No. 880,788. PATENTED MAR. 3, 1908.

H. G. GILLMOR.

MEANS OF FORMING ELECTRICALLY BONDED RAIL JOINTS.

APPLICATION FILED MAR. 27, 1906.

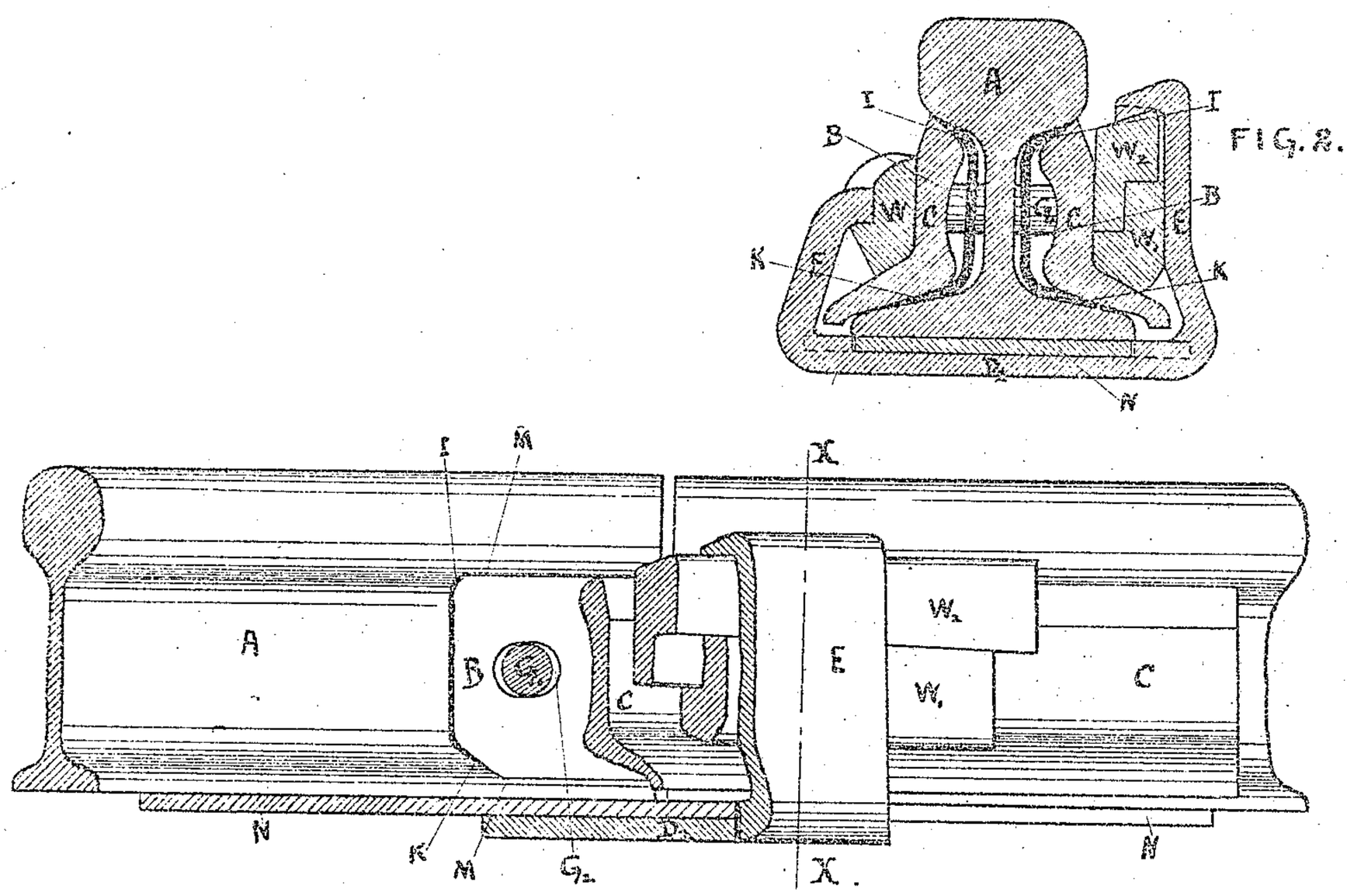

FIG. 2.

FIG. 1.

