(No Model.) 4 Sheets—Sheet 1.

G. V. M. A. PARROT & A. C. REIGNIER.

DYNAMO ELECTRIC MACHINE.

No. 491,294. Patented Feb. 7, 1893.

FIG. 1.

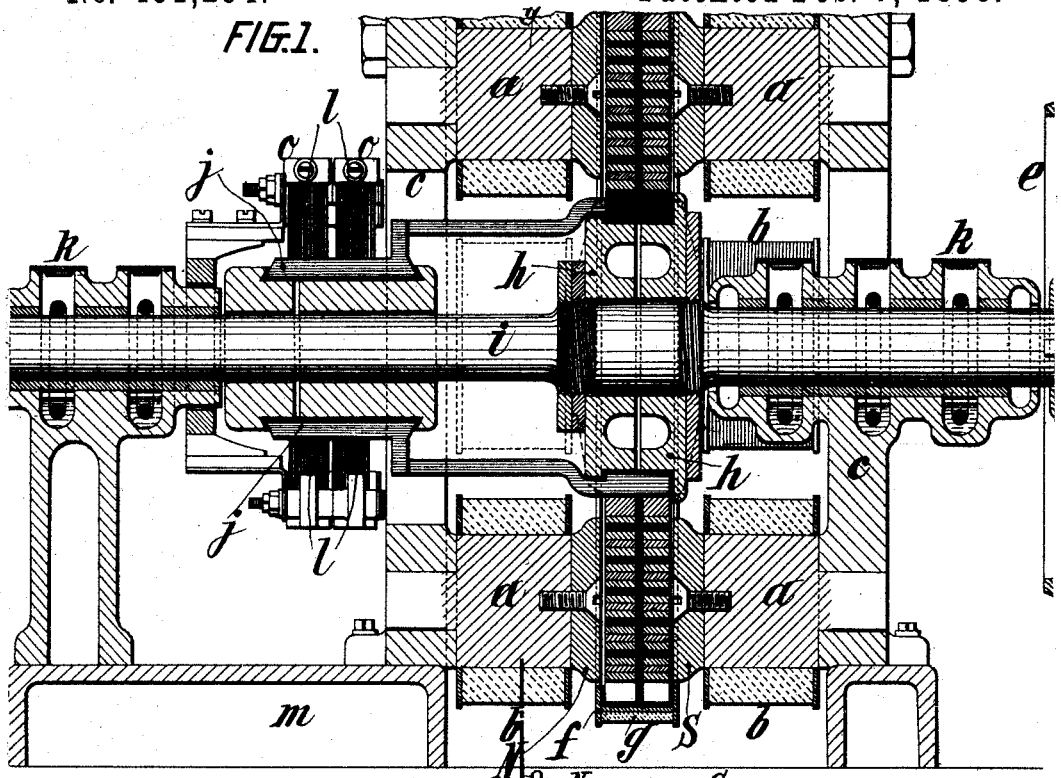
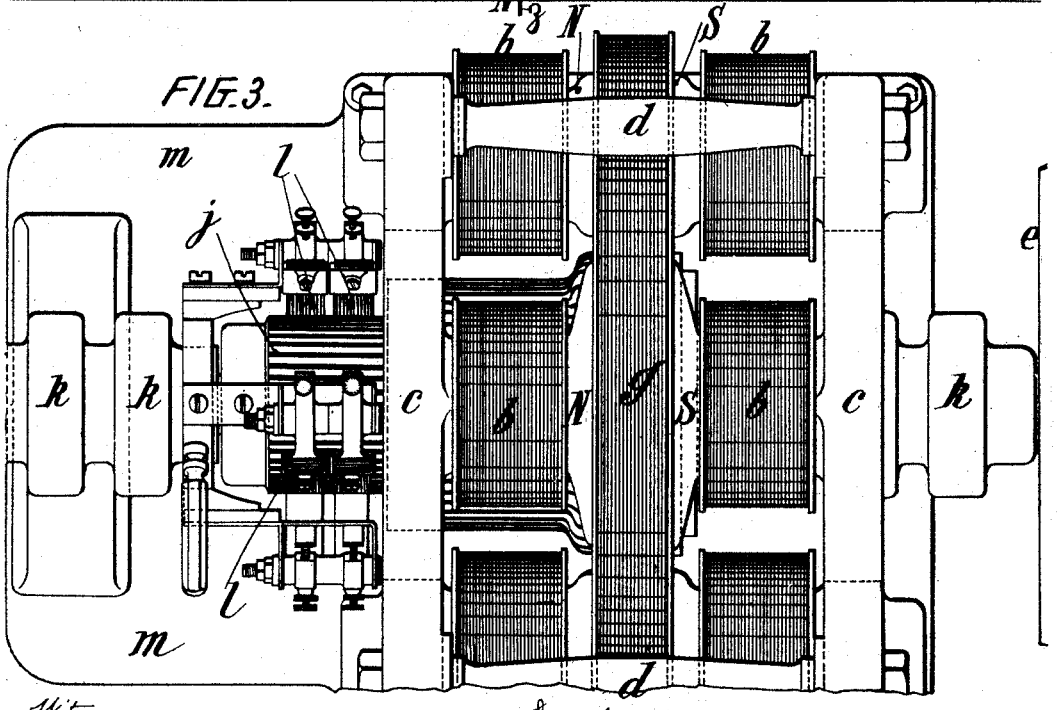


