

W. B. CLEVELAND.

RAIL BOND.

APPLICATION FILED MAY 2, 1908.

959,718.

Patented May 31, 1910.

Fig. 1

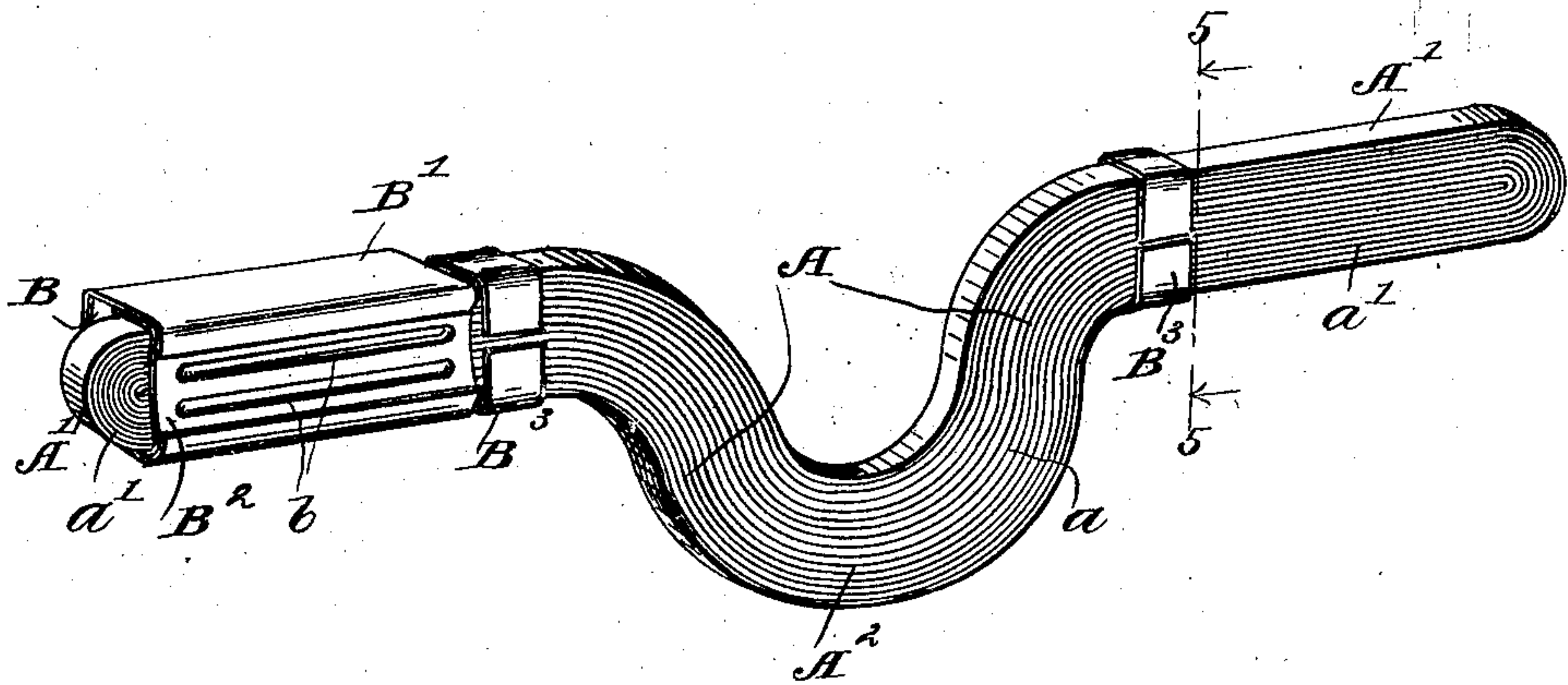


Fig. 2

