

H. C. WILLIAMS.
ELECTRICAL BONDING DEVICE.

APPLICATION FILED JAN. 20, 1910. RENEWED SEPT. 18, 1912.

Patented Oct. 22, 1912.

1,042,304.

Fig. 2.

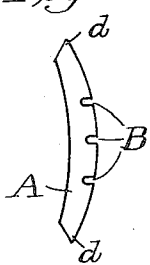


Fig. 3.

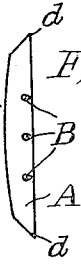


Fig. 1.

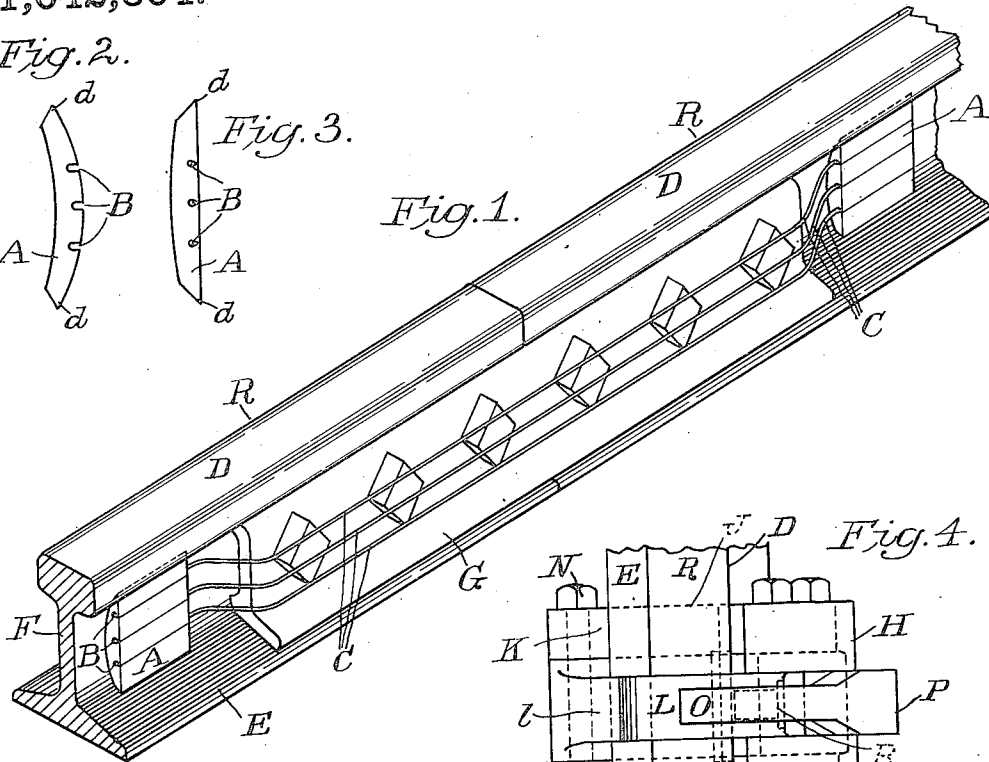


Fig. 4.

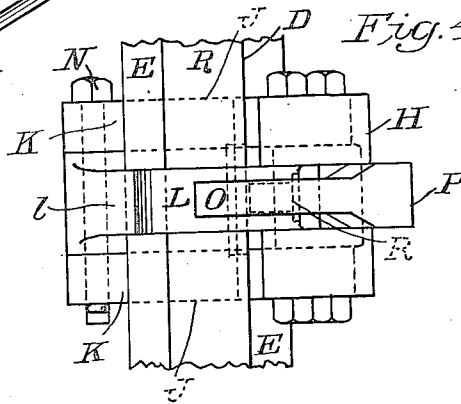


Fig. 7.

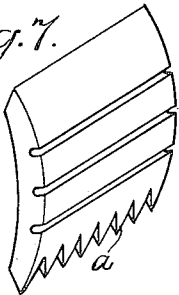


Fig. 8.



Fig. 6.

