

No. 626,378.

Patented June 6, 1899.

S. H. HARRINGTON.  
ELECTRIC RAIL BOND.

(Application filed June 16, 1898. Renewed Feb. 28, 1899.)

(No Model.)

FIG. 1.

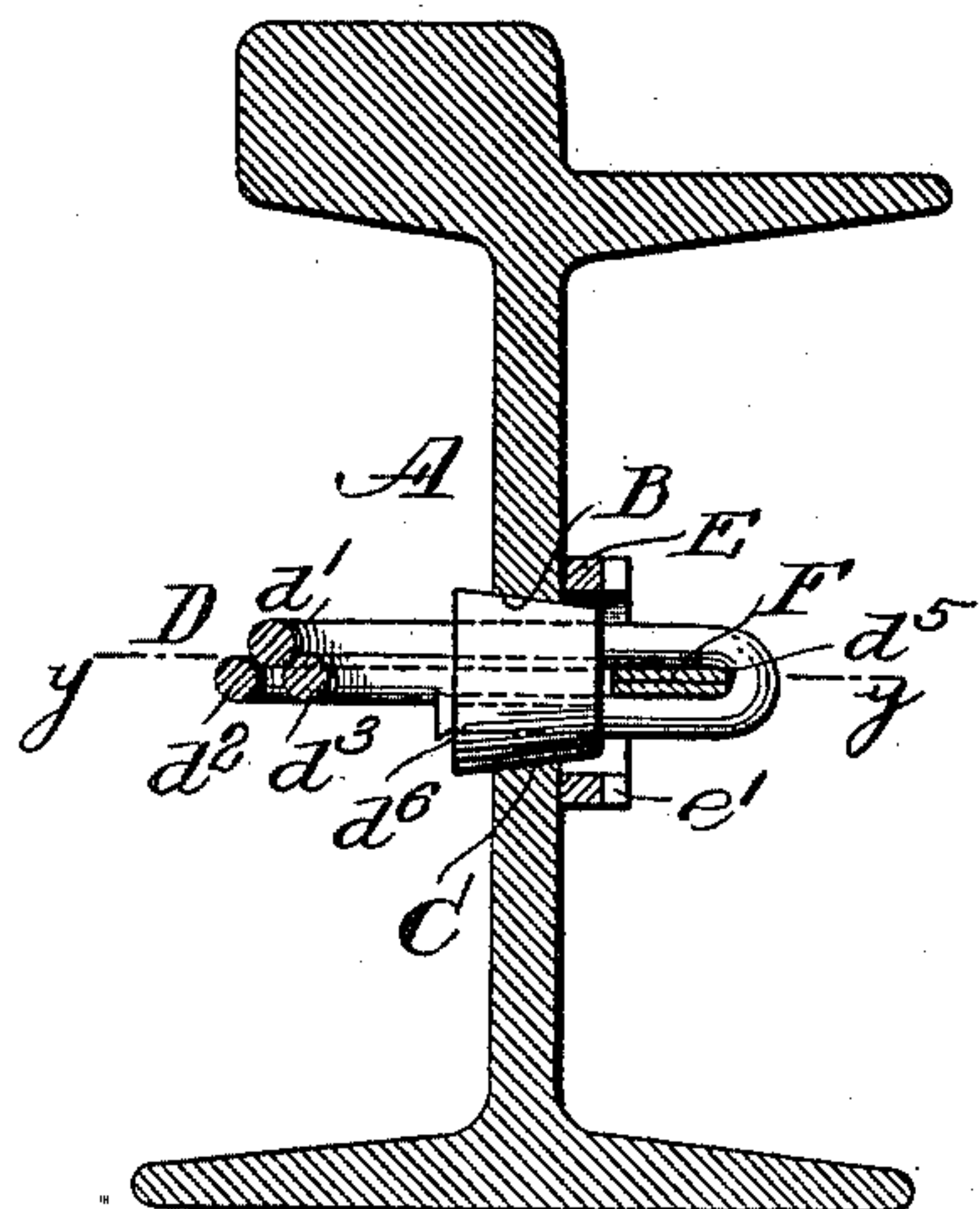


FIG. 2.