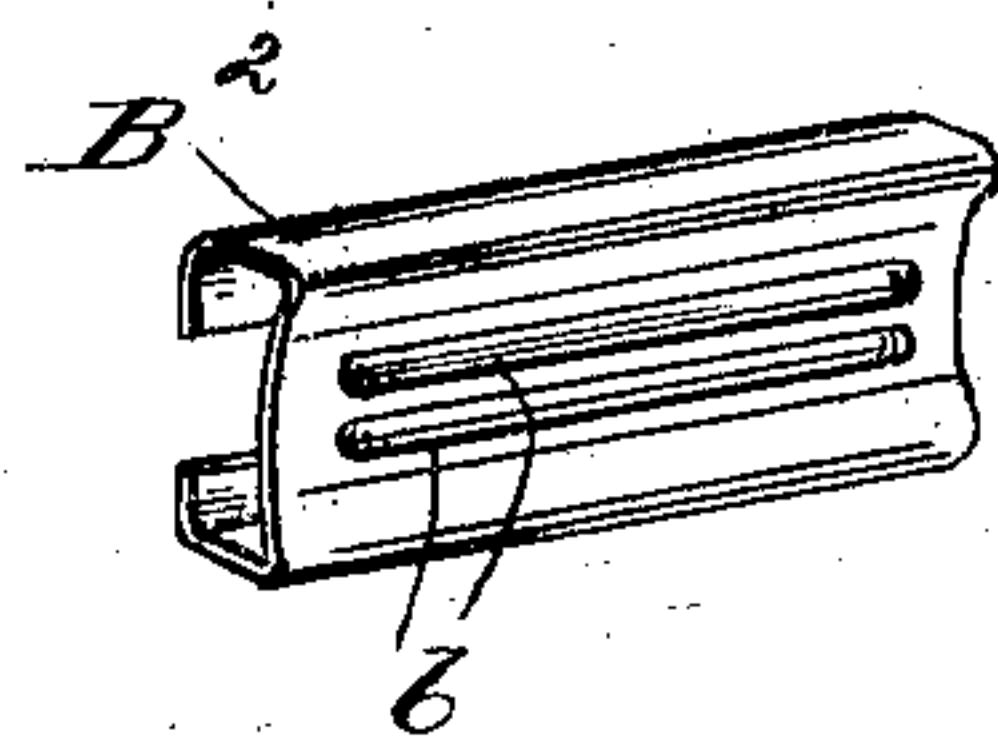


Fig. 3

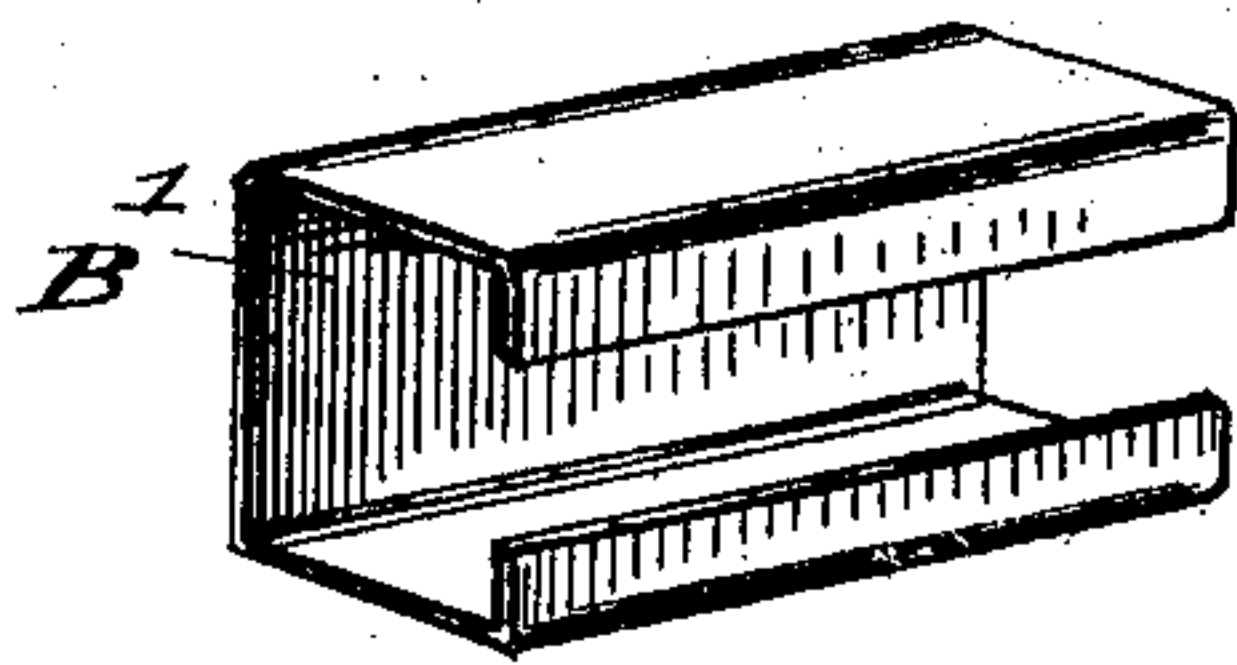


Fig. 4

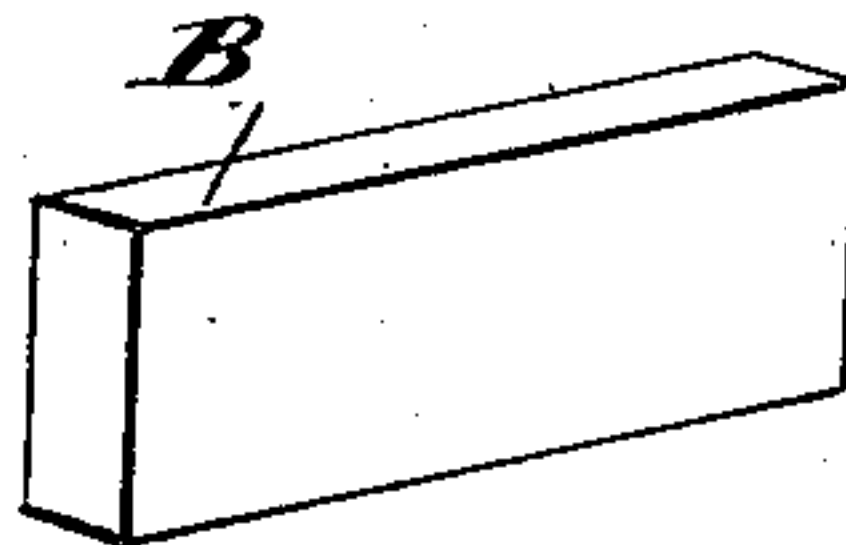
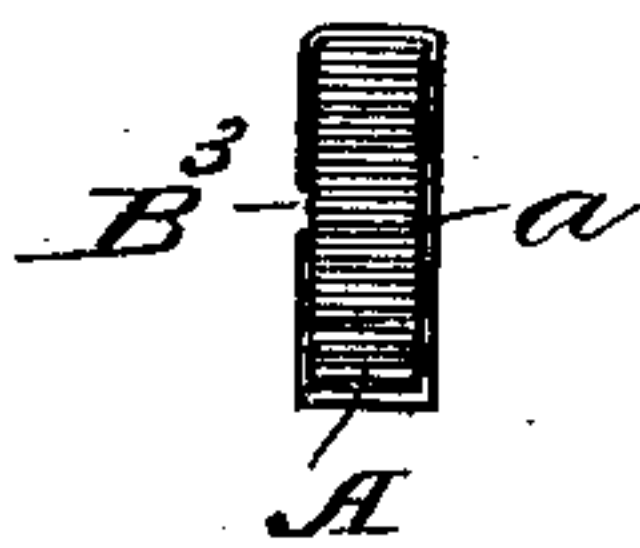


Fig. 5



Witnesses:

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UNITED STATES PATENT OFFICE.

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RAIL-BOND.

959,718.

