No. 717,025. Patented Dec. 30, 1902.

H. B. NICHOLS.

RAIL JOINT.

(Application filed July 8, 1902.)

(No Model.)

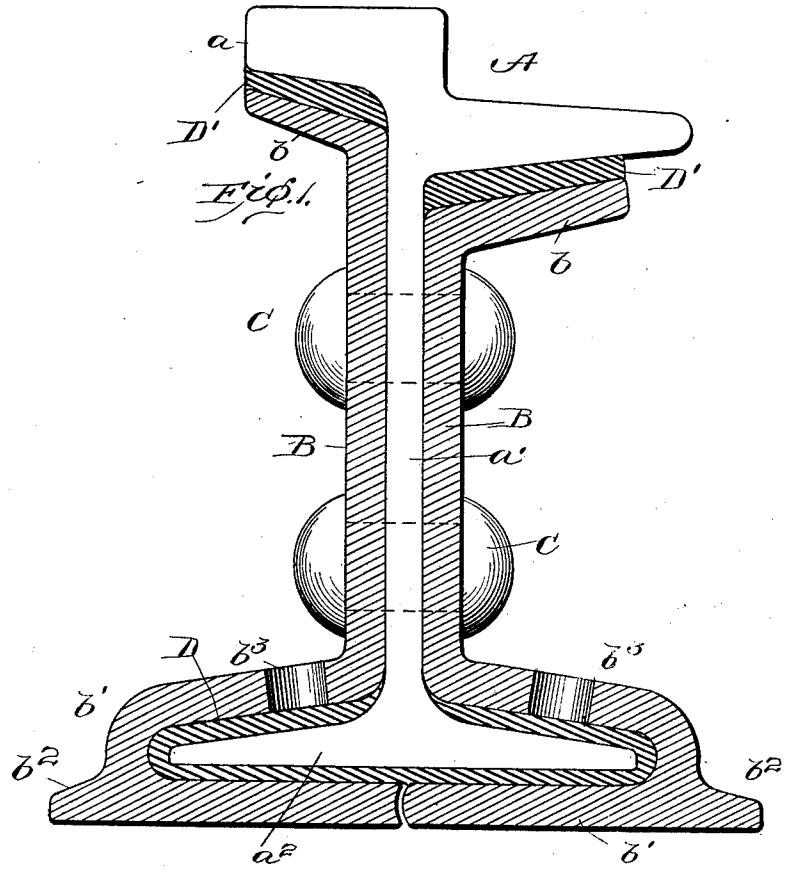
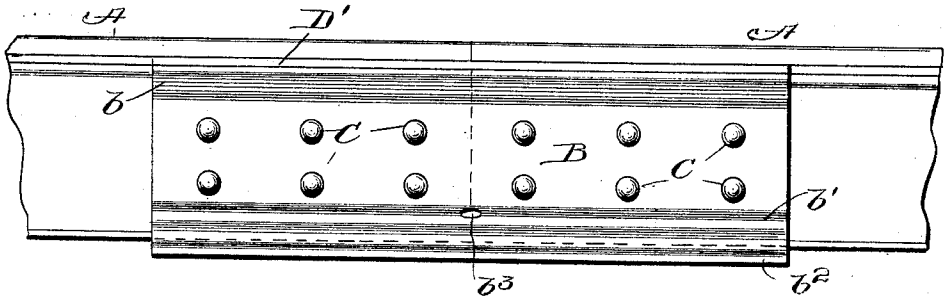


Fig. 1.

Fig. 2



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UNITED STATES PATENT OFFICE.

HENRY B. NICHOLS, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO CONSTANTINE B. VOYNOW, OF PHILADELPHIA, PENNSYLVANIA.

RAIL-JOINT.

SPECIFICATION forming part of Letters Patent No. 717,025, dated December 30, 1902.

Application filed July 8, 1902. Serial No. 114,732. (No model.)

To all whom it may concern:

Be it known that I, HENRY B. NICHOLS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Rail-Joint, of which the following is a specification.

My invention relates to improvements in railway-rail joints in general, and in particular to rail-joints of electric railways, in which, besides performing their usual function of connecting and supporting the rail ends to form a continuous track-surface, the joints themselves constitute electrical connectors or bonds for the rails.

The principal object of the invention is to produce a joint for abutting rail-sections in which said sections are firmly held against lateral displacement and which shall resist to a maximum degree the tendency to vertical displacement and wear due to the passage and pounding of the rolling-stock and traffic over and upon the rail-surface and which shall constitute an efficient electrical connection between the rails.

Other objects and advantages of the invention will more fully appear as I proceed with a detailed description of the invention, which follows.

A preferred embodiment of my invention is illustrated in the accompanying drawings and will be hereinafter described; but it will be understood that I do not limit myself or the scope of the invention to the precise form set forth, as various changes in the details of construction may be made without departing from the spirit of the invention, and in these drawings—

Figure 1 is a transverse section taken through the central portion of the rail-joint and showing its construction, and Fig. 2 is a side elevation of the same on a reduced scale.

