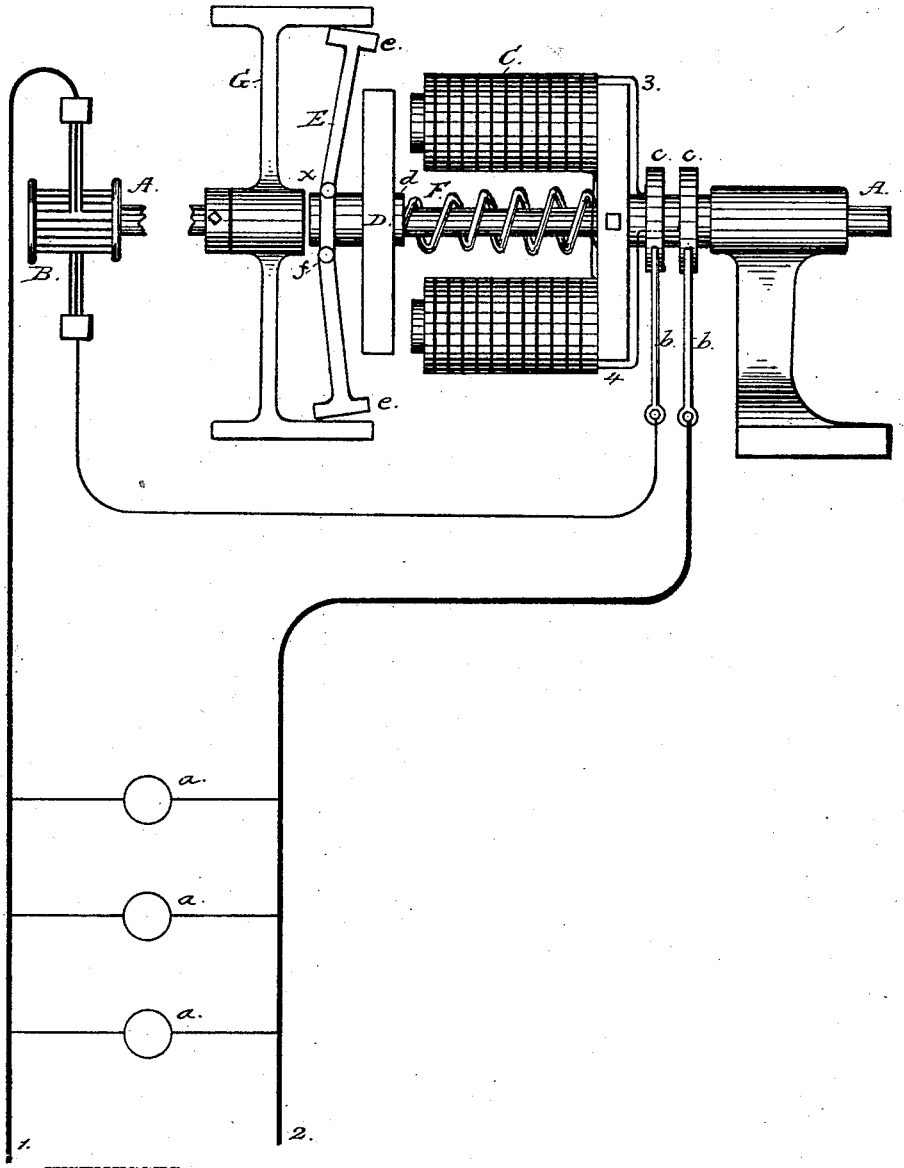
(No Model.)

T. A. EDISON.

REGULATOR FOR DYNAMO ELECTRIC MACHINES.

No. 264,666. Patented Sept. 19, 1882.



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THOMAS A. EDISON, OF MENLO PARK, NEW JERSEY.

REGULATOR FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 264,666, dated September 19, 1882.