Specification of Letters Patent.

Patented May 31, 1910.

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To all whom it may concern:

Be it known that I, WILLIAM B. CLEVELAND, a citizen of the United States, resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Rail-Bonds, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

The present invention relates to rail-bonds for electrically connecting the adjacent ends of contiguous rails or like conductors.

The object of the invention is the provision of a bond that aside from being adapted to effect such connection in an efficient and durable manner, will be at the same time simple and compact in manufacture and also comprehend in its structure all the materials necessary for the effecting of its attachment to the rail, except of course the heating electric current.

To the accomplishment of the above and related objects, said invention, then, consists of the means hereinafter fully described and particularly pointed out in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting, however, but one of various mechanical forms in which the principle of the invention may be used.

In said annexed drawing: Figure 1 is a perspective view of a rail bond in which has been incorporated my several improvements, one end or terminal portion of such bond being represented as partially stripped of certain elements normally appended thereto; Fig. 2 represents a sheet of cementing material constituting one of these elements; Fig. 3 represents a clip, preferably composed of like material, for attaching a carbon block, separately shown in Fig. 4, to the rear of the contact face to such terminal portion; and Fig. 5 represents a transverse cross section of the bond taken on the line 5—5, Fig. 1.

As has been implied in the statement of the objects sought to be obtained by this invention, one of these in the particular bond in hand is the inclusion in the bond structure of a suitable resistance material for generating the heat necessary to weld or

braze, as the case may be, the bond terminal to the rail or other object that it is desired to electrically connect. I accordingly affix to the rear face of the respective terminal portions A' of the bond A small oblong blocks B of carbon, Fig. 4, such blocks being held in place with the necessary security by means of clips B', Fig. 3, that when in position inclose them on three sides and overlap the front or contact face of the said terminal portions A'.

Clips B' are desirably composed of suitable cementing material, that, where the bonds are to be brazed, will of course be brass. Across the contact faces of the terminal portions A' are moreover secured sheets B² of like material that are corrugated, preferably longitudinally, as at b, so as to decrease the contact area thereof and also admit, if desired, of the securing thereof of the necessary flux for the brazing operation. These sheets of braze are preferably in the form of clips wrapped about such terminal portions so as to substantially inclose the same and be fixedly held in place thereon; the carbon holders overlapping these braze clips as will clearly appear by observation of the completely assembled terminal illustrated at the left of Fig. 1. The particular type of bond A illustrated is one now largely favored in operations of this kind and consists of a narrow flat strand a, usually of copper, wound upon itself a plurality of times to form a laminated strip bent to provide the terminal portions A' already referred to and an intermediate extensible body portion A². I have found that while clips of cementing material, as of braze or solder, serve initially to hold the strands entering into the terminal portion A' of the bond closely together, when such sheets begin to melt the strands of the bond tend to spread more or less apart, which is objectionable both because a solid, homogeneous, terminal or head will not be formed, and because the strands thus separated, being flattened down under the pressure of the electrode through which the current is supplied for the welding or brazing operation, have their cross-sectional area decreased. I accordingly provide supplementary clips B³, preferably of the same material viz. copper, as that of which the bond itself is composed, these supplementary

clips being located adjacent to the inner edges of the contact faces of the respective terminal portions A'. The employment of clips B³, it will be understood, is not necessarily dependent upon the use of solder sheets and resistance blocks of carbon of the sort above described, since such clips will be equally efficacious where the solder is applied in any of the several approved fashions now prevailing, or where the carbon block forms a part of the electrode and not of the bond terminal at all. Nothing further need be said to point out the usefulness of such supplementary clips in retaining the strands of the bond together even pending the fusion of the outer ends of the latter. Attention should be called, however, to the further function performed by the clips, after the bond has been affixed, such function being of even greater consequence than the one just considered. By reason of their location adjacent to the inner edges of the contact faces of the terminal portions of the bond, the corresponding edges of the clips are exposed to the welding heat developed in such portions and become fused therewith; the non-adjacent edges, on the contrary, when the welding operation is properly conducted, remain free. The result is that the clips permanently inclose the strands entering into the terminals of the bond, and confine the movement of such strands in such fashion as practically to relieve the points of actual attachment of such strands to the rail of any strain whatever. The life of a bond is by this means measurably prolonged.

