

V. G. APPLE.
DRIVING MECHANISM.
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1,002,191.

Patented Aug. 29, 1911.

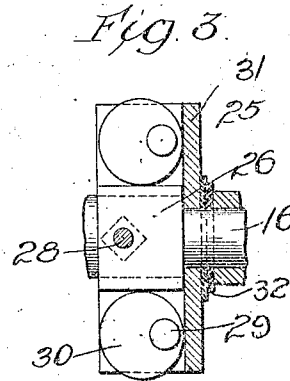
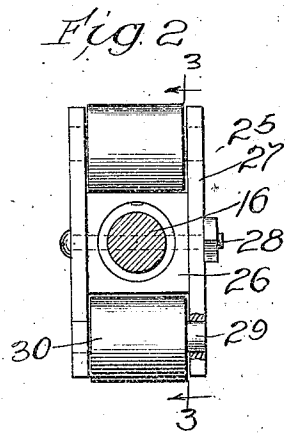
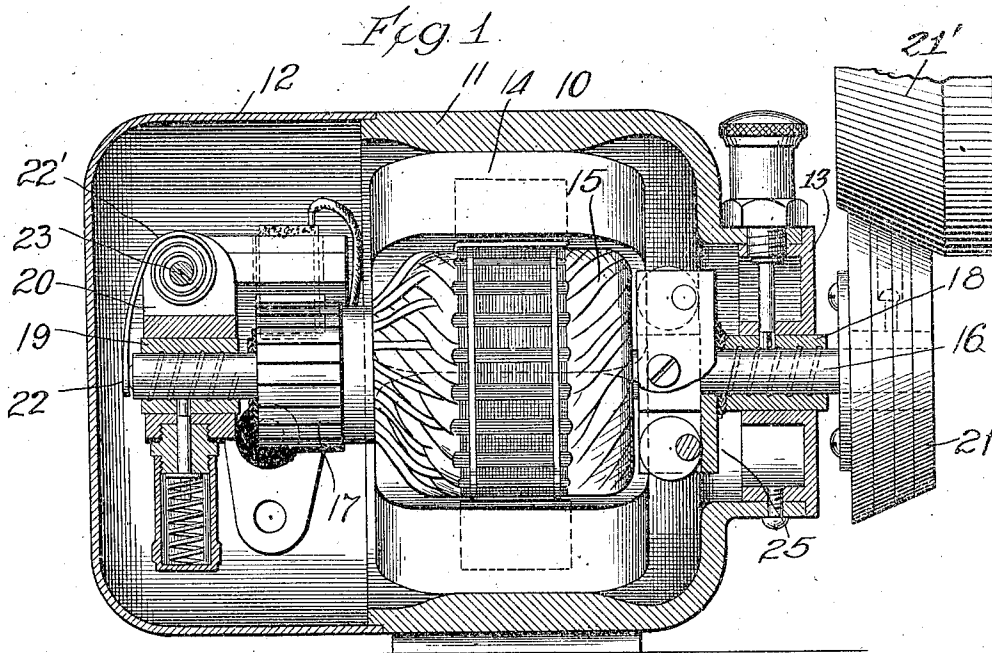
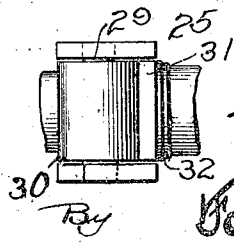


Fig. 4.



Witnesses:

R. A. White

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Inventor:

Vincent G. Apple

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UNITED STATES PATENT OFFICE.

VINCENT G. APPLE, OF DAYTON, OHIO.

DRIVING MECHANISM. **BEST AVAILABLE COPY**

1,002,191.

Specification of Letters Patent. **Patented Aug. 29, 1911.**

Original application filed May 27, 1908. Serial No. 464,522. Divided and this application filed April 12, 1909. Serial No. 489,309.

To all whom it may concern:

Be it known that I, VINCENT G. APPLE, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Driving Mechanism, of which the following is a specification.

My invention relates to improvements in centrifugal governors and more particularly to governors for dynamo-electric machines, applicable to generators and motors alike. The application to which it is especially adapted, however, is for the governing of electric generators of small size, such as are commonly employed for the generation of electric current for gas-engine ignition, where the prime mover, transmitting power to the generator, runs at variable speeds.

One of the salient objects of my invention is to provide a simple, cheap, and efficient governor for use in conjunction with such dynamos, to maintain constant the speed of the armature under the varying conditions of speed of the prime mover, and of size and construction particularly adapting it to be inclosed within the dynamo casing.

Other and further objects will become apparent to those skilled in the matter from the following description, taken in conjunction with the drawing, wherein I have illustrated an operative embodiment of my invention, applied to a small dynamo of the character described in my pending application filed May 27, 1908, Ser. No. 464,522, whereof this application is a division.

Figure 1 is a longitudinal section with parts broken away showing a generator with my governor applied thereto. Fig. 2 is an end view of the governor applied to a shaft. Fig. 3 is a section on the line 3—3 of Fig. 2. Fig. 4 is a plan view of the governor.

In the drawings, 10 indicates, in general, a dynamo casing or housing, comprising a frame casting 11, a cup-shaped door 12, closing the rear end, and the head 13, closing the front end thereof. The frame carries the field coils 14, within which rotates the armature 15, mounted upon a longitudinally positioned shaft 16, which also carries the commutator 17, and has bearings at opposite ends in the sleeves 18 and 19. The sleeve 18 is mounted in the head 13, so as to project inwardly therefrom a short distance, and

the sleeve 19 is mounted in a spider 20, which may be cast integrally with the frame 11.

