

(No Model.)

J. J. ZIMMELE & A. BOURNONVILLE.
BONDING DEVICE FOR ELECTRIC RAILWAYS.

No. 533,261.

Patented Jan. 29, 1895.

Fig. 1.

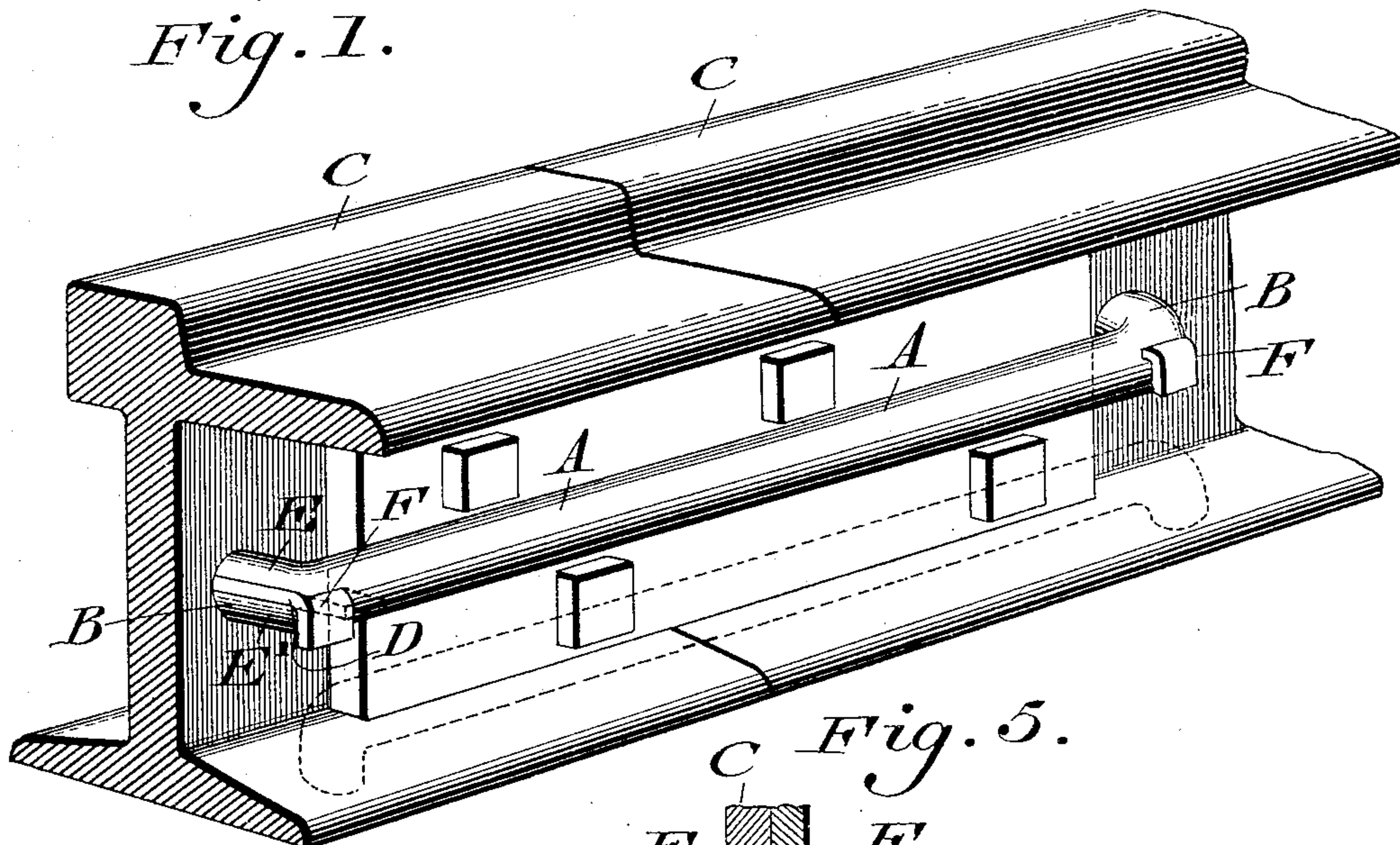


Fig. 5.

