizontally disposed rail-supporting portion and a member which extends alongside of the heads of the rails, the top face of said member being lower than the treads of the rails, and insulating material interposed between the rails and said girder and projecting slightly above the top face of the member on the girder which extends alongside of the heads of the rails.

In testimony whereof I hereunto affix my signature in the presence of two witnesses, this twenty ninth day of August 1911.

HARRY F. ROACH.

Witnesses:
WELLS L. CHURCH,
GEORGE BAKEWELL.