

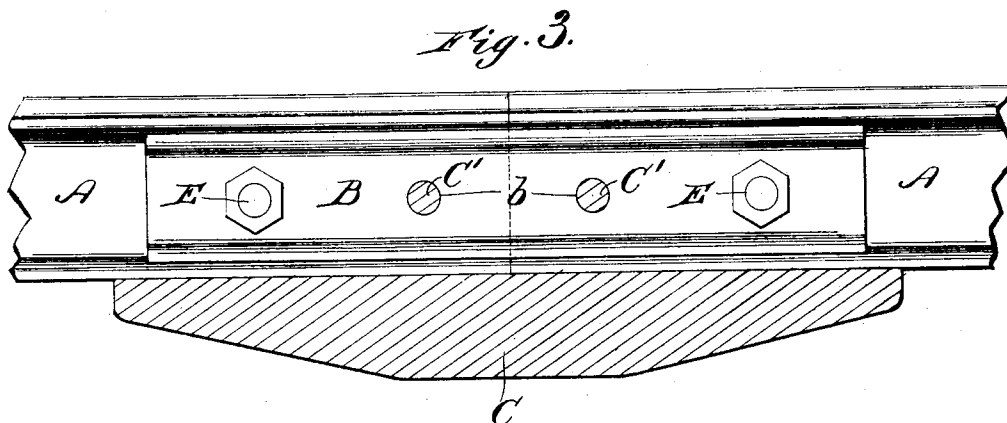
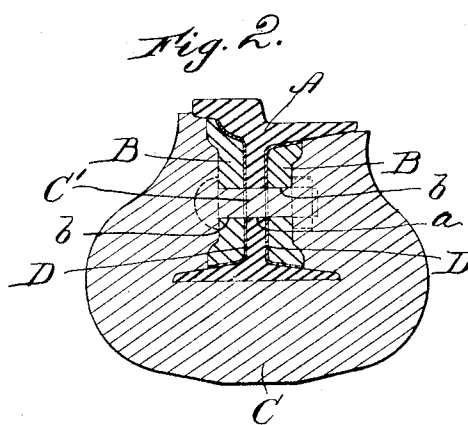
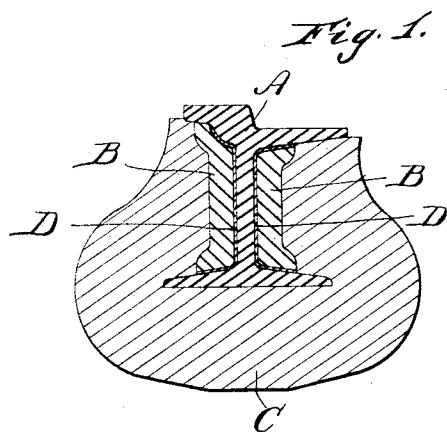
(No Model.)

H. W. FALK.

RAIL JOINT AND METHOD OF FORMING SAME.

No. 558,373.

Patented Apr. 14, 1896.



WITNESSES

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RAIL-JOINT AND METHOD OF FORMING SAME.

SPECIFICATION forming part of Letters Patent No. 558,373, dated April 14, 1896.

Application filed August 23, 1895. Serial No. 560,538. (No model.)

To all whom it may concern:

Be it known that I, HERMAN W. FALK, a citizen of the United States, residing at Milwaukee, county of Milwaukee, State of Wisconsin, have invented a certain new and useful Improvement in Rail-Joints and Methods of Forming the Same; and I declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to new and useful improvements in rail-joints and methods of forming the same; and my said invention consists in the matters hereinafter described, and pointed out in the appended claims.

In the accompanying drawings, illustrating my invention, Figure 1 is a vertical transverse sectional view of a rail-joint constructed in accordance with my invention. Fig. 2 is a similar view taken on line 2 2 of Fig. 3 and illustrating a somewhat different form of construction. Fig. 3 is a vertical longitudinal sectional view of the joint shown in Fig. 2, but showing the rail ends and the fish-plate in side elevation.

Referring by letter to said drawings, A A designate the rail ends, and B B fish-plates, which may be of any of the usual forms of construction, adapted to be secured to opposite sides of the webs of the rail ends.

In the particular form of construction shown in Figs. 2 and 3 the fish-plates are provided with the usual bolt-holes *b b*, and the rail ends are provided with corresponding holes *a a*, adapted to register with the bolt-holes in the fish-plates when the latter are adjusted in position upon the rail ends.

C designates a body of cast metal, which is molded about the rail ends in the manner shown, so as to inclose the fish-plates B B. Prior to placing the fish-plates in position upon the rail ends the surfaces of said rail ends and the fish-plates are prepared for fusion either by being separately covered or coated with a suitable flux or by having a thin sheet or layer D of fusible metal interposed between said surfaces, as shown.