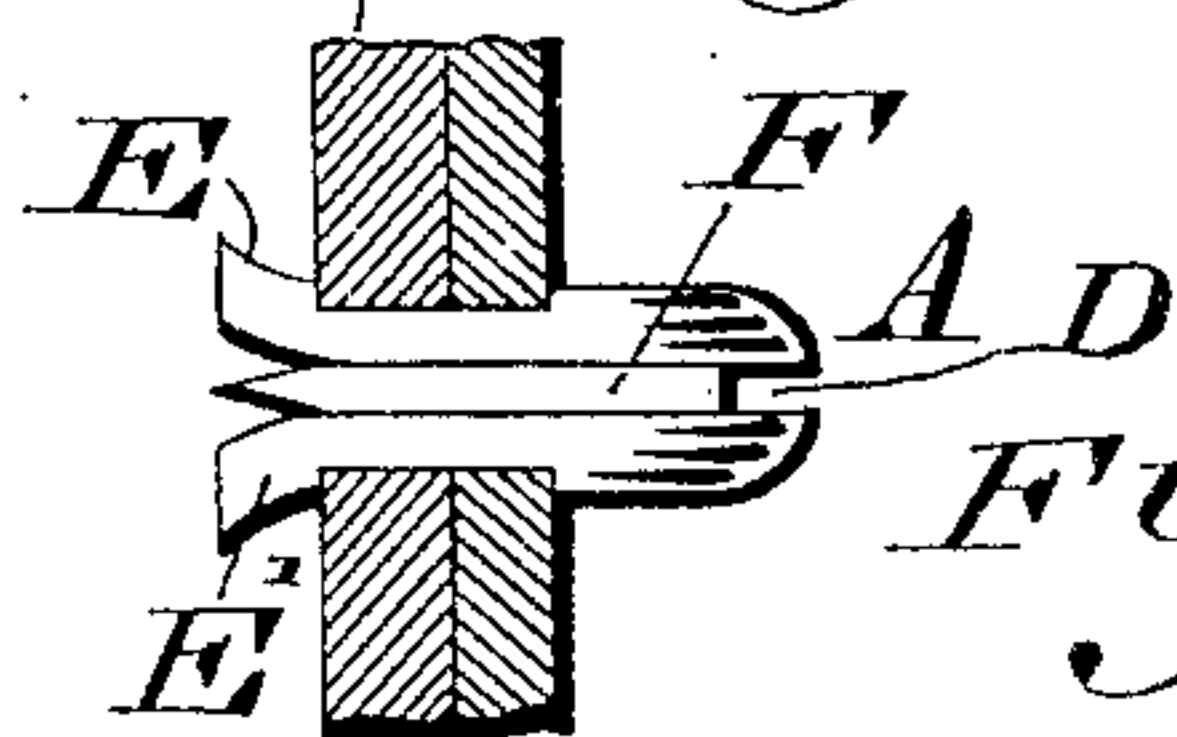


Fig. 4.

