(No Model.)

2 Sheets—Sheet 1.

B. G. LAMME.

INDUCTOR DYNAMO.

No. 599,942. Patented Mar. 1, 1898.

Fig. 1.

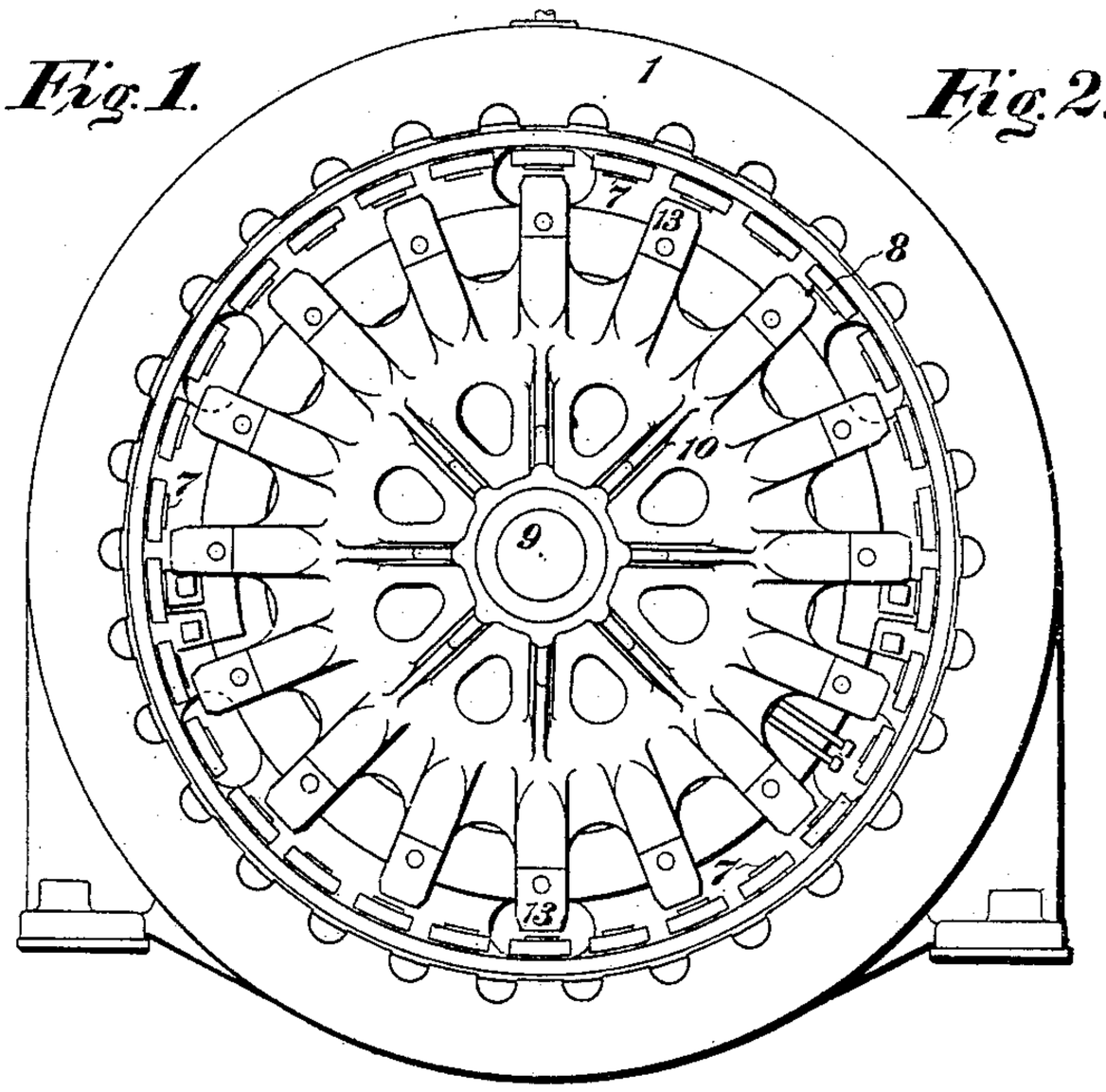


Fig. 2.

