

T. A. EDISON.  
 Magneto-Electric Machine.

No. 222,881.

Patented Dec. 23, 1879.

Fig. 1.

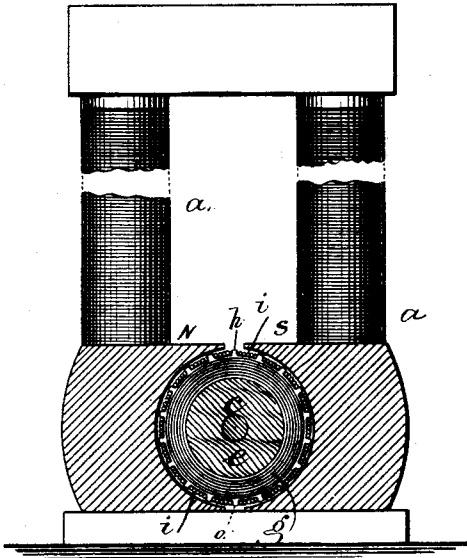


Fig. 3.

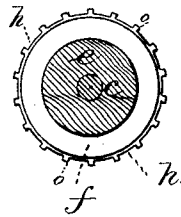


Fig. 4.

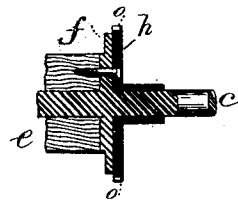


Fig. 2.

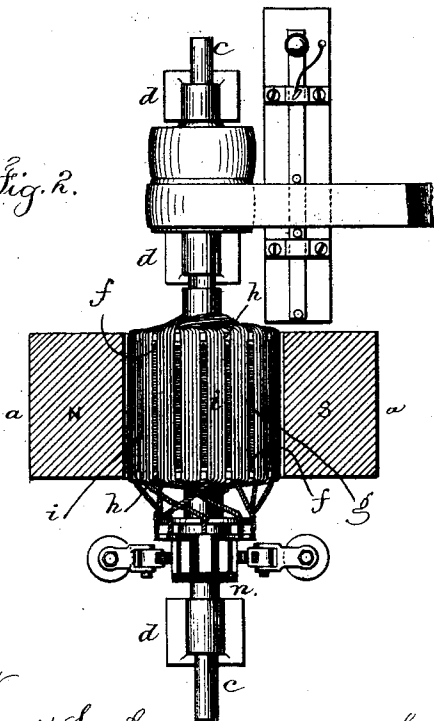
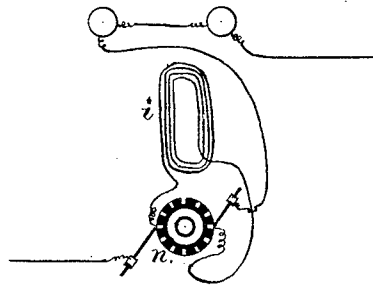


Fig. 5.



Witnesses

Chas. N. Smith  
 Geo. T. Pinckney

Inventor

Thomas A. Edison.  
 per Lemuel W. Perrell  
 atty.

# UNITED STATES PATENT OFFICE.

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

## IMPROVEMENT IN MAGNETO-ELECTRIC MACHINES.

Specification forming part of Letters Patent No. 222,881, dated December 23, 1879; application filed September 10, 1879.

*To all whom it may concern:*

Be it known that I, THOMAS A. EDISON, of Menlo Park, in the State of New Jersey, have invented an Improvement in Magneto-Electric Machines, (Case 184,) of which the following is a specification.

The object of this invention is to increase the effectiveness and cheapen the construction of the revolving armature.

I make the revolving armature of a cylinder of wood with two iron heads, and around the cylinder and between the heads fine iron wire is wound.

At the ends of the cylinder, outside the iron heads, there are disks of hard rubber or other insulating material, and the wires forming the induction-helix are wound lengthwise of the cylinder into notches in the edges of the disk. This insures the proper insulation of the induction-helix, even if the insulating-covering of the wires may be injured, and the fine iron-wire cylinder forms a magnet by induction from the field-of-force magnet, and the wires running circumferentially also set up magnetic poles in the revolving armature, and with the aid of the commutator the magnetic poles always remain at the right place on account of the quick discharging time of the iron-wire magnet, and therefore are practically regardless of the speed of revolution, and render it unnecessary to adjust the commutators for different speeds of revolution.

In the drawings, Figure 1 is an elevation of the field-of-force magnet with the poles and armature-cylinder in section. Fig. 2 is a plan of the armature-cylinder with the poles in section. Fig. 3 represents the wooden cylinder sectionally without the wire helix. Fig. 4 is a section of one end of the armature-cylinder, and Fig. 5 is a diagram of the circuit-connections.

The field-of-force magnet *a* is provided with the poles N S, and the same may be either a permanent magnet or electro-magnet, but preferably the latter, and the helix thereof in the circuit from the armature-helix; or it may be energized separately. The pole-faces are concave.

The shaft *c* is in bearings *d*, and has a wooden cylinder, *e*, between the two iron heads *f*, and *g* is the helix of iron wire wound into the space between the heads *f*.

The insulating-heads *h*, of hard rubber, vulcanized fiber, or equivalent material, are secured outside the heads *f*, and are of larger diameter, so that the helix-wires *i*, that are wound longitudinally, may be kept from contact with the iron helix *g* or heads *f*, so that the current may not be short-circuited, even if the insulation of the wires *i* is defective.

The projections *o* around the heads *h* serve as guides to retain the wires that are wound into the notches between said projections.

The longitudinal wires *i* are connected to the commutator-plates *n*, from which the brushes pass the current to the binding-screws, and thence to the object that is to be supplied with the electric current.

The wires *i* may be wound in the manner set forth in my application No. 177.

In use the poles N S of the field-magnet energize, by induction, the iron-wire helix *g*, and the wires of the armature-coil *i* are carried across or cut the lines of magnetism, so as to obtain a maximum effect in setting up a current in said induction-helix.

The bobbin, after winding, is served with German-silver wire in several places to keep the induction-wires against the cylinder.

I do not claim a dynamo-magneto-electric machine wherein a cylindrical armature coiled with insulated wire wound longitudinally on the exterior thereof and provided with a commutator is caused to rotate between curved branches of electro-magnets, the coils of which are in electric circuit from the commutator to the terminals of the machine, as I prefer not to include the helix of the field-magnet in the circuit from the commutator.

I claim as my invention—

The cylinder *e*, of wood or similar material, with the iron heads *f* and intervening helix of fine iron wire, in combination with the disks *h* of non-conducting material and the induction-helix *i*, wound lengthwise and into notches in the edges of the insulating-disks, substantially as set forth.

Signed by me this 4th day of September, A. D. 1879.

THOS. A. EDISON.

Witnesses:

S. L. GRIFFIN,  
FRANK McLAUGHLIN.