

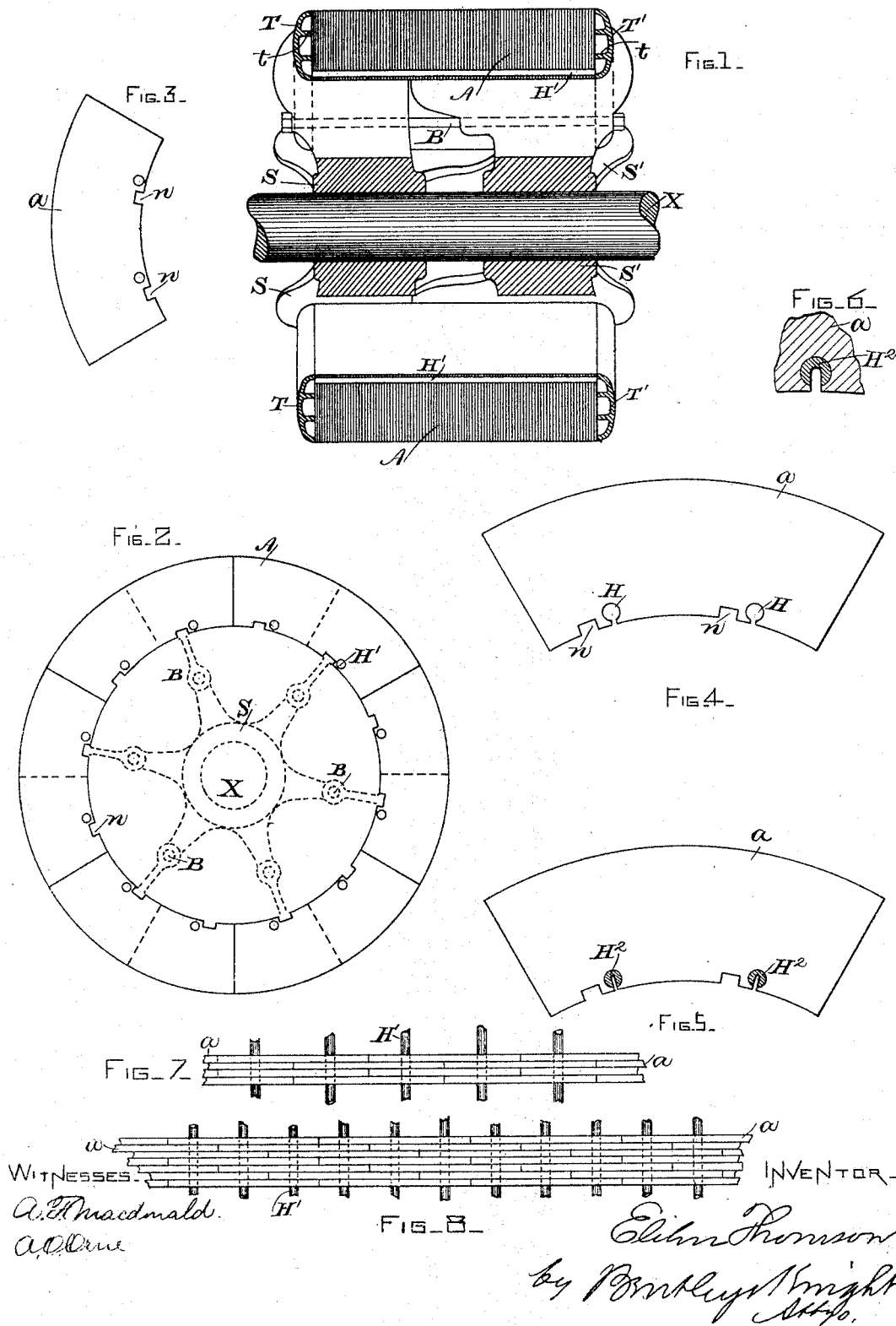
(No Model.)

E. THOMSON.

ARMATURE FOR DYNAMO ELECTRIC MACHINES OR MOTORS.

No. 490,376.

Patented Jan. 24, 1893.



# UNITED STATES PATENT OFFICE.

ELIHU THOMSON, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR TO THE THOMSON-HOUSTON ELECTRIC COMPANY, OF CONNECTICUT.

## ARMATURE FOR DYNAMO-ELECTRIC MACHINES OR MOTORS.

SPECIFICATION forming part of Letters Patent No. 490,376, dated January 24, 1893.

Application filed July 10, 1891. Serial No. 399,042. (No model.)

*To all whom it may concern:*

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Swampscott, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Armatures for Dynamo-Electric Machines or Motors, of which the following is a specification.