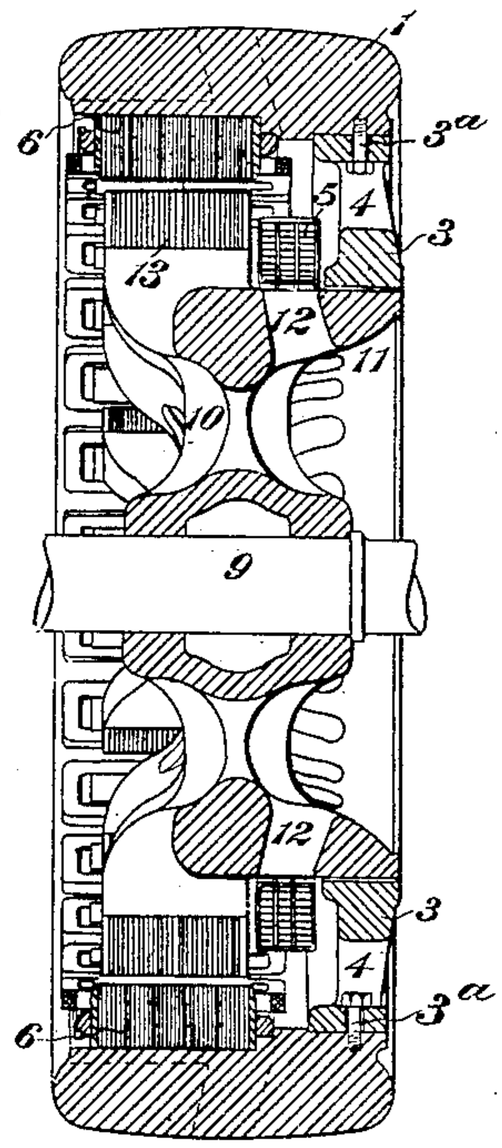


Fig. 3.

