(No Model.)

J. A. LANNERT.

DYNAMO ELECTRIC MACHINE.

No. 300,615. Patented June 17, 1884.

Fig. 1.

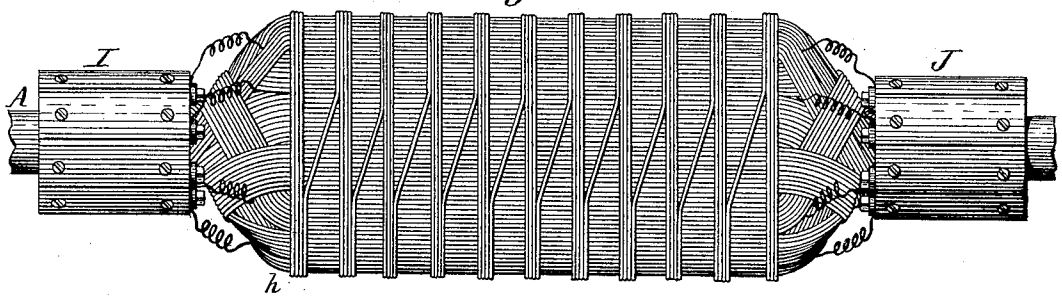


Fig. 2.

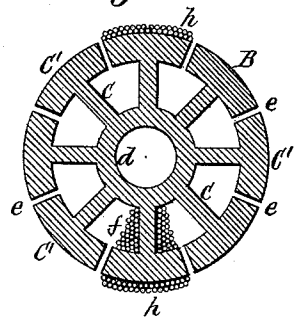


Fig. 3.

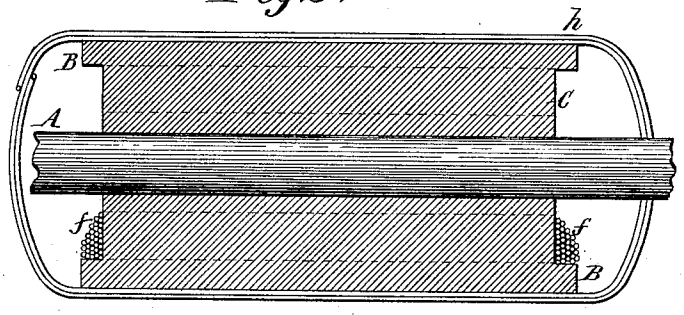


Fig. 4.

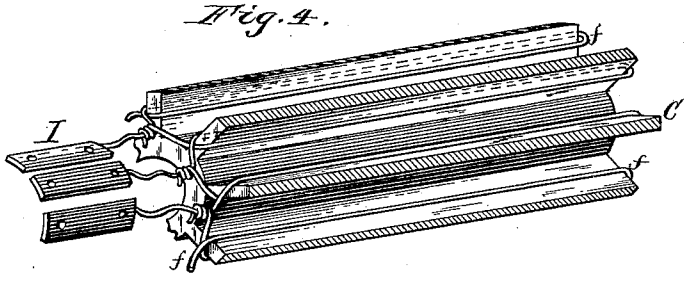
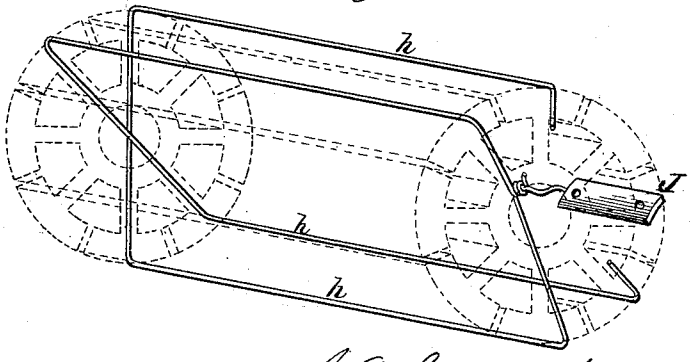


Fig. 5.



Witnesses:
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UNITED STATES PATENT OFFICE.