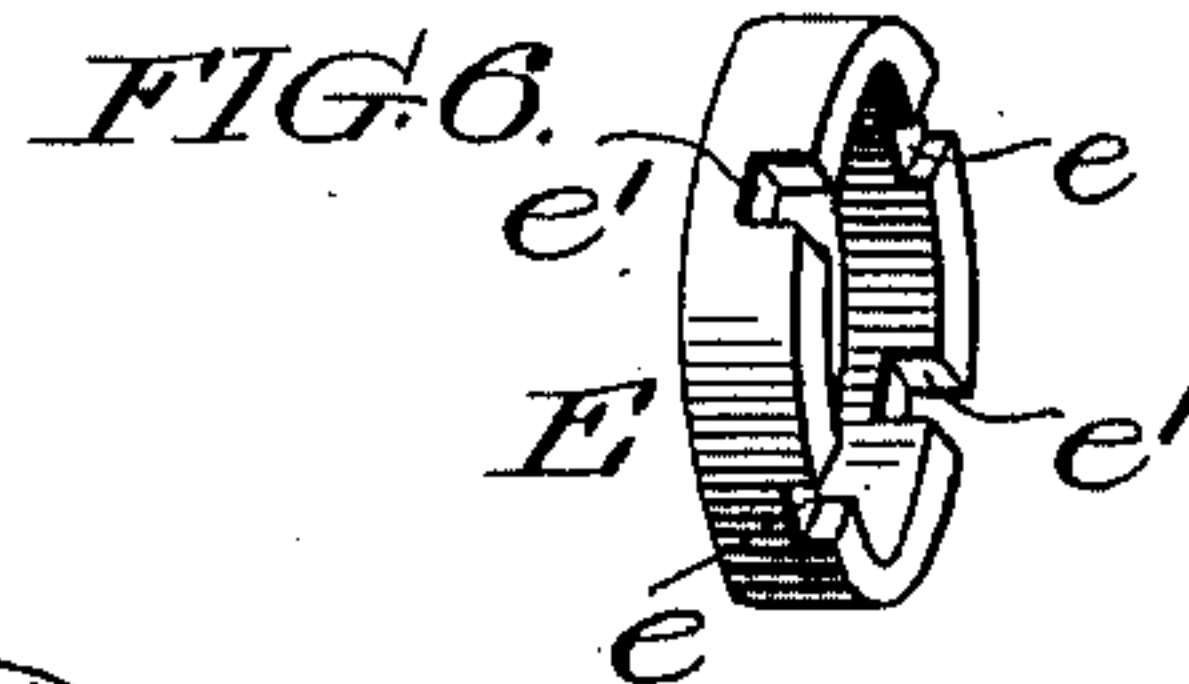
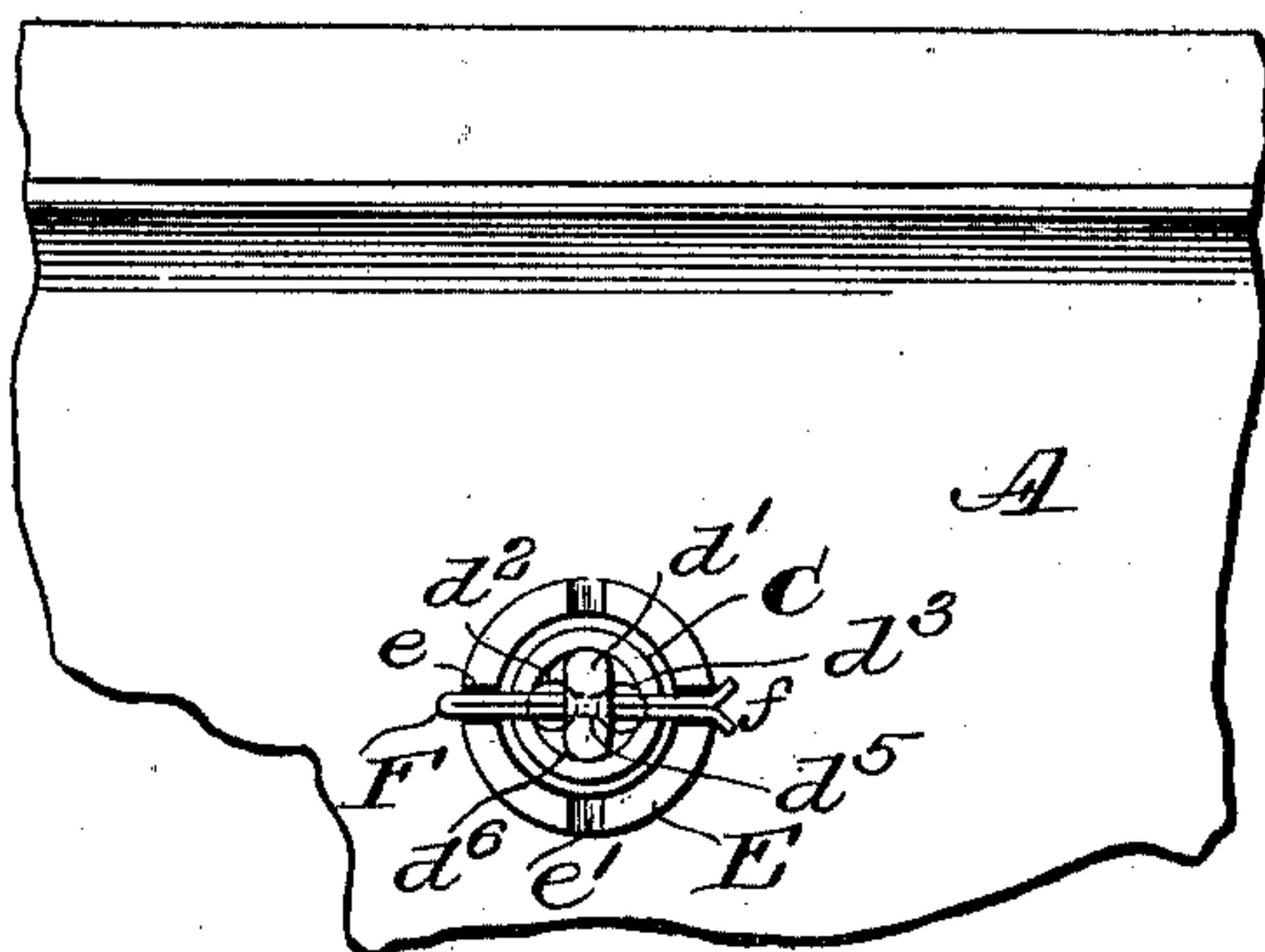


