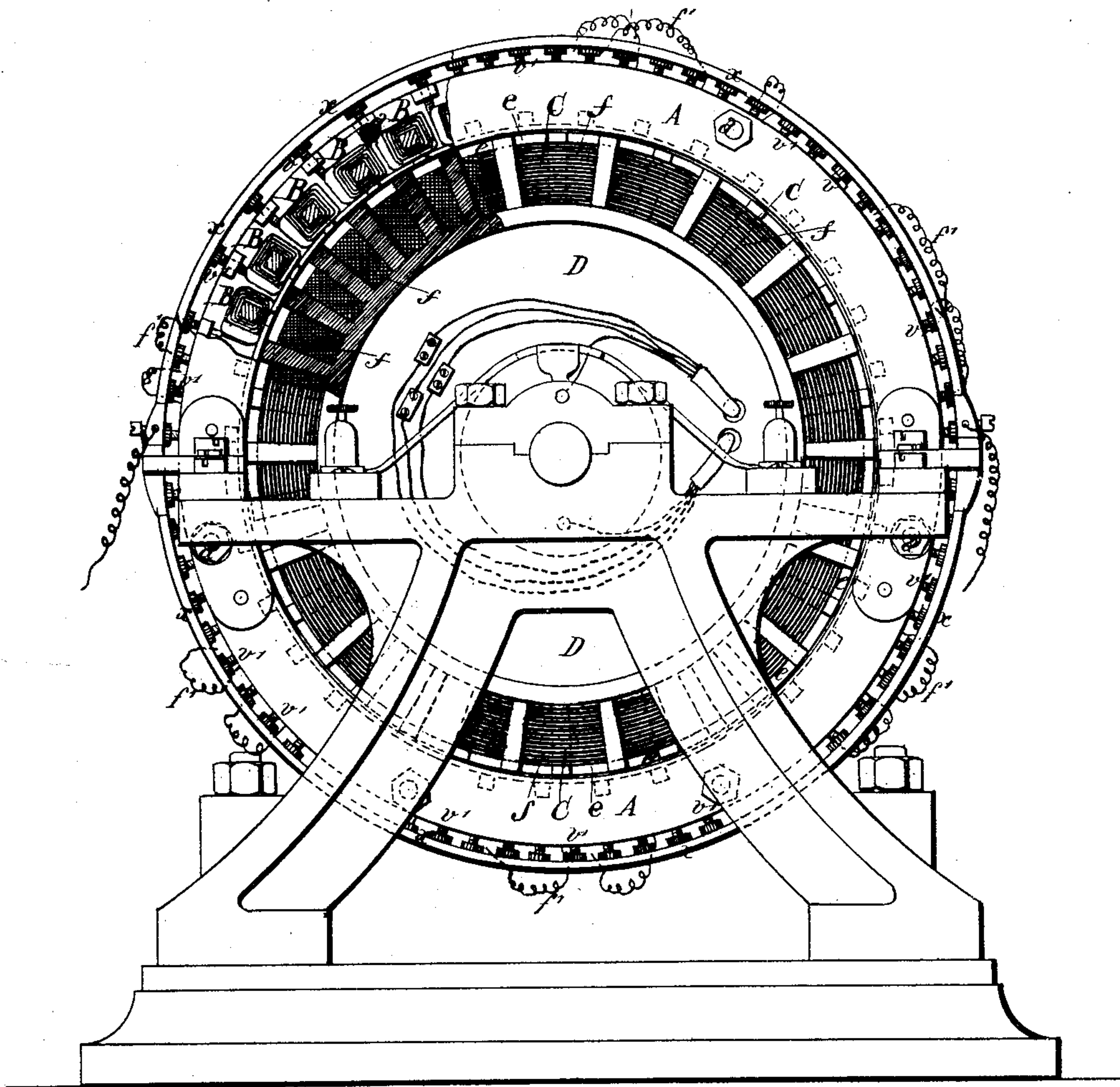


G. LECOQ.
Dynamo-Electric Machine.

No. 221,327.

Patented Nov. 4, 1879.

Fig. 1



Witnesses.
C. F. Hedrick
C. F. Hedrick

Gustave Lecoq
by *A. Pollok*
his attorney

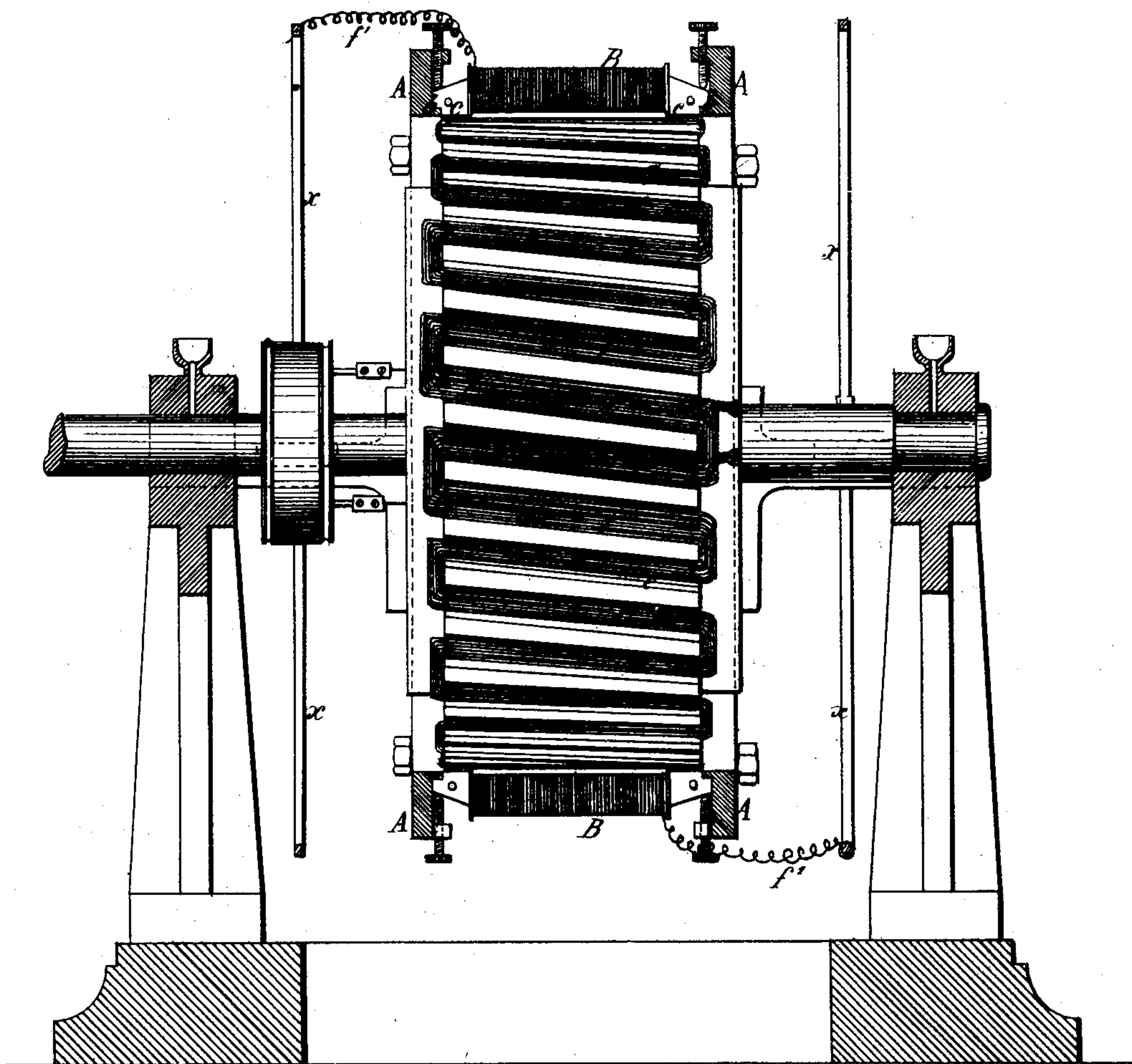
G. LECOQ.
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3 Sheets—Sheet 2.

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Fig. 2



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E. J. Nick
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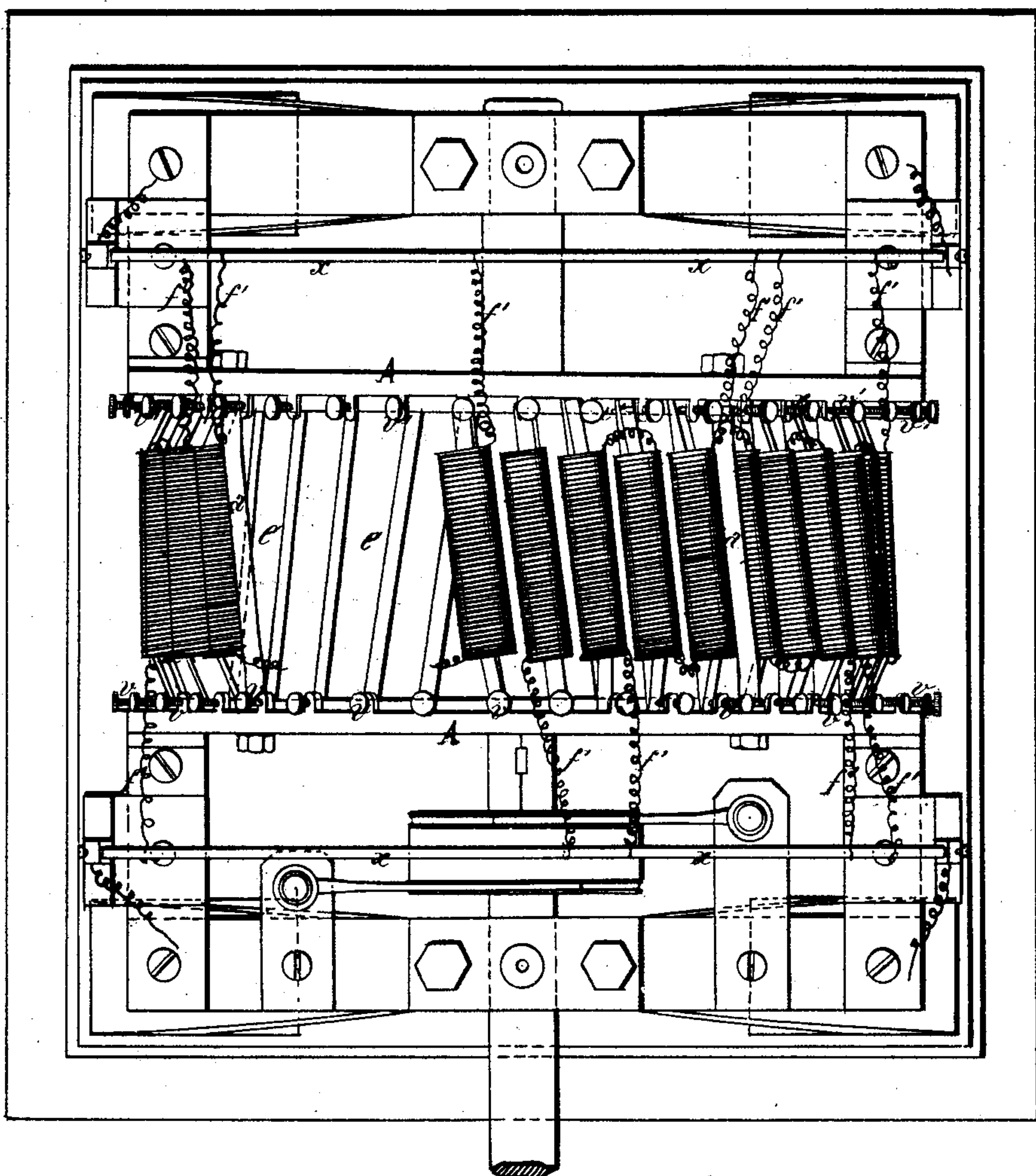
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Fig. 3



Witnesses.
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C. J. Hedrick

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by A. Pollok
his attorney

UNITED STATES PATENT OFFICE.

GUSTAVE LECOQ, OF PARIS, FRANCE.

IMPROVEMENT IN DYNAMO-ELECTRIC MACHINES.

Specification forming part of Letters Patent No. **221,327**, dated November 4, 1879; application filed May 16, 1879.

To all whom it may concern:

Be it known that I, GUSTAVE LECOQ, of Paris, in the Republic of France, have invented certain new and useful Improvements in Magneto-Dynamo-Electric Machines, of which the following is a full, clear, and exact description.

The object of this invention is to improve the operation of magneto-dynamo-electric machines, to increase their effective result by diminishing the motive power for operating them, and to facilitate their putting together and repair.

In order to accomplish these results new dispositions and forms of the electro-magnets and bobbins are adopted.

The accompanying drawings represent a magneto-dynamo-electric machine in accordance with this invention.

Figure 1 is an end view, in elevation, partly in section; Fig. 2, a view, in elevation and section, at right angles to that in Fig. 1; and Fig. 3, a plan.

The superiority of magneto-electric machines with separate and fixed bobbins, so that a worn-out bobbin may be replaced with a good one during the operation of the apparatus without deranging it, is evident, and this feature is embodied in the machines made according to this invention.

Two fixed bronze or brass rings, A, connected by cross-bars *a*, serve to sustain the bobbins B. These bobbins are of a particular form, as shown in Fig. 2. The ends of the cores of these bobbins project into recess *b* in the rings A, and are held therein by means of screws *v'*. The armatures or bobbin-cores present a large exposed surface, *c*, not covered with wire, so that the poles of the electro-magnets, acting on a large surface of iron, produce a great influence. Moreover, the electro-magnets C, of almost the same form as the bobbins, but larger, are wound with a thick wire, producing an induced current in the fine wire of the bobbins. The electro-magnets are fixed on a ring, D, to which a rotary movement is imparted.

In this machine, as described, the electro-magnets and the bobbins are the same in number, (ordinarily, say, thirty-six,) in such a way as to diminish very much the velocity of rotation of the electro-magnets, and consequently

the force necessary to be derived from the engine or motor.

The electro-magnet C can be made in the form of a U. In all cases it is placed obliquely, with reference to the axis of rotation, in such manner that the same pole of the magnet passes in rotation from the end of one bobbin to the opposite end of the neighboring bobbin without any sudden transition. It is true that in this way the influence is lost of the induction-current of the electro-magnet; but as the poles exert their force in moving from one end to the other of the bobbins, there is in like manner a great diminution of the force required to sharply detach the poles of the electro-magnets from contact with the cores of the bobbins.

In place of giving to the part of the bobbin wrapped with wire the form shown, it may equally as well be made of the form in cross-section of a U. The winding of the wire upon the electro-magnets can also be done in different ways.

Thus, as shown in Fig. 2, the electro-magnet is made preferably of a cylinder, D, provided on its periphery with inclined grooves *e*, in which are wound the wires *f*. The bobbins B, placed also obliquely with respect to the axis of the cylinder, are affected by two magnets. The inclination is divided between the magnets and the bobbins. The bobbins can be made with three poles, and then the grooves *e* of the cylinder are more inclined than in the previous instances, so that the same bobbin is affected by three magnets. In this disposition the winding of the wire is always done in the manner heretofore described.

The current is received by the wires *f'* upon the isolated circles *x*.

The manner of connecting the bobbins together, and of introducing the current for exciting the electro-magnets, is sufficiently illustrated in the drawings, and need not be here more particularly described.

It is evident that many modifications and changes in details may be made in the machine without departing from the spirit of this invention—for example, in the mode of grouping or arrangement of parts, or in the dimensions and number of the elements composing the machine.

Having thus described my said invention,

and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is as follows:

1. The bobbins of the form described, having cores of soft iron projecting beyond the wrapped portions, and exposing a large surface, in combination with a series of magnets operating in connection therewith to induce electric currents in the coils of said bobbins, substantially as set forth.

2. The combination, with a series of bobbins having cores with ends projecting beyond the wrapped portions, of a series of inducing electro-magnets, arranged to operate in connection therewith, the cores of said electro-magnets being of a width proportionate to the distance between the projecting ends of the bobbin-cores, substantially as shown and set forth.

3. The electro-magnets composed of a cylinder with a series of parallel grooves upon its periphery, and wire wound therein around the projecting ribs between said grooves, the

wire in alternate grooves running in opposite directions, substantially as set forth.

4. The combination, in a magneto-electric machine, of the inducing electro-magnets and induced bobbins with soft-iron cores, obliquely arranged with reference to each other, substantially as set forth.

5. A magneto-electric machine composed of a revolving cylinder with a series of electro-magnets upon its periphery, two stationary rings at the sides, and a series of bobbins with cores projecting at the ends beyond the wrapped portions, detachably secured in said ring by set-screws or similar means, substantially as set forth.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

G. LECOQ.

Witnesses:

ROBT. M. HOOPER,
J. ARMENGAUD.