

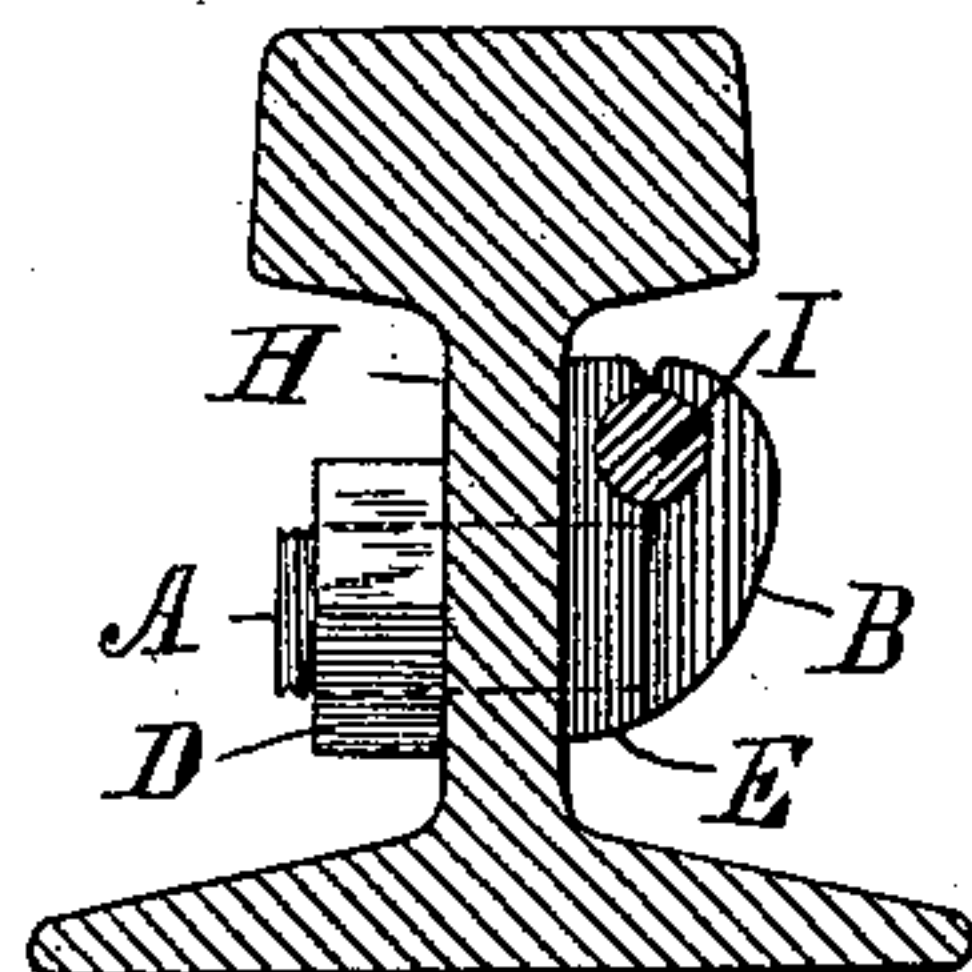
(No Model.)

A. GREEN.  
ELECTRICAL BOND CLAMP.

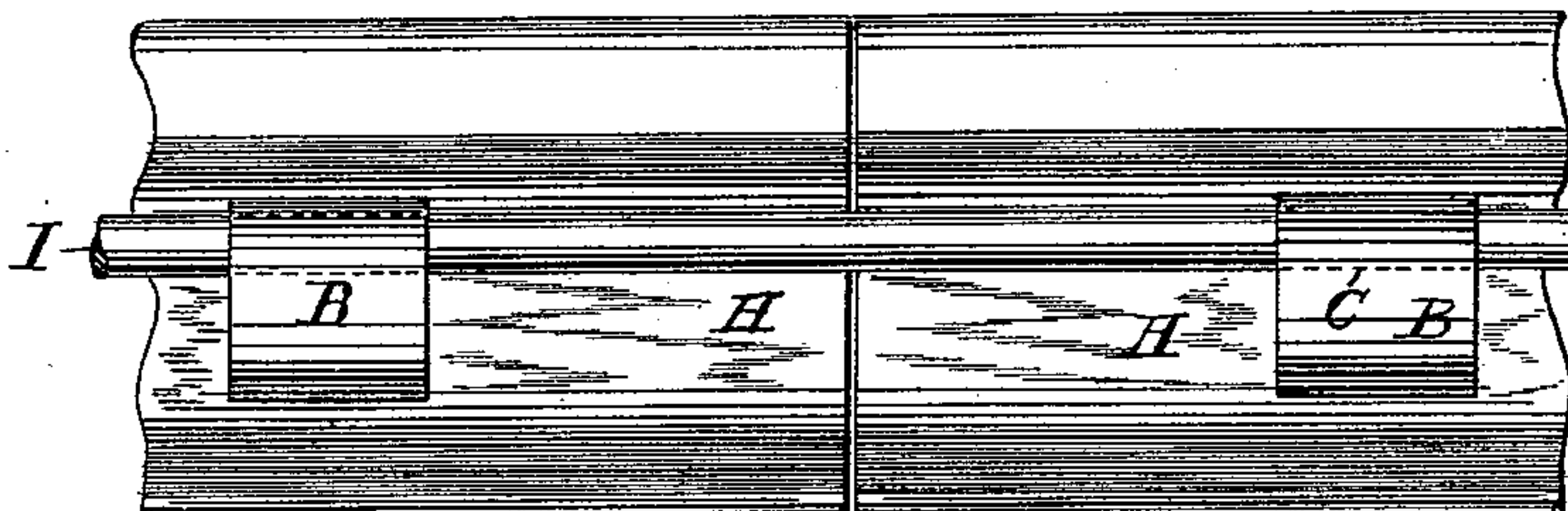
No. 539,616.