FIG. 3.



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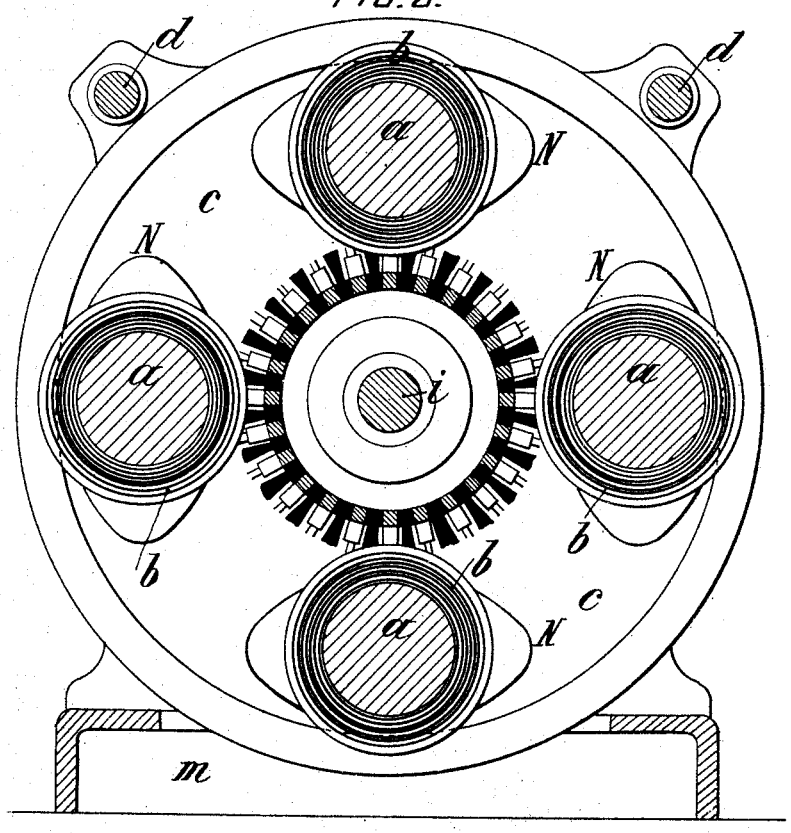
(No Model.) 4 Sheets—Sheet 2.

G. V. M. A. PARROT & A. C. REIGNIER.

DYNAMO ELECTRIC MACHINE.

No. 491,294. Patented Feb. 7, 1893.

FIG. 2.



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(No Model.) 4 Sheets—Sheet 3.

G. V. M. A. PARROT & A. C. REIGNIER.

DYNAMO ELECTRIC MACHINE.

No. 491,294. Patented Feb. 7, 1893.