FIG. 4.

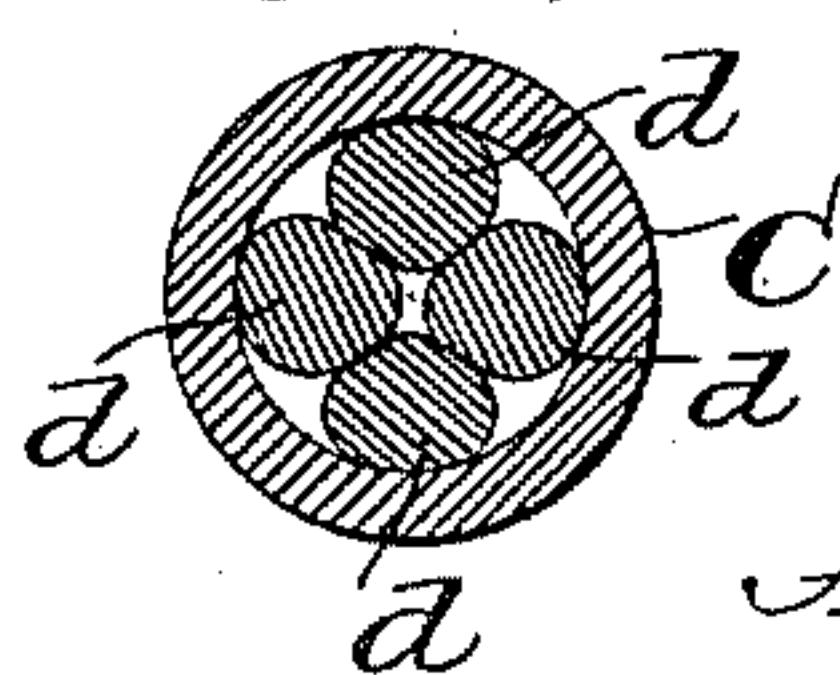


FIG. 3.

