No. 616,435. Patented Dec. 20, 1898.

R. EYRE & W. DISHONG.

ELECTRICALLY WELDED JOINT.

(Application filed Feb. 7, 1898.)

(No Model.)

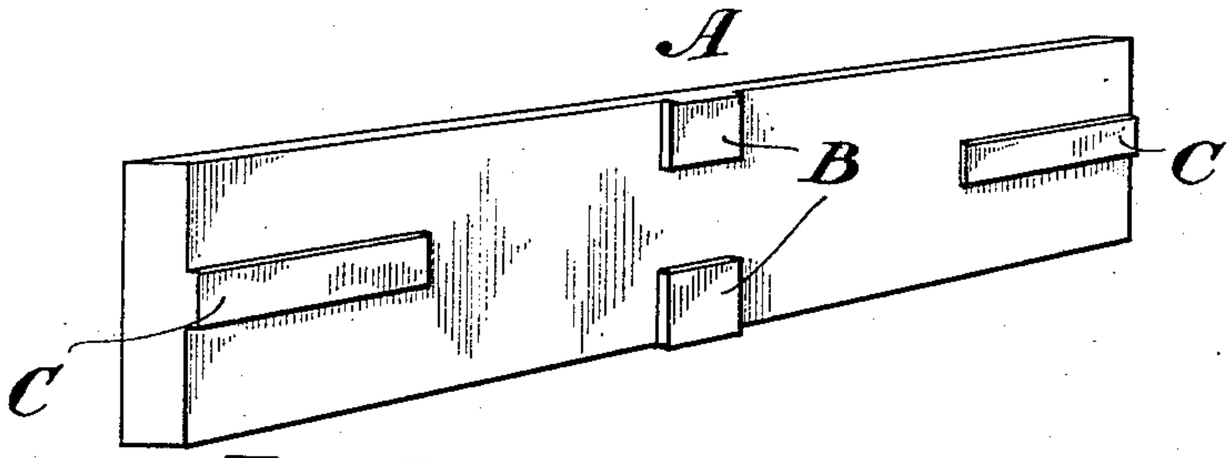

Fig. 1.

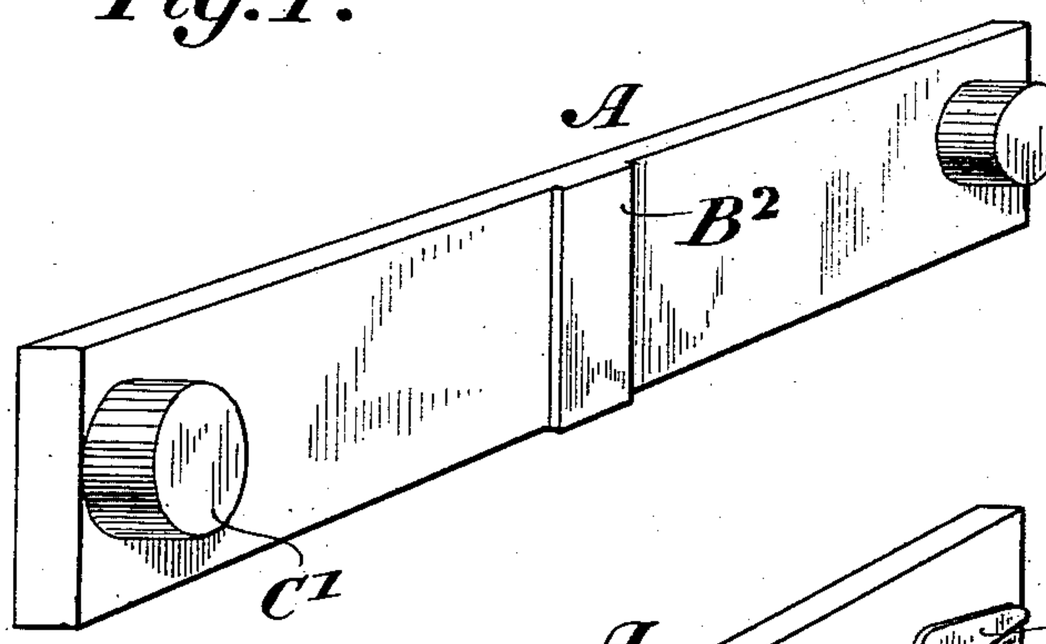

Fig. 2.

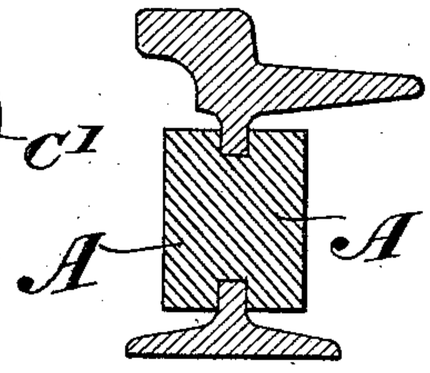

Fig. 4.

