No. 752,691. PATENTED FEB. 23, 1904.

L. J. LE PONTOIS.

INDUCTOR ALTERNATOR.

APPLICATION FILED AUG. 22, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1

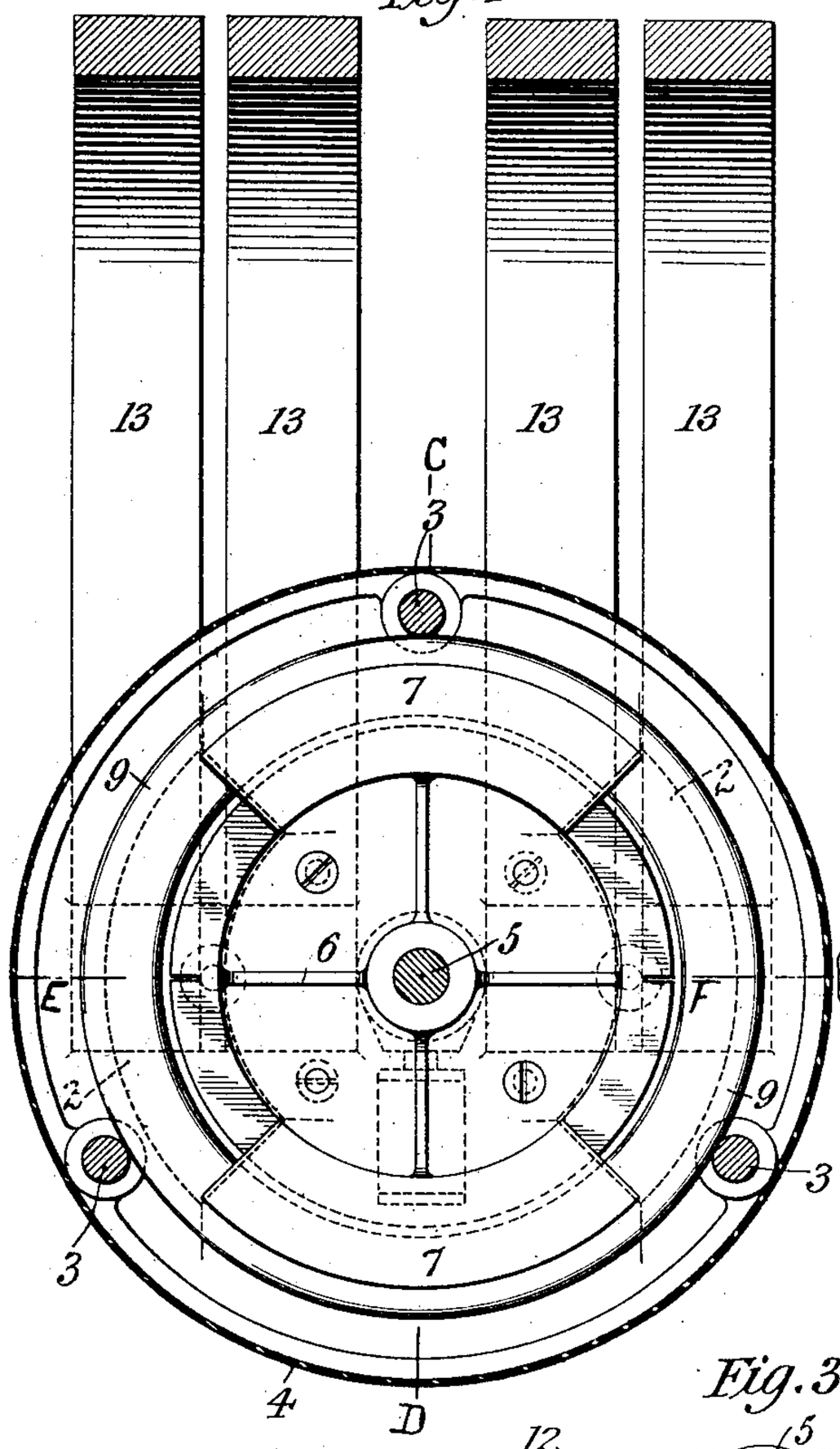


Fig. 2

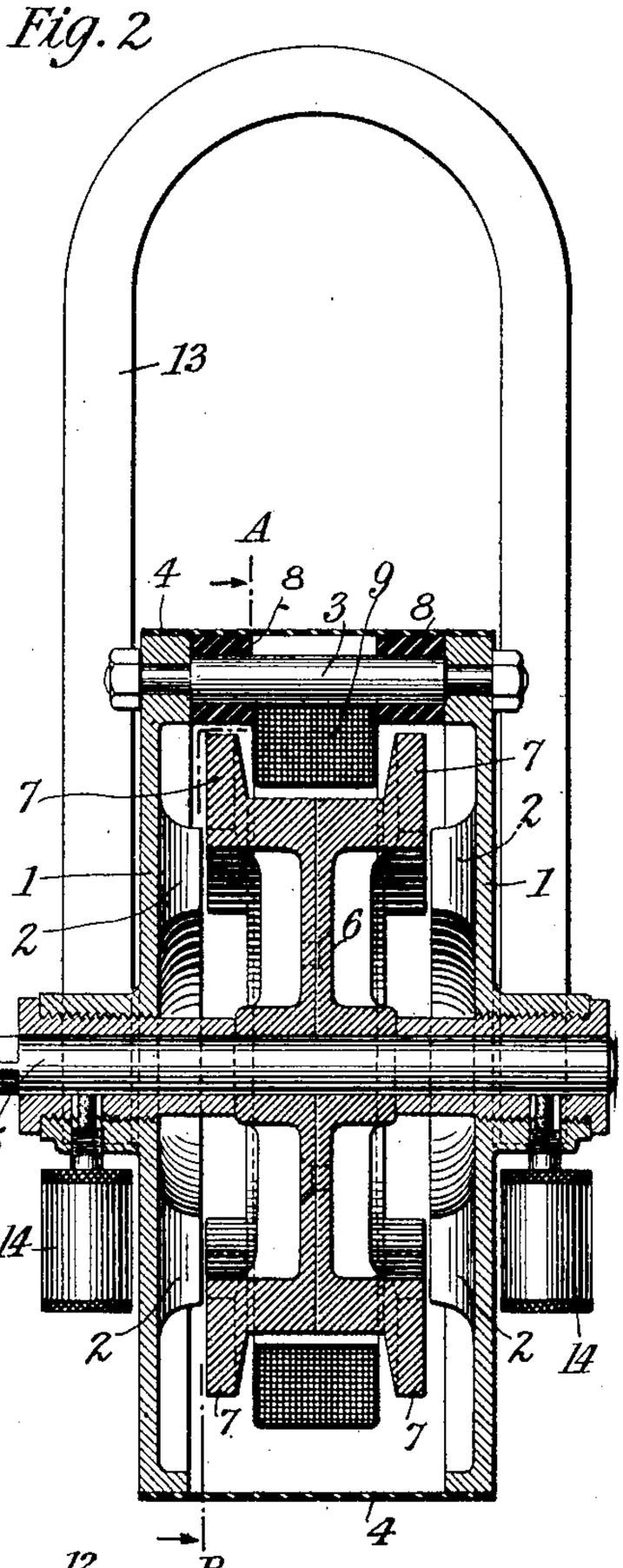
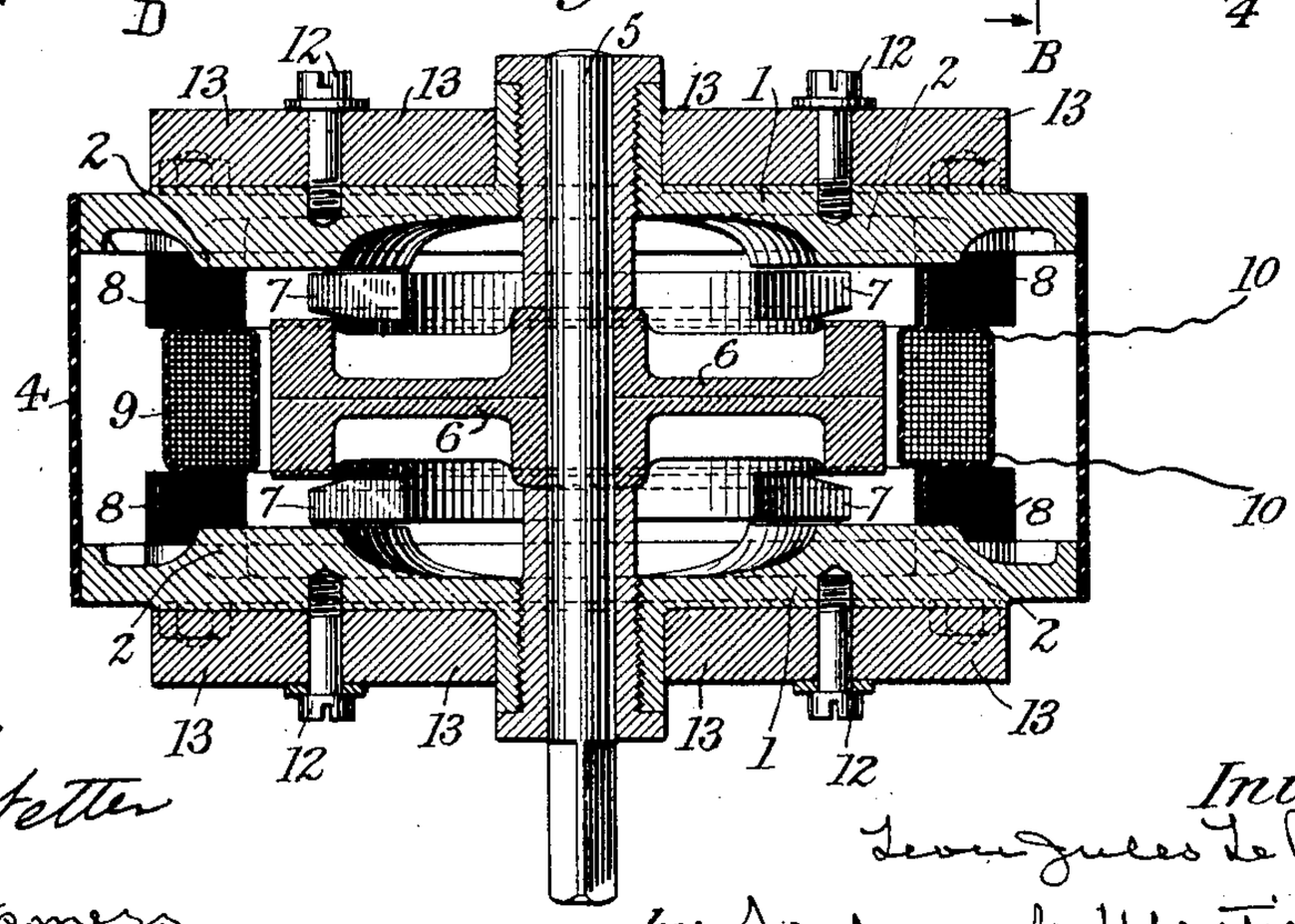


