

RAIL BOND.

979,202.

Patented Dec. 20, 1910.

Fig. 1.

E. A. Volk

Inventory of
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UNITED STATES PATENT OFFICE.

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RAIL-BOND.

979,202.

specification of Letters Patent. Patented Dec. 20, 1910.

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To all whom it may concern:

Be it known that we, WILLIAM J. RANDOLPH, Sr., and WILLIAM J. RANDOLPH, Jr., citizens of the United States, residing at Moscow, in the county of Livingston and State of New York, have invented a new and useful Improvement in Rail-Bonds, of which the following is a specification.

This invention relates to improvements in rail bonds or connections which serve to connect electrically the adjacent ends of the rails of a railway track through the fish plates for the purpose of adapting the track to be used as a conductor of electric current.

The object of the invention is to provide a rail bond of simple and inexpensive construction which will form a secure and positive electrical connection between the rails and the fish plates and which is so constructed that it can be easily and quickly secured in position for connecting the rails and fish plates which are commonly used in track construction and requires no separate securing device for this purpose, nor any change nor alteration in the construction of the rails and fish plates.

In the accompanying drawings: Figure 1 is a side elevation of a portion of a railroad track showing a rail joint provided with rail bonds embodying the invention. Fig. 2 is a sectional plan thereof on line 2—2, Fig. 1. Fig. 3 is a transverse sectional elevation thereof on line 3—3, Fig. 1, on an enlarged scale. Fig. 4 is a fragmentary sectional elevation of one end of the rail bond. Fig. 5 is a perspective view of the rail bond.

Like reference characters refer to like parts in the several figures.

The rails and fish plates to which the rail bonds are adapted to be secured may be of any usual and suitable construction. In the construction shown, A A represent the abutting rails and B B the fish plates which connect the ends of the rails on both sides thereof. These fish plates are secured to the rails by means of the usual bolts C which pass through holes in the plates and in the web portions of the rails.

D D represent the rail bonds which connect the opposite ends of the fish plates to the rails and are preferably arranged on both sides of the rail. Each rail bond consists of a plate or body portion d which extends lengthwise of the rail and has offset end portions or flanges d' d^2 , the ends of which are adapted to engage the web por-

tion of the rail and the end portion of the fish plate to form an electrical connection between these two members. The end flange d' of the rail bond which engages with the rail is preferably made somewhat longer than the end flange d^2 which engages with the fish plate, so that the body portion d of the rail bond will extend substantially parallel to the rail when the rail bond is in position thereon. Intermediate between its ends, the body portion of the rail bond is provided with a suitable hole d^3 through which a bolt d^4 or other suitable securing device is adapted to pass. The bolt d^4 extends through the usual holes which are provided in the rail and end portion of the fish plate for receiving the connecting bolts C. The rail bonds on the opposite sides of the rail at the ends of the fish plates are preferably directly opposite to each other so that the bolt d^4 serves to secure the corresponding rail bonds in position.

The end portions or flanges d' d^2 are provided with suitable prongs or contact points which are adapted to be forced into the material of the rail and fish plate when the rail bond is secured thereto and which insure a good contact therewith. In the construction shown, the prongs consist of pins or studs E which have threaded stems e which are screwed into suitable holes in the end flanges d' d^2 of the rail bond. Each of these studs is provided at its outer end with a central contact point or prong e' and an annular edge portion or contact ring e^2 which surrounds the contact point e' and is spaced therefrom.

In securing the rail bond to the rail and fish plate, the body portion of the rail bond is hammered, or otherwise driven, sufficiently to bring the contact points and the annular edges of the studs E into positive engagement with the rail and fish plate, the contact points and edges preferably penetrating a short distance into the material of the rail and fish plate so as to form an intimate electrical contact therewith. The space between the annular edge e^2 and the contact point e' is preferably filled with a suitable cement or packing e^3 which serves to prevent moisture from gaining access to the contact point and interfering with the electrical connection through the same. The employment of separate detachable studs permits the studs or contact points of the rail bond to be made of a harder grade of steel than the

body portion of the bond, and also permits the studs, when worn or broken, to be readily removed and new studs inserted. While the construction described is preferable, any
 5 other suitable detachable contacts may be employed, or, if desired, the rail bonds may be provided with contact points integrally formed therewith.