Patented May 21, 1895.

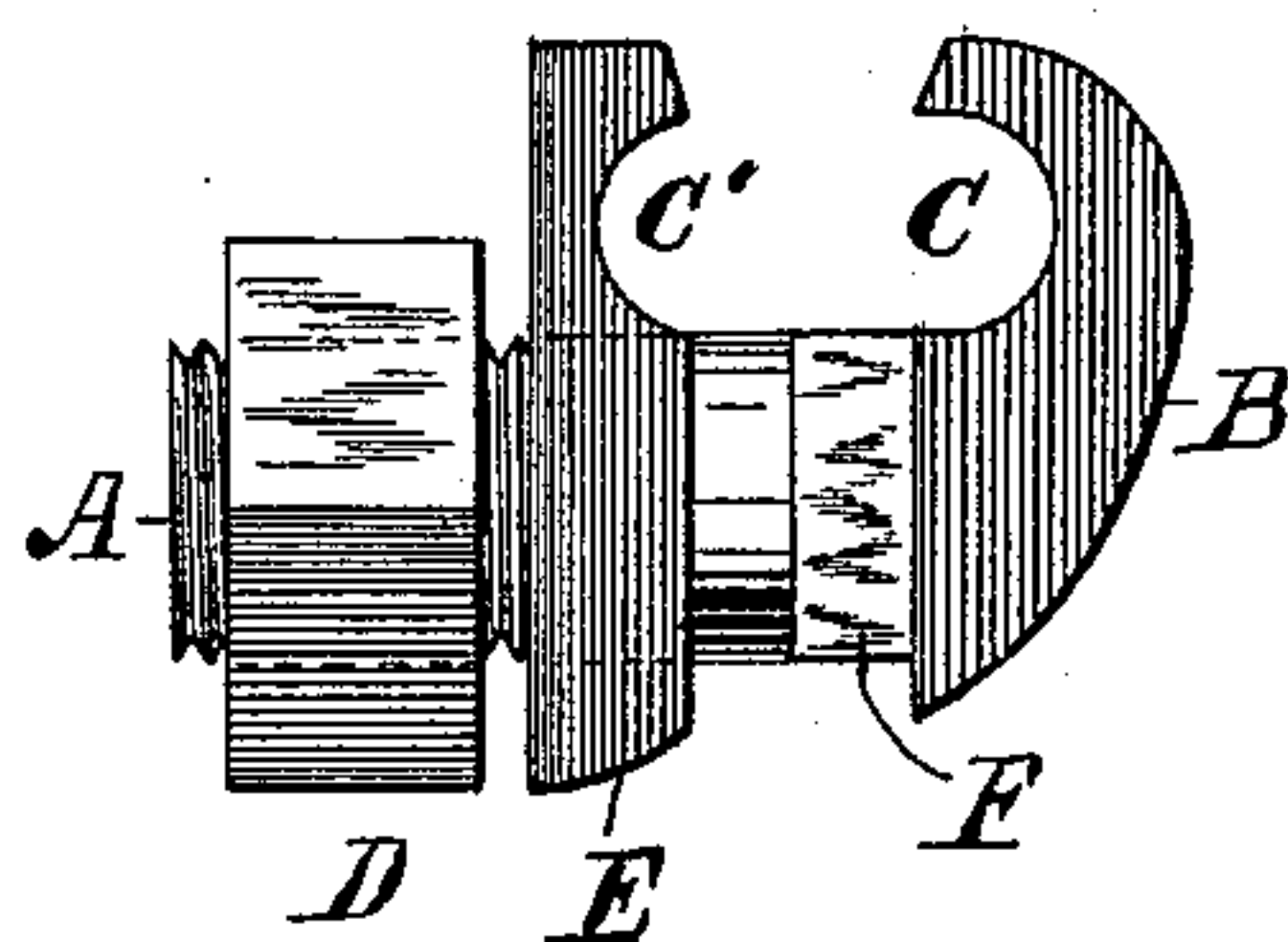
*Fig. 1.*



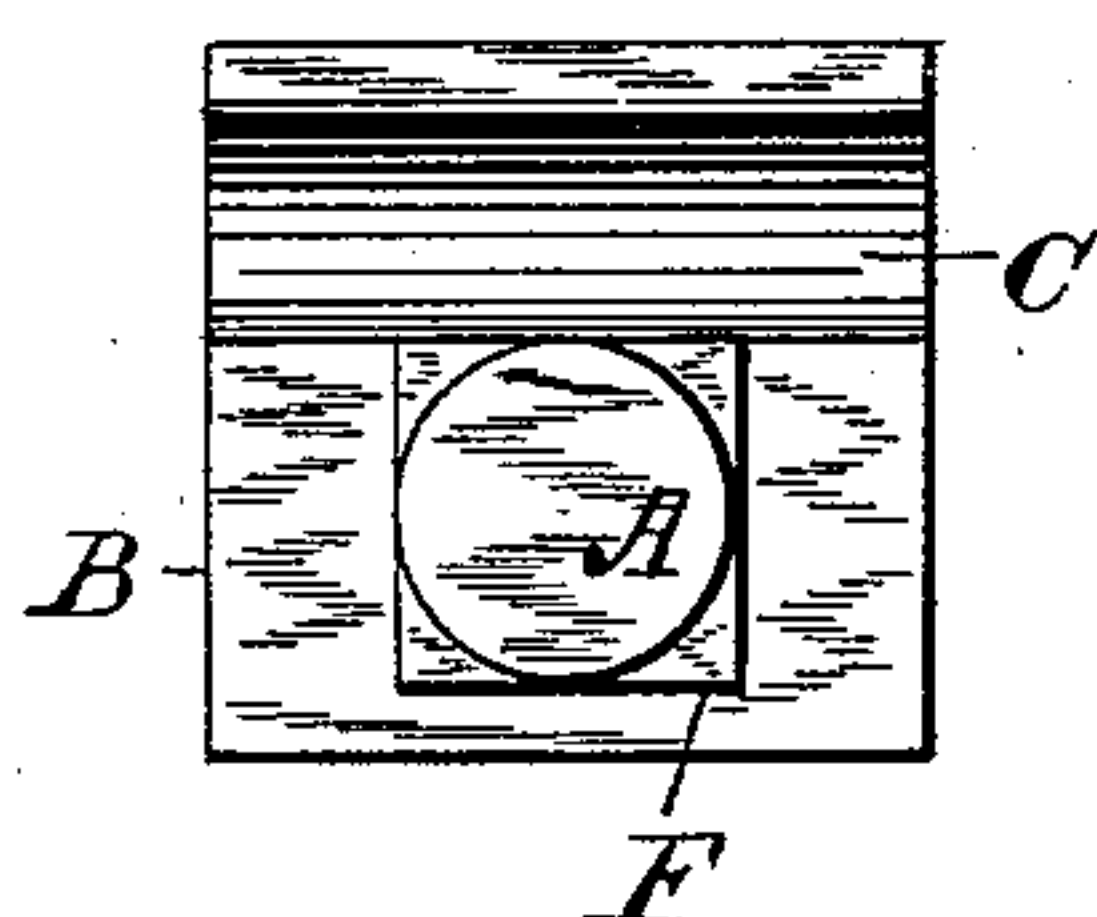
*Fig. 2.*



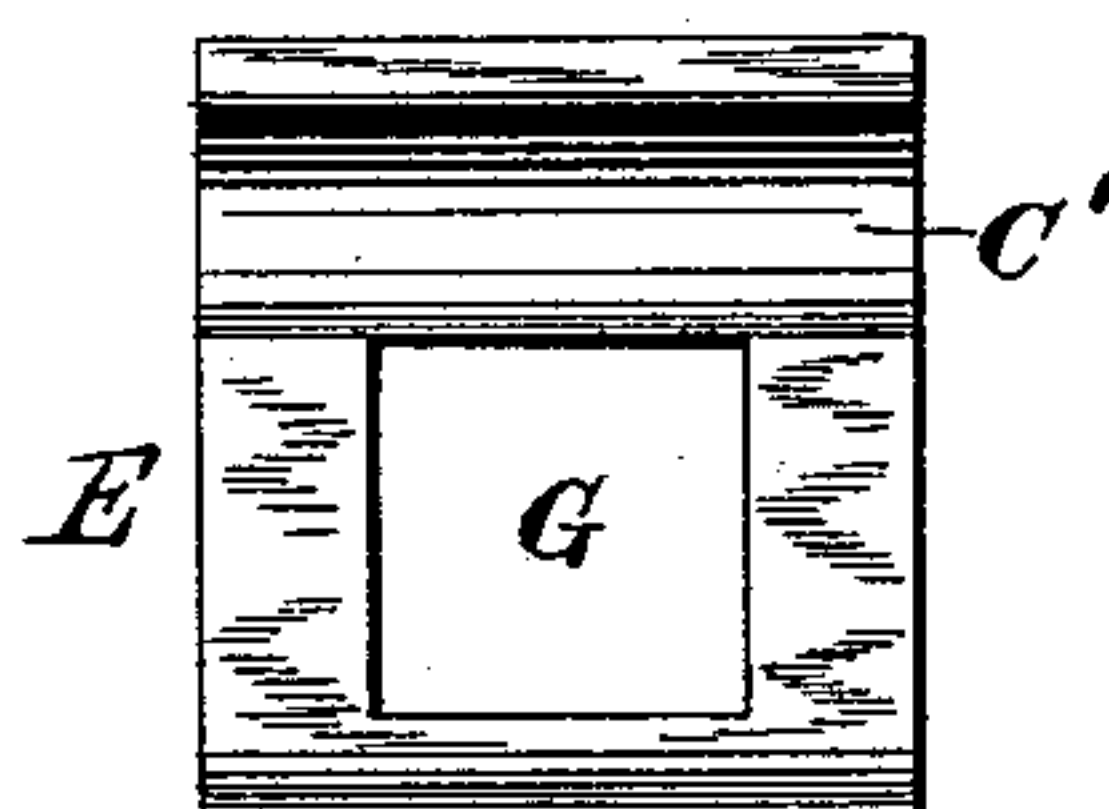
*Fig. 3.*



*Fig. 4.*



*Fig. 5.*



Attest:  
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Thomas S. Crane, Atty.

# UNITED STATES PATENT OFFICE.

ALFRED GREEN, OF ROCHESTER, NEW YORK.

## ELECTRICAL BOND-CLAMP.

SPECIFICATION forming part of Letters Patent No. 539,616, dated May 21, 1895.

Application filed August 27, 1894. Serial No. 521,404. (No model.)

*To all whom it may concern:*

Be it known that I, ALFRED GREEN, a citizen of the United States, residing at Rochester, county of Monroe, and State of New York, have invented certain new and useful Improvements in Electrical Bond-Clamps, fully described and represented in the following specification and the accompanying drawings forming a part of the same.