Fig. 3



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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 5

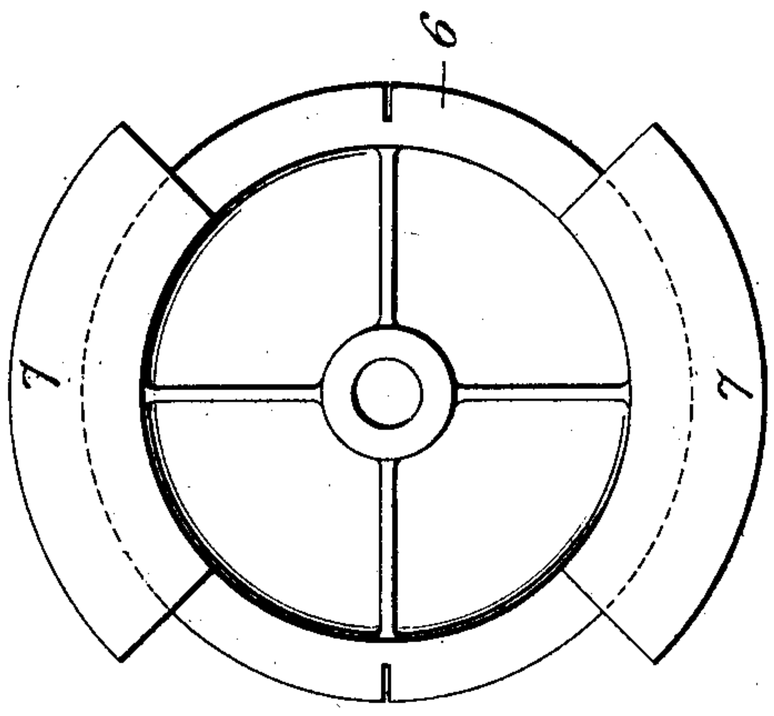
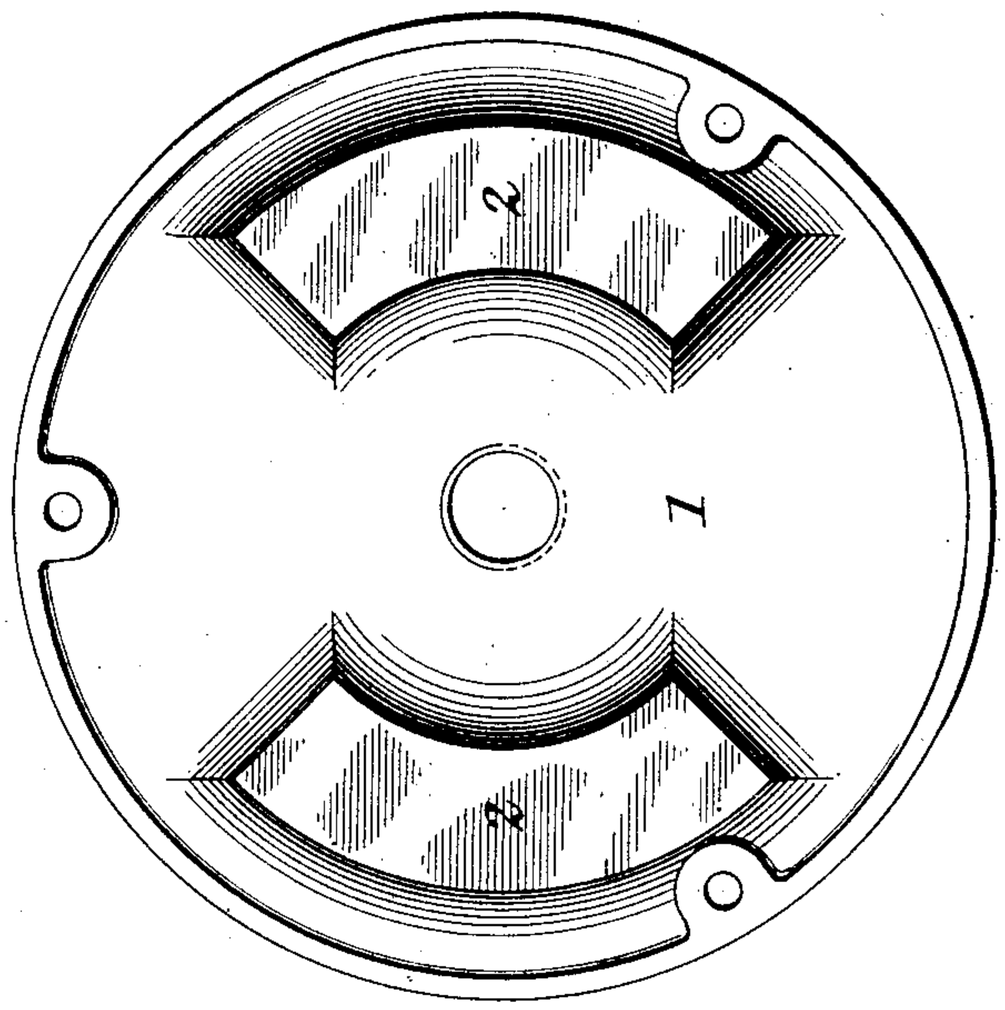


Fig. 4



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No. 752,691. Patented February 23, 1904.

UNITED STATES PATENT OFFICE.

LEON JULES LE PONTOIS, OF NEW ROCHELLE, NEW YORK.

INDUCTOR-ALTERNATOR.

SPECIFICATION forming part of Letters Patent No. 752,691, dated February 23, 1904.

Application filed August 22, 1903. Serial No. 170,473. (No model.)

To all whom it may concern:

Be it known that I, LEON JULES LE PONTOIS, a citizen of the Republic of France, and a resident of New Rochelle, Westchester county, New York, have invented a new and useful Improvement in Inductor-Alternators, of which the following is a specification.

My invention relates to a new type of inductor-alternator especially adapted for the production of current required to cause sparks in internal-combustion engines.

This form of inductor-alternator is particularly adapted for use with an engine which runs at constant speed, as it is unnecessary in such a case to change the time of sparking or the time of ignition of the combustible gas. This alternator has been calculated so as to produce a sufficient current at low speed to start the engine, it being a well-known fact that at higher speed the armature reaction on the field-magnet tends to maintain the current almost constant in spite of the great variations of the speed.

In the following I have described with reference to the accompanying drawings a structure embodying and illustrating my invention, the features thereof being more particularly pointed out hereinafter in the claims.

Figure 1 is an elevation of the apparatus along the line A B of Fig. 2 looking in the direction of the arrows. Fig. 2 is a sectional view along the line C D of Fig. 1. Fig. 3 is a sectional view along the line E F of Fig. 1. Fig. 4 is a plan view of the stationary pole-piece, and Fig. 5 is a plan view of the armature or inductor.

Similar numbers of reference indicate similar parts throughout the several views.

1 1 indicate two polar disks similar to each other, each having on its face a pair of segmental polar projections 2 2, disposed diametrically opposite each other. The disks 1 1 are held in fixed position relative to each other by pins 3 3 3, preferably of some diamagnetic metallic substance, such as brass, in such manner that the pairs of polar projections 2 2 are opposite each other, with an air-gap between them.

