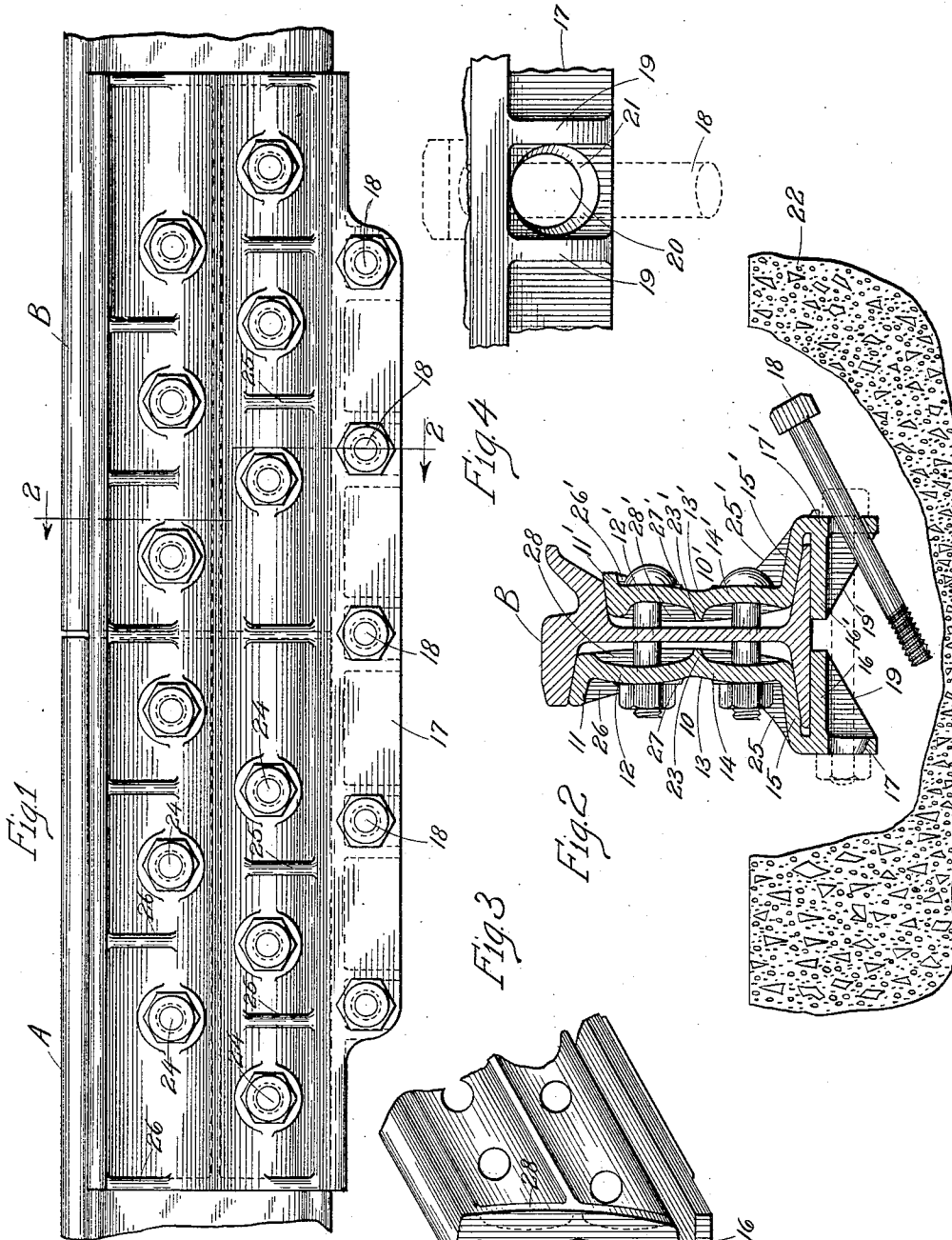


J. G. McMICHAEL.
RAIL JOINT.
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1,042,021.

Patented Oct. 22, 1912.



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UNITED STATES PATENT OFFICE.

JAMES G. McMICHAEL, OF CHICAGO, ILLINOIS.

RAIL-JOINT.

1,042,021.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JAMES G. McMICHAEL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Rail-Joints, of which the following is a specification.

My invention relates to improvements in rail joints, and has for one of its objects to provide a durable, strong, and efficient rail joint for railway rails.

My joint is especially designed to be used in tracks having girder rails wherein the lower portions of the rails together with that portion of the joint is depressed below the surface of the roadway.

One of the objects of my invention is to provide in a joint of the character described, a means whereby the bolts below the surface of the rail may be inserted without the necessity of making large excavations in the roadway within which to insert the bolt.

Another object of my invention is to provide, in a joint of the character described, a strong, efficient, and durable structure below the base of the rail, and for the accommodation of the bolts whereby the lower portion of the joint throughout substantially the entire length thereof may be forcibly brought into intimate contact with the base of the rail.

