(No Model.)

C. A. SEELEY.

MAGNETO ELECTRIC MACHINE.

No. 277,069. Patented May 8, 1883.

Fig. 1

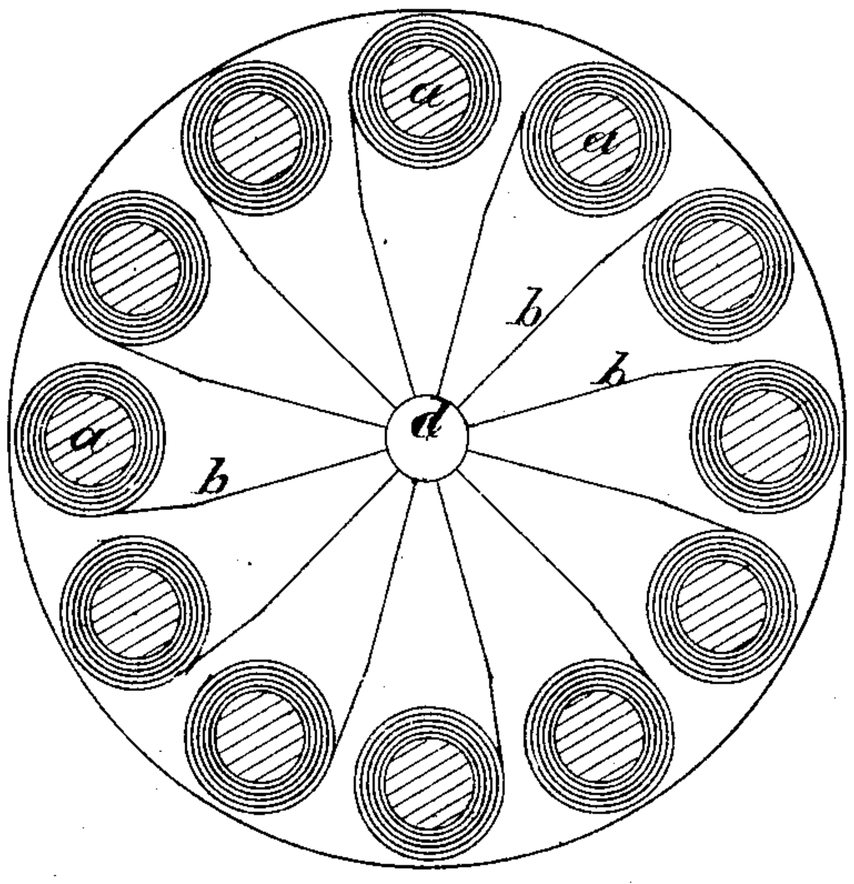


Fig. 2

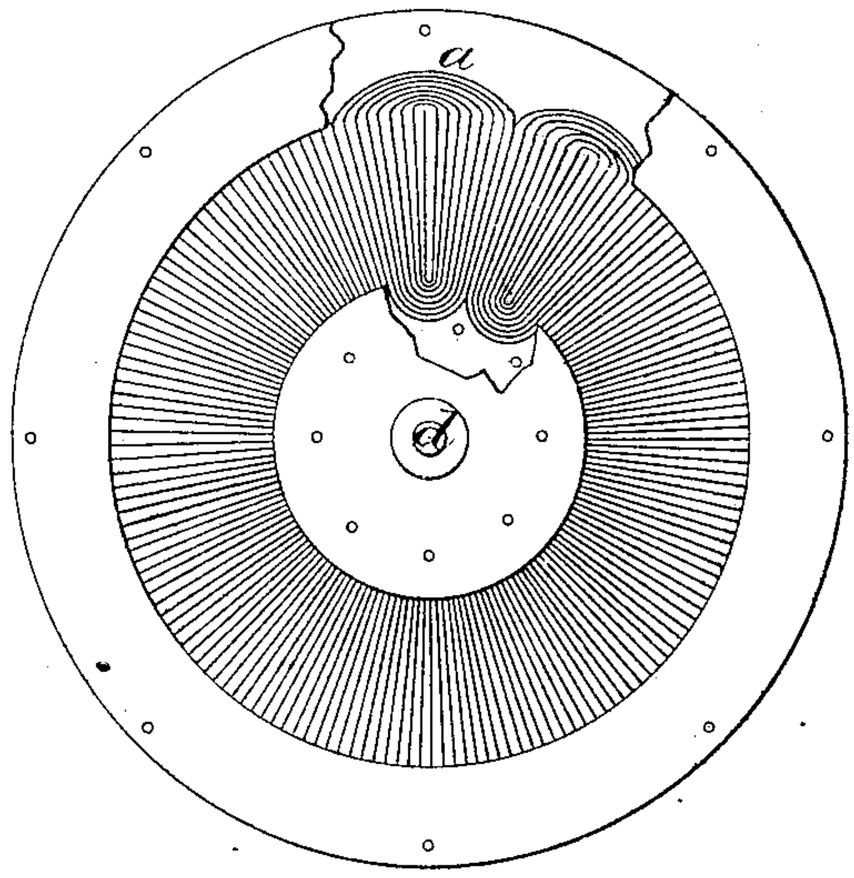