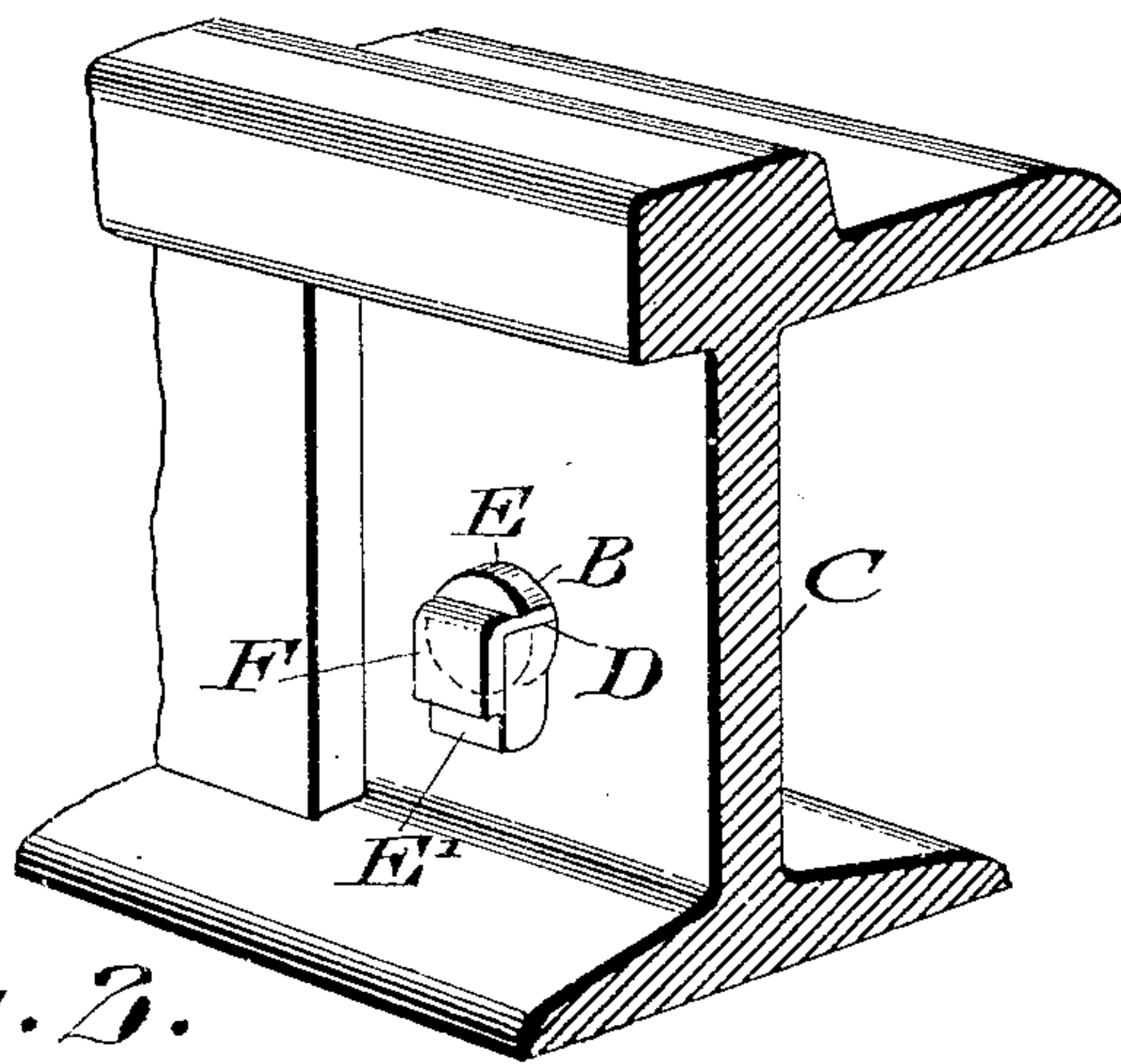
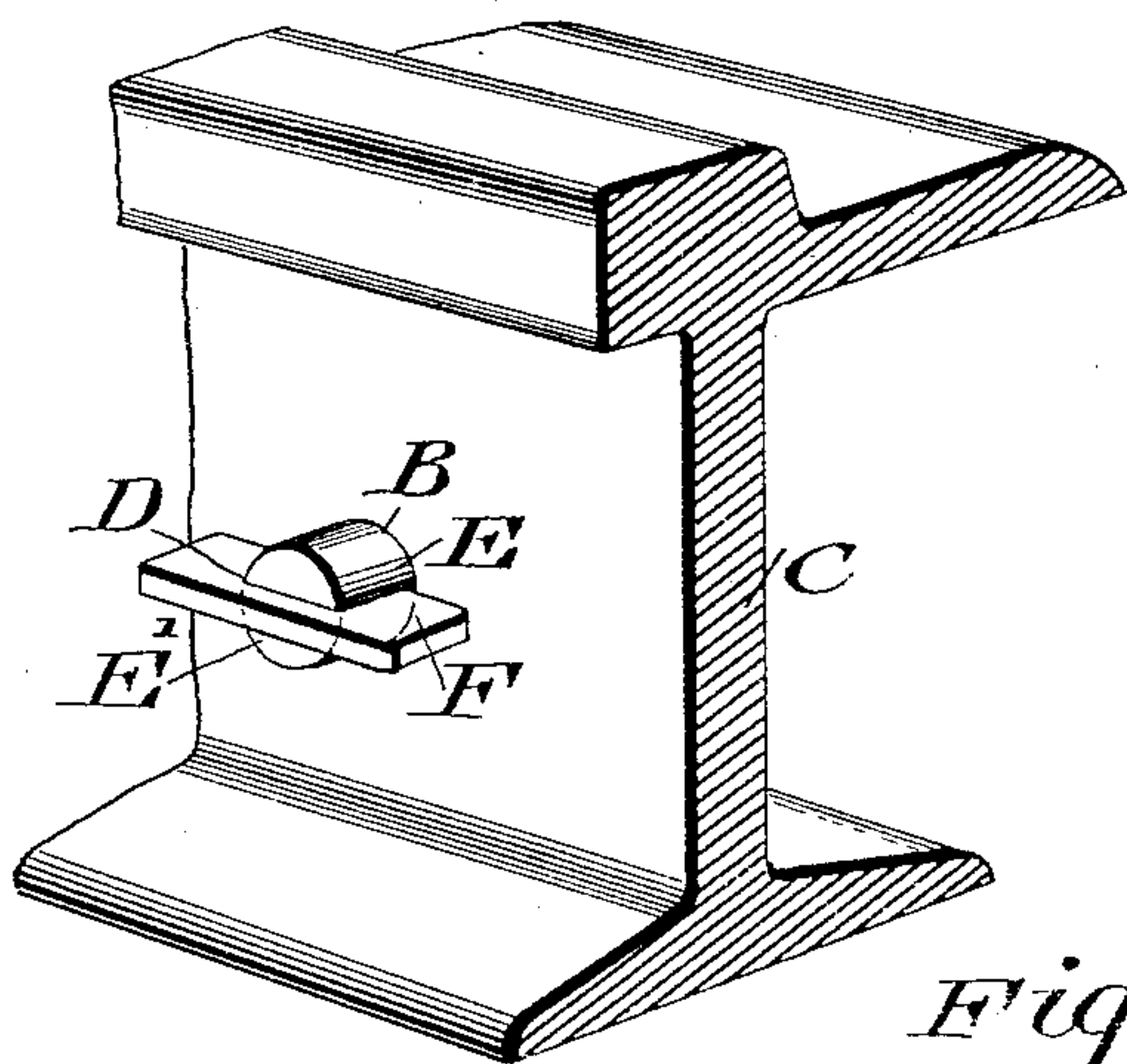