The present invention relates to the construction of armature cores for dynamo electric machines, electric motors, or similar apparatus.

The design of the invention is to render it easy to construct cores from segmental pieces of sheet iron, and it is particularly applicable to the case of large dynamos or motors in the construction of which it is almost impossible to obtain satisfactory sheets of wrought iron of large enough width to construct a whole armature, or when such sheets are obtained they are liable to be of varying thickness or be buckled or otherwise distorted.

My invention is also applicable to the avoidance of currents set up in the portions of the armature body.

In the accompanying drawings Figure 1 is a longitudinal section of an armature constructed in accordance with my invention. Fig. 2 is an end view of the core of the same. Figs. 3, 4, 5 and 6 show separately, different forms of segmental core plates and attaching devices. Figs. 7 and 8 show two of the ways in which the segments may be arranged.

X is the shaft carrying upon it spiders or supports S, S' for the iron core of the armature. They are drawn together by a number of bolts B, B, &c., passing through openings in the limbs of the spiders. These spiders have radiating limbs which are fitted to enter notches or grooves *n*, in the iron core A, of the armature carried thereon. This construction is common in the making of armatures in which the iron core A is composed of complete rings stamped from sheet iron. I prefer that the spiders S, and S' shall be extended, as shown at T, T' to inclose and hold the iron core when drawn together by the bolts B. To save metal and to give a rounded end for winding, the parts T, T', T', are made whole and cast with ribs *t*, as shown in Fig. 1.

The core body or laminated mass A, is built of segmental pieces *a*, punched out in the form shown in Fig. 3. These segmental pieces when placed end to end form a complete ring, and in building up the armature body they are caused to overlap in such a way that the junctions between the segments of each succeeding ring are offset from the junctions of the other rings, or if desired, a number of rings may have their junctions matched, say, to the extent of several sheets in thickness and then the offset may be made, and so the whole body may be built up. The notches *n*, in the blank *a*, Fig. 3, receive the radiating arms S, S', when the structure is drawn together. It is manifest however, that these notches and radiating arms would not be sufficient of themselves to hold the body of the armature together, as centrifugal force would readily cause the segments to leave the center. To avoid this, each plate is punched with a hole or holes and such hole is made as near to the interior edge of the blank or annulus as can be conveniently done. In placing the parts together long metal rods H', H', Fig. 1, are made to enter these holes and fill them closely thereby locking the overlapping core segments together. The rods are put as near the interior surface of the armature as possible, so that no iron or very little iron shall exist on the side toward the axis or within the line of the bolt or rod. Hence very little or no magnetism will pass within or through the rods H', H', and no electromotive force, or practically none, will be set up in these rods. The rods are prevented from being shifted endwise by being held between the expanded ends of the spiders or otherwise secured from movement.

In order to make a firm and strong construction, each segment is made to overlap half the adjacent segments, as seen in Fig. 7, so that the bolts or rods may be placed equidistant, and about midway between the joints between the segments. By overlapping each segment with two or more of the adjacent segments at each end, as in Fig. 8, the structure may be further strengthened. In either case, the tendency of the plates to turn about the rods as centers, is obviated by the break joint arrangement of the rods and joints.

In Fig. 4 the holes H H, are shown as cut through to the interior surface, thus more effectively preventing the magnetism from passing around the ring inside the line of the bars H', H'. It is preferable indeed that the holes H H, Fig. 4, be filled, with bars H<sup>2</sup>, H<sup>2</sup>, which are themselves slotted along their length, as shown in Figs. 5 and 6 for more effectively cutting off the passage of magnetism, and therefore the development of electromotive force in the bars. At the same time, the said slotting may be carried to an extent which will give the bar, if made of steel or elastic metal, a sufficient compressibility to fit the holes very firmly and tightly. The bar could thus be a tube with an inwardly turned slit.

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

1. A sectional laminated core for dynamo or motor armatures having overlapping sections, holes through said sections near the

inner edge thereof and binding rods occupying said holes.

2. A sectional laminated core for dynamos or motors having overlapping sections, holes through said sections near the inner edge thereof and binding rods slotted along their length and occupying said holes.

3. The combination of the laminated armature core the supporting spiders therefor having hollow clamping heads engaging against the ends of the core.

4. The combination of the laminated armature core the supporting spiders therefor having hollow ribbed clamping heads engaging against the ends of the core.

In witness whereof I have hereunto set my hand this 8th day of July, 1891.

ELIHU THOMSON.

Witnesses:

JOHN W. GIBBONEY,  
JOHN T. BRODERICK.