Fig. 3

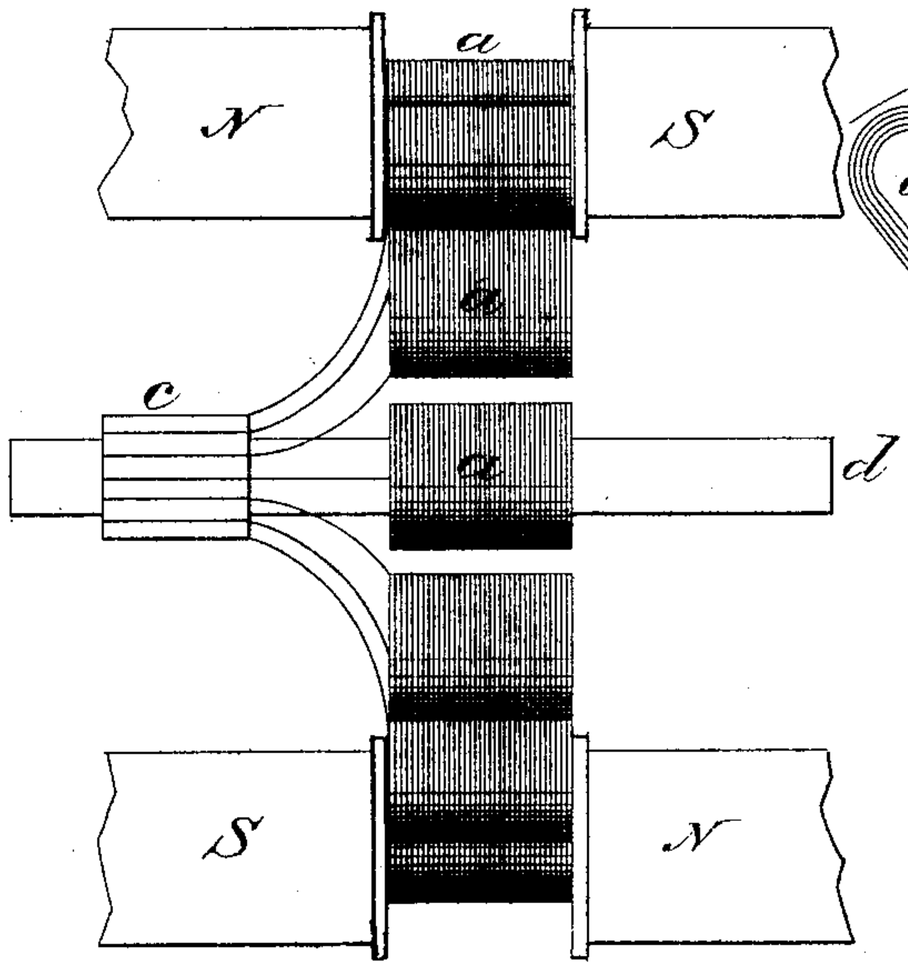
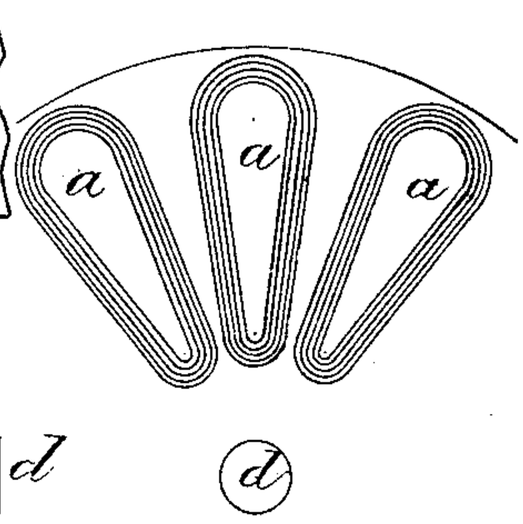


Fig. 4



Witnesses:

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UNITED STATES PATENT OFFICE.