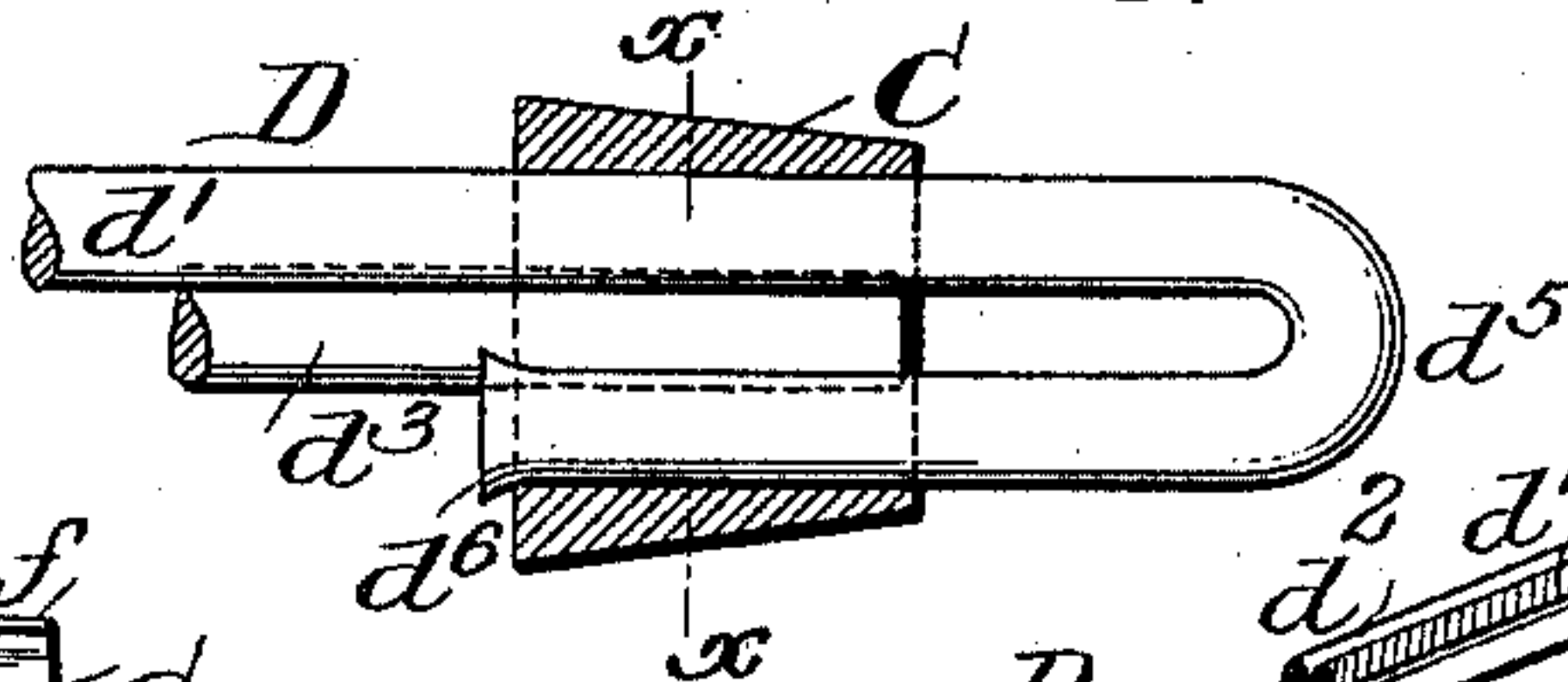


FIG. 5.

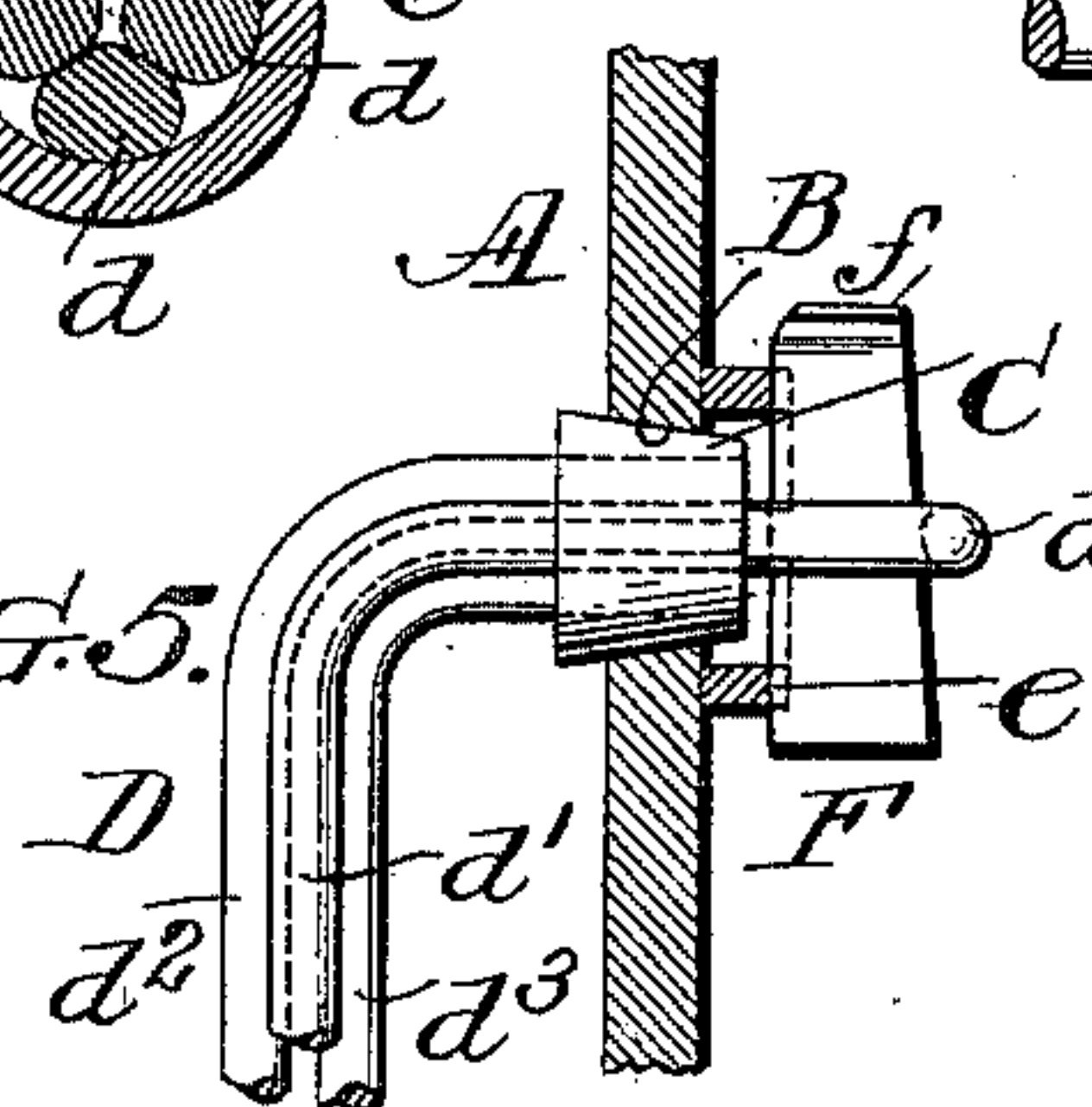


FIG. 7.