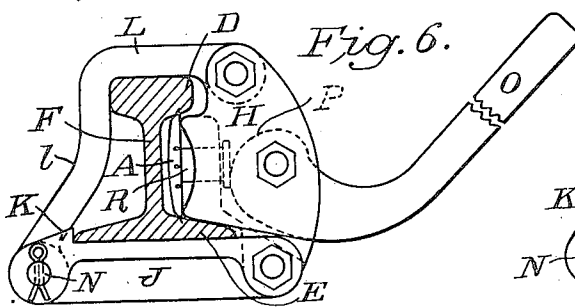
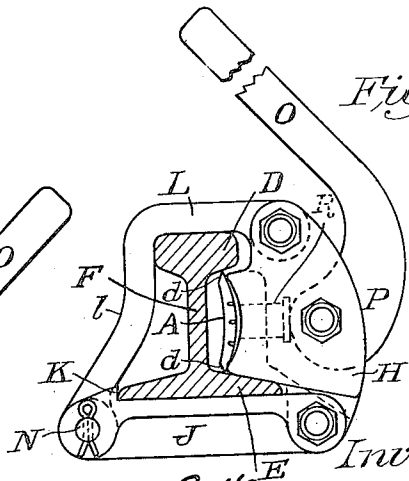


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

HIRAM C. WILLIAMS, OF UTICA, NEW YORK, ASSIGNOR OF ONE-THIRD TO FRANCIS B. HARRINGTON, OF ALBANY, NEW YORK, AND ONE-THIRD TO STEPHEN R. PAYNE, OF SYRACUSE, NEW YORK.

ELECTRICAL BONDING DEVICE.

1,042,304.

Specification of Letters Patent.

Patented Oct. 22, 1912.

Application filed January 20, 1910, Serial No. 539,056. Renewed September 18, 1912. Serial No. 721,100.

To all whom it may concern:

Be it known that I, HIRAM C. WILLIAMS, a citizen of the United States, residing at the city of Utica, in the county of Oneida and State of New York, have invented certain new and useful Improvements in Electrical Bonding Devices, of which the following is a specification.

My invention relates to electrical bonding devices, and the object of my invention is to provide a means for electrically bonding adjacent electrical conducting agents especially adapted for use in railway service, and so constructed and arranged that the bonding wires are positively held in contact with the rails, together with such other elements and combinations as are herein-after set forth and claimed.

I accomplish these objects by means of the mechanism illustrated in the accompanying drawing, in which—

Figure 1 is a perspective view of a rail provided with my bonding device. Fig. 2 is an end elevation of the retaining plate before it is placed in position in contact with the rail. Fig. 3 is an end elevation of the retaining plate after it has been sprung into position. Fig. 4 is a plan with parts broken away. Fig. 5 is an end elevation showing the tool used for placing the retaining plate in position before the retaining plate is operated upon. Fig. 6 is an end elevation showing the tool in contact with a retaining plate after the retaining plate has been forced into position. Fig. 7 is a perspective view of a modified form of retaining plate, and Fig. 8 is a perspective view of a still further modified form of retaining plate.

Similar letters refer to similar parts throughout the several views.

In order to carry the current from one rail to the other in electric railways or for railway signaling in steam railways, it is necessary to provide some connection other than the joints and fish plates at the place of the meeting of the rails. Wires are usually employed and they are generally attached to the rails by boring or drilling holes through the web of the rails and passing the wires therethrough. It takes considerable time to drill the holes through the rails and properly connect the wires therein. Furthermore, there is usually a considerable amount of slack wire necessary in the pres-

ent manner of connecting up which is very liable to be broken or otherwise injured, and which increases the expense of the electrical connection over what it would be if the wires were extended directly from one rail to the other—just allowing enough to take care of expansion and contraction.

I provide a steel retaining plate, A, slightly concavo convex in cross section, and provide along the convex surface a series of slots, B, adapted to receive the end of a wire, C. I preferably construct the upper and lower edges, *d*, of the plate, A, in the form of the edge of a blade as shown in Figs. 2, 3 and 5. Retaining plates A, A, are placed between the head, D, and the foot, E, of adjacent rails R, R. The edges of the plate engaging the lower surface of the head and upper surface of the foot of the rail respectively adjacent to web, F, occupying the position shown in Fig. 5. The ends of the wires, C, are placed in the slots, B, the wires extending from one rail to the other over the fish plates or other retaining joints, G, as shown in Fig. 1.