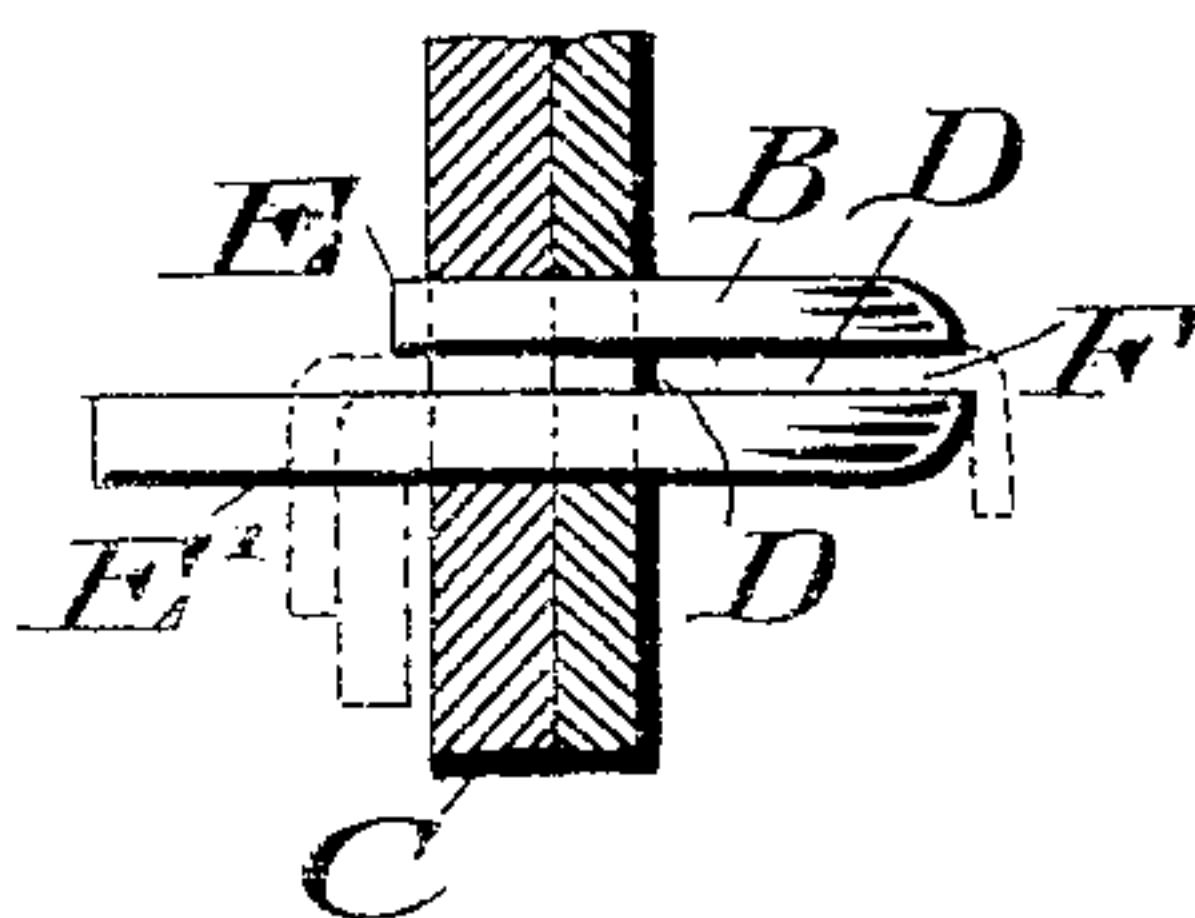