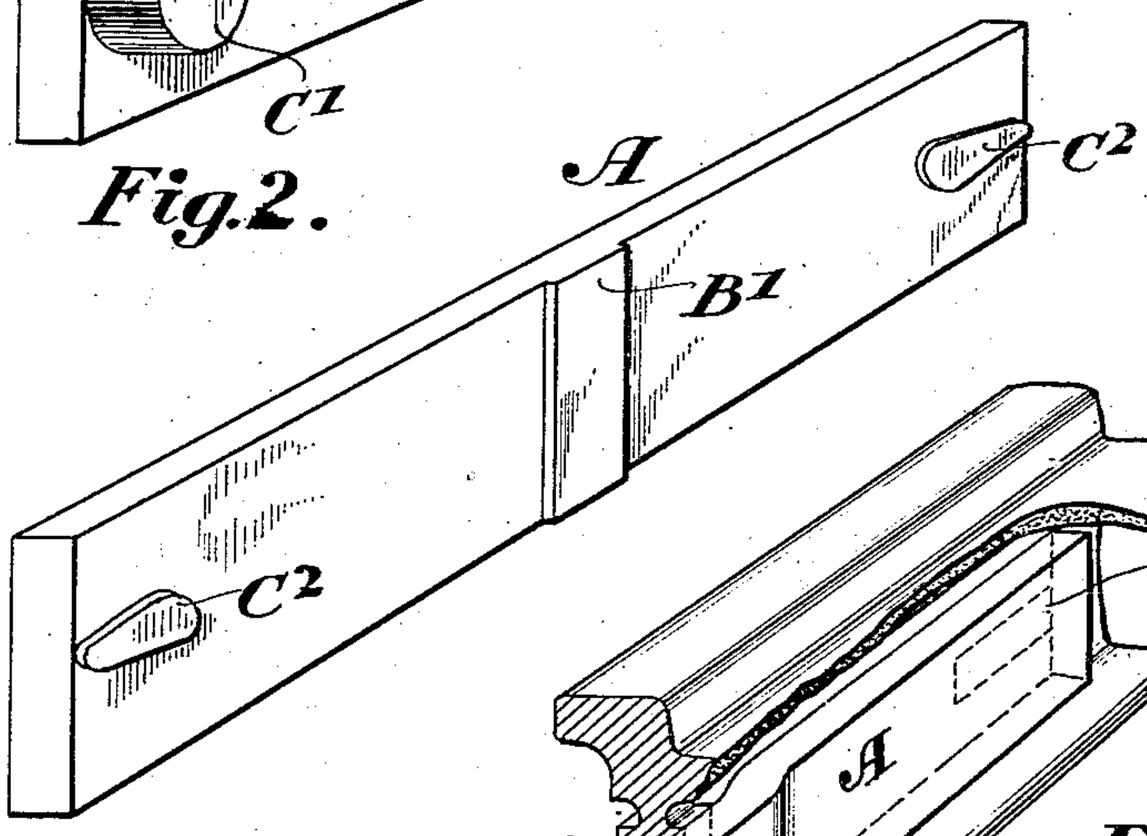

Fig. 3.

Fig. 5.

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RICHARD EYRE AND WILLIAM DISHONG, OF JOHNSTOWN, PENNSYLVANIA, ASSIGNORS, BY MESNE ASSIGNMENTS, TO THE LORAIN STEEL COMPANY, OF OHIO.

ELECTRICALLY-WELDED JOINT.

SPECIFICATION forming part of Letters Patent No. 616,435, dated December 20, 1898.

Application filed February 7, 1898. Serial No. 669,379. (No model.)

To all whom it may concern:

Be it known that we, RICHARD EYRE and WILLIAM DISHONG, of Johnstown, in the county of Cambria and State of Pennsylvania, have invented new and useful Improvements in Electrically-Welded Joints, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

Our invention relates to electrically-welded joints especially adapted as joints for what is known as "continuous railway-track."