Referring to the drawings, A A represent abutting rail-sections, which may be of any well-known or preferred form, each having a head a, a web a', and a base a^2. To connect these abutting rail-sections, I employ splice-bars of peculiar form, each having a central flattened portion B, adapted to lie against the web of the rails, a lower extension b', extending around the base-flange, approximately to the middle point thereof, and an upper flange b, extending beneath and in proximity to the head of the rails. The splice-bars are secured to the webs of the rail-sections by rivets or other suitable means and are provided upon the outer bends of the extensions b' with flanges or projections b^2, by which they may be secured to the cross-ties or other support.

The space formed between the splice-bar extensions b' and the rail-bases is filled by a suitable liner or filler D, which is introduced in a molten state through the openings b^3 and completely surrounds, preferably, the rail-bases and forms with the extensions b' a rigid support for the rails. The spaces formed between the splice-bar upper flanges b and the lower surfaces of the rail-heads a are also preferably provided with a similar liner or filler D′, which bears both upon said flanges and rail-heads and forms a support for the latter, taking up and compensating for any irregularities due to variations of casting or rolling of the splice-bars. It is, however, not in all cases necessary to introduce the liner or filler between the splice-bar upper flanges and the rail-heads, as in some cases I may prefer to have them contact with and bear directly against the rail-heads, the irregularities in casting or rolling the splice-bars being taken up and compensated by the liner or filler at the base of the rails. This liner or filler may be composed of any suitable substance or compound—such as zinc, spelter, Babbitt metal, or other suitable substance—and is applied in a molten state. It should preferably be a substance which expands upon cooling and hardening and should have a fusing-point which is below that of the rails.

The joint is formed in the following manner: The rail ends are first properly cleaned by a sand-blast or other suitable means and the splice-bars placed in position. The rails are then brought to a uniform surface by the insertion of wedges between the bar and tram of the rails and held in place by temporary bolts while the bolt or rivet holes are being reamed. After the splice-bars have been riveted the joint is heated by oil-burners,

the holes b^3 and spaces at the ends of the bars having been, however, previously calked with asbestos-cloth to prevent soot entering between the bars and rails. Molten zinc or other material is poured through hole b^3 between the bar extensions and the base of the rails and also by means of dams between the lower surface of the rail-heads and the upper flanges of the splice-bars. When this liner has hardened, a rigid, efficient, and durable joint is the result.

Many changes in the mode of forming the joint may be made without departing from the spirit of the invention, the above being a preferred method.

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

1. In a rail-joint, the combination with abutting rail-sections, of splice-bar formed with a flattened or web portion and with an extension to lie over and reach beneath the rail-bases, means to secure said flattened or web portion to and adjacent the webs of said rail-sections, and a liner or filler interposed in a molten state between the head and base of said rail-sections only and said splice-bar.

2. In a rail-joint, the combination with abutting rail-sections, of splice-bars having their flattened or web portions riveted or bolted adjacent and to the webs of said rail-sections and formed with extensions to inclose the rail-bases, and a liner or filler interposed in a molten state between said extensions and rail-bases.

3. In a rail-joint, the combination with abutting rail-sections, of splice-bars having their flattened or web portions riveted, bolted or otherwise secured adjacent and to the webs of said rail-sections and formed with extensions to inclose the rail-bases, and a liner or filler interposed in a molten state between said extensions and rail-bases, said securing means being independent of said liner or filler.

4. In a rail-joint, the combination with abutting rail-sections, of splice-bars having their flattened or web portions riveted, bolted or otherwise secured adjacent and to the webs of said rail-sections and formed with upper flanges extending beneath the rail-heads and lower extensions to inclose the rail-bases, and a liner or filler interposed in a molten state between said upper flanges and said rail-heads, said securing means being independent of said liner or filler.

5. In a rail-joint, the combination with abutting rail-sections, of splice-bars having their flattened or web portions riveted, bolted or otherwise secured adjacent and to the webs of said rail-sections and formed with upper flanges extending beneath the rail-heads and lower extensions to inclose the rail-bases, and a liner or filler interposed in a molten state between said upper flanges and the rail-heads and between said lower extensions and the rail-bases, said securing means being independent of said liner or filler.

6. The method of joining the ends of abutting rail-sections which consists in rigidly securing the flattened or web portion of splice-bar adjacent and to the webs of said rail-sections, and then introducing a liner or filler in a molten state into the space formed about the rail-bases by inclosing extension of said splice-bar.

7. The method of joining the ends of abutting rail-sections which consists in rigidly securing the flattened or web portion of splice-bar adjacent and to the webs of said rail-sections, and then introducing a liner or filler in a molten state into the space formed about the rail-bases by inclosing extension of said splice-bar and between the rail-heads and upper flange of said splice-bar.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HENRY B. NICHOLS.

Witnesses:
GEO. B. TAYLOR,
WM. S. TWINING.