(No Model.)

W. GILLETT.

MAGNETO ELECTRIC MACHINE.

No. 418,120. Patented Dec. 24, 1889.

Fig. 1.

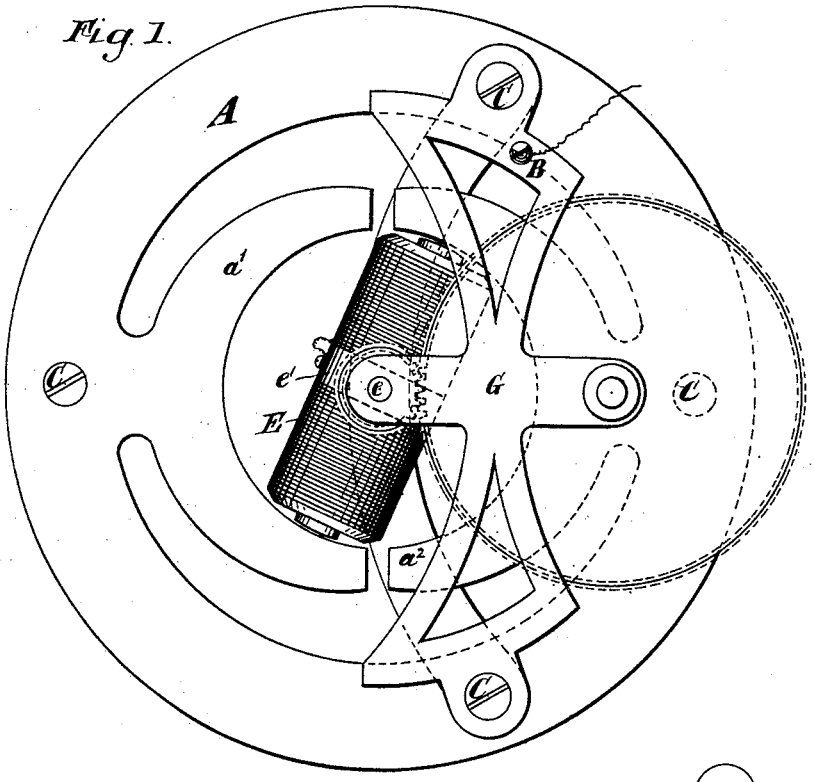
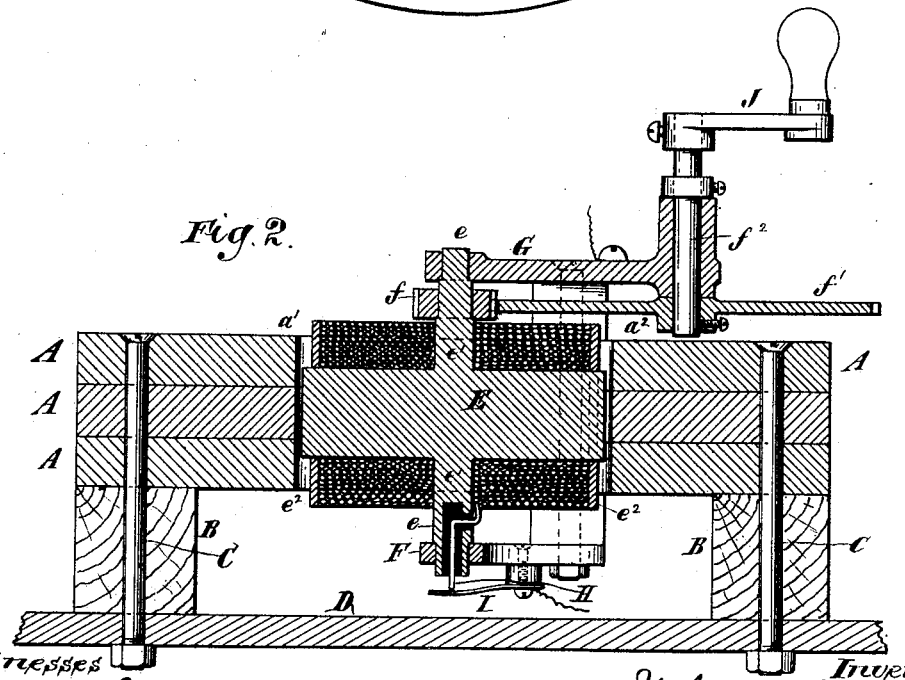


Fig. 2.



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MAGNETO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 418,120, dated December 24, 1889.

Application filed June 23, 1886. Renewed October 20, 1888. Again renewed May 4, 1889. Serial No. 309,669. (No model.)

To all whom it may concern:

Be it known that I, WEBSTER GILLETT, of New York, in the county and State of New York, have invented a certain new and useful Improvement in Magneto-Electric Machines, of which the following is a specification.

I will describe a magneto-electric machine embodying my improvement, and then point out the various features in claims.

In the accompanying drawings, Figure 1 is a plan or top view of a magneto-electric machine embodying my improvement. Fig. 2 is a transverse section of the same.

Similar letters of reference designate corresponding parts in both figures.

The field-magnet of this magneto-electric machine is composed of a number of steel plates A, placed one against another. These plates are of circular form and they have extended inwardly from them at opposite points segmental pole-pieces a' a^2. These pole-pieces extend almost in contact with one another, as here shown. The connection between them and the main portion of the magnet-plates is preferably made quite narrow, as shown. Any desirable number of these plates may be employed. As shown, but three are used. They are supported upon a wooden block B of annular form, to which they are secured by bolts C, extending through the block B and into a wooden base-piece D.