In carrying out our invention we employ a pair of splice-bars which we weld to the abutting rails by the usual electric-welding process. It is of course old to electrically weld a pair of splice-bars to the abutting rails, and we have therefore no intention of claiming novelty in this *per se*. Certain difficulties have, however, been met with in joints of this character. A joint for continuous track must have sufficient strength to withstand any longitudinal tension which may be put into the track by the tendency of the rails to contract when their temperature falls much below that at which they were welded. It must also have sufficient transverse stiffness to prevent any vertical movement of the rails when subjected to the weight of the moving vehicles. To obtain this transverse stiffness, it has been customary to provide comparatively short splice-bars having vertical projections near their ends, and these projections were welded to the side of the rails. In welding the splice-bars to the rails and in cooling the welds afterward much heat is conveyed to the rail surrounding the splice-bar projection. This tends to cause severe strains, because of the sharp contrast in the temperature of the rail at adjacent portions of the same. This is especially bad in the case of vertical projections, because so great a height of the rail-section is subject to the spread of heat, with the consequent strains. The evil effect is still further exaggerated by the shortness of the splice-bars, for under the influence of strong longitudinal tension a crack will start at the back of one of the projections, and this will easily spread by a horizontal crack through the thin web of the rail to the end thereof. By our invention we avoid both of these difficulties, for we provide comparatively long splice-bars, which are either welded to the rail or through a hole in the rail to each other at the extreme ends of the splice-bars. These end welds are made with the sole purpose in view of providing a form best adapted to withstand longitudinal tension. For transverse stiffness we weld the rails together at their ends. We thus provide a pair of welds at the extreme ends of the bars which withstand tension, and we provide a common weld connecting the rail ends, this weld being provided with the sole purpose in view of standing transverse strains, so that the joint will be absolutely stiff. By following this principle we are enabled to form the projections on the splice-bar of the best possible shape for the particular purpose in view, and the center weld will not readily break, for the tension is withstood by the end welds.

Referring to the drawings, Figures 1, 2, and 3 show different forms of splice-bars embodying the general features of our invention. Fig. 4 shows a cross-section of a joint made with the bars shown in Fig. 2, the section corresponding to a line through the center of one of the end projections. Fig. 5 is a perspective view of a portion of a joint, showing another modified form of our invention.

We desire to disclaim any invention which may specifically lie in the form of splice-bar shown in Fig. 3, as this is a specific invention which forms part of the subject-matter of an application of H. F. A. Kleinschmidt, filed February 2, 1898, Serial Number 669,353.

A is the splice-bar, which we prefer to make in each case in the shape of a plain rectangular bar.

B, B′, and B^2 represent various modified forms which the central member to be welded to both rails may take and which are designed, as heretofore set forth, to give transverse stiffness to the joint.

C, C′, and C^2 represent the end projections of the splice-bars, which are to be either welded to the rail, as C and C^2, or welded through a hole in the rail to each other, as C′.

In Figs. 1 to 4, inclusive, the central mem-

bers are projections from the center of the splice-bar. As the weld which is to be made at this point is for vertical stiffness only, the central member may be, as shown in Fig. 1, composed of two small separated projections B, or, as shown in the remaining figures, as a plain vertically-disposed rectangle. Other shapes—such as vertically-disposed ovals, &c.—would of course fall within the scope of our invention. As shown in Fig. 5, it is not necessary that the central member shall be connected with the splice-bar, for very excellent joints have been made in which the transverse stiffness was gained with the aid of rectangular plates B^3, as shown in Fig. 5.

A good form of end projection is shown in Fig. 1. Such a shape heats very little of the rail-section. A modification is shown in Fig. 2, in which circular bosses pass through a hole in the web of the rail, the bosses of opposite bars being welded to each other. There may also be a partial weld between the bosses and the rail. Another excellent form is shown in Fig. 4.

Of course it is clear that many other forms of splice-bars besides those we have chosen for illustration might be used without departing from the central idea of our invention.

Having thus described our invention, what we claim, and desire to protect by Letters Patent, is—

1. The combination of the rails and splice-bars, connections between the ends of the splice-bars and the rails adapted to withstand the tension put into the rails when their temperature falls below that at which they are joined, and members which are each welded to both of the juxtaposed rail ends so as to impart transverse stiffness to the joint.

2. The combination of the rails and splice-bars, connections between the ends of the splice-bars and the rails adapted to withstand the tension put into the rails when their temperature falls below that at which they are joined and members which are each welded to both of the juxtaposed rail ends so as to impart transverse stiffness to the joints and which connect said juxtaposed rail ends with the splice-bars.

3. A rail-joint comprising the combination of the rails, and splice-bars welded to and connecting the same, one of the welds which connect the rails and splice-bars being a union between the central portion of the splice-bars and the abutting ends of both rails, the others of said welds being between each end of the splice-bars and one of the rails.

4. The combination of the rails and splice-bars, welds securing the ends of the splice-bars to the rails to prevent longitudinal movement of the rails, and an independent weld uniting the center of the splice-bars to both rails adjacent to their ends to prevent vertical movement of the rails.

5. A pair of splice-bars having horizontally-disposed end projections and a vertically-disposed center projection in combination with a pair of rails both of which are welded to the said center projections and each of which is welded to one of the end projections of each bar.

In testimony whereof we have affixed our signatures in the presence of two witnesses.

RICHARD EYRE.
WILLIAM DISHONG.

Witnesses:
MYRTLE E. SHARPE,
BLANCHE GRUMZER.