

(No Model.)

E. THOMSON.

ARMATURE FOR DYNAMO ELECTRIC MACHINES OR MOTORS.

No. 452,951.

Patented May 26, 1891.

Fig. 1.

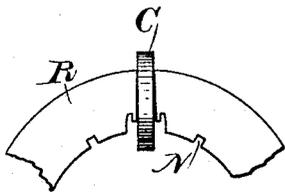
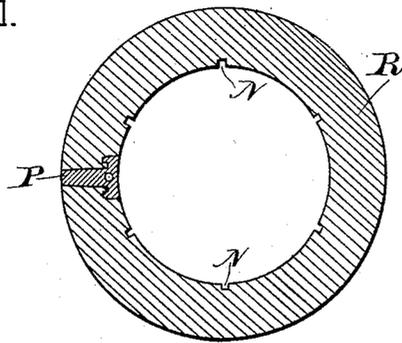


Fig. 2.

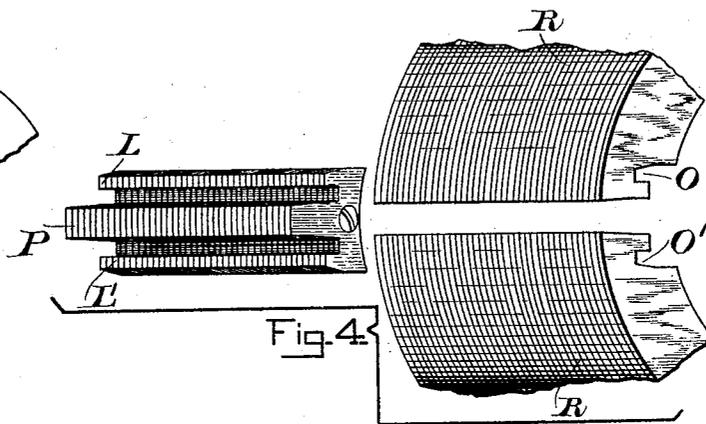


Fig. 4.

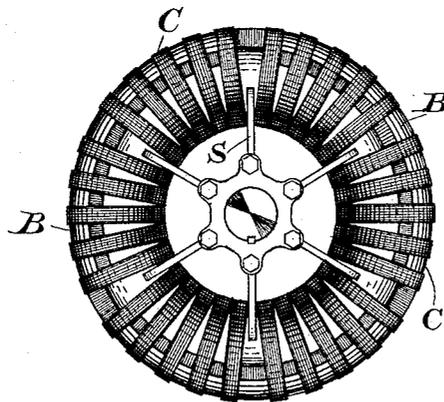


Fig. 3.

WITNESSES:

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# UNITED STATES PATENT OFFICE.

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

## ARMATURE FOR DYNAMO-ELECTRIC MACHINES OR MOTORS.

SPECIFICATION forming part of Letters Patent No. 452,951, dated May 26, 1891.

Application filed March 5, 1890. Serial No. 342,790. (No model.) Patented in England April 9, 1889, No. 6,064.

*To all whom it may concern:*

Be it known that I, ELIHU THOMSON, a citizen of the United States, residing at Lynn, Massachusetts, have invented certain new and useful Improvements in Armatures for Dynamo-Electric Machines or Motors, (which have been patented in England, No. 6,064, April 9, 1889,) of which the following is a specification.

The object of my invention is to facilitate the work of winding the electric conductors or coils upon an armature of the Gramme-ring type.

Another object of the invention is to render it easy to replace a burned coil on such an armature with another coil. In such constructions as previously made the centrifugal force of the rapidly-revolving armature would sometimes open the space in which the plug was placed and allow it to become detached from its position. The main and distinguishing feature of the present construction is, however, the shaping of the plug and core in such a manner that the centrifugal force can have no effect in loosening or detaching the plug or in allowing the armature to increase its circumference by centrifugal action.

The invention consists in making the armature-core of sheets or laminae of soft iron, which are punched into the desired form, and which sheets have a section or plug removable therefrom in such a way that the conducting-coils can be slipped in the opening and upon the magnetizable ring, when the replacement of the plug into its position in the ring restores the contour and magnetic continuity, such plug and core also having such a form that they interlock and oppose centrifugal action, the stronger the centrifugal action the greater being its interlocking effectiveness.

Figure 1 illustrates one of the laminae or plates used in constructing an armature-core in accordance with this invention. Fig. 2 illustrates the manner of inserting the coil of wire in which current is to be generated or utilized. Fig. 3 shows the armature with all the coils of wire in place and the plug in position to complete the magnetic circuit. Fig. 4 shows the plug and broken ring.

In Fig. 1, R is the main portion of the lamina or plate used in constructing a core

after the manner of the invention, and P represents the plug, which is removable from the portion R, it being possible to dislodge it by withdrawing it toward the inner portion of the ring.

N are notches cut in the ring R, and are used to support the ring upon a spider for revolution, as will be explained hereinafter.

In Fig. 2 the coil C, which has been previously wound upon a suitable form or mold, is slipped into the opening left by the removal of the plug P, enough of the laminae or plates R having been joined together parallel with each other and secured in a proper manner, as by insulated bolts, to form a magnetizable core of the desired size and capacity. As many of the coils C are slipped into position on the core R as may be desired in any particular construction, after which the plug P is replaced in its position in the core. The coils C are then disposed in proper relation about the ring R, as shown in Fig. 3, and are held in place in any suitable manner, such as by blocks of wood B B or any other good insulating material. The arms of the spider S are then forced into the notches N N, Figs. 1 and 2, which are in alignment, by great mechanical pressure—such as hydraulic pressure—when the whole forms a solid structure suitable for rapid revolution in a magnetic field for the generation of electric currents of various characters, for the utilization of such currents in furnishing power, or for transforming such currents into other currents having a greater or less potential. It will be noticed in Fig. 4 that the plug P has upon its inner end two lugs L L', and that the ring R has two corresponding cut-away portions O O', suitable for the reception of the lugs L L'. The purpose of these lugs is to prevent the centrifugal force of the rapidly-revolving armature opening the space in which the plug P exists and allowing it to become loosened from its position. Such spreading of the ring R is entirely prevented by the interlocking of the lugs L L' into the recesses O O' provided for this purpose, so that in practice the armature so constructed answers every purpose of a solidly-built core as a magnetic carrier for the coils C.

The invention is not limited to the precise form of lug L shown, as it is obvious that other shapes might be given to these parts and perform the locking function which is the distinguishing feature of the present invention.

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

1. A ring-armature core having a removable plug, with projections at its inner portion interlocking with the core ends to prevent spreading of the core and outward displacement of the plug, the remainder of the plug and core ends tightly fitting one another, but having no interlocking parts preventing inward movement of the plug.

2. A ring-armature having a wedge or plug driven outwardly into a cut through the ring, the plug having projections at its inner end interlocking with the remainder of the ring to prevent spreading of the ring and outward displacement of the plug.

3. A laminated ring-armature having a laminated wedge or plug driven outwardly into a cut through the ring, the plug interlocking at its inner end with the remainder of the ring to prevent spreading of the ring and outward displacement of the plug.

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Witnesses:

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