

(No Model.)

J. T. MORROW.

ARMATURE FOR DYNAMO ELECTRIC MACHINES.

No. 504,401.

Patented Sept. 5, 1893.

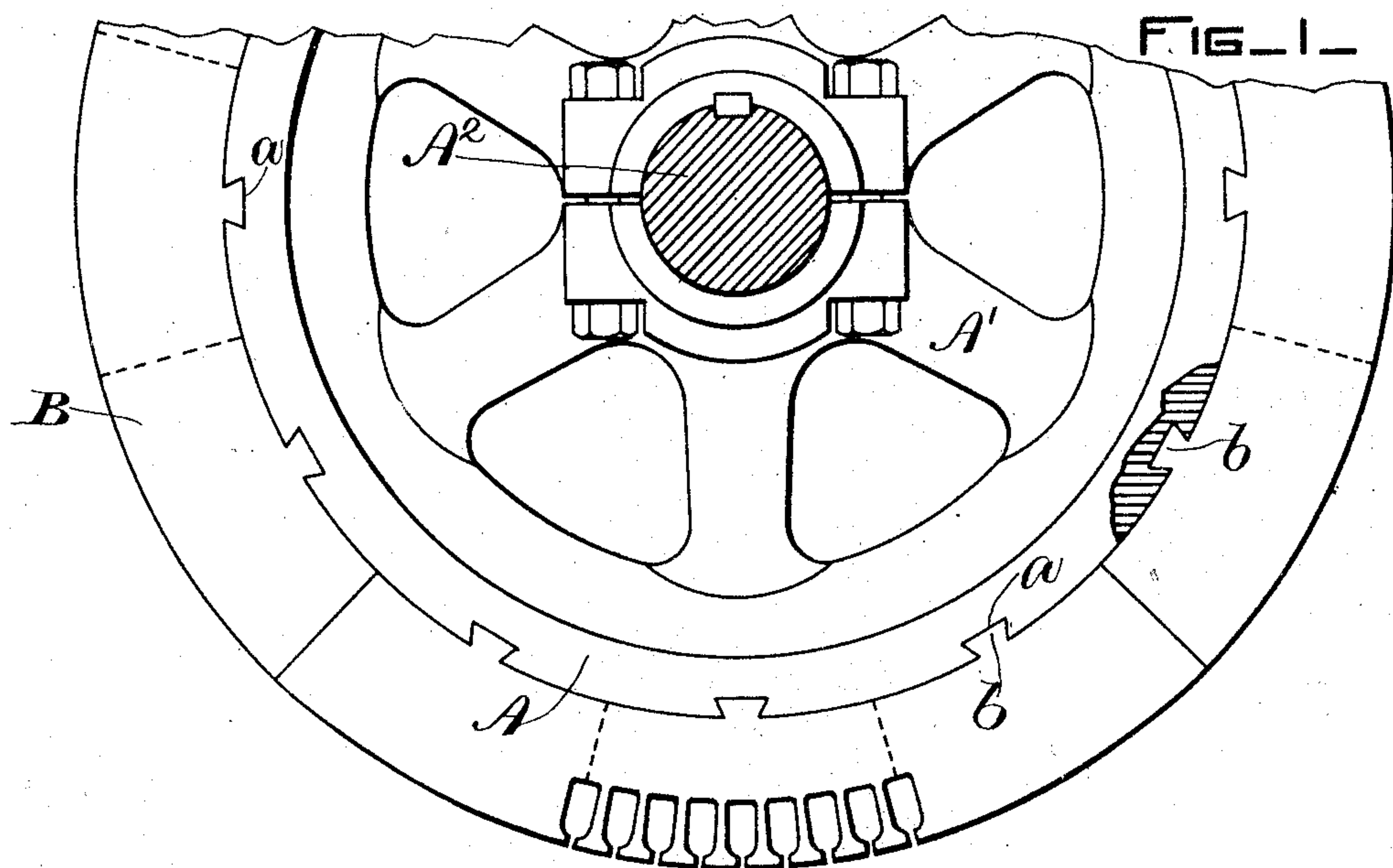