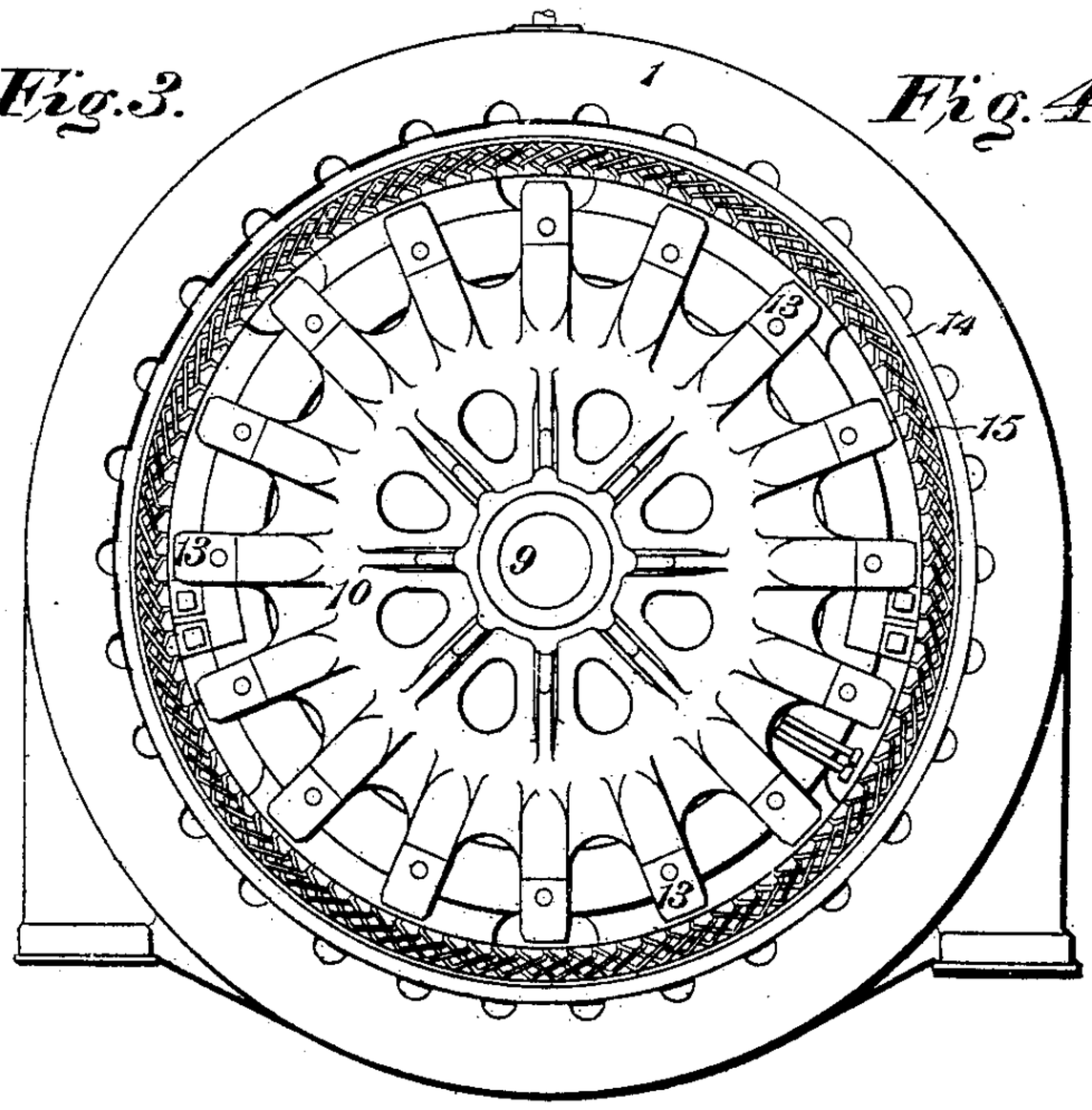
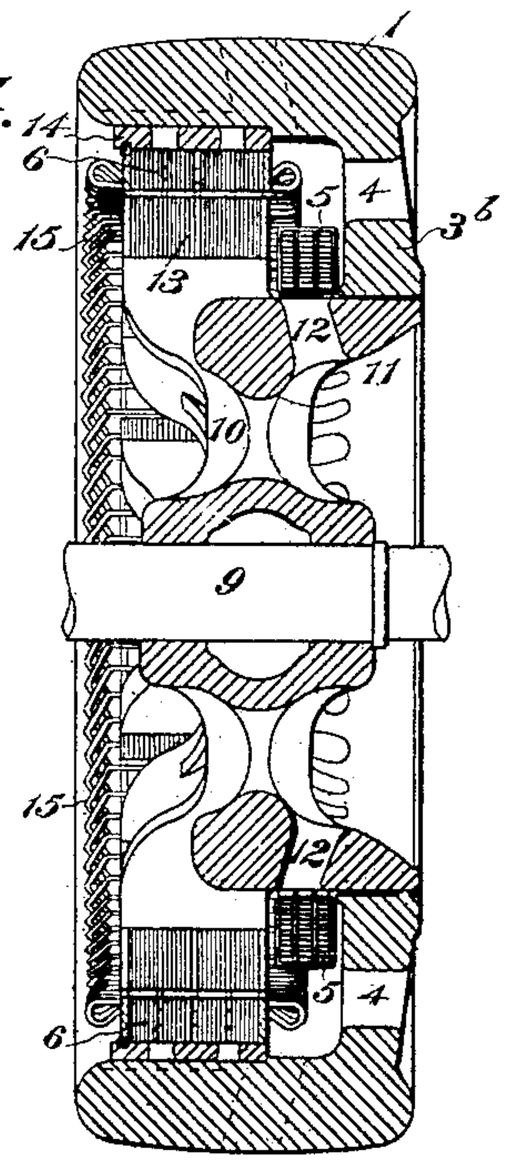


Fig. 4.



WITNESSES

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(No Model.) 2 Sheets—Sheet 2.

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INDUCTOR DYNAMO.

No. 599,942. Patented Mar. 1, 1898.

Fig. 5.