The magnet-plates A may be cast ready for use save that the inner circumferential edges of the pole-pieces will need to be trimmed or turned off to render them absolutely true.

E designates an electro-magnet or armature having trunnions *e* extending from it at right angles to its axis and at the middle of its length. The trunnions *e* may be formed integral with the core of the electro-magnet or armature, which, as usual, will be made of soft iron. Preferably the core will be made oval, and, as shown, the trunnions extend from a flange e', that extends from the core at about the middle of the length of the latter. At each side of this flange the core is wound with wire, plates e^2 being provided at the ends of the core to keep the wire in place. One of the trunnions of this armature or electro-magnet is supported in a metal plate F, attached to the lowermost magnet-plate A, and the other is journaled in a metal frame G, secured to the uppermost magnet-plate A. This frame G may be secured in place by the same bolts C that secure the magnet-plates A together and to the base-piece. The plates F and G are, as shown, secured upon the field-magnet by bolts which extend through both said frames and the magnet-plates.

One end of the wire of the armature or electro-magnet is attached to the core thereof. The other end passes transversely into the lower trunnion *e*, an insulated bushing being inserted transversely into this trunnion at the point where the end of the wire enters it, so as to insulate this end of the wire from the trunnion, and consequently from the armature-core. This trunnion has also fitted to it another bushing of insulating material. The latter extends longitudinally into the trunnion and has a wire H extending into it from the end of the trunnion. This wire H is of course insulated from the trunnion. It is in electrical communication with the end of the armature or electro-magnet wire that extends into the trunnion.

The plate F at about the middle of its length, where it supports the lower trunnion of the armature or electro-magnet, is raised or elevated above the base-piece. The lower trunnion of the armature or electro-magnet is shouldered, so that it may be supported by the said plate F, notwithstanding its end extends through the plate. Below the plate is a metal spring I, with which the wire H is in contact. The wire of the armature or electro-magnet is consequently in electrical communication with this metal spring I. The metal spring I may be fastened to the base-piece or it may be fastened to one of the magnet-plates A, if insulated from the latter. One of the circuit-wires with which the machine is designed to be used will be fastened to this metal spring. The other will be fastened to a binding-screw B, which is secured to one of the magnet-plates A or the frame G.

The upper trunnion *e* of the armature or electro-magnet E has affixed to it a toothed pinion *f*. With this pinion engages a large gear-wheel f', which is affixed to a shaft f^2,

that is journaled in the frame G. The shaft f^2 has affixed to it a cranked handle J. By manipulating the handle J the shaft f^2 may be rotated, so as to impart a very rapid rotation to the armature or electro-magnet E. As the latter rotates its core passes in close proximity to the pole-pieces of the field-magnets. The poles of the armature or electro-magnet have a long sweep within the magnetic field of each pole-piece of the permanent magnet, so that said armature or electro-magnet has a great opportunity to acquire or establish its electric polarity. Owing to the fact that the pole-pieces of the permanent magnet extend in close proximity with one another, the charge or discharge of polarity is very abrupt. Consequently very powerful alternating currents are set up within the coils of wire of the armature or electro-magnet. As the poles of the armature or electro-magnet are within the magnetic field of each pole-piece of the permanent magnet for the greater part of each revolution, the alternating currents generated are more of an intensity nature than otherwise they would be. This is desirable for the purpose of ringing bells over great length of wires at high resistance.

The field-magnet, the armature, and the driving mechanism are all secured together by means of the plates F and G and constitute one structure, which may be secured to any convenient base-piece or support. This is very advantageous, because the machine may be quickly and easily erected by inexperienced persons and has no separate parts which may become lost in handling or shipment. The machine is, moreover, very cheap and durable.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. In a magneto-electric machine, the combination, with a permanent magnet consisting of circular plates provided with pole-pieces composed of plates nearly semicircular in form and having their square ends substantially parallel with and close to the corresponding ends of the opposite pole-piece, of an armature having central transverse trunnions, a plate bolted to the lower plate of the field-magnet and supporting the lower trunnion of the armature, and a frame extending over the top of the field-magnet and bolted to the upper plate thereof to give bearing to the upper trunnion, substantially as described.

2. In a magneto-electric machine, the combination, with a permanent magnet consisting of circular plates provided upon opposite sides with pole-pieces composed of substantially-semicircular plates a' a^2, having their square ends substantially parallel with and close to the corresponding ends of the opposite pole-piece, of the armature E, having central transverse trunnions e, the lower one resting upon a plate F, bolted to the lower plate of the field-magnet, and the other having bearing in an arm or extension on a frame G, bolted at its ends to the upper plate of the field-magnet, and a gear f', journaled in an arm upon said frame and having a shaft lying in an extended bearing on the arm, said gear meshing with a pinion on the trunnion, substantially as described.

3. In a magneto-electric machine, the combination, with a field-magnet composed of circular plates A and having pole-pieces a' a^2 mounted on their inner edges, of a frame G, mounted on the upper plate A and connected thereto by bolts C, which also unite the several plates A, a plate F, mounted on the lower plate A and connected thereto by the bolts C, an armature supported by said frame and plate, and a gear f', journaled in the frame and meshing with a pinion on one of the trunnions of the armature, substantially as described.

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