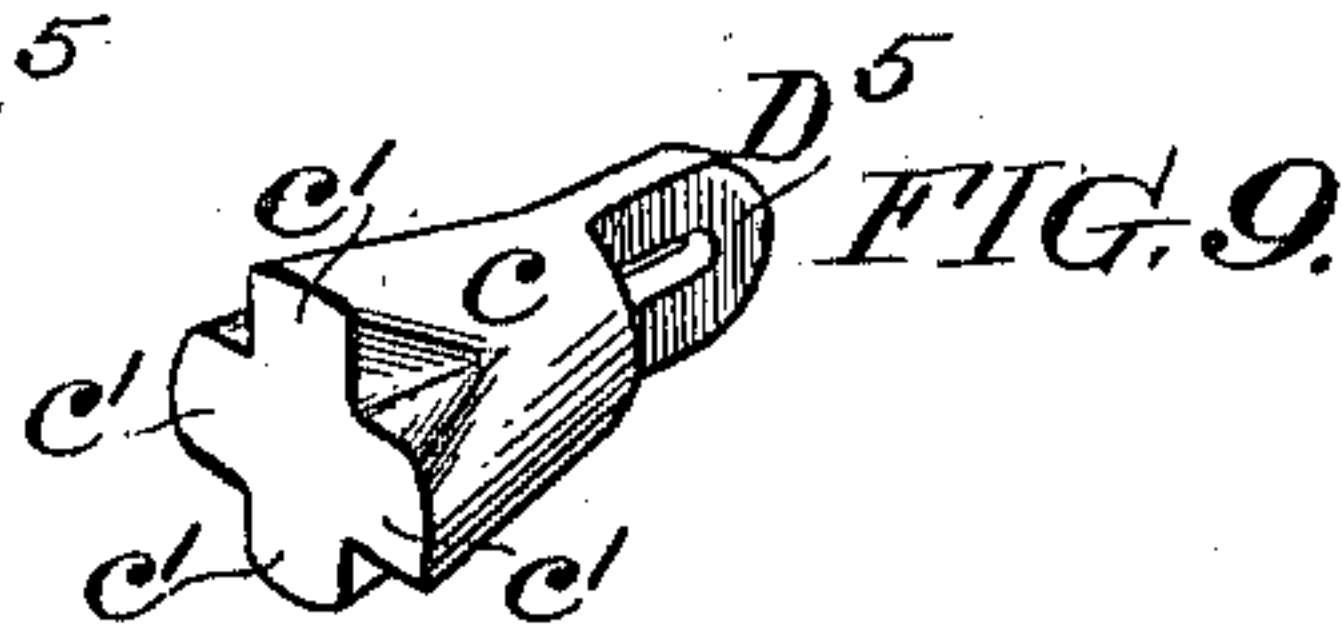
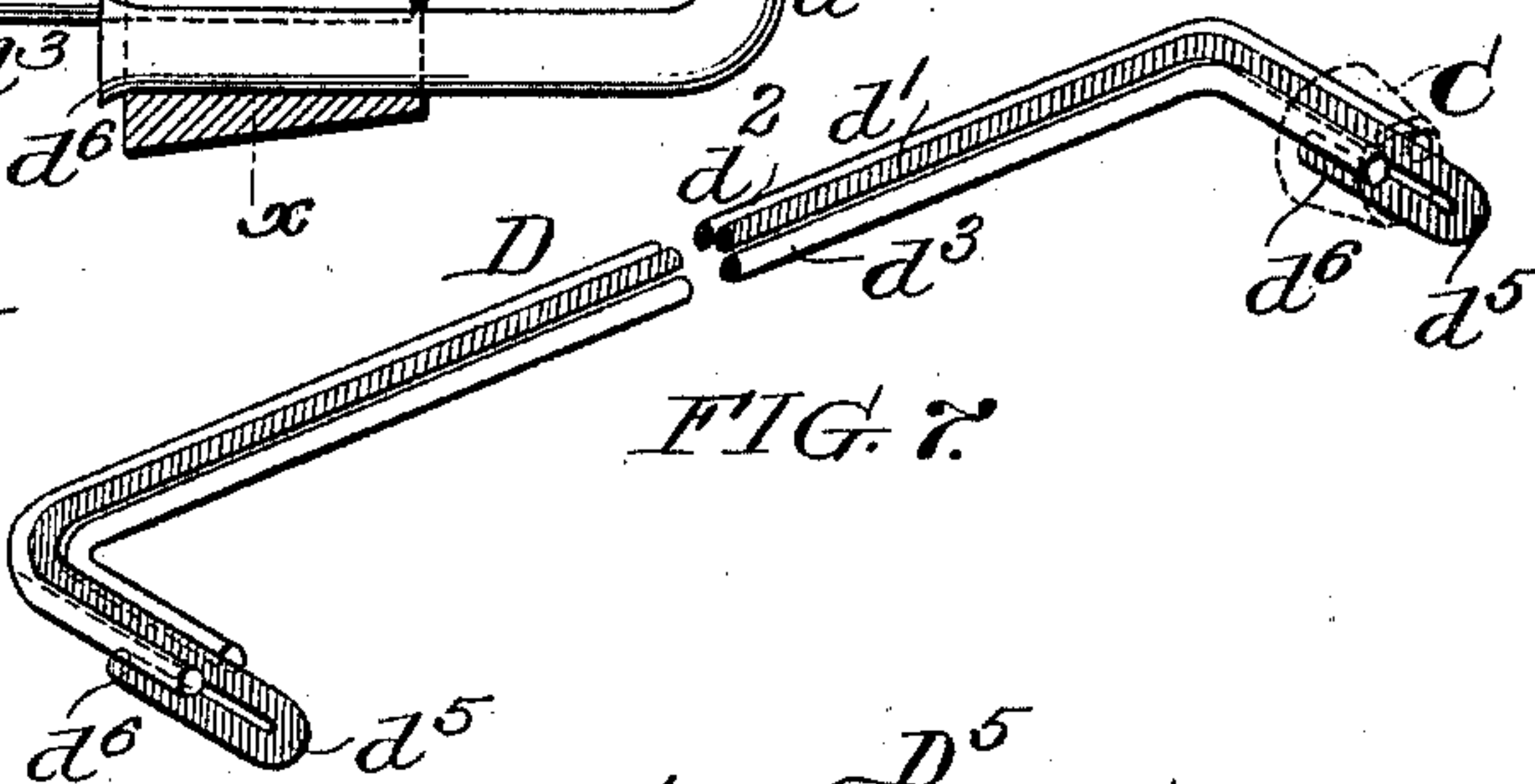