It now becomes necessary to press the retaining plates so firmly in contact with the head and foot of the rail that they cannot be displaced and so that the wires cannot be withdrawn from the slots, B, B. To do this I have provided a tool shown in Figs. 4, 5 and 6, although I do not intend to limit myself to the particular means for forcing the retaining plates into the desired position which I have illustrated and now proceed to describe.

The casting, H, has hinged to it plates, J, J, with hook, K, at one end which plate and hook pass under the foot of the rail and engage a side of the foot of the rail on the side of the rail opposite that upon which the retaining plate is placed. The casting, H, also has hinged to it a plate, L, provided with a portion, *l*, adapted to pass over the head of the rail and engage the side of the head opposite the casting, H, and extend down between the hooks, K, K, on the plate, J, and provided with a hole for the bolt, N, which passes through it and the hooks, K, K, as shown in Fig. 4. The casting, H, has fulcrumed to it a cam lever, P, operated by the lever arm, O, so positioned that when the plates, J and L, are placed in the position shown in Fig. 5 engaging the foot and

the head of the rail, the cam lever, P, will by the operation of the lever arm, O, plunger or pin, R, force it against the convex surface of the retaining plate, A, whereby
 5 the plate will be forced so that the upper and lower edges thereof will bite into the head and foot of the rail, and what was before the convex surface of the plate will become substantially a flat surface and the
 10 slots, B, B, will become closed; and what was before the concave surface will become the convex and be in close proximity to the web of the rail, thus preventing the possible removal of the plate without breaking or
 15 cutting either it or the rail to which it is attached and also preventing the removal of the wires from contact with the retaining plate, because they are pinched therein and the openings to the slots in which they rest
 20 are closed.

I have shown in Fig. 7 a modified form of the retaining plate in which one of the edges, *a*, is serrated. In Fig. 8 I have shown
 25 another modified form of retaining plate in which I have used a narrow plate or pin, *b*.

I do not want to limit myself to the exact form of plate, nor to the particular construction of the tool for snapping the plate into position. I have not drawn my claims
 30 on the tool for the reason that I expect to make it the subject of a separate application for patent.

The foot of the rail or the underside of the head, or both, may be milled for the reception of the edge of the retaining plate
 35 if desired.

What I claim as my invention and desire to secure by Letters Patent, is:

1. A means for bonding electrically two
 40 conducting agents, comprising retaining plates provided with openings therein adapted to receive wire conducting agents; one of said retaining plates placed in contact with each of said conducting agents;
 45 wires extending from one retaining plate to

the other and placed in said openings in each of said plates, said plates adapted to be forced into contact with one surface only of said conducting agents, whereby said openings are closed and the retaining plates
 50 brought into close contact therewith but prevented from passing through the conducting agents respectively.

2. The combination of a railway rail with a retaining plate adapted to be placed between the head and the foot of the rail adjacent to the web, said retaining plate provided with openings adapted to receive a wire; one or more wires placed into said openings in said retaining plate; said plate
 55 adapted to be forced into close contact with the head and foot of said rail, thereby closing said openings and causing the plate to bite into the head and foot of the rail.

3. An electric bond comprising two concave convex retaining plates; openings
 60 along the convex surface; wires placed in said openings respectively; adjacent rails, one of said plates placed between the head and the foot of each rail; the convex surfaces adapted to be forced toward the web
 70 of the rail until what was before the convex surface becomes flat and the concave surface becomes convex.

4. An electrical bond comprising retaining
 75 plates adapted to be placed between the head and the foot and adjacent to the web of adjoining rails, and containing openings therein for one or more wires; said plates adapted to be caused to bite into the head
 80 and foot of the rail, closing said openings and holding said plates in position, substantially as described.

In testimony whereof I have affixed my signature in presence of two witnesses.

HIRAM C. WILLIAMS.

Witnesses:

BEULAH CORLE,
 LOTTIE PRIOR.