FIG. 2 -

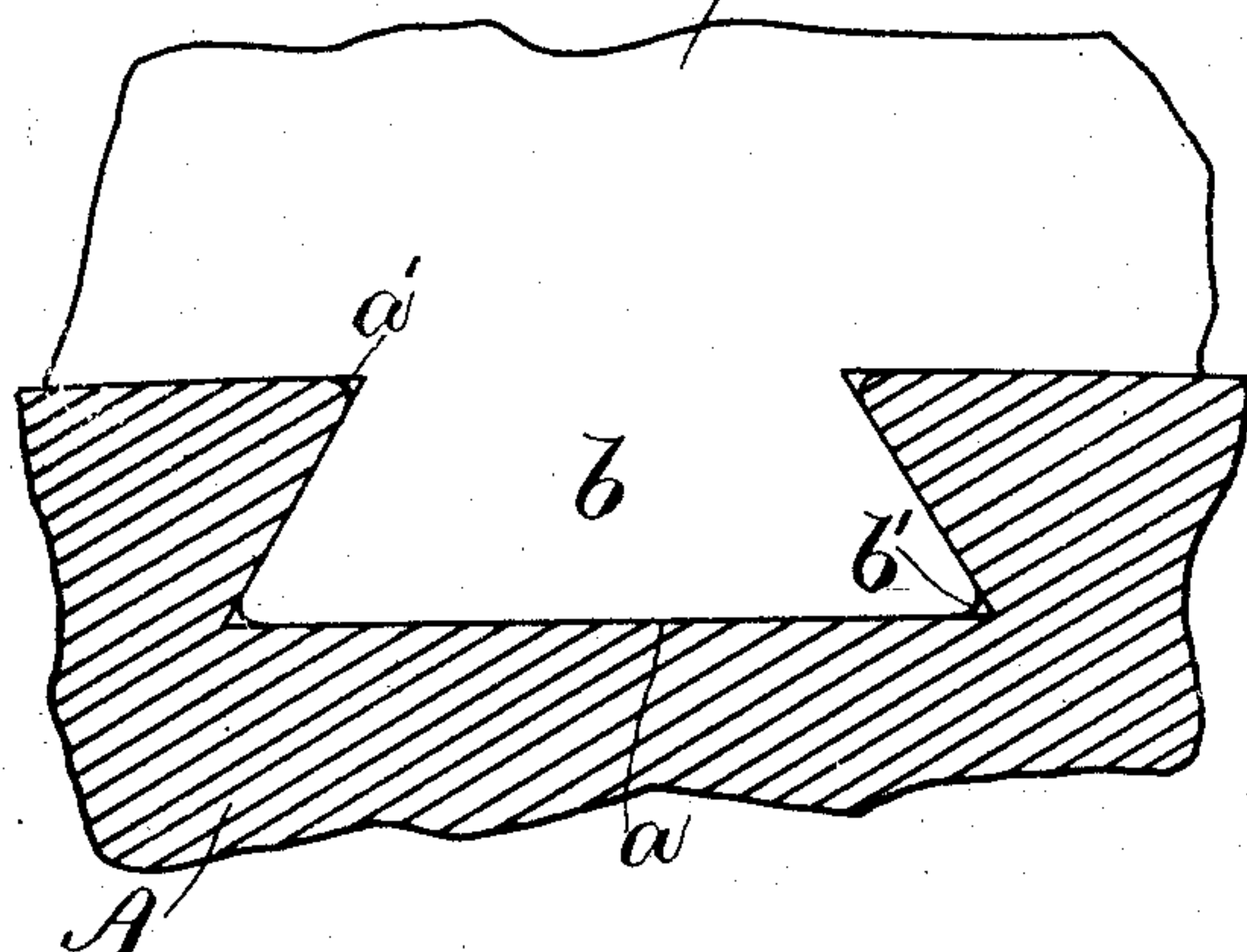