JOHN A. LANNERT, OF BUFFALO, NEW YORK, ASSIGNOR TO THE BUFFALO ELECTRIC WORKS, OF SAME PLACE.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 300,615, dated June 17, 1884.

Application filed January 9, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. LANNERT, of the city of Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Dynamo-Electric Machines, of which the following is a specification.

My invention relates to improvements in that class of armatures of dynamo-electric machines in which continuous induced currents of electricity are generated by the displacement of magnetism in a cylinder or drum of iron or other magnetic material provided with radial arms and enveloped by inducing-coils of wire or other suitable material.

The object of my invention is to produce a compact armature, whereby two strong continuous currents are generated which can be used separately—one for external purposes and one for charging the field-magnets—and which is simple in construction.

My invention consists of the improvements in the construction of the armature, which will be hereinafter fully set forth, and pointed out in the claim.

In the accompanying drawings, Figure 1 represents a side elevation of my improved armature. Fig. 2 is a cross-section of the same. Fig. 3 is a longitudinal section of the armature. Figs. 4 and 5 are perspective views, illustrating the manner in which the coils are wound upon the armature.

Like letters of reference refer to like parts in the several figures.

A represents the rotating shaft to which the armature is secured, and B represents the cylinder or drum of the armature rigidly secured to the shaft A.

C represents the radial arms of the drum, connected at their inner ends to a hub, *d*, which is secured to the shaft A. The arms are separated at their outer ends by slots *e*, formed in the cylindrical outer portion of the drum B, midway between each pair of arms, whereby each arm C is provided at its outer end with a head or polar enlargement, C′, having the form of a cylinder-segment.

f represents coils or helices of copper wire, or other suitable material, wound upon the webs or radial portions of the arms C, the several coils being wound in the same direction upon the several arms. The issuing end of one coil is connected to the entering end of the next adjacent coil, and both are connected to the same commutator-section as represented in Fig. 4, thereby forming a closed circuit. By revolving this armature between the north and south poles of a magnet two currents are produced in the coils of the armature, the currents issuing in opposite directions in the two halves of the armature opposite the two poles of the magnet. These currents can be collected by brushes applied to opposite sections of the commutator midway between the poles of the magnet. The current so generated can be used for various purposes; but I prefer to employ it for charging the field-magnets.

h represents coils of wire or other good conductor wound upon the cylinder B. Each of the heads or poles C′ is covered by two coils arranged side by side, so that the number of external coils, *h*, wound upon the cylinder is equal to the number of internal coils, *f*, wound upon the arms C, eight internal and eight external coils being employed in the construction represented in the drawings. Each of the coils *h* is wound lengthwise over the outer side of the cylinder, then across one end of the cylinder, then back along the opposite side of the cylinder, and then across the opposite end of the cylinder to the starting-point. The issuing end of one coil is connected to the entering end of the next adjacent coil, and the two ends are connected to the same commutator-section as represented in Fig. 5, thereby forming a closed circuit.

I represents the commutator with which the internal coils, *f*, are connected, and J the commutator with which the external coils, *h*, are connected. By the rotation of the armature between the poles of a magnet currents are produced in these external coils in the same manner as in the internal coils, and the currents produced in the external coils can be collected by brushes, as before stated, and be employed for lighting, plating, or other purposes independently of the currents generated in the internal coils, thereby avoiding the re-

action on the field-magnets when the current used externally meets with an increased resistance. The currents so produced are steady and irreversible, thereby adapting the machine especially for electric lighting and plating. The armature can be rotated at a much higher rate of speed than the armatures of other machines without overheating the armature.

I do not wish to claim anything in this application which is claimed in another pending application filed by me July 20, 1883, No. 109,469.

I claim as my invention—

The combination, with a drum or cylinder composed of radial arms C, connected at their inner ends and having their outer ends provided with separate polar extensions C', of internal coils, *f*, wound lengthwise upon the arms C in the same direction and connected to form a closed circuit, and external coils, *h*, wound lengthwise around the drum and connected to form a closed circuit, substantially as set forth.

In witness whereof I have hereunto set my hand this 29th day of December, 1883.

J. A. LANNERT.

In presence of—
EDWARD WILHELM,
C. F. GEYER.