

B. P. REMY.
ELECTRIC IGNITION GENERATOR.

APPLICATION FILED JULY 5, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

