G. & L. INRIG.

DYNAMO ELECTRIC GENERATOR.

APPLICATION FILED JAN. 20, 1914.

1,149,998.

Patented Aug. 10, 1915.

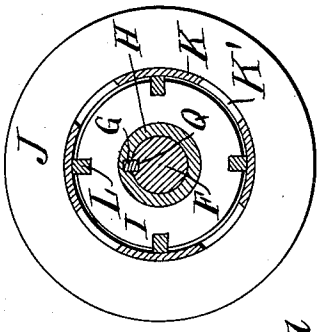


Fig. 2.

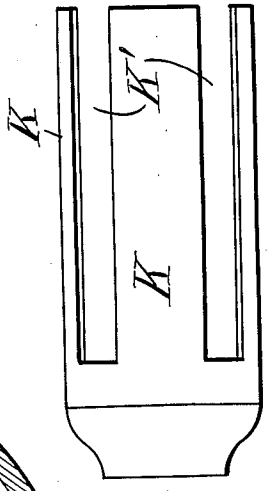


Fig. 3.

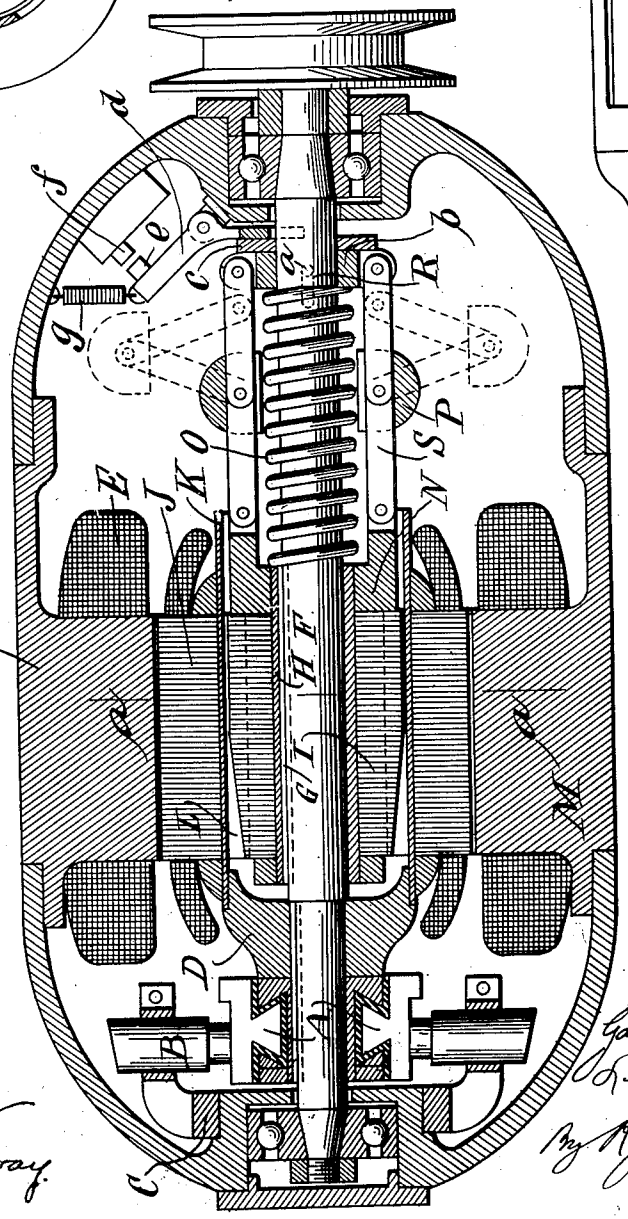


Fig. 1.

Witnesses
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UNITED STATES PATENT OFFICE.

GAVAN INRIG AND LEON INRIG, OF LONDON, ENGLAND.

DYNAMO-ELECTRIC GENERATOR.

1,149,998. Specification of Letters Patent. Patented Aug. 10, 1915.

Continuation of application Serial No. 701,608, filed June 4, 1912. This application filed January 20, 1914. Serial No. 813,211.

To all whom it may concern:

Be it known that we, GAVAN INRIG and LEON INRIG, subjects of the King of Great Britain, residing at 154 Bishopsgate, London, in the county of Middlesex, England, have invented certain new and useful Improvements in Dynamo-Electric Generators; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in the construction and design of electric generators, adapted to be used in connection with accumulators under conditions where the speed is variable, such as car axles or automobile engines, and has for its object a new and improved means for maintaining a constant voltage under all speeds.