The rail bonds can be easily and quickly
 10 secured in place at the opposite ends of the fish plates. It is only necessary to place the rail bonds in position opposite to each other on opposite sides of the rail and with their holes d^3 in alinement with the bolt holes in
 15 the corresponding ends of the fish plates and rail so that the bolts d^4 can be readily inserted through these holes for securing the rail bonds in position. The body portions of the rail bonds are then tapped with a
 20 hammer or sufficient force is applied thereto in some other suitable manner to bring their contact points into intimate engagement with the rail and fish plates, in which position they can be retained by tightening the
 25 nuts on the bolts d^4 . The bolts d^4 also assist in securing the fish plates to the rail and thus take the place of the bolts which are ordinarily employed for this purpose. The construction of the rail joint is thus not
 30 weakened by applying the rail bonds thereto.

In the construction shown, rail bonds are employed at opposite sides of the rail at both ends of the fish plates. The rail bonds
 35 on one side may be dispensed with if desired and the electric connection completed through only one of the fish plates instead of through both. The rail bonds, when in position, lie close to the rail where there is
 40 little danger of their becoming displaced or broken by depending parts of a train passing over the track or in any other manner. They can be cheaply manufactured and quickly attached to the rail and do not re-
 45 quire any additional hole or other alteration to be made in the fish plate and the rail for securing the rail bond thereto.

We claim as our invention:

1. The combination with a rail and fish
 50 plate, of a rail bond for electrically connecting said rail to said fish plate comprising a connecting body portion extending substantially parallel with said rail and spaced therefrom, said body portion being pro-
 55 vided at its ends with contact portions which are adapted to engage the sides of said rail and said fish plate, and means engaging said body portion between said contact portions for securing said rail bond to said rail and
 60 said fish plate, substantially as set forth.

2. The combination with a rail and fish

plate, of a rail bond for electrically connect-
 ing said rail and said fish plate, having off-
 set contact portions at its opposite ends
 which are adapted to engage the sides of 65
 said rail and said fish plate, and means com-
 mon to said rail and said fish plate for se-
 curing said rail bond in position on said
 rail and clamping said fish plate between
 said rail bond and said rail, substantially as 70
 set forth.

3. The combination with a rail and fish
 plate, of a rail bond for electrically connect-
 ing said rail and said fish plate comprising
 a connecting body portion extending sub- 75
 stantially parallel with said rail and pro-
 vided at its opposite ends with contact por-
 tions which project inwardly therefrom and
 are adapted to engage the sides of said rail
 and said fish plate, and means for securing 80
 said rail bond to said rail and said fish plate,
 substantially as set forth.

4. The combination with a rail and fish
 plate, of a rail bond for electrically connect-
 ing said rail and said fish plate, comprising 85
 a connecting body portion extending sub-
 stantially parallel with said rail and pro-
 vided at its ends with offset contact portions
 which are adapted to engage the sides of
 said rail and fish plates, and a bolt extend- 90
 ing through said rail and fish plate for se-
 curing said rail bond in position thereon,
 substantially as set forth.

5. The combination with a rail and fish
 plate, of a rail bond for electrically connect- 95
 ing said rail and said fish plate, comprising
 a connecting body portion having offset end
 portions provided with detachable contact
 points which are adapted to engage said rail
 and said fish plate, and means for securing 100
 said rail bond to said rail and fish plate, sub-
 stantially as set forth.

6. The combination with a rail and fish
 plate, of a rail bond for electrically connect-
 ing said rail and said fish plate, comprising 105
 a connecting body portion having offset end
 portions provided with contact points and
 contact rings surrounding the same and
 spaced therefrom, said points and rings be-
 ing adapted to engage the sides of said rail 110
 and fish plate, a packing between said points
 and said rings, and means for securing said
 rail bond in position on said rail and said
 fish plate, substantially as set forth.

Witness our hands, this 30th day of June, 115
 1910.

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Witnesses:

MICHAEL McMAHON,
 JAMES W. BROPHIEL.