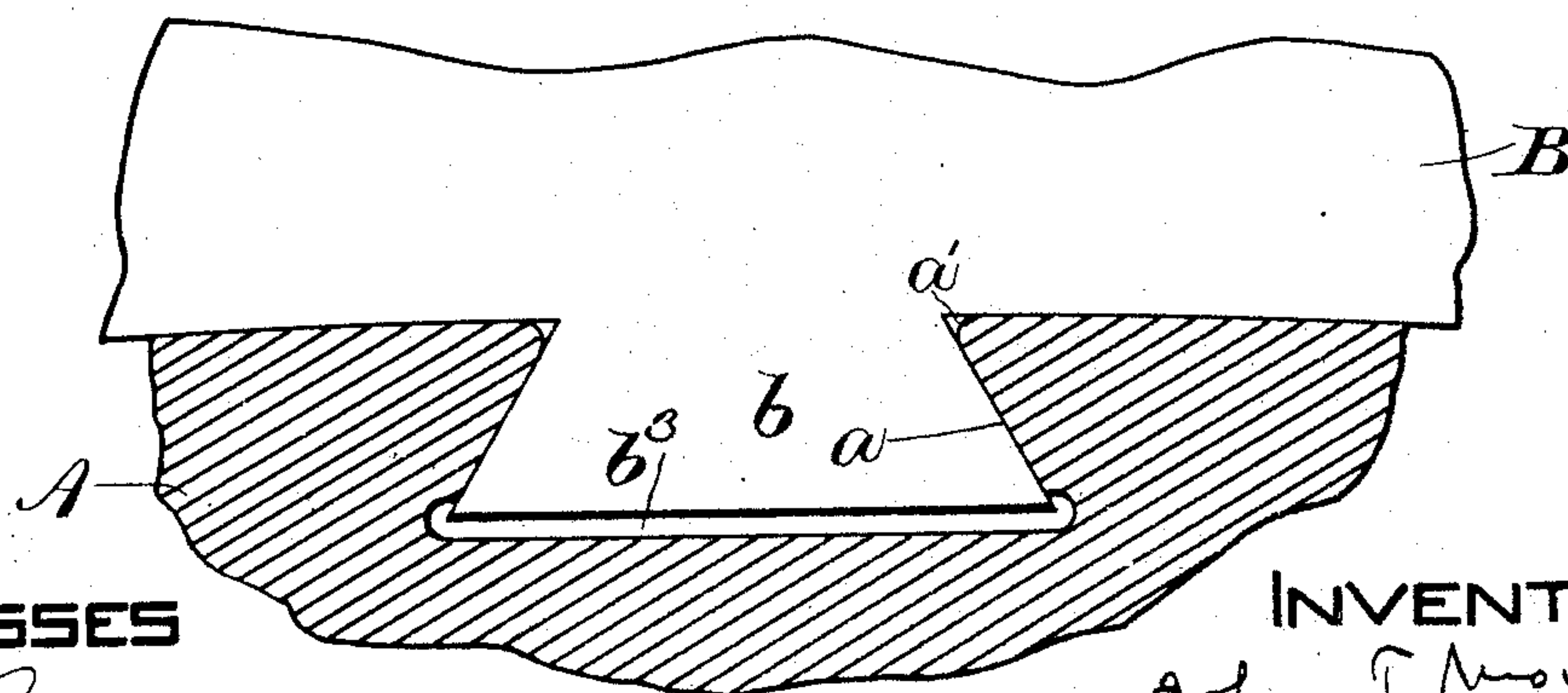
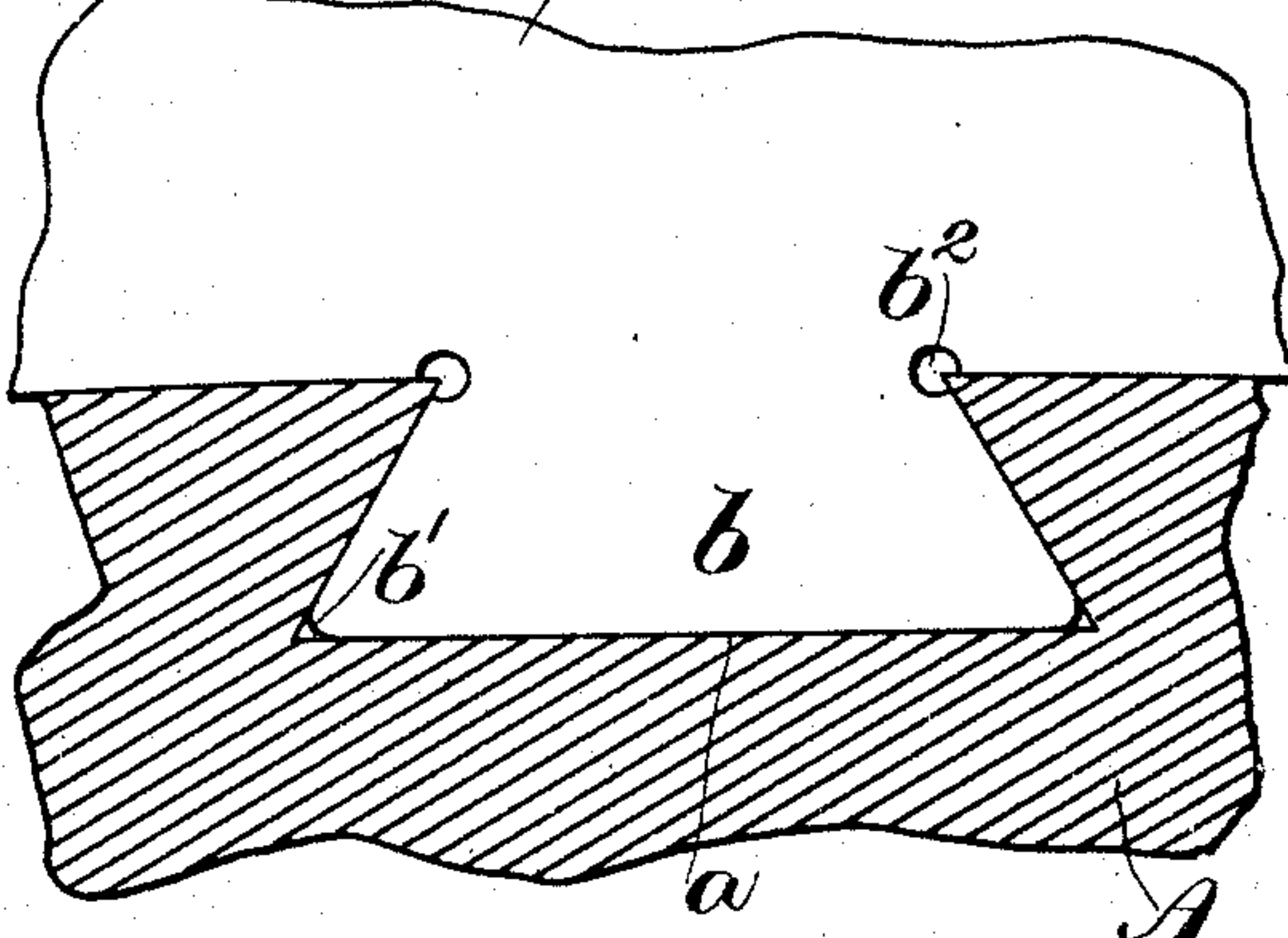