Fig. 3.



Witnesses

P. H. Hagler.
L. Douville

Inventors
John J. Zimmele
Antoine Bournonville
By *John A. Diersheim*
Attorney.

UNITED STATES PATENT OFFICE.

JOHN J. ZIMMELE AND ANTOINE BOURNONVILLE, OF PHILADELPHIA, PENNSYLVANIA; SAID BOURNONVILLE ASSIGNOR TO SAID ZIMMELE.

BONDING DEVICE FOR ELECTRIC RAILWAYS.

SPECIFICATION forming part of Letters Patent No. 533,261, dated January 29, 1895.

Application filed November 30, 1894. Serial No. 530,351. (No model.)

To all whom it may concern:

Be it known that we, JOHN J. ZIMMELE and ANTOINE BOURNONVILLE, citizens of the United States, both residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Bonding or Connecting Devices for Electric Railways and other Electrical Conductors, which improvement is fully set forth in the following specification and accompanying drawings.

Our invention consists of a bond for electric conductors having novel means for securing the same in position.

Figure 1 represents a perspective view of a bond or connector embodying our invention, the same being shown as applied to an electric railway. Figs. 2 and 5 represent end views thereof, together with sections of portions of rails, (and fish plates when employed.) Figs. 3 and 4 represent perspective views of the ends of bonds embodying our invention.

Similar letters of reference indicate corresponding parts in the several figures.

Referring to the drawings: A designates a bond or connector formed of a bent piece of copper or other suitable metal, having its limbs B, inserted in the adjacent conductor C, said limbs being split, kerfed or slotted as at E, forming the sections E, E', the splits, kerfs or slots extending beyond the bend or angle into the body of the bond. Into said splits, kerfs or slots are driven the keys F, whose tendency is to spread apart the sections E, E', of the limbs, and force them against the walls of the openings in the conductor, thus firmly holding the bond in position.

In Fig. 1, the keys F are shown as inserted through the front of the bond, while in Figs. 3 and 4 they are shown as inserted at the end of the bond.

After the keys are applied and the sections tightened by the same, either end of the sections may be bent or turned over, and clinched on the conductor, thus preventing displacement of the bonds, and loosening of the limbs of the same in the conductor.

In the construction and satisfactory and economical operation of an electric railroad, one of the important factors is the obtaining of as nearly perfect a conductor as is possible

for the return of the current to the generator. To this end various methods have been employed, embodying the attachment to the end of a rail of the track of one or more metallic conductors, and attachment of the same also to the abutting end of the next rail, and sometimes to the rail on the opposite side of the track, and so on through the entire length of the track.

Such method is known in electric railway construction as bonding, and the devices are called bonds. The present means in use, such as channel pins, rivets and other devices, are generally open to the objection that they greatly reduce the sectional area of the bond conductor, and therefore its electrical carrying capacity at a vital point, namely, the point of contact with the rail; or the continuous vibration of the rails due to the passage of traffic, eventually causes a loosening of contact, with perhaps possible harmful electrical action to adjacent water or gas mains, &c., thereby tending to still further destroy the efficiency of such method of bonding or there is difficulty or expense in the application.

Our system of bonding, whether applied in whole or in part, is designed to give perfect and secure electrical contact with sufficient conductivity, and simplicity and ease of construction with small expense, and may be employed in electric railways or in other cases where continuous electric conductors are required. The principle can be used in connection with enlarged terminals and also where the terminals are joined to cables or ribbons for the purpose of securing flexibility.

When the limbs are subjected to severe pressure by the key, they are compressed by the conductor, and have their ends spread apart, as shown in Fig. 5, thus interlocking said limbs with said conductor, and preventing all possible displacement of the former.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A bond or connector for an electric conductor, having limbs on the end thereof, the same being adapted to be tightened in position, substantially as described.

2. A bond or connector for an electric conductor having limbs on the end thereof, and

a device for spreading and tightening the same in the opening in a rail or other conductor, said parts being combined substantially as described.

5 3. A bond or connector for an electric conductor having limbs on the end thereof, and a key adapted to be inserted between said limbs and spread the same in the opening in the rail or other conductor which they occupy,
10 substantially as described.

4. A bond or connector for an electric con-

ductor, having limbs on the end thereof, and a kerf or slot extending in said limbs into the body of the bond or connector, whereby a wedging device may be inserted in said kerf 15 or slot from either side of a rail or other conductor, substantially as described.

JOHN J. ZIMMELE.

ANTOINE BOURNONVILLE.

Witnesses:

JOHN A. WIEDERSHEIM,

R. H. GRAESER.