FIG. 6

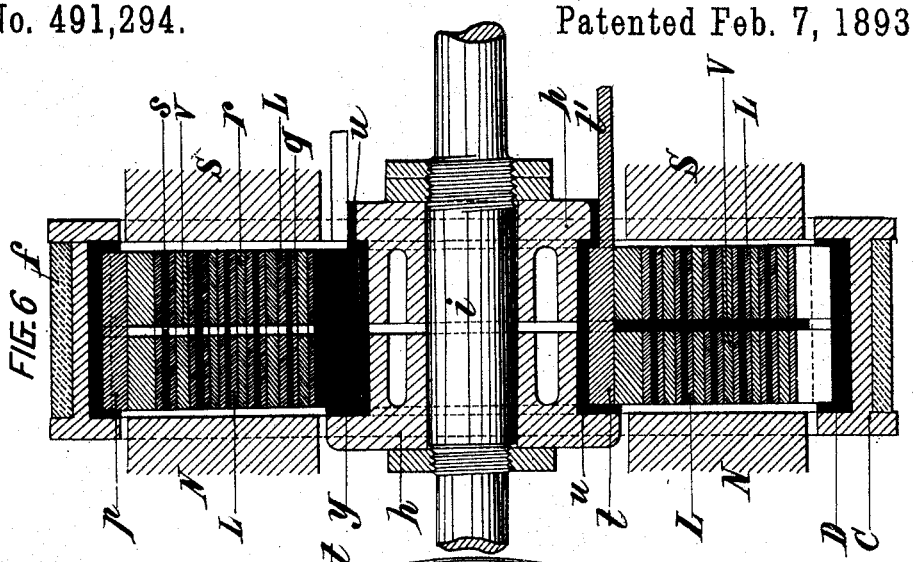
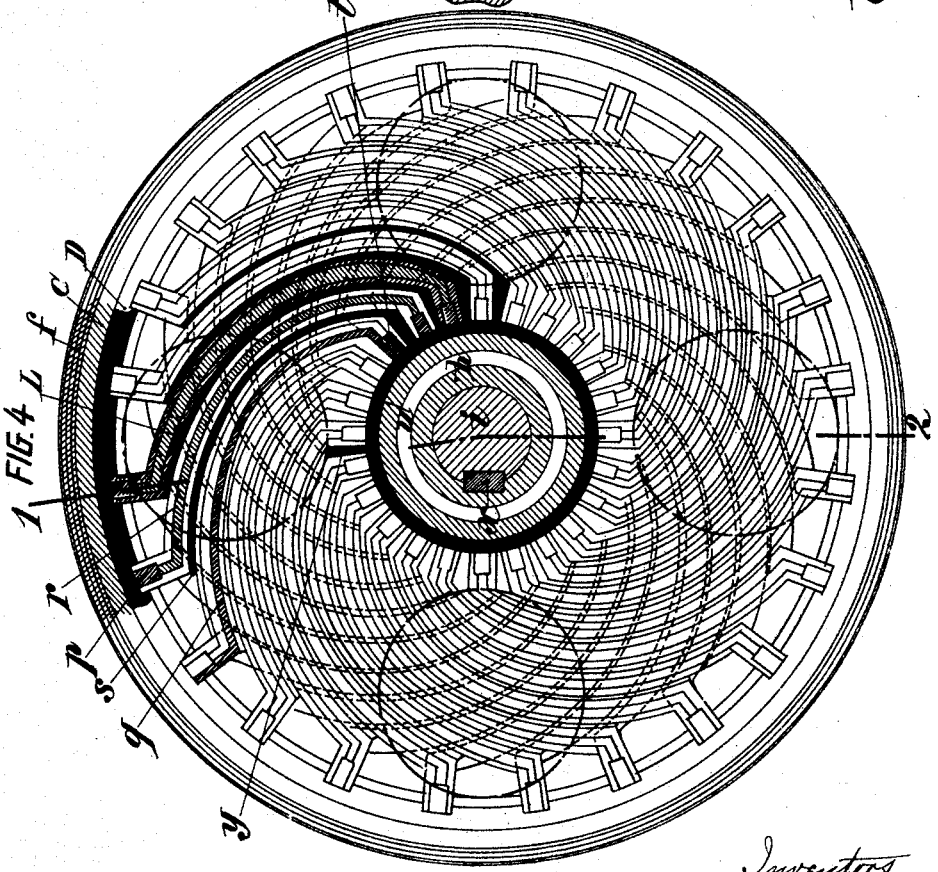