FIG. 3 -



WITNESSES

*Al. Orne*  
*J. D. Langdon*

FIG. 4 -

INVENTOR

*John T. Morrow*  
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*Attys.*



# UNITED STATES PATENT OFFICE.

JOHN T. MORROW, OF LYNN, ASSIGNOR TO THE GENERAL ELECTRIC COMPANY, OF BOSTON, MASSACHUSETTS.

## ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 504,401, dated September 5, 1893.

Application filed May 13, 1893. Serial No. 474,080. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN T. MORROW, a citizen of the United States, residing at Lynn, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in the Construction of Armatures, of which the following is a specification.

My invention relates to the construction of armatures its object being to provide efficient and economical means for building up a laminated core and securing it to its support or carrier.

In carrying out my invention I provide an internal cylindrical supporting shell, preferably carried by the usual armature spiders keyed to a shaft, and on the outer surface of said supporting shell longitudinal grooves are cut, into which corresponding projections on the inner surface of an annular armature core are adapted to fit, preferably making a dovetail or undercut joint. The core itself is composed of segmental laminæ of such proportions that a predetermined number of them make one layer of the core; and in adjacent layers the segments are so arranged as to break joints. The said segments are provided at their inner edges with projections adapted to fit the grooves on the supporting shell, and registering with each other when the core is assembled.

In the accompanying drawings, Figure 1 is an end elevation of an armature constructed in accordance with my invention, and Figs. 2, 3 and 4 are modifications in the shape of the grooves and projections whereby the parts are united.

Referring to Fig. 1, the cylindrical supporting shell A is carried on spiders A' keyed to a shaft A<sup>2</sup> in the ordinary manner. At regular intervals along the outer surface of said supporting shell A are longitudinal undercut grooves a, into which fit the dovetail projections b, on the laminæ B. In making up an armature, the spiders and supporting shell are first assembled, and the laminæ of sheet iron punched out in the shape indicated in Fig. 1 are slipped over the surface of the said shell with the projections a in the grooves b. After one layer is in place, another, breaking joints with the first, is put on, and so on, until the armature is completed.

The dotted lines in Fig. 1 indicate the edges of the laminæ in successive layers, showing the manner of breaking joints.

It is obviously unnecessary to have the dovetail projections exactly fit the grooves, as shown in Fig. 1, and this is moreover manifestly undesirable, since much more care is thereby rendered necessary both in punching the laminæ and in finishing the grooves. Slight modifications are therefore shown in Figs. 2, 3 and 4. In Fig. 2 the outer corners of projection b are rounded as shown at b', while the outer edges of the groove a are rounded as shown at a'. A firm connection is thus afforded between the parts by the fit of the beveled edges of the groove and projection, while the necessity of a perfect fit at the acute angles, which would be difficult of attainment, is obviated. In Fig. 3 instead of rounding the edges of the grooves a, the laminæ are punched so as to have a recess b<sup>2</sup> at the inner acute angles of the dovetail projections. In all of these arrangements, however, the projection b extends to the bottom of the groove a, necessitating a careful milling thereof as well as a smooth edge on said projection, in order to render the parts readily assembled. It is therefore preferable to chamber the groove as shown at b<sup>3</sup> in Fig. 4.

The die used in punching out the laminæ is now simple in form as in Fig. 1, while imperfections caused by dulling thereof at the acute angles where such imperfections are most likely to manifest themselves, make no material difference in the strength of construction.

I am aware of Patent No. 493,337 granted to Horace F. Parshall March 14, 1893, and therefore do not claim broadly an annular core supported by and dovetailed to an internal cylindrical support, but confine myself to a core made up of segmental laminæ punched with internal dovetail projections. It is obviously of material advantage to make the laminæ segmental rather than annular since the material from which they are punched can in this way be cut much less to waste while by so assembling consecutive layers as to break joints, as above set forth, a practically solid structure is obtained.

A further improvement consists in the modifications in the shape of the dovetail connec-



tions, as described, which render the parts much more readily assembled. By making the core with internal dovetail projections integral therewith a greater depth of free iron for the traverse of magnetism is obtained.

What I claim as new, and desire to secure by Letters Patent, is—

1. An armature for dynamo electric machines, comprising a cylindrical supporting shell having longitudinal undercut grooves in its outer surface, and an annular core made up of segmental laminæ fitting thereon and provided with internal dovetail projections integral therewith and engaged by said undercut grooves, as described.

2. An armature core comprising layers of segmental laminæ dovetailed to an internal

supporting shell, in which the segments in consecutive layers break joints, substantially as described.

3. An armature comprising an internal cylindrical support, undercut grooves on the surface thereof, and a core fitting and surrounding said support, and built up of laminæ punched with internal registering projections engaged and gripped by said grooves, but not fitted exactly thereto, as described.

In witness whereof I have hereunto set my hand this 11th day of May, 1893.

JOHN T. MORROW.

Witnesses:

JOHN W. GIBBONEY,  
BENJAMIN B. HULL.