

No. 761,682.

PATENTED JUNE 7, 1904.

E. J. JAVAUX & A. M. L. BARBOU.

CONTINUOUS CURRENT DYNAMO.

APPLICATION FILED JAN. 28, 1903.

NO MODEL.

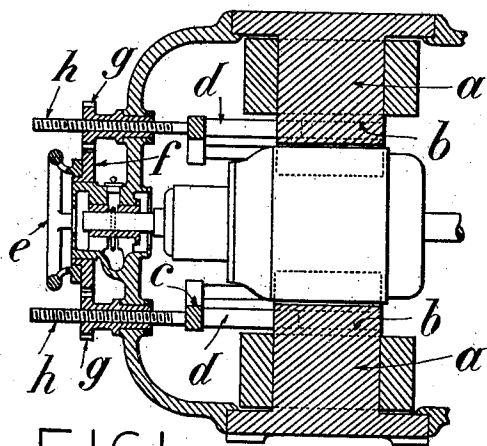


FIG. 1.

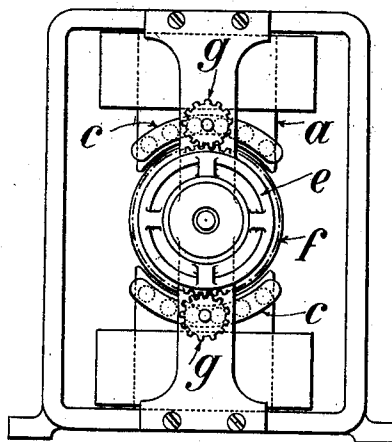


FIG. 2.

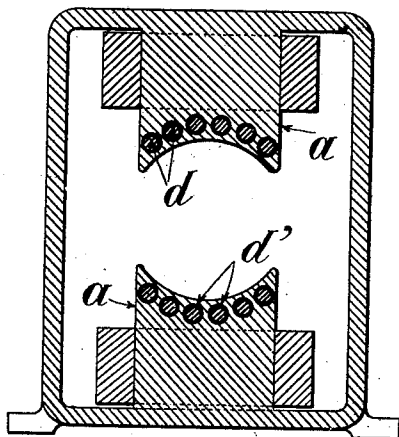


FIG. 3.

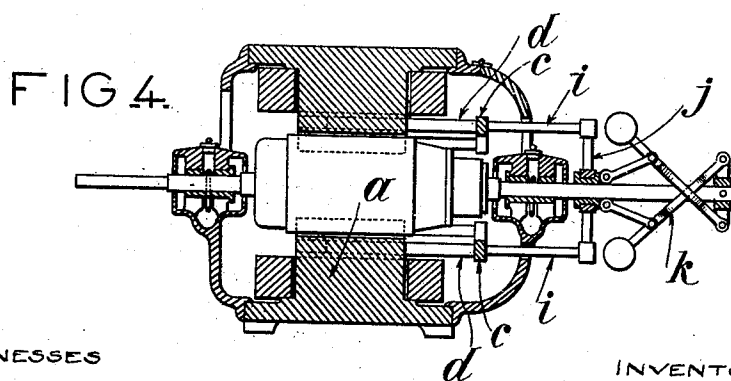


FIG. 4.

WITNESSES

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CONTINUOUS-CURRENT DYNAMO.

SPECIFICATION forming part of Letters Patent No. 761,682, dated June 7, 1904.

Application filed January 28, 1903. Serial No. 140,927. (No model.)

To all whom it may concern:

Be it known that we, EMILE JULIEN JAVAUX and ALFRED MARIE LOUIS BARBOU, directors of the Société Gramme, citizens of the Republic of France, residing at No. 20 Rue d'Hautpoul, Paris, in the Republic of France, have invented certain new and useful Improvements in Continuous-Current Dynamos, of which the following is a specification.

This invention relates to improvements in continuous-current dynamos, and has for its object to provide means for controlling the magnetic resistance or reluctance of the magnetic circuits by means of thin bars or rods of iron adapted to be parallelly displaced with regard to the armature-axis in holes or grooves formed in the pole-pieces in direct proximity to the bore. By this means the strength of the magnetic flux can be altered, and consequently the inductive reaction, so that the speed of the machine can be altered without difficulty within very wide limits.