The fish-plates may be secured in position upon the rail ends prior to casting the metal body C thereon in any desired manner—as, for instance, as shown in Figs. 2 and 3, in which bolts E E are employed, said bolts being passed through the bolt-holes *b b* and *a a* in the fish-plates and the webs of the rail ends, respectively. As shown more particularly in Fig. 3, I prefer to arrange the bolts E E in certain ones only of the bolt-holes, the other bolt-holes being left open for the passage of the molten metal. By the application of external heat the temperature of the rail ends and the fish-plates is raised to such a degree that fusion between the surfaces of said rail ends and said fish-plates is obtained. The cast-metal body C, being formed about the fish-plates and in contact with the base-flanges of the rail ends, will unite with the surfaces thereof.

The operation of fusing the fish-plates to the surfaces of the rail ends may be accomplished in any desired manner, either as a separate operation prior to the casting of the metal body C thereon or at one and the same time and with the same operation of casting the metal body C around the fish-plates and the bases of the rail ends.

It will of course be understood that when the fusion between the surfaces of the rail ends and the fish-plates is obtained during the operation of casting the metal body C thereon the necessary heat is imparted to the rail ends and the fish-plates by the application of the molten metal thereto, the comparatively large body C of cast metal being sufficient to heat the webs of the rail ends and the fish-plates to such a degree as to cause the flux or the fusible metal between said rail ends and said fish-plates to flow and thereby to obtain perfect union of said parts. Where certain of the bolt-holes *b b* are left open the molten metal will flow through the same, so as to strongly and permanently unite the opposite sides of the cast-metal body by means of cylindric connecting portions C' C', which fill said bolt-holes, as shown in Figs. 2 and 3. Fusion is also obtained between the cast-metal body C and the exposed portions of the base-flanges of the rail ends, said flanges be-

ing comparatively light and thin, so that the application of the molten metal to the already partially-heated rail ends will raise the temperature of said flanges to a welding or fusing degree.

By the fusion of the fish-plates to opposite sides of the webs of the rail ends, as described, the rail ends are very securely and rigidly joined, and at the same time a very satisfactory electrical bond is formed between said rail ends, which is capable of carrying any desired volume of electric current when the track is intended for an electric railway.

The cast-metal body C, being formed upon the outside of the fish-plates and around and beneath and in direct contact with the bases of the rail ends, serves not only to rigidly and firmly support the rail ends in position, but also serves to reinforce the fish-plates and prevent any possible displacement or disruption of the same from contact with the rail ends.

By my improvement I am enabled to provide an exceedingly strong, rigid, and durable joint for railway-rails, by means of which the rails are held unyieldingly in position and all tendency of the rails to separate when in use or to sag or spring at the joints is prevented, the abutting faces of the rail ends being held in permanent and forcible contact with each other.

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

1. The combination with a pair of rail ends, of a pair of metal plates secured to opposite surfaces of the webs thereof, and united thereto by fusion, and a body of metal cast or molded around and beneath said rail ends, and in contact with the outer surfaces of said metal plates and the base-flanges of said rail ends, substantially as described.

2. The combination with a pair of rail ends of a pair of metal plates located upon opposite sides of the webs of said rail ends, said metal plates and said rail ends being provided with registering apertures or holes, and a body of metal cast or molded around and be-

neath said rail ends and through said apertures or holes, substantially as described.

3. The combination with a pair of rail ends of a pair of metal plates located upon opposite sides of the webs of said rail ends, said metal plates and rail ends being provided with registering apertures or holes, bolts passing through certain ones of said apertures or holes, and a body of cast metal formed or molded around and beneath said rail ends and through other ones of said apertures or holes and in contact with the outer surfaces of the metal plates and the base-flanges of said rail ends, substantially as described.

4. The combination with a pair of rail ends of a pair of metal plates located upon opposite sides of the webs of said rail ends, said metal plates and rail ends being provided with registering apertures or holes, bolts passing through certain ones of said apertures or holes, and a body of cast metal formed or molded around and beneath said rail ends and through other ones of said apertures or holes, and in contact with the outer surfaces of the metal plates and the base-flanges of said rail ends, and said metal plates being united to the surfaces of the webs of the rail ends by fusion, substantially as described.

5. A method of joining rail ends consisting in adjusting upon a pair of aligned and apertured rail ends, a pair of metal plates provided with registering apertures, interposing a flux between said plates and said rail ends, securing said plates by bolts passed through certain ones only of said apertures, and finally casting a body of metal around and beneath said rail ends and said metal plates, and through the remaining apertures therein, and uniting said metal plates directly to the surfaces of said webs by fusion, substantially as described.

In testimony whereof I sign this specification in the presence of two witnesses.

HERMAN W. FALK.

Witnesses:

JOHN E. WILES,
E. W. STOUT.