Other and further objects of my invention will become apparent to persons skilled in the art from a consideration of the specification taken in conjunction with the drawings, wherein—

Figure 1 is a longitudinal elevation of the joint with portions of the abutting rails to which it is applied broken away; Fig. 2 is a section taken on line 2—2 of Fig. 1; Fig. 3 is a broken away fragmentary perspective view of the end of the rail joint, looking toward the inside surface of the same, showing the elongated bolt holes; and Fig. 4 is a fragmentary enlarged detail of a portion of the base structure of the joint.

In all of the views, the same reference characters indicate similar parts.

A and B indicate the adjoining ends of alining rails to which the joint is attached.

The joint is composed of two sections, 10 and 10', substantially alike in general structure. In the particular embodiment illustrated, wherein a girder rail is chosen for an exemplification, although it is obvious that my invention is equally applicable to

a T-rail, section 10 is vertically smaller than section 10' for the accommodation of the peculiarly formed rail with which it is shown to be associated. Each of the sections is provided with a head, 11 and 11', outwardly curved or arched portions, 12 and 12', extending the full length of the joint, and meeting at points, 13 and 13', nearer the web of the rail, where they come in conjunction with similarly outwardly curved parts, 14 and 14'. Folded portions, 15 and 15', immediately overlie the base of the rail and make intimate contact with the top surface thereof. Base portions, 16 and 16', underlie the rail, preferably to a point near the center thereof. Downwardly extending ribs, 17 and 17', extend nearly the full length of the joint sections, and form a sub-base structure for the reception of the bolts, 18, of which there are, in the specific construction illustrated, five, so that they extend under the base of the joint and through perforations in the downwardly extending ribs, 17 and 17'. Ribs, 19 and 19', extend from the bottom of the downwardly extending ribs 17 and 17', to points near the inner limits of the base portions, 16 and 16', these strengthening ribs on each side of each of the bolts providing pockets for the bolts. The ribs 17 and 17' are perforated by bolt holes 20 which are enlarged downwardly at the inner surface of the rib, as clearly shown in 21, for the convenient introduction of the bolt 18 without the necessity of large excavations being made in the roadway, 22, for the insertion of the bolts. The tapering form of the holes for the bolts permit them to be inserted at an angle and also provide by the inner tapering surfaces of the holes a guide for the end of the bolt in the opposite section, in the operation of inserting the bolt into similar perforations provided in the opposite rib.

A central longitudinal rib, 23—23', is provided in the superstructure in the joint and extends substantially the full length of the joint between the outwardly arched parts, each of the latter being provided with a row of holes, one row of holes being located above the rib and the other in the other arch below the rib for the accommodation of bolts, 24, which latter take through both sections of the joint and rail, and serve to hold the sections into intimate and firm contact with the rail. Strengthening ribs, 25 and 25', extend from points near the

edge of the folded portion, 15 and 15', to points near the center of the rail, there being a rib on each side of each of the bolt holes provided in the superstructure. Other ribs, 26 and 26', extend from the bottom of the head, 11 and 11', downwardly toward the center of the vertical portion of the section. Bosses, 27 and 27', surround the bolt holes provided for the bolts, 24, and form a proper receiving surface for the reception of the nuts on the bolts, 24. At the end of the joint section, ribs, 28 and 28', are provided to produce a finish, and to add to the strength of the section.

I have found in practice that the distribution of metal in the new joint, produces the maximum strength consistent with the necessary resiliency, with the smallest quantity of metal. The sub-structure is especially advantageous as affording a means for maintaining close contiguity of the bottom parts of the joint with the rail base, and for reinforcing the vertical strength of the joint for a considerable distance from the central point where the greatest strain comes. The arch-shaped portions in the vertical walls of the joints through the respective apices of which the bolts pass, afford maximum resistance to the bolts, so that the tension produced by the bolts serves not to unduly deflect the vertical portion of the joint which intervenes between the head and base of the rail. This advantage is obtained by the use of the double row of holes located so as to pass through the apices of the arch portions of the joint.

Having described my invention, what I claim and desire to secure by Letters Patent of the United States is:

1. A railway rail joint comprising oppo-

site sections, each section provided with a superstructure having a vertical portion, and a laterally extending portion, a sub-structure comprising a base plate, underlying the rail, and a downwardly extending rib at the intersection of the laterally extending portion and the base plate, the under side of said rib being substantially parallel with said base portion, said rib having a suitable number of vertically elongated perforations for a like number of bolts.

2. In a railway rail joint comprising opposite sections, each section provided with a vertical portion, a folded portion, and a bolt-receiving portion below the base of the rail, said bolt-receiving portion having a vertically elongated perforation, whereby said bolt may be inserted therein when the uninserted portion thereof is raised above the horizontal plane of said perforation.

3. A joint having a portion to be bolted lying below the base of the rail, said portion provided with a perforation larger at the inside surface than the outside surface thereof, whereby a bolt may be inserted therein when held at an angle to the axis of said perforation.

4. A rail joint section having a portion to be bolted, lying below the base of the rail, said portion provided with a vertically elongated perforation, whereby a bolt may be inserted therein at a vertical angle from the horizontal plane.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

JAMES G. McMICHAEL.

In the presence of—

W. LINN ALLEN,

MARY F. ALLEN.