The controlling devices hitherto known based on the insertion of variable masses of iron into magnetic circuits have considerable disadvantages. Thus, for instance, the displacement of a heavy iron core arranged inside a pole-piece entails magnetic leakage and produces a very considerable displacement of the field between the magnet and the armature, so that frequent adjustment of the brushes in accordance with the displacement of the field is rendered necessary.

Our invention is illustrated in the annexed drawings, in which—

Figure 1 is a longitudinal sectional view of our improved controlling arrangement adapted to be regulated by hand. Fig. 2 is a front view of same. Fig. 3 is a cross-section of same through line A B of Fig. 1, the core being removed. Fig. 4 is a longitudinal sectional view of our arrangement adapted to be automatically regulated.

The pole-pieces *a* of the dynamo are provided with apertures *b* in such a manner that the section of passage for the magnetic flux is considerably reduced. The said apertures can consist of holes of circular or any other shape extending from one side of the pole-pieces to

the other, and they can be arranged in greater or smaller distances from each other, but always in close proximity to the bore. In the holes *b* are adapted to slide with slight friction iron bars *d*, of the same shape as the holes. These bars may be inclosed in non-magnetic material to prevent their adherence, as shown at *d'* in Fig. 3. According to the extent to which these iron bars are inserted into the apertures, the section of passage for the magnetic flux is increased or reduced and the magnetic resistance or reluctance of the circuit consequently altered.

The insertion of the bars *d* into the pole-piece apertures can be effected by hand or automatically.

Figs. 1 to 3 illustrate means for simultaneously displacing the bars by hand by means of a hand-wheel *e*. For this purpose the bars *d* are mounted on a segmental bar *c*, to which are secured screws *h*, engaged in the hubs of pinions *g*, gearing with a toothed wheel *f*, made integral with the hand-wheel *e*. The pinions *g* are mounted on their bearings in such a manner that they are free from rotating, but cannot move lengthwise. It may thus be seen that by turning the hand-wheel *e* the screws *h*, and consequently the segmental bars *c*, together with the bars *d*, are moved lengthwise, causing thereby the bars *d* to be inserted to a greater or less extent in the pole-pieces.

Fig. 4 illustrates means for automatic adjustment for the purpose of maintaining a constant electromotive force in the case of a dynamo driven at variable speed. In this case the segmental bars *c*, carrying the bars *d*, are connected, by means of rods *i* and a cross-bar *j*, to the sleeve of a centrifugal governor *k*, which regulates automatically the insertion of the bars into the pole-pieces. When the speed of the machine which drives the dynamo augments, the balls of the centrifugal governor move away from each other, driving along the sleeve toward the right and pulling, hence, the bars *d* out of the pole-pieces. The electromotive force, which has augmented accordingly, is thus diminished and brought to its normal value. When, on the contrary, the

speed of the machine diminishes, the bars *d* are inserted to a greater extent in the pole-pieces, and the electromotive force is augmented till it reaches its normal value.

5 With the arrangement illustrated the reaction on the armature is modified in the same ratio as the magnetic flux, and this takes place without causing sparking at the brushes within very wide limits with the same output of
10 power. The speed of the machine can be trebled or quadrupled without causing defective action.

Having now described our invention, what we claim as new, and desire to secure by Letters Patent, is—

15 1. A continuous-current dynamo comprising pole-pieces provided with holes parallel with regard to the armature-axis and in close proximity to the bore, in combination with
20 iron bars adapted to be inserted into the holes of the pole-pieces, and means for inserting said bars into said holes to a greater or less

extent, substantially as and for the purpose set forth.

2. A continuous-current dynamo comprising pole-pieces *a* provided with holes *b* parallel with regard to the armature-axis and in close proximity to the bore, in combination with iron bars *d* adapted to be inserted into the holes of the pole-pieces, segmental bars
30 *c* on which said bars are mounted, screws *h* secured to said segmental bars, pinions *g* engaging said screws, and a hand-wheel *e* made integral with a toothed wheel *f* gearing with the pinions *g*, substantially as and for the purpose set forth. 35

In witness whereof we have hereunto set our hands in presence of two witnesses.

EMILE JULIEN JAVAUX.

ALFRED MARIE LOUIS BARBOU.

Witnesses:

ANTOINE LAVOIX,

AUGUSTUS E. INGRAM.