The use of a block of any resistance material directly attached to the terminal of the bond I do not herein set up as broadly new, one form of such construction being shown and described in a co-pending application of Albert B. Herrick, filed April 19, 1905, Serial No. 256,439. I should call attention, however, to the simplicity of the means herein utilized to secure such block in place, as also to the convenient mode of attaching the sheet of cementing material to the contact face of the terminal, permitting not only of the ready assembling of the bond in the shop in the course of manufacture, but also lending itself to convenient use when being applied in the field.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention:—

1. As a new article of manufacture, a rail-bond comprising a plurality of strands, and clips securing the ends of said strands together to form the terminal portions of the

bond, said clips extending inwardly beyond the inner ends of the faces of such terminal portions designed to contact with the rail.

2. As a new article of manufacture, a rail-bond comprising a plurality of copper strands, and clips of substantially the same degree of fusibility securing the ends of said strands together to form the terminal portions of the bond, said clips extending inwardly beyond the inner ends of the faces of such terminal portions designed to contact with the rail.

3. As a new article of manufacture, a rail-bond comprising a flat copper strand wound upon itself a plurality of times to form a laminated strip, and clips of the same material secured to the terminal portions of said strip to bind the component strands together, said clips extending inwardly beyond the inner ends of the faces of such terminal portions designed to contact with the rail.

4. As a new article of manufacture, a rail-bond comprising a plurality of strands wound together to form terminal portions and an intermediate body portion, sheets of cementing material secured across the contact faces of such terminal portions, said sheets being in the form of clips wrapped about such portions so as to be frictionally held in place, and clips of the same material as said bond secured to such terminal portions adjacent to the corresponding clips of cementing material and serving to bind said strands together irrespective of the latter.

5. As a new article of manufacture, a rail-bond comprising a flat copper strand wound upon itself a plurality of times to form a laminated strip, sheets of cementing material secured across the contact faces of the terminal portions of said strip, said sheets being in the form of clips wrapped about such portions so as to substantially inclose the same and be frictionally held in place, and clips of the same material as said bond secured to such terminal portions adjacent to the corresponding clips of cementing material and serving to bind the component strands in such portions together irrespective of said latter clips.

6. As a new article of manufacture, a rail-bond comprising an intermediate body portion and terminal portions designed to be affixed to the rail, blocks of high resistance material disposed to the rear of the contact faces of such terminal portions, and clips securing said blocks in place.

7. As a new article of manufacture, a rail-bond comprising an intermediate body portion and terminal portions designed to be affixed to the rail, carbon blocks secured to the rear of the contact faces of such terminal portions, and clips of cementing material securing said blocks in place.

8. As a new article of manufacture, a rail-bond comprising a plurality of strands

bound together to form terminal portions and an intermediate body portion, sheets of cementing material secured across the contact faces of such terminal portions, blocks 5 of high resistance material disposed to the rear of such terminal portions and clips of cementing material partially overlapping aforesaid sheets and securing said blocks in place.

10. 9. As a new article of manufacture, a rail-bond comprising a flat copper strand wound upon itself a plurality of times to form a laminated strip, clips of the same material secured to the terminal portions of said strip

to bind the component strands together, said 15 clips extending inwardly beyond the inner ends of the faces of such terminal portions designed to contact with the rail sheets of braze secured across such faces, carbon blocks disposed to the rear of such faces, and 20 clips of braze partially overlapping said sheets and securing said blocks in place.

Signed by me, this 30th day of April, 1908.

WILLIAM B. CLEVELAND.

Attested by—

E. R. RODD,

JNO. F. OBERLIN.