

No. 757,070.

PATENTED APR. 12, 1904.

E. G. THOMAS.  
RAIL BONDING CONSTRUCTION.

APPLICATION FILED MAR. 19, 1903.

NO MODEL.

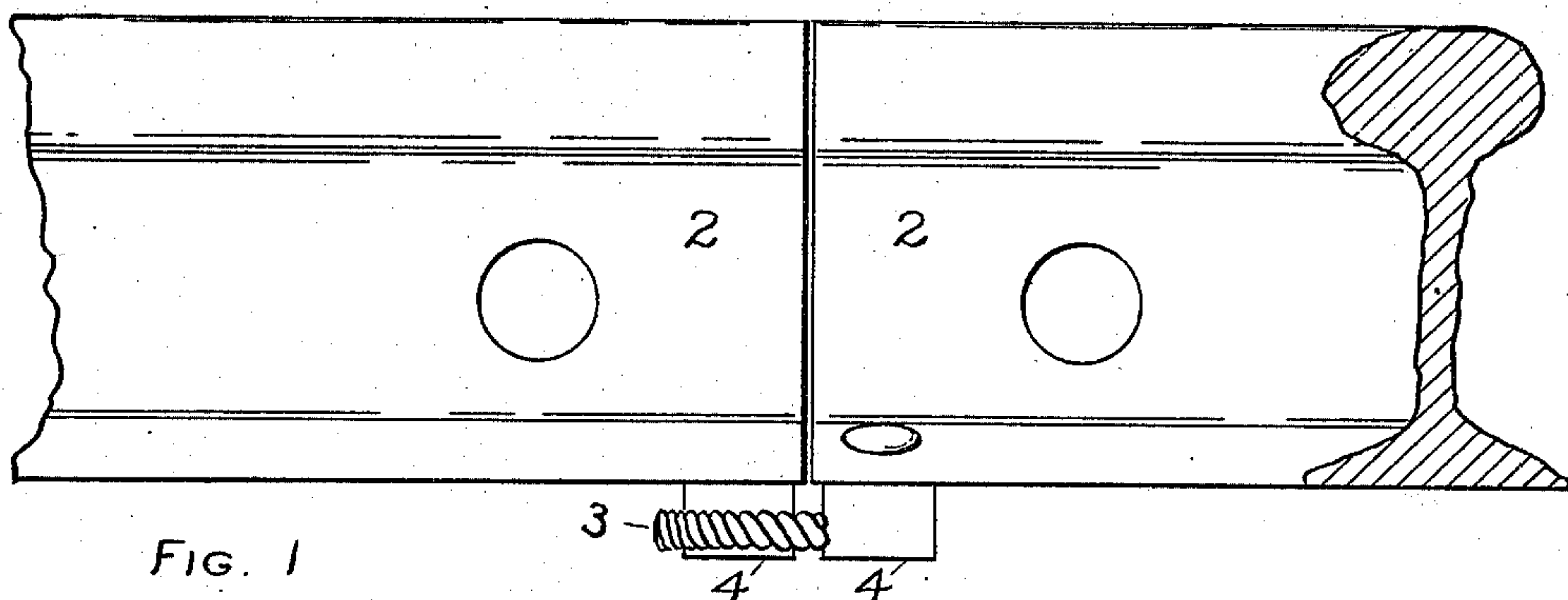


FIG. 1