Application filed August 7, 1882. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the county of Middlesex and State of New Jersey, have invented a new and useful Improvement in the Regulation of Dynamo or Magneto Electric Machines, (Case No. 415;) and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

The object of my invention is to produce an automatic regulating apparatus for dynamo and magneto electric machines which shall act on variations in the number of translating devices in circuit from the machine, or in the speed of the engine driving said machine, to adjust the speed of rotation of the armature to the point necessary to produce the generation of current required. This I do by connecting the pulley over which the belt from the engine is placed to the armature-shaft through a friction-clutch, the latter being adjustable by means of an electro-magnet energized by the current generated, so as to convey more or less power to the armature-shaft, according to the current required.

A convenient form of my invention is shown in the drawing, which is a view of a regulating apparatus in elevation, with the friction-clutch shown in section and the circuits in diagram.

A is the armature-shaft of a dynamo or magneto electric machine, and B the commutator-cylinder mounted thereon, the armature being omitted for convenience in drawing. 1 2 are the main conductors leading from the commutator, and having translating devices *a a* placed in multiple arc upon them.

C is an electro-magnet, so mounted near the end of the armature-shaft A as to revolve therewith. The conductor 2 is broken and formed into contact-springs *b b*, which bear on the metal collars *c c*, these being insulated from the shaft A. From these metal collars a circuit, 3 4, runs, which includes the magnet C, the latter being thus placed directly in the main circuit 1 2. A sleeve, *d*, is keyed also to the armature-shaft, so that it revolves with it, but has a longitudinal movement upon it, on which sleeve are mounted the armature D of the magnet C and the friction-clutch E. A spring, F, is secured to the sleeve *d*, so that such sleeve is retracted from the magnet by the spring. The friction-clutch consists of arms carrying friction-shoes *e e* and united by a toggle or elbow joint, *f*.

G is the pulley over which the belt from the engine which drives the armature passes. The pulley G is sleeved to the shaft A so as to turn loosely upon it, and motion is therefore communicated from the belt to the shaft only through the friction-clutch, more or less power being communicated, according to the position of the friction-shoes within the pulley G.

The operation of this apparatus is as follows: When more translating devices *a a* are placed in circuit the increased current in the main line causes an increase in the energy of the magnet C, which attracts its armature D, and thus throws the friction-shoes *e e* into greater contact with the pulley G, thereby conveying more power from the engine to the armature-shaft and causing the latter to revolve with greater rapidity, thus increasing the generation of current to the desired degree. A decrease in the number of translating devices in circuit causes a decrease in the energy of the magnet C, the spring F throws the armature back, and the friction-shoes *e e* are partly removed from contact with the pulley. Should a sudden increase occur from any cause in the speed of the engine which drives the armature—an increase too great to be taken up immediately by the governor of the engine—the friction-shoes *e e* will slip on the surface of the pulley, and the increase will not be communicated to the armature-shaft. It is evident that other forms of friction-clutch might be used, though that shown is found most convenient for the purpose.

The magnet C might be placed in a shunt from the main line, instead of directly therein, with the same effect.

What I claim as my invention is—

1. In a dynamo or magneto electric machine, the combination, with the armature-shaft and a loose pulley mounted thereon, of a friction-clutch for conveying motion from said pulley to said shaft, and means actuated by the current generated for moving such friction-clutch so as to vary its contact with the pulley, substantially as set forth.

2. In a dynamo or magneto electric machine, the combination, with the armature-shaft and a loose pulley mounted thereon, of a friction-clutch for conveying motion from said pulley to said shaft, and an electro-magnet in the main line from the machine for moving such friction-clutch so as to vary its contact with the pulley, substantially as set forth.

3. The combination of the loose pulley on the armature-shaft, the electro-magnet mounted on said shaft and revolving with it, and the sleeve keyed to said shaft and carrying the armature of said electro-magnet, and the friction-clutch making frictional contact with the inside of said pulley, substantially as set forth.

This specification signed and witnessed this 1st day of May, 1882.

THOS. A. EDISON.

Witnesses:
H. W. SEELY,
P. B. WILBER.