The present application is a continuation of our application filed June 4, 1912, Serial No. 701,608.

The manner in which the above object is attained and the mode of procedure and the construction is fully described and illustrated in the following specification and in the accompanying drawings, of which—

Figure 1 is a longitudinal mid-sectional view of the generator; Fig. 2 is a cross-section of the armature core on the line *a*—*a* of Fig. 1; and Fig. 3 is a view of the cylinder which supports the outer armature.

In the drawings herewith, all the working details are shown in the longitudinal half-section.

The spindle F is mounted on ball bearings in the ordinary manner.

A designates the commutator; B the carbon box brushes; C a ring secured to the brush holders for carrying the brushes; D a head splined to the spindle and to which is attached the cylinder K on which the armature J is mounted which may consist of the usual laminæ. To prevent the cylinder K acting as a short circuiting armature, the said cylinder is provided with a plurality of longitudinal slots K′ as is shown in Fig. 2, thereby preventing the armature heating to an unallowable extent and masking out a large part of the magnetic flux which would otherwise reach the inner armature core. The commutator and the armature both revolve with the spindle.

E designates the field coils; H is a brass sleeve splined to the spindle by a feather G. The feather rests in a key-way Q in the spindle. The armature core I is mounted on the brass sleeve H.

The armature coils T are mounted in the armature J, the ends of said coils being attached to the commutator in the usual manner.

L designates guides fitted to the armature core and engaging the cylinder K and acting as a support for the overhung armature.

M designates the core of the field magnets; N a brass socket member suitably attached to the tube H and carrying one end of the governor links S, the other end of said links being carried by a collar R fitted to the spindle and rotating therewith, and sliding thereon to the extent of the slot *b* in the spindle which receives a pin *a* on the collar.

P designates the governor balls carried by the links; O a spiral spring against which the governor works.

d is a switch lever pivoted to the adjacent end of the shell or casing, one end of which is bifurcated to straddle the spindle at which point it is inclosed between the end of the casing and a space filler or washer *c*. The other end of the switch lever *d* carries a contact point *e* which coöperates with a fixed contact point *f* in closing and opening the circuit. A spring *g* exerts a force to close the circuit at such times when the collar R releases the lever *d* through the action of the governor.

The machine, when running at normal speed, is the same as any dynamo having the well known types of winding and will give its predetermined voltage at normal speed. When, however, the speed increases, the ball governor draws the armature core I along the spindle and out of the cylinder K, initially closing the switch points, thereby increasing the air space, and thus cutting off a number of the magnetic lines of force passing through the armature and so preventing any increase in voltage. As the speed decreases, the spring O overcomes the centrifugal force of the balls and pushes the armature core back into the cylinder carrying the coils, and separates the contact

points *e* and *f*. The armature core, as shown in the drawing, is slightly tapered at one end. By building the armature core in this manner, the voltage is kept constant with a smaller lateral motion than if the armature core were a true cylinder. When the speed has increased so as to bring the governor to the position shown by the dotted lines, on the drawing, the current has been reduced to a minimum, as the air gap between the coils and the armature core is too great to allow of the passage of an appreciable number of lines of force. The cylinder K, carrying the armature coils is necessarily made of very thin metal, and requires the support of the armature from the inside to keep it true and in position. The armature core itself being tapered at one end, the cylinder would lose its support at high speeds when it is most required. This difficulty is overcome by the guides L hereinbefore referred to.

Having described our invention, we claim:

1. A dynamo electric generator having its armature in two separate and distinct portions, one portion being fixed to the spindle and rotating therewith, said portion carrying the coils, the other portion being the core which rotates with the spindle and is free to move in and out of the coils, and a governor controlling said core.

2. In a dynamo electric machine, an armature, a movable core for said armature, and a centrifugal governor controlling said core in the movement thereof which increases and decreases the magnetic reluctance in the armature.

3. In a dynamo electric machine, an armature, a movable core for said armature having a tapered end, and a centrifugal governor adapted to move said core and to thereby increase or decrease the magnetic reluctance of the armature.

In testimony whereof we affix our signatures, in presence of two witnesses.

GAVAN INRIG.
LEON INRIG.

Witnesses:
THOMAS WALTER PRICE,
JAMES MARTIN MURPHY.