4 indicates a suitable cover extending around the circumferences of the disks and over the space between them.

Within the air gap or space between the disks 1 1 on shaft 5, journaled in suitable bearings in the disks 1 1, is mounted an armature or inductor 6, carrying four segmental polar projections or wings 7 7 7 7, two on each side, as shown in Fig. 2, the projections on each side respectively being disposed diametrically opposite each other, as shown in Fig. 5. The polar projections 7 7 are adapted to coincide in shape and size with the polar projections 2 2 on disks 1 1 and are so disposed on inductor 6 that in the rotation of the latter they will pass over the faces of the polar projections 2 2 with as slight an air-gap between them as is possible.

Clamped between insulating-collars 8 8 on pins 3 3 3 in such manner as to hold it between the polar projections 7 7 7 7 on inductor 6 is a coil 9, connected by wires 10 10 with a suitable circuit-breaker (not shown) in the combustion-chamber of the engine.

Clamped to the outer faces of disks 1 1 by means of set-screws 12 12 are four permanently-magnetized horseshoe-magnets 13 13 13 13, the poles of the same magnetic sign being clamped to the same disk.

14 14 indicate oil-cups adapted to lubricate the bearings of shaft 5.

The inductor 6, as shown in Fig. 5, is preferably slotted for a portion of its diameter in order to prevent the formation of secondary currents in the inductor.

The shaft 5 may be driven by any convenient means.

It will be noted that as the rotating member or inductor 6 passes through its complete revolution its projections will coincide with the projections on the disks 1 1 twice in each revolution and that at that point the total magnetic reluctance of the iron circuit will be minimum and that the magnetic reluctance will be maximum at the time when the projections of the rotating inductor 6 are most distant from the projections on the disks 1 1 and at right angles thereto. The disks 1 1 being polarized at opposite polarity by means of the horseshoe-magnets 13 13, a magnetic

circuit is thus formed from one pole of the horseshoe-magnets 13 through the polar projections 2 2 of one of the disks 1, projections 7 7, and inductor 6, polar projections 2 2 on the other disk 1 to the opposite pole of the magnets 13. As the inductor 6 is rotated, as has been stated, twice in every revolution, the magnetic flux will pass through its periods of maximum and minimum intensity, thus causing an alternating current in the coil 9. The projections 2 2, as is obvious, concentrate the magnetism at those points of the disks.

I am aware that the exact shape and arrangement of the parts may be considerably deviated from without departing from the spirit of my invention, and I do not restrict myself to the details as shown and described.

What I claim, and desire to secure by Letters Patent of the United States, is—

1. In an apparatus of the character described oppositely-polarized pole-pieces separated from each other, an inductor arranged between said pole-pieces, polar projections on said inductor arranged opposite each other, means for moving said pole-pieces and said inductor relative to each other, and a stationary coil adjacent to said inductor.

2. In an apparatus of the character described oppositely-polarized stationary pole-pieces separated from each other, an inductor adapted to rotate between said pole-pieces, polar projections on said inductor arranged opposite each other and a stationary coil adjacent to said inductor.

3. In an apparatus of the character described oppositely-polarized stationary pole-pieces separated from each other, polar projections on each of said pole-pieces arranged opposite each other, an inductor adapted to rotate between said pole-pieces, polar projections on said inductor arranged opposite each other and a stationary coil adjacent to said inductor.

4. In an apparatus of the character described oppositely-polarized stationary pole-pieces separated from each other, a plurality of polar projections on each of said pole-pieces, each of the polar projections on one pole-piece being opposite one on the other pole-piece, an inductor adapted to rotate between said pole-pieces, a plurality of polar projections on said inductor adapted to register with the polar projections on the pole-pieces during a portion of each period of revolution and a stationary coil adjacent to said inductor.

5. In an apparatus of the character described a pair of disks separated from each other, a pair of polar projections on each disks diametrically opposite each other, the polar projections on one disk being opposite those on other disk, magnets having the poles of one sign adjacent to one of said disks and the opposite poles adjacent to the other of said disks, an inductor adapted to rotate between said disks, two pairs of polar projections on said inductor, each pair being side by side and diametrically opposite from the other pair and so arranged with respect to the polar projections on the disks that they will successively vary the reluctance of the magnetic circuit, and a stationary coil supported between the pairs of polar projections on the inductor, substantially as described.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

LEON JULES LE PONTOIS.

Witnesses:
GEORGE G. SCHREIBER,
SEABURY C. MASTICK.