The object of this invention is to furnish an improved electrical bond for a rail joint, whereby a large contact surface may be secured, and a good electrical connection effected without the use of solder.

The bond clamp itself consists in part of a loose gib or clamp plate adapted to set against the web of the rail, and provided with a groove to fit the side of the bond wire, and partly, of a bolt adapted to pass through the gib and through the web of the rail and having a head provided with a groove to admit the bond wire or rod, and suitable means for tightening the bolt so as to clamp the bond wire in firm contact with the groove upon the gib. The bond consists of two such bond clamps secured upon the webs of two rails near their adjacent ends, and having a bond wire or rod extended through the grooves in the two clamps and secured therein by tightening the bolts, which also operate to clamp the gibs into close contact with the web.

The invention will be understood by reference to the annexed drawings, in which—

Figures 1 to 5 show the preferred form of my invention. Fig. 1 represents a rail in section with the bond-clamp applied thereto. Fig. 2 represents the joint of two rails with the bond-clamps and bond-wire applied thereto. Fig. 3 is a side elevation of the bond-clamp removed from the rail and the clamp-plate pushed back from the neck of the bolt. Fig. 4 is an end view of the bolt, showing the inner side of the groove in the head; and Fig. 5 shows the inner side of the clamp-plate.

Referring to the drawings, Figs. 1 to 5, A designates the shank of the bolt, adapted to be inserted through the webs H of the rails near the end, as shown in Figs. 1 and 2.