The shaft 16 extends through the bore of the sleeves 18 and 19 at its forward end to carry a friction wheel or pinion 21, and at its rear end to abut against a leaf spring 22, having a spiral extension 22', attached to a shaft 23, carried by the spider 20, and which may be, and preferably is, rotatively adjustable to vary the tension of the spring. The spring 22 tends constantly to hold the shaft in its position, but the shaft may slide rearwardly against the tension of such spring.

The governor, generally indicated at 25, is mounted within the housing or frame 10, preferably between the armature 15 and the forward shaft-bearing sleeve 18. It consists preferably of a core 26, secured upon the shaft 16, and having secured thereto side plates or members 27 in parallel relation at right angles to the shaft, the core, shaft, and side members being secured together, in the construction shown, by a bolt 28. Between the side members 27 on opposite sides of the shaft are mounted pintles 29, whereon are eccentrically mounted rollers 30. The pintles 29 may be, and preferably are, integral with the rollers, and are so arranged that when the rollers stand with their shortest radius toward the plates 31, they rest upon the core 26, as shown in Fig. 3. The plate 31 is loosely mounted upon the shaft 16 between the side members 27 of the governor, so that, as shown in Fig. 3, it may receive the thrust of the rollers 30. Such plate 31 is held against axial movement by the sleeve 18, but may be prevented from wearing upon the sleeve by washers 32 if desired.

In operation, the tension of the spring 22, normally pressing the shaft axially, forces the rollers 30 against the plate 31, and such plate against the sleeve 18. When the shaft is rotated through the engagement of the friction wheel 21, with the fly wheel of the gas engine, the governor construction is carried in rotation with the shaft, the plate 31 being held in constant position rotatively of the shaft by its inclusion between the side plates 27 of the governor which are in turn secured to the shaft by the bolt 28. The rotation of the governor causes the rollers to be thrown outward by centrifugal action,

such action tending to force them into a position such that the lines of centers of the rollers and their pintles stand at right angles to the shaft axis, and thereby cause the cam surfaces of the rollers to press against the plate 31, which is held against longitudinal movement by the sleeve 18. Consequently, when the speed is such that the action of the rollers can overcome the pressure of spring 22, the governor moves the shaft with its commutator, armature, and friction wheel rearwardly, longitudinally of the casing, so that when the speed of the fly wheel or prime mover tends to transmit excessive speed to the dynamo, the governor acts to withdraw the friction wheel from the prime mover, and thereby to maintain a substantially constant predetermined speed of the dynamo, which may be varied by the adjustment of the spring tension.

While I have herein described in detail a specific embodiment of my invention, it will be apparent that many changes in the shape and construction of the parts may be made without departure from the spirit of the invention, within the scope of the appended claims.

What I claim is:

1. The combination of a shaft mounted for sliding and rotary movement; an abutment fixed longitudinally with respect to the shaft, and a governor carried by the shaft, comprising bearing plates, one on each side of the shaft, eccentrically mounted rollers therebetween, movable under the influence of centrifugal force to act upon the abutment to move the shaft axially, and yielding means acting upon the end of the shaft opposing such movement of the shaft.

2. The combination of a shaft mounted for rotation and axial movement; yielding means acting upon the end of the shaft opposing axial movement thereof in one direction; an abutment fixed longitudinally with respect to the shaft, and a governor on such shaft, comprising a bearing plate positioned longitudinally by the abutment; a frame, rotatable with the shaft and carrying the plate therewith; and eccentrically mounted rollers within the frame, arranged when thrown outward by centrifugal action to exert a pressure upon the plate, tending to force the shaft axially against the tension of its spring.

3. The combination with a shaft and bear-

ings therefor, wherein the shaft is axially movable and rotatable; a core, connected with the shaft; side plates connected with the core; a bearing plate positioned laterally by the side plates, but movable axially with respect to the shaft, and positioned longitudinally by the shaft bearing, rollers eccentrically mounted in the side plates, arranged for coöperation with the bearing plate to tend to move the shaft axially under the influence of centrifugal action; and a spring arranged to resist such axial movement of the shaft.

4. In a device of the character described, an engine fly wheel, a friction pulley for coaction therewith, a longitudinally slidable shaft, and means for so sliding the shaft to vary the position of the pulley with respect to the fly wheel, comprising a stationary abutment, two plates rotatable with the shaft on opposite sides thereof, weights journaled in said plates adapted to be moved by centrifugal force to impinge against the stationary abutment and thereby move the shaft.

5. The combination with a friction driving pulley, of a speed governor comprising a longitudinally movable shaft, a coacting friction pulley affixed thereto adapted and arranged to engage said driving pulley, means for yieldingly effecting such engagement, a centrifugally operated device for separating said pulleys comprising a core secured to said shaft, a plate on each side thereof affording bearings for movable weights, weights journaled in said plates adapted to be moved by centrifugal effect, and a relatively stationary abutment against which said weights impinge to move the driven pulley out of engagement with the driving pulley.

6. A centrifugally responsive device comprising a shaft, part, 26, surrounding said shaft, plates, 27—27, secured thereto affording bearings for movable weights, movable weights contained between said plates and journaled therein, and means for securing the plates in place and the device on the shaft.

In testimony whereof I hereunto set my hand in the presence of two witnesses.

VINCENT G. APPLE.

In the presence of—

CARL L. BAUMANN,
WILLIAM C. WEINMAN.