No. 628,050. Patented July 4, 1899.

H. H. WAIT.

ARMATURE FOR DYNAMO ELECTRIC MACHINES.

(Application filed June 10, 1898.)

(No Model.)

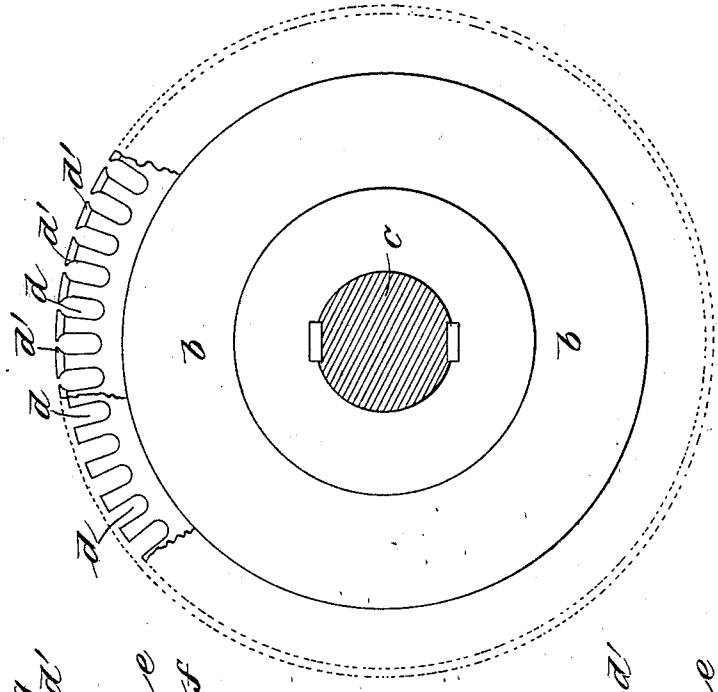


Fig. 2.

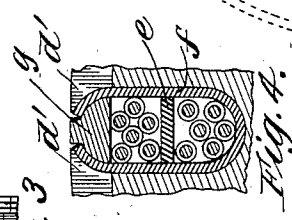


Fig. 4.

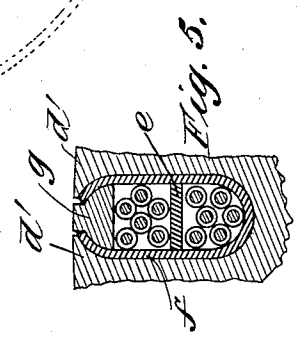


Fig. 5.

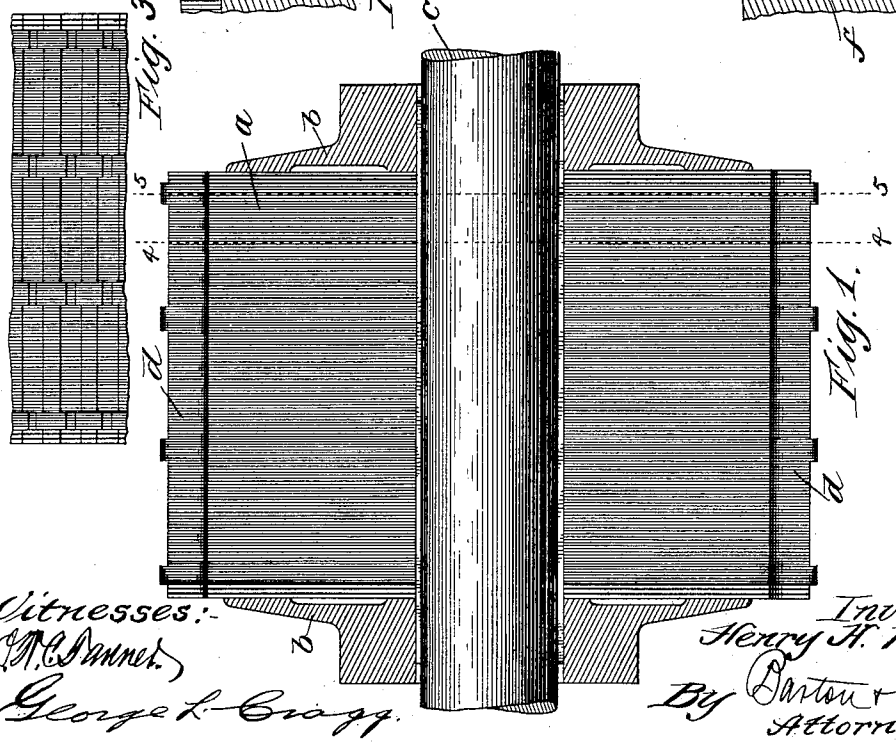


Fig. 1.

Fig. 3

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UNITED STATES PATENT OFFICE.