FIG. 4



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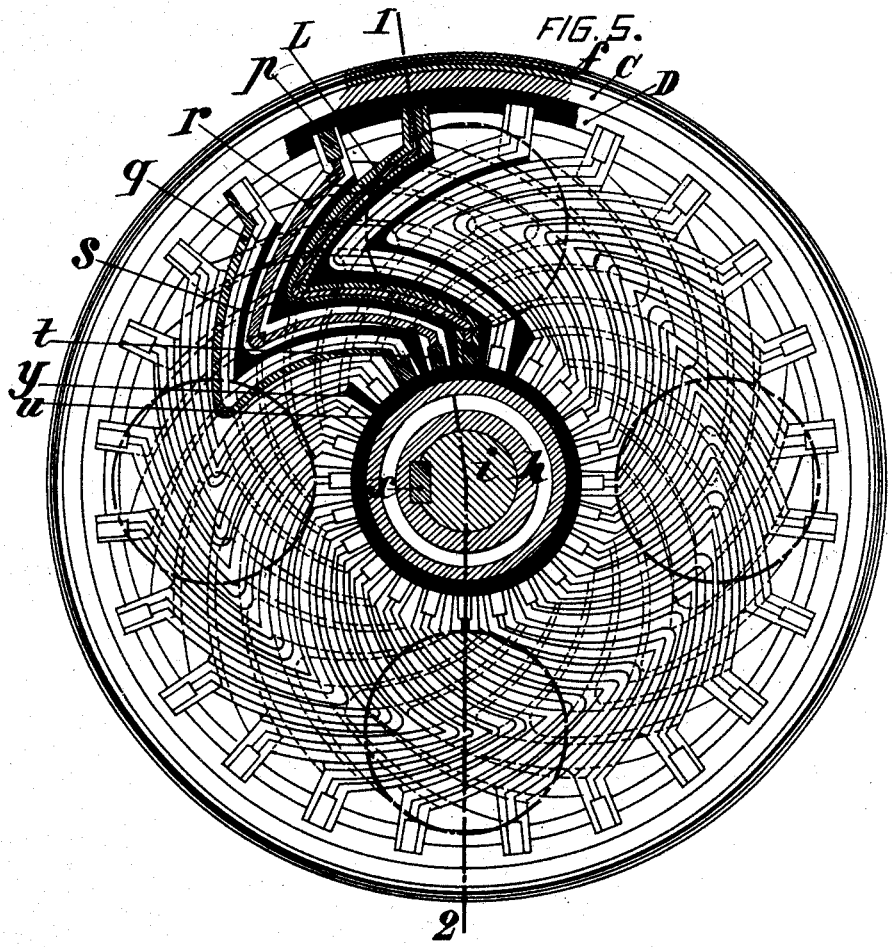
(No Model.) 4 Sheets—Sheet 4.

G. V. M. A. PARROT & A. C. REIGNIER.

DYNAMO ELECTRIC MACHINE.

No. 491,294. Patented Feb. 7, 1893.

FIG. 5.



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UNITED STATES PATENT OFFICE.

GABRIEL VALERY MARIE ANDRÉ PARROT AND ANTOINE CHARLES REIGNIER, OF PARIS, FRANCE.

DYNAMO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 491,294, dated February 7, 1893.

Application filed August 3, 1892. Serial No. 442,065. (No model.) Patented in France August 28, 1889, No. 200,411, and November 9, 1891, No. 217,303; in Belgium March 16, 1892, No. 98,821, and in England March 22, 1892, No. 5,654.

To all whom it may concern:

Be it known that we, GABRIEL VALERY MARIE ANDRÉ PARROT and ANTOINE CHARLES REIGNIER, of the city of Paris, France, have invented a Dynamo-Electric Machine, (for which we have obtained Letters Patent in France for fifteen years, dated August 28, 1889, No. 200,411, and November 9, 1891, No. 217,303; in Belgium for fifteen years, dated March 16, 1892, No. 98,821, and in England for fourteen years, dated March 22, 1892, No. 5,654,) of which the following is a full, clear, and exact description.