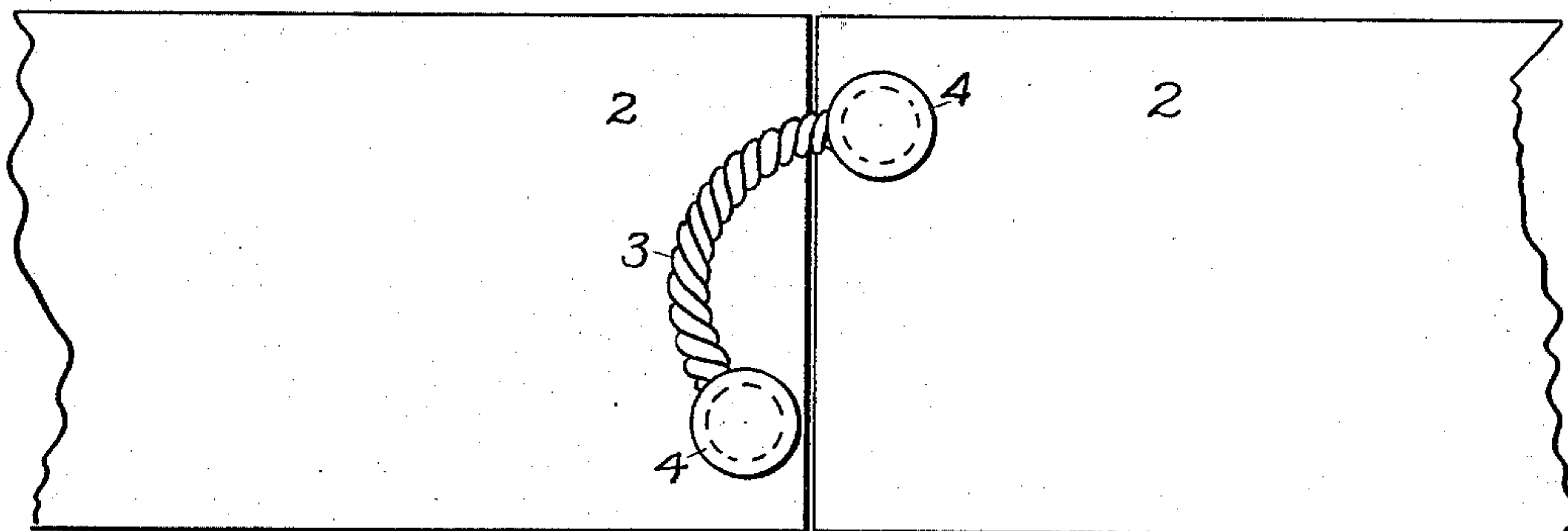


FIG. 2

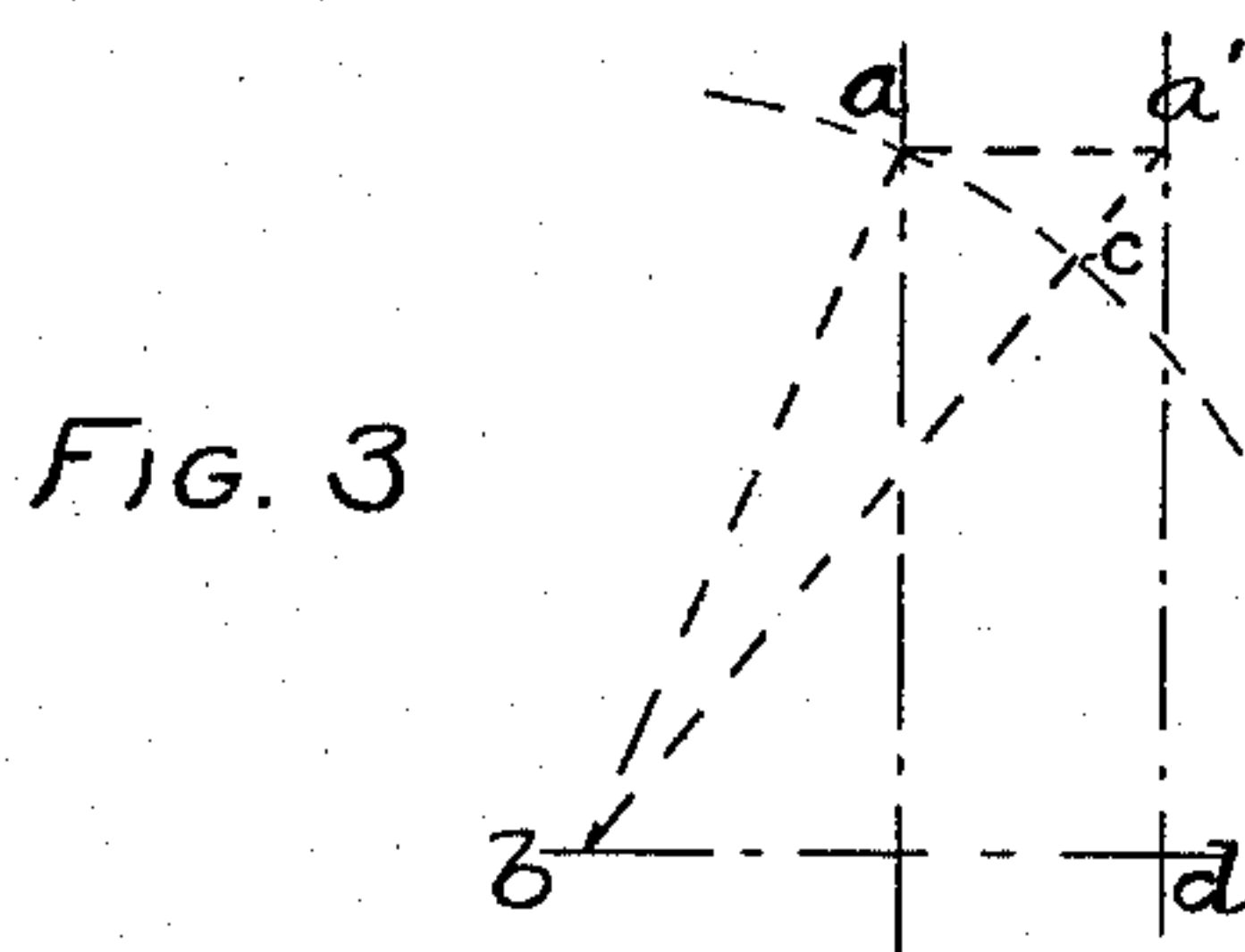


FIG. 3

WITNESSES

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## UNITED STATES PATENT OFFICE.