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MAGNETO-ELECTRIC MACHINE.

SPECIFICATION forming part of Letters Patent No. 277,069, dated May 8, 1883.

Application filed January 3, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES A. SEELEY, a citizen of the United States, residing at New York, in the county and State of New York, have invented a new and useful Improvement in Magneto-Electric Machines, of which the following is a specification.

In accordance with the invention herein described my improved magneto-electric machine contains no iron in its armature, and the parts of the machine are so combined that the electricity generated is similar in character to that of the Gramme machine. The machine belongs to the class which is sometimes designated as "continuous-current" machines.

In the accompanying drawings, in which similar letters indicate like parts, Figures 1 and 2 are end views of disk-armatures. Fig. 3 is a side view of the armature field-magnets and commutator as combined in the complete machine; and Fig. 4 is a view of part of an armature, showing a novel method of winding the bobbins.

My improved machine, as to its form, its principal parts and their relation to each other, and the theory of its operation, resembles the machines known as the "Niaudet-Breguet" machine and the "Farmer-Wallace" machine. In such machines the armature is of a disk form. The electro-magnetic elements, with axes parallel to each other and to the axis of revolution, are arranged at the outer part of the disk, and the bobbins are connected together to form a closed series, the junctions of the bobbins being connected consecutively with the bars of the commutator.

The field-magnet system consists of two pairs of opposite magnet-poles, and its position with reference to the armature is illustrated in Fig. 3, where S and N designate, respectively, the poles of the pairs. The magnet-poles should be provided with pole-plates conformable to the contour of the bobbins which are to be influenced by them. When the armature is revolved between the opposed poles of the pairs of magnet-poles, electric currents are set up in the armature-circuit in such a way that a + electrical consequent-pole is constantly maintained at the part of the circuit between one of the pairs of field-magnet poles, and a — consequent-pole between the other pair, and the brush-contacts of the commutator are therefore to be made with the commutator-bars as they successively become connected with these consequent-poles.

My improvement in part consists in dispensing with the iron cores which heretofore have been employed in the armatures of the machines above described. The armature of my improved machine is a series of short bobbins having no cores of iron, with axes parallel to the axes of revolution, connected outside to inside, and so on, so as to make a completely-closed circuit, the series of bobbins being held together by suitable supports and stays. In each of the drawings the position of the bobbins in relation to each other is shown. In Fig. 1 the connection of the junctions of bobbins with the commutator-plates is shown. The armatures are represented in the drawings as containing twelve bobbins each; but in practice the number of bobbins may be greatly increased. It will be observed that when the wire is wound radially, as in Fig. 2, the proportion of the efficient to the inefficient wire increases with the number of the bobbins; also, the evenness of current increases with the number of bobbins. A number less than twelve is not to be recommended. For a machine of large size one hundred would not be too many.

Figs. 1, 2, and 4 show different sectional forms of bobbins. In my armature only that part of the wire which may be computed as of a radial direction is directly efficient in the generation of electricity, and for this reason the forms shown in Figs. 2 and 4 are greatly to be preferred to that shown in Fig. 1. The armature as shown in Fig. 2 differs from the armature patented by me June 22, 1880, in the fact that the bobbins of this specification are a closed series, while the former armature had bobbins with free ends. The bobbins of Fig. 4 are wound on a novel plan, and will probably be preferred. In these bobbins the median lines of the winding are radial in part, and the angles of the radial parts between successive bobbins are equal to each other, and also equal to the angle of the radial parts formed by the in and out winding at the interior of the bobbins, and also equal to the angle of the sector of the disk occupied by each of the bobbins.

The word "bobbin" is used in this specifica-

tion as synonymous with the word "coil," and to signify an electrical conductor wound in a constant direction about an axis.

I claim—

1. An armature of a magneto-electric machine, in which coreless bobbins or bobbins having non-magnetic cores are connected in closed circuit.

2. A series of armature-bobbins without magnetic cores and connected in closed circuit, the said bobbins being so wound and arranged that all the angles formed by contiguous median lines of the winding shall be equal to each other.

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