This invention relates to a dynamo electric machine of improved construction whereby an increased output or useful effect is obtained.

The invention consists essentially in the use, in the construction of the armature, of bi-metallic strips formed by rolling, and superposed on each other similar to plates in a voltaic battery, or such other manner as to effect a most intimate contact of the two metals, viz: a magnetic metal and a good conductive metal of which the strips are composed. By preference, the metal of superior conductivity is placed outside, as the output, if the armature be constituted by the series copper—iron—copper, will be far greater for equal sections of the two compound metals than if it were formed of the series iron—copper—iron. By this improved construction the usual magnetic core is dispensed with and therefore the consequent loss of energy, the iron strips contained in the bi-metallic conductors fulfilling the function of a magnetic core, while utilizing the current set up in them. The copper situated at each side of the iron strips, collects almost the whole of the current, so that the bi-metallic conductor is capable of furnishing a very large quantity of electricity while insuring a relatively considerable magnetic induction without the use of a magnetic core.

Reference is to be had to the accompanying drawings forming part of this specification, wherein

Figure 1 is a longitudinal vertical section, a portion being broken away; Fig. 2 a cross section on line *y*—*z* Fig. 1, and Fig. 3 a plan of our improved machine wherein the bi-metallic copper—iron—copper conductors are substituted for the covered copper wire of the ordinary armature coils. Figs. 4 and 5 are face views, partly in section, of the armature wound in drum form and ring form respectively. Fig. 6 is a cross section applicable to both forms of winding, and taken on lines 1—2 of Figs. 4 and 5 respectively.

In Figs. 1, 2 and 3, *a* are the field magnet cores carrying coils *b* and mounted on the standards *c* connected by stays *d* and fixed to a base plate *m*, N being the north, and S the south, pole pieces between which the disk armature revolves.

The windings of the armature are constituted by curved bi-metallic strips fitting within each other arranged in two juxtaposed disks clamped together with transverse connections coupling the end of a strip of the one disk to the beginning of the next, the curvature of the strips being reversed in the two disks.

L are the curved bi-metallic strips separated by insulating strips *s q* being the copper portions and *r* the iron-portion of a bi-metallic strip *p* are cross bars connecting a strip of the one disk to a strip of the other disk at the periphery of the armature, and *t* are similar cross bars connecting the inner end of a strip of the one disk to that of a strip of the other disk, *t'* being prolongations of bars *t* leading to an ordinary Gramme collector *j l*.

C is a metallic segmental flanged rim insulated by the intervening annulus D, and upon which is wound the wire binding *f*.

v is an insulating disk separating the bi-metallic lamellar disks, and *y* are wedge shaped insulating segments between the inner ends of adjacent bi-metallic strips.

u is a flanged insulating sheath between the disks and the two disk clamping collars *h h* forming the boss which is secured by a key *x* upon the shaft *i*.

e is the driving pulley, *k* the shaft bearings.

The iron and the copper of the strips of each circuit are shown as being electrically connected in quantity.

In certain cases the iron contained in the bi-metallic strips may be completely insulated from the electric circuit which is in that case formed only by the copper of the strips, the iron fulfilling only the function of a magnetic core.

The employment of the herein described bi-metallic conductor is of advantage in all electro-magnetic inductive apparatus.

I claim—

1. A dynamo electric machine armature constructed of strips formed of two metals, the one being iron and the other copper and superposed on each other substantially as described.

2. A dynamo electric machine armature constructed of two juxtaposed disks each constructed of bi-metallic strips, as specified, each strip of the one disk being electrically connected to a corresponding strip of the other disk, substantially as specified.

The foregoing specification of our dynamo electric machine signed by us this 19th of July, 1892.

GABRIEL VALERY MARIE ANDRÉ PARROT.
ANTOINE CHARLES REIGNIER.

Witnesses:
DENIS P. KEOGH,
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