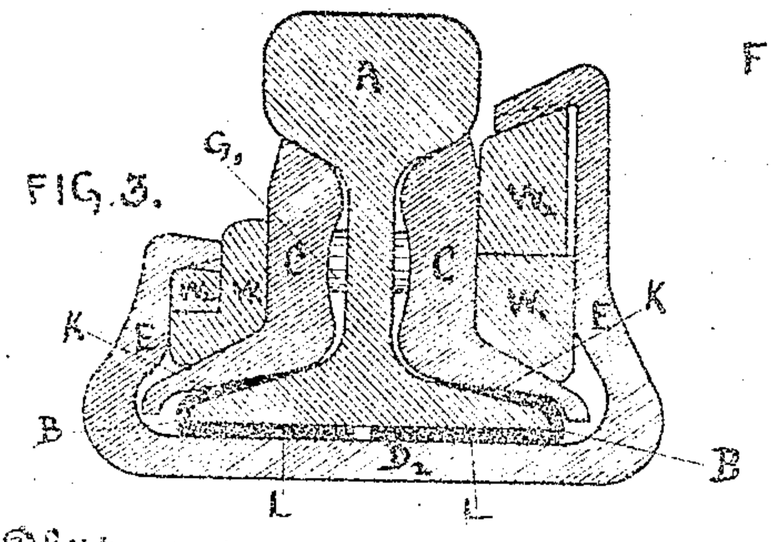

FIG. 3.

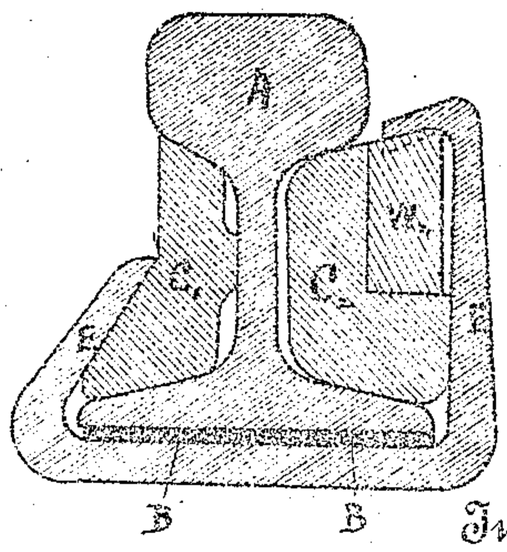

FIG. 4.

Witnesses

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HORATIO G. GILLMOR, OF BATH, MAINE.

MEANS OF FORMING ELECTRICALLY-BONDED RAIL-JOINTS.

No. 880,788. Specification of Letters Patent. Patented March 3, 1908.

Application filed March 27, 1906. Serial No. 308,289.

To all whom it may concern:

Be it known that I, HORATIO G. GILLMOR, a citizen of the United States, residing at Bath, county of Sagadahoc, State of Maine, have invented an Improvement in the Means of Forming Electrically-Bonded Rail-Joints, of which the following is a specification, accompanied by drawings.

This invention relates to electrically bonded rail joints, and one of its objects is to provide electrical contact between the parts of the joint employed to give the necessary mechanical strength to the joint, so that their electrical conductivity may be made to contribute to the conductivity of the joint as a whole.

Another object of my invention is to provide a bond, which may be cheaply manufactured from a rolled sheet or plate, in which the area of the surfaces of contact of the bonds with the rails shall be great as compared with the sectional area of the bond.

Another object of my invention is to so construct a bonded joint that the electrical contacts of the rails with the other parts of the joint will not be interfered with by contraction and expansion of the rails.

Further objects of my invention will hereinafter appear; and, to these ends, the invention consists of an electrically bonded rail joint for carrying out the above objects embodying the features of construction, combination of elements and arrangement of parts having the general mode of operation, substantially as hereinafter fully described in this specification and shown in the accompanying drawing, in which:—

Figure 1 is an elevation, partly in section, of a form of the electrically bonded joint. Fig. 2 is a section of the parts of this form at the plane indicated by X X in Fig. 3. Figs. 3 and 4 are sections illustrating modified forms of the electrically bonded joint.

Similar letters refer to similar parts throughout the several views.

Referring to the drawings, A represents the meeting ends of the rails; B the bond of material of relatively high electrical conductivity, such for example as copper, zinc or aluminium; C fish bars, and D a clamp chair of the type described in my applications Nos. 290161, filed December 4, 1905, and 300667, filed February 12, 1906, in which pressure upon the parts of the joint necessary to secure them in position is secured by wedges, W, W_1 and W_2 driven between the arms E of the clamp chair and other parts of the joint, these wedges being provided with suitable means to automatically lock them when they reach the proper position. The rail ends rest upon a base plate N interlocking with the clamp chair so as to prevent longitudinal movement of the base plate with respect to the chair. The pins G traverse holes in the bond plate, fish bars and rails arranged to register with one another so that the bond and fish bars are prevented from moving longitudinally with respect to each other and one of the rail ends.