B designates the bolt head, C the groove in the same for the insertion of the bond-wire, and D the nut in Figs. 1 and 3, which when

tightened upon the web draws the head of the bolt toward the opposite side.

E designates the gib having hole G adapted to fit upon a square neck F formed upon the bolt adjacent to the head. A groove C' is formed upon the inner side of the gib opposite to the groove C in the bolt head; the two grooves embracing the opposite sides of the bond-wire or rod I, and operating to tightly grasp the same when the nut is tightened upon the web, as shown in Fig. 1.

In my construction the bond-wire is made of large diameter or cross section, to reduce in the greatest possible degree the resistance to the electric current. The bond-wire is shown of circular cross section in the drawings, but may be made square, oval, or of any other desired form, provided the groove or grooves are made to fit the same, and thus afford a large contact surface.

It is obvious that a key may be used to tighten the bolt in the web of the rail, or that the bolt may be riveted therein, and any suitable means may therefore be used for securing the bolt, and drawing the head toward the gib E.

The surface of the groove is preferably made to fit the surface of the bond-wire or rod, and is thus adapted to make a large and durable contact with the same, independently of the use of solder; which may however be employed if desired; although the bond is designed to dispense with the same.

The hole in the rail is preferably made to tightly fit the shank of the bolt, so that the latter may be driven into the same to make a metallic contact proof against corrosion. The bolt is preferably made of non-corrosive metal, as brass or gun-metal; but may be made of iron and heavily tinned. The bond wire may also be tinned if desired, to admit of soldering when required.

Owing to the large contact surface and the powerful means provided for clamping the bond-wire into the groove C, the electrical joint may be made perfect and durable without the use of solder; and the connections may thus be readily applied, removed, or renewed without the use of fire.

When the bolt is secured by a nut, the slackening of the same immediately releases the



bond-wire, and where the wire or electric conductor is continuous with the rails, the bond furnishes a most convenient means for detaching the conductor from the rail temporarily when it is necessary to remove and replace one or more of the rails.

It is obvious that the gib E may be made of any desired thickness to set the bond wire off from the web of the rails, so that when carried in a straight line it may clear the fish plate at the rail joint; or the bond-clamps may be set a suitable distance outside the ends of the fish plate, and the bond-wire bent outwardly from the clamps to clear the fish plate.

I am aware that it is common to use hook-headed bolts in clamping a wire or rod, and I do not claim such construction as my invention, because the bond clamp for use upon the web of a rail requires a loose gib or grooved plate to co-operate therewith.

In the preferred form of my invention I secure the utmost strength and bearing surface with a minimum of metal, by forming the groove C' near one edge of the gib upon its outer surface, and forming the hole G near its opposite edge.

The bolt head is made square and of much larger dimensions than the bolt to afford a broad bearing surface upon the rod; and the head is tapered at B' upon its outer side, toward the farther side of the bolt. This form imparts great stiffness to the construction with the least amount of material.

Having thus set forth the nature of the invention, what is claimed herein is—

1. A bond clamp for an electric rail bond, comprising the loose gib E provided with the groove C' to fit a bond wire or rod, the hole G adjacent to the groove, and the bolt A inserted through the hole G and provided with the head B having the groove C correspond-

ing with the groove C', and provided with means for tightening it upon the web of the rail, substantially as herein set forth.

2. A bond clamp for an electric rail bond, comprising the loose gib E provided at one edge with the groove C' and at the opposite edge with the hole G, and the bolt A inserted through the hole G and having a nut D, and the square head B projected at one side of the bolt and formed upon its inner surface with the groove C corresponding with the groove C', and the head being tapered upon its outer side B' toward the farther side of the bolt, substantially as herein set forth.

3. An electric rail bond comprising the bond wire or rod I, the pair of loose gibs E provided each with the groove C' and the hole G adjacent to the groove, and the bolts A inserted through the holes G and provided each with the head B having the groove C corresponding with the groove C', and having means for tightening them upon the web of the rail, substantially as set forth.

4. The combination, with the adjacent rail webs H provided with the bolt holes as set forth, of the bolts A fitted to such holes and provided each with the nut D, and head B having the groove C upon the inner side, the loose gibs E fitted to the necks of the bolts and provided each with the groove C', the bond wire or rod I fitted to the grooves, and the nuts operating to clamp the bond wire in the groove and the gibs upon the web of the rail, substantially as herein set forth.

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

ALFRED GREEN.

Witnesses:

W. J. MORAY,  
JULIUS WULFF.