FIG. 8.

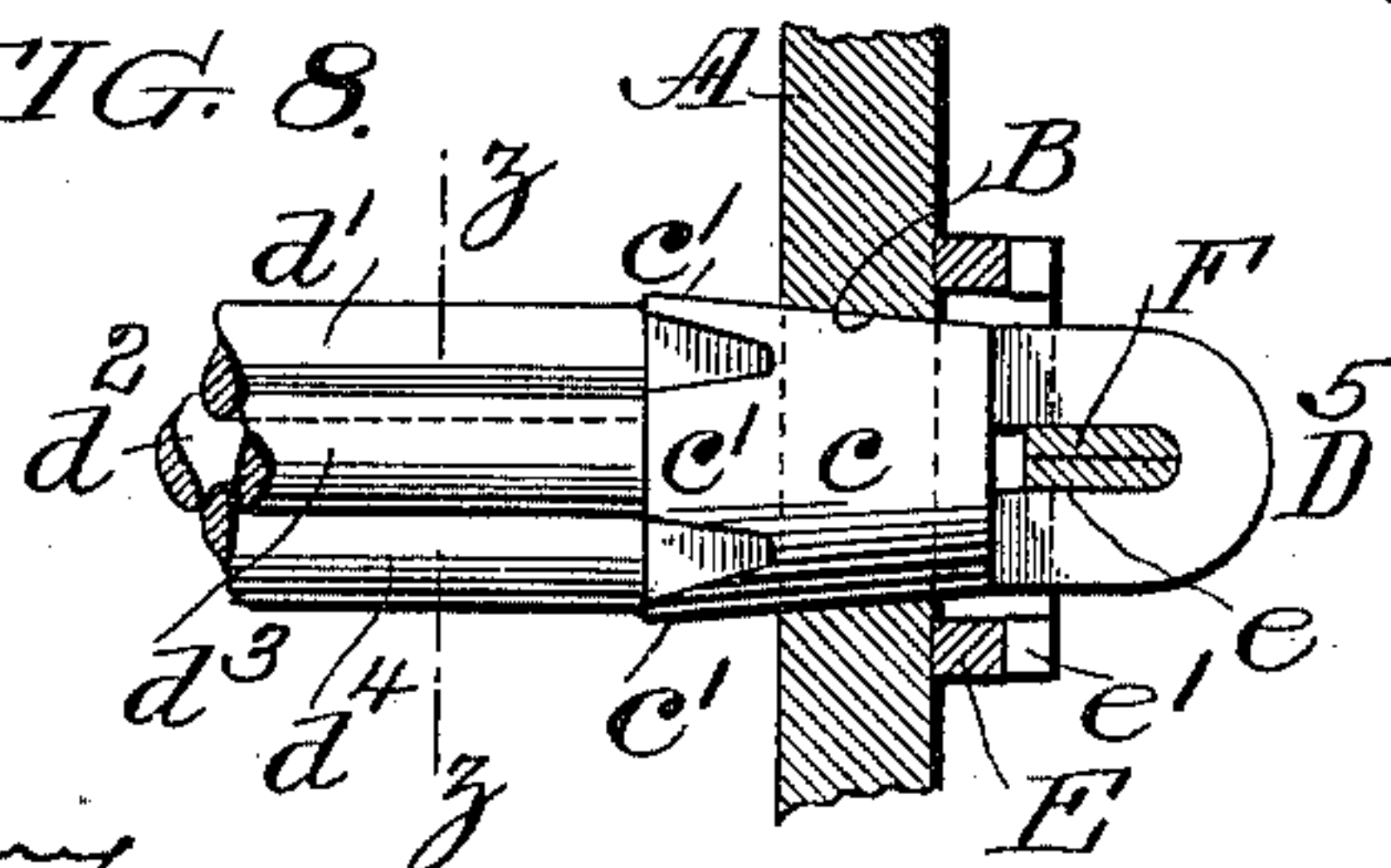
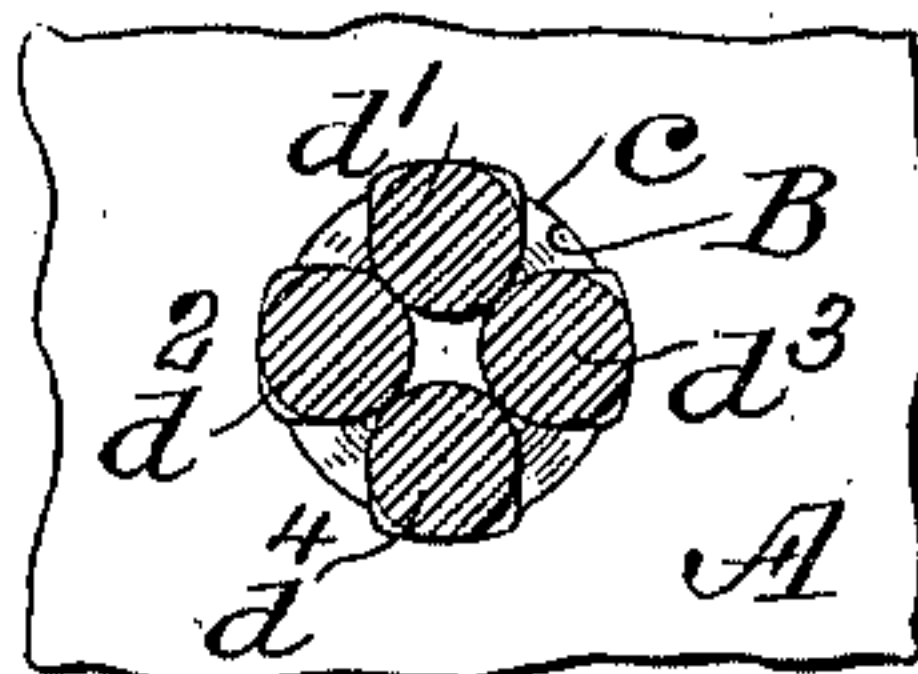


FIG. 10.



Witnesses.

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# UNITED STATES PATENT OFFICE.

SAMUEL H. HARRINGTON, OF NEW YORK, N. Y.

## ELECTRIC RAIL-BOND.

SPECIFICATION forming part of Letters Patent No. 626,378, dated June 6, 1899.

Application filed June 16, 1898. Renewed February 28, 1899. Serial No. 707,228. (No model.)

*To all whom it may concern:*

Be it known that I, SAMUEL H. HARRINGTON, a citizen of the United States of America, residing in the city, county, and State of New York, have invented a certain new and useful Improvement in Electric Rail-Bonds, of which the following is a true and exact description, reference being had to the accompanying drawings, which form a part thereof.

My invention relates to rail-bonding devices such as are used for electrically connecting or joining rails of electric railways; and my object is to provide a simple and efficient means for anchoring the bond in its contacting position with the rail, the leading feature of my invention consisting in providing a bond with conically-formed thimbles or plugs adapted to enter perforations in the rails to be connected, and providing each thimble or plug with a loop extending out from its smaller end through the opposite side of the rail to that in which the thimble is inserted and into which a wedge can be driven to draw and hold the contact-thimble in a proper working contact with the walls of the perforation in the rail. Preferably I form the body of my bond of separate wires or strands uniting the thimbles, and preferably also I continue these wires or strands into the body of the thimble and form the loop, before referred to, by doubling the ends of one or more of the wires, so that it will extend beyond the smaller end of the thimble in the form of a loop and return through the thimble.