A feature of this invention is the providing of large areas of contact of the bond with the rail ends and with the several parts of the rail joint employed, primarily, to give the joint the necessary strength; the object being to make the electrical conductivity of these strength members of the joint contribute to the conductivity of the electrical circuit at the joint. To this end, the bond B, formed preferably from a rolled sheet or plate, is bent to fit the under surfaces of the heads of the rails as at I, and around the tops of the base flanges, as at K in Figs. 1 and 2. When the fish bars C are placed and forced into position the bond is forced into intimate contact on the one hand with the under surfaces of the heads and the tops of the base flanges of the rails and on the other hand, with the fish bars.

The wedges are constructed to exert wedging forces both transversely and vertically; so that, when they are driven into position, not only are the fish bars and bond forced into position against the rail ends, but the parts of the joint are made to exert pressure upwardly under the bases of the rails and downwardly, upon the upper surfaces of the bases; and the bond is thus made to contact more intimately and over a larger area with the bases of the rails than would otherwise be the case. Furthermore, as the materials, which would ordinarily be employed for the bond, are, as compared with the materials of the rails and other parts of the joint, relatively soft, projections from the surfaces of these latter would be forced into the softer material of the bond; so that the bond, under the pressure exerted upon it, will conform closely to the surfaces of the rail and other parts, even though these be somewhat irregular; and the contact surfaces of the bond and

the continuing pressure upon these surfaces will not be affected by the contraction and expansion of the rails. The areas of contact of the bond with the rails are as compared with the sectional area of the bond relatively great, and the contact of the bond with the strength members of the joint make these latter a part of the electrical circuit at the joint. Where copper is employed for these bonds, it will generally be desirable to coat its surfaces with a metal or metals less subject to corrosive action of the elements; and, for this purpose a coating of tin, zinc or lead or combinations of these metals or other metals might be employed. Where it is desirable to reduce the areas of contact between the bond and the rails, fish bars and other parts to a minimum, a plastic amalgam of mercury and other metals may be employed between the rail and the parts of the joints, with which it comes in contact, with a view to insuring better electrical contact.

In the form of the joint illustrated in Fig. 3, contact is provided for between the bond, the top and bottom surfaces of the base flanges of the rails and the fish bars and clamps; and the whole held in position by an automatically locking wedged clamp chair D with wedges W_1 and W_2 for producing the necessary pressure upon the parts.

In the form of the bond illustrated in Fig. 4, contact between the bond and the base of the rail and the clamp chair only are provided for, there being employed at the joint a fish bar of special form C_1, a wedged fish bar C_2, and a wedge W_2 driven between the clamp chair D at one side of the joint and the other parts to clamp the whole in position.

Obviously, some features of this invention may be used without others and the invention may be embodied in widely varying forms of which those shown in the drawing are but a few of the types; therefore, without limiting the invention to the construction shown and described, nor enumerating the equivalents, I claim and desire to secure by Letters Patent the following:

1. An electrically bonded rail joint, including, in combination with the rails, a chair having upwardly extending arms, a bonding plate over-lapping the ends of the rails, and a wedge whereby pressure is exerted upon parts of the joint, substantially as described.

2. The combination of rails and an electrically bonded joint for the adjacent ends thereof, including a chair having inwardly extending arms, a sheet of conducting material over-lapping the ends of said rails, and wedges whereby pressure is exerted upon the parts of the joint, substantially as described.

3. The combination of rails and an electrically bonded joint for the adjacent ends thereof, including a chair having upwardly extending arms, a conducting plate over-lapping the ends of said rails, and wedges constructed with double wedging surfaces whereby an inward and upper pressure is exerted upon parts of the joint, substantially as described.

4. A combination of rails and an electrically bonded joint for the adjacent ends thereof, including a sheet of conducting material over-lapping the ends of said rails, a chair having upwardly extending arms; fish bars adapted to engage under surfaces of the heads of the rails and upper surfaces of the bases of the rails, and wedges driven in between the arms of said chair and said fish bars, substantially as described.

5. A combination of rails and an electrically bonded joint for the adjacent ends thereof, including a plate of bonding material over-lapping the ends of said rails, a chair having upwardly extending arms; fish bars adapted to engage under surfaces of the heads of the rails and upper surfaces of the bases of the rails; wedges between said arms and bars, and fastening means for holding the joints in place, substantially as described.

6. A combination of rails and an electrically bonded joint for the adjacent ends thereof, including a chair having upwardly extending arms, bonding plates and bars between said chair and said rails, and wedges driven in between the arms of said chair and said bars, substantially as described.

7. An electrically bonded rail joint, including, in combination with the rails, a chair having upwardly extending arms overturned inwardly at their upper edges, a sheet of bonding material and bars over-lapping the ends of said rails, and wedges constructed to exert wedging forces in directions approximately at right angles, whereby an upward pressure is exerted upon portions of said sheet of bonding material and an inward pressure upon the said bars at opposite sides of said rails, substantially as described.

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

H. G. GILLMOR.

Witnesses:
H. H. BONNEMORT,
H. E. WILLIAMS.