EDWARD G. THOMAS, OF WALTHAM, MASSACHUSETTS.

## RAIL-BONDING CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 757,070, dated April 12, 1904.

Application filed March 19, 1903. Serial No. 148,524. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD G. THOMAS, a citizen of the United States, and a resident of Waltham, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Rail-Bonding Construction, of which the following is a specification.

My invention is intended to provide an improved rail-bonding construction whereby the bending strains in the bond may be diminished and the life of the bond may be materially increased. So far as I am aware it has heretofore been the universal custom in bonding rails to locate the points of attachment of the bond in the same straight line running parallel with the length of the rails, or substantially so, so that the entire change in the distance between the points of attachment when the rails expanded or contracted had to be provided for and taken up by the flexible portion of the bond.

My present invention provides a rail-bonding construction in which only a portion of the actual separation of the points of attachment of the bond has to be taken up by the bond itself, and inasmuch as the life of a bond depends in great measure upon the amplitude of its elongations and contractions I am thereby enabled to make rail-bonds last much longer than heretofore.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the adjacent ends of a pair of rails with a bond applied to the bottom thereof in accordance with my invention. Fig. 2 is a bottom plan view of the parts shown in Fig. 1. Fig. 3 is a diagram illustrating the principle of my invention.

In the drawings, 2 2 represent the adjacent ends of a pair of rails, and 3 represents a bond provided with rivet-terminals 4, adapted to be passed through the webs or flanges of the rails and riveted thereto in a well-known manner. The bond shown in the drawings is a twisted-wire bond; but the particular form of construction of the bond itself is not material to my invention.

My invention consists in locating the terminals 4 or other means whereby the bond is

attached to the rails in substantially different lines with respect to the length of the rails, or, in other words, on opposite sides of a line passing through the flexible portion of the bond and running parallel with the length of the rails. The result of this arrangement is indicated by the diagram Fig. 3, in which  $a b$  indicate the relative position of the points of attachment of the bond when the latter is in its most contracted position, and  $a' b'$  indicate the relative position of said points when the bond is in its most extended or elongated position. The longitudinal separation of the points of attachment is thus equal to the distance  $a a'$ , the line  $a a'$  being parallel with the length of the rails, and with the ordinary rail-bonding construction, in which the points of attachment are located in the same straight line coincident or parallel with the line  $a a'$ , all this elongation would have to be taken up by the bending of the bond. With my construction, however, the length of the bond is changed merely from the distance  $a b$  to the distance  $a' b'$ , the actual elongation of the bond itself being therefore the distance  $a' c$ ,  $c$  being a point on a circle described from  $b$  as a center with the line  $a b$  as a radius. The difference in length between the lines  $a a'$ ,  $a' c$  therefore represents the amount by which the elongations and contractions of the bond itself are diminished when my construction is employed, and I have found by repeated tests that the life of a bond may be greatly increased by my construction and arrangement.

It will be evident that the ratio of the distance  $a a'$  to the distance  $a' c$ , or, in other words, the proportionate saving in elongation and contraction of the bond, will increase as the angle increases, which is included between the line joining the points of attachment of the bond and a line running parallel with the length of the rails, and that unless said angle is of substantial size the results contemplated by my invention will not be secured to any practical extent. The angle above referred to is the angle  $a b d$  in Fig. 3, assuming that the line  $a b$  represents the position of the bond when the rails are in contact with one another. It is therefore desirable to locate the attaching-terminals of the



bond near the ends of the rails, so as to make the angle referred to as large as possible. When the points of attachment are equidistant from the intervening ends of the rails, the distance between each point of attachment and the end of the corresponding rail will be less than half the distance between the points of attachment themselves, and this is a distinguishing feature of my invention.

Although in my construction as herein illustrated the bond is shown as applied to the bottoms of the rails, it might obviously be applied to the webs thereof with the same result, and I do not consider my invention to be limited to any particular type or construction of bond or attaching means.

I claim as my invention—

1. In a rail-bonding construction, the combination with a pair of rails of a bond having a flexible portion, each end of which is secured in fixed relation to one of the rails at a point located at a substantial distance to one side of a line passing through the other point and running parallel with the length of the rails, said flexible portion being located on the same face of the rails.

2. In a rail-bonding construction, the combination with a pair of rails of a bond comprising a flexible portion the ends of which are secured in fixed relation to the respective rails at points which are diagonally related with respect to the length of the rails, the distance between each of said points and the end of the corresponding rail being less than one-half the distance between the points themselves.

3. In a rail-bonding construction, the combination with a pair of rails of a bond the ends of which are secured in fixed relation to the respective rails at points located in a line extending diagonally with respect to the length of the rails, said diagonally-related ends being located on the same face of the rails and connected by a flexible portion, substantially as described.

In testimony whereof I have hereunto subscribed my name this 13th day of March, 1903.

EDWARD G. THOMAS.

Witnesses:

E. D. CHADWICK,  
JOSEPH T. BRENNAN.