The nature of my improvements will be best understood as described in connection with the drawings, in which they are illustrated, and in which—

Figure 1 is a sectional cross-section of a rail in which a bond constructed in accordance with my preferred form is secured. Fig. 2 is a side elevation of a portion of the rail, showing the bond in place. Fig. 3 is an enlarged sectional view of the bond, showing the construction of the loop by my preferred method, Fig. 4 being a cross-section on the line  $x x$  of Fig. 3. Fig. 5 is a horizontal section through the bond and rail, taken on the line  $y y$  of Fig. 1. Fig. 6 is a perspective view of a wedge-bearing ring which I prefer to use. Fig. 7 is a perspective view of the bond as a whole, illustrating how the loops extending

beyond the contact-thimbles can conveniently be formed. Fig. 8 is a sectional view showing a modified construction of bond-thimble, Fig. 9 being a perspective view of the same, and Fig. 10 a cross-sectional view on the line  $z z$  of Fig. 8.

A indicates the rail-web, in which is formed a conical perforation B.

C or  $c$  is the contact-thimble, formed or secured to the ends of the bond-body, (indicated at D.) Preferably I use a bond-body made up of separate strands or wires, as indicated at  $d^1 d^2 d^3$  in Figs. 1 to 7, a fourth wire  $d^4$  being used in the construction indicated in Figs. 8 to 10.

In the construction of Figs. 1 to 7 the wires of the bond-body enter and are held together by the thimble C, while in the construction shown in Figs. 8 to 10 the thimble  $c$  is solid, the portion of it which does not enter the perforation in the rail being brought, as indicated best in Fig. 9, to approximately the cross-section of the wires making up the body and to a form which permits and facilitates the union of the wires thereto by welding.

Extending from the smaller end of the conical contact plug or thimble is a loop which may be formed, as best shown in Figs. 3 to 7, by extending a portion of one of the wires  $d^1$ , as shown, through the thimble C and returning it back again into the thimble, as indicated at  $d^5$ , thus forming a loop  $d^5$ , or the loop may be formed in any convenient way. For instance, in the case of the solid thimble (shown in Figs. 8 and 9) the loop here indicated at  $D^5$  is an integral part of the thimble or plug.

F is a wedge adapted to pass through the loop  $d^5$  or  $D^5$  and to act against the outer end thereof and against the face of the rail-web in which the bond is secured. As, however, it is generally preferable, if not necessary, that the plug or thimble of the bond should be drawn so that its smaller end will extend beyond the face of the web, I preferably provide a wedge-bearing surface to be interposed between the face of the web and the wedge, and preferably I make this bearing-surface in the form of a ring E, which is placed against the face of the web around the perforations through which the plug passes and which transmits the thrust of the wedge to the web of the rail. As it is difficult to pro-



vide for perfect uniformity in the extent in which the plug will extend through the rail-web, I prefer to form the bearing-ring E with a plurality of slots, as indicated at *ee* and *e'e'*.  
 5 The depth of these slots being unequal, a workman in setting the bonds in place will turn the bearing-ring so that the slots which will best be adapted for use in each particular case will register with and engage the  
 10 wedge F.

Preferably I form the smaller end of the wedge (indicated at *f*, Figs. 2 and 5) so that it can be opened and spread out, as is best shown in Fig. 2, locking against the sides of the  
 15 slot in the bearing-ring, and thus affording an additional protection against the possible displacement of the wedge.

Having now described my invention, what I claim as new, and desire to secure by Letters  
 20 Patent, is—

1. An electric rail-bond having a conical thimble for insertion in an opening in a rail, and a loop secured to the smaller end of the conical thimble and adapted to engage with  
 25 a wedge as specified.

2. An electric rail-bond having a conical thimble at each end for insertion in an opening in a rail, a loop secured to the smaller end of the conical thimble and adapted to en-

gage with a wedge as specified and a body 30 portion D formed of separate strands or wires.

3. An electric rail-bond having conical thimbles for insertion in openings in the rail, a body made up of separate strands or wires entering and secured to the thimbles afore- 35 said and loops formed of extensions *d<sup>5</sup>* *d<sup>6</sup>* of a body-wire bent into a loop and having its backwardly-turned end secured in the thimble.

4. An electric rail-bond having conical thimbles and loops secured to their smaller 40 ends in combination with wedges F adapted to enter the loops and anchor the thimbles in place in the rails.

5. An electric rail-bond having conical thimbles and loops secured to their smaller 45 ends in combination with wedge-bearings as rings E, and wedges F adapted to enter the loops and rest against the bearings.

6. An electric rail-bond having conical thimbles and loops secured to their smaller 50 ends in combination with annular wedge-bearing rings E having slots as *e* and *e'* of different depths and wedges F adapted to enter the loops and rest in slots in the rings E.

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