HENRY H. WAIT, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WESTERN ELECTRIC COMPANY, OF SAME PLACE.

ARMATURE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 628,050, dated July 4, 1899.

Application filed June 10, 1898. Serial No. 683,065. (No model.)

To all whom it may concern:

Be it known that I, HENRY H. WAIT, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Armatures for Dynamos, (Case No. 11,) of which the following is a full, clear, concise, and exact description.

My invention relates to dynamo-electric machines of that class employing iron-clad armatures, and has for its object the improvement in the construction of said armatures to obviate certain defects heretofore existing and to simplify the construction of the armature.

The invention, generally speaking, may be said to consist in an armature having a core of magnetic material provided with a plurality of coil-receiving grooves, each groove being provided at its longitudinal opening with a plurality of longitudinally-separated lugs integral with said core, a retaining-strip of non-magnetic material being preferably interposed between said lugs and the armature-wire within the grooves. By this construction I am enabled to reduce the self-inductive effect in the armature-coils, thereby reducing the sparking at the commutator-brushes upon change of load, while at the same time band-wires for retaining the armature-coils in position against the action of centrifugal force may be dispensed with.

I will explain my invention more particularly by reference to the accompanying drawings, which illustrate the preferred embodiment thereof.

In the drawings, Figure 1 is a longitudinal sectional view of an armature-core constructed in accordance with my invention. Fig. 2 is a partial elevation thereof, portions being broken away to reveal more clearly the construction of the armature. Fig. 3 is a plan view of a portion of the armature shown in Fig. 1. Fig. 4 is a cross-sectional view of a portion of the armature on line 4 4 of Fig. 1. Fig. 5 is a cross-sectional view of a portion of the armature on line 5 5 of Fig. 1.

Like letters indicate like parts throughout the different views.

The armature-core *a* is preferably of iron and composed of a number of laminæ assembled between end plates *b b* upon the armature-shaft *c*. A plurality of longitudinal or substantially longitudinal coil-receiving grooves *d* are provided at the periphery of the armature-core. These grooves are preferably of the cross-section shown in Figs. 2, 4, and 5. In Figs. 4 and 5 a diaphragm of insulating material *e* is shown between different parts of an armature-winding. Each coil-receiving groove is also preferably provided with a lining *f* of insulating material. The core-plates or laminæ are preferably stamped in the desired shape, some of the plates in each core being provided with inwardly-projecting lugs *d' d'*, which serve partially to close the coil-receiving grooves, sufficient space being left between the opposing lugs for the passage of the armature-wire. The lugs are longitudinally separated, so that increased air-gaps are provided at intervals along the grooves between the separated lugs to increase the magnetic reluctance to throttle the lines of force which are set up in the metal surrounding the grooves and to reduce objectionable reactions between the armature and the fields.

After the armature-wire has been placed within the grooves retaining-strips *g* of non-magnetic material, as wood, are driven in a longitudinal direction between the lugs and the armature-wire. Sufficient lugs *d'* are to be provided along the longitudinal openings of the coil-receiving grooves to prevent the retaining-strips and the armature-wires from bulging outwardly. By stamping a number of plates in each core with lugs and properly distributing such laminæ throughout the body of the core the retaining-lugs may be made integral with the core at minimum cost. I preferably provide each wall of each groove with the retaining-lugs, the lugs being preferably placed opposite each other, as shown.

By the construction herein shown and described the self-induction of the armature-coils is reduced, whereby the sparking at the commutator-brushes is lessened upon change of load.

Having thus shown and particularly described one embodiment of my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. The combination in a dynamo-armature, of thin disks forming the core thereof having similar peripheral recesses forming coil-channels in the armature, a large proportion of said disks having a diameter substantially equal to the outer diameter of the coils, and the remainder being of greater diameter and having inwardly-projecting lips formed in the said recesses at the peripheries of these disks; whereby the coils are retained in place but the self-induction of the coils is not substantially increased, substantially as described.

2. In a laminated armature, the combination of the disks forming the core thereof having teeth projecting from the peripheries thereof forming coil-channels, a large proportion of said teeth having a length substantially equal to the depth of the coil and the remaining teeth being of the same form but of greater length and having projections formed at their extremities contracting the opening to the coil-channel; whereby the coils are retained in place by said longer teeth, while the self-induction of the coils is not substantially increased, substantially as described.

3. In an iron-clad armature for dynamo-electric machines, the combination of disks having projecting teeth of substantially the same length as the space occupied by the coil, with disks having similar teeth projecting farther than the others adapted to hold blocks or wedges, whereby the coils are retained in place, substantially as described.

In witness whereof I hereunto subscribe my name this 19th day of May, A. D. 1898.

HENRY H. WAIT.

Witnesses:
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