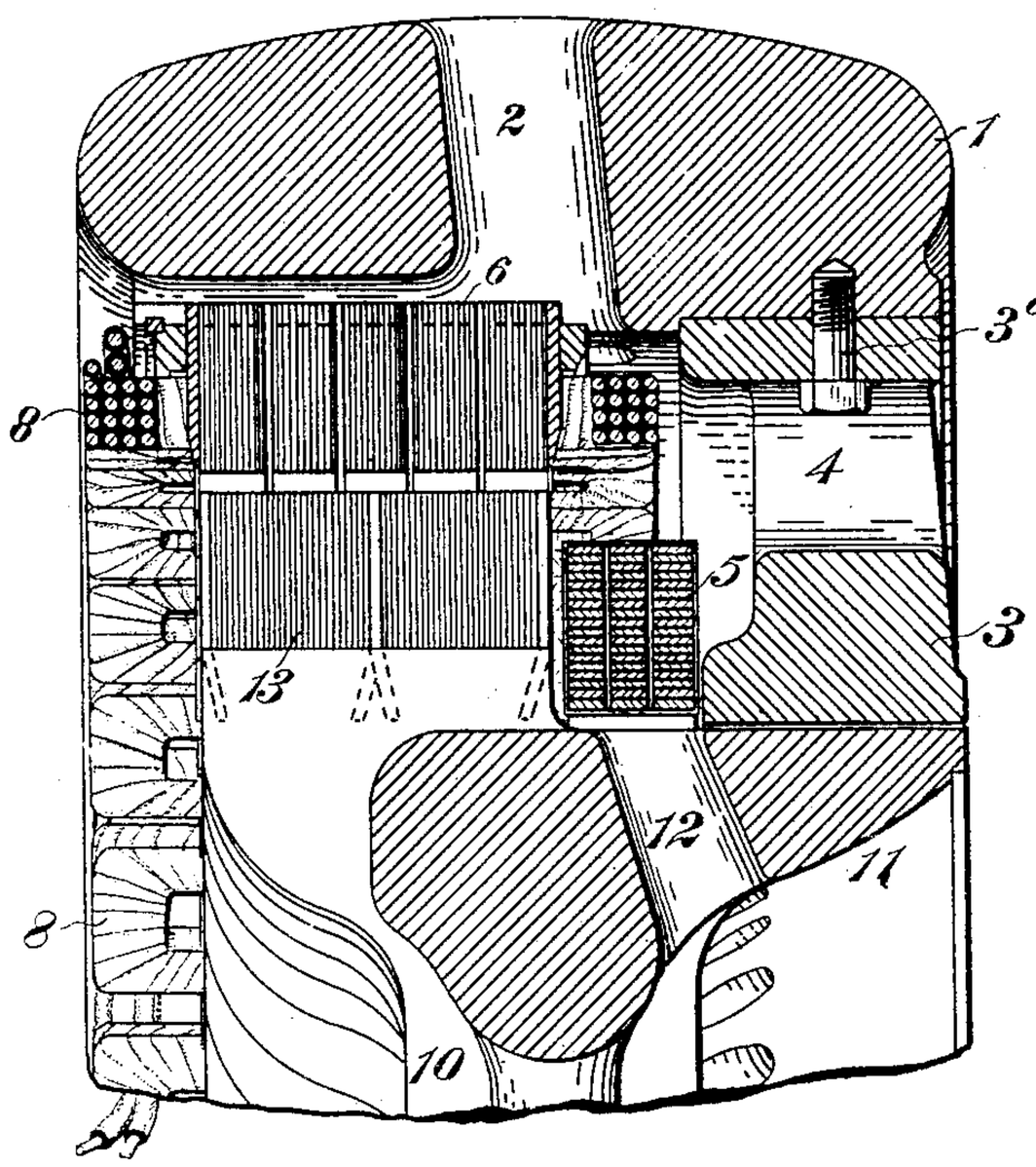
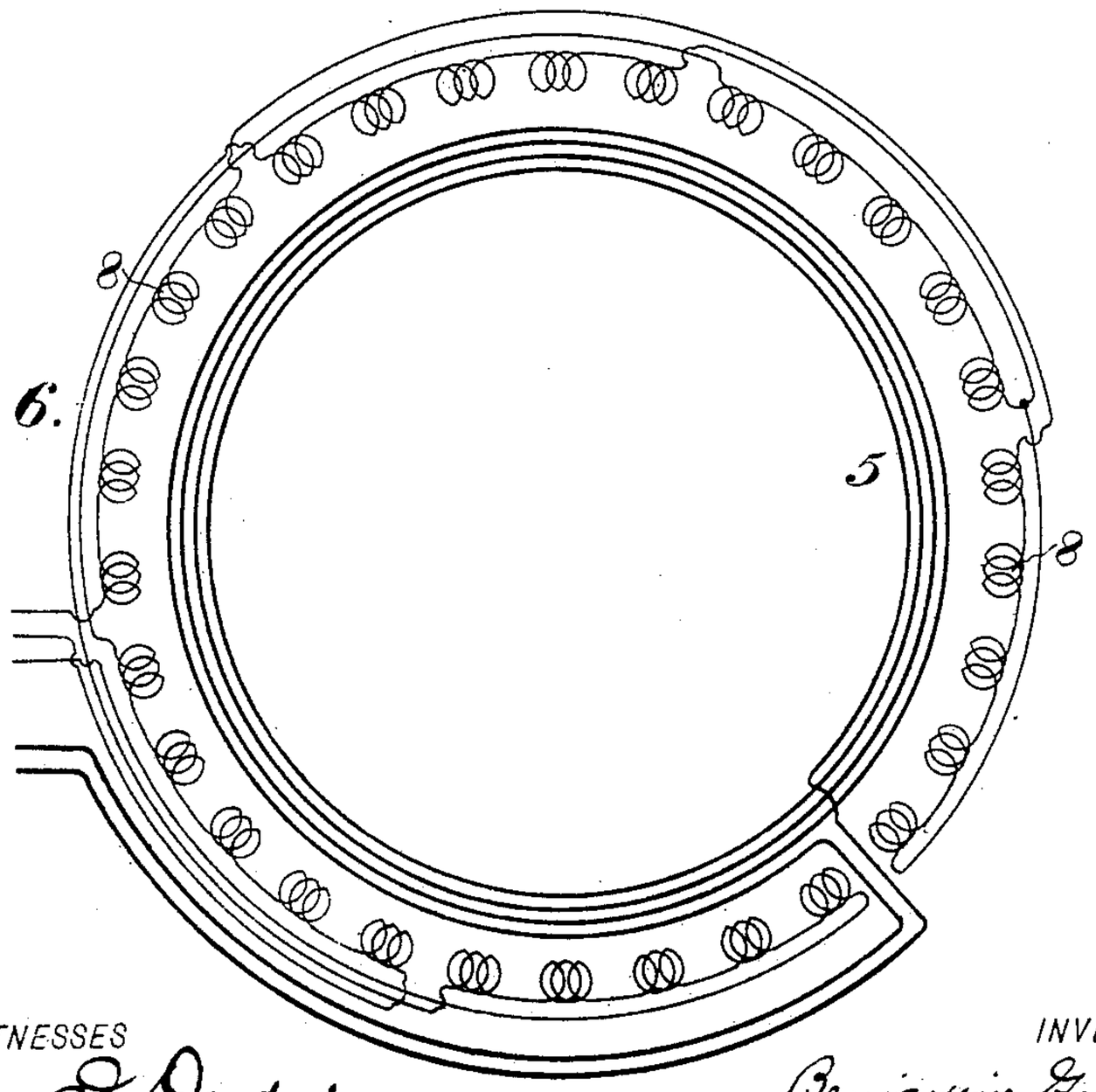


Fig. 6.



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INDUCTOR-DYNAMO.

SPECIFICATION forming part of Letters Patent No. 599,942, dated March 1, 1898.

Application filed July 12, 1897. Serial No. 644,173. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN G. LAMME, a citizen of the United States, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Inductor-Dynamos, (Case No. 747,) of which the following is a specification.

My invention relates to dynamo-electric generators, and particularly to that class of generators in which both the magnetizing and generating coils are stationary and the magnetic field is varied by the movement of a body or bodies of magnetizable metal through such magnetic field and in proximity to both the magnetizing and generating coils, as distinguished from the general class of machines in which the generating-coils are moved through the magnetic field in such manner as to cut the lines of force constituting the same.

The object of my invention is to produce a machine of the general character above specified which shall be simple and compact in construction and efficient in operation.

In the accompanying drawings, Figure 1 is an end elevation of a machine constructed in accordance with my invention, and Fig. 2 is a central transverse section of the same. Fig. 3 is a view corresponding to Fig. 1 and illustrating a modified construction. Fig. 4 is a central transverse section of the machine shown in Fig. 3. Fig. 5 is a sectional view, on a larger scale, of a portion of the machine shown in Figs. 1 and 2. Fig. 6 is a diagram of the windings of the machine shown in Figs. 1, 2, and 5.

The details of construction as illustrated in Figs. 1, 2, 5, and 6 are as follows: 1 is the stationary frame of the machine, which may be constructed of cast iron or steel and is preferably provided around its periphery with a series of ventilating-openings 2. At or near one end of the frame 1 is a heavy iron or steel ring 3, which projects inwardly a considerable distance and is provided with a series of ventilating-openings 4. As shown in the drawings, this ring is separately cast and is fastened to the main portion of the frame 1 by means of screws or bolts 3^a. This form was adopted by reason of greater facility in construction, but it is obvious that the ring 3 and frame 1 may constitute parts of a single casting, if desired.

The magnetizing-coil 5 is in the form of a ring and may be supported adjacent to the ring 3 by any suitable means. This magnetizing-coil 5, as shown, is divided circumferentially into three parts for purposes of ventilation, but it will be understood that this detail of construction is in no way essential.

On the inner periphery of the frame 1 are mounted the laminæ constituting the ring-core 6. This core is provided with ventilating-ducts by means of suitable spacing-pieces and may be supported and fastened in position by any suitable means known in the art.

The laminated core 6 is provided with inwardly-projecting teeth 7, each of which is surrounded by a generating-coil 8, these coils 8 being in the present instance connected, as indicated in Fig. 6, to form a three-phase star-winding. The particular form of connection and the specific number of phases indicated are not essential, however, to my present invention.

Upon the shaft 9 of the machine is mounted the rotating member 10, which is in the form of a spider, having a laterally-projecting ring portion 11, provided with ventilating-openings 12. The circumferential outer surface of the portion 11, which projects beyond the ventilating passages or openings 12, is in close proximity to the corresponding inner periphery of the ring 3, the air-gap between these two parts being made as small as possible, in order to provide a good magnetic circuit around the magnetizing-coil 5. The outer periphery of the rotary part 11 at the opposite end is provided with laminated pole-pieces 13, the ends of which are adjacent to the ends of the teeth 7.

It will be observed that the air-gap between the pole-pieces 13 and the stationary teeth 7 is materially greater than that between the faces of the parts 3 and 11, this construction being provided in order to decrease the self-induction in the generating-coils and the iron losses due to the local magnetic circuits around each of the generator-coils and through the adjacent pole-pieces.

Since the cross-magnetizing effect tends to

distort the useful magnetic field in such manner as to increase the induction at one edge of each pole-piece, and thus increase the iron losses, any reduction of such cross-magnetization increases the efficiency of the machine. This result may be secured by increasing the width of the air-gap between the parts 7 and 13 and without materially affecting the useful magnetic circuit, since the air-gap between the parts 3 and 11 is reduced to a minimum. This construction is rendered feasible by reason of the fact that a generating-coil is located adjacent to only one of the air-gaps in its magnetic circuit.

Referring now to Figs. 3 and 4, the portions of the machine constructed of iron or steel are, for the most part, substantially the same as those hereinbefore described and are designated by the same reference-numerals. The ring 3^b, however, is cast integral with the main frame 1, and the stationary laminated core 6 is mounted in a separate ring 14, which is fastened to the interior of the frame 1. Either this method of mounting or that shown in the other figures may be employed, as desired. The magnetizing-ring 5 in this form of machine is also the same as that hereinbefore described, but the generating-winding 15 is a distributed winding located in narrow slots in the inner periphery of the core 6 and may be connected in any known manner to provide one or more phases of current, as may be desired.

Whatever be the particular connection of the several coils with each other or the number of phases of current, there will be several slots corresponding to each phase and to each pole.

While I have shown and described specific details of construction, I desire it to be understood that such details may be varied without departing from the spirit and scope of the invention.

I claim as my invention—

In an inductor-dynamo, a magnetizing-coil provided with a magnetic circuit having a relatively wide air-gap and a relatively narrow air-gap, in combination with a set of generating-coils adjacent to said wide air-gap, substantially as and for the purpose described.

In testimony whereof I have hereunto subscribed my name this 10th day of July, A. D. 1897.

BENJ. G. LAMME.

Witnesses:
WESLEY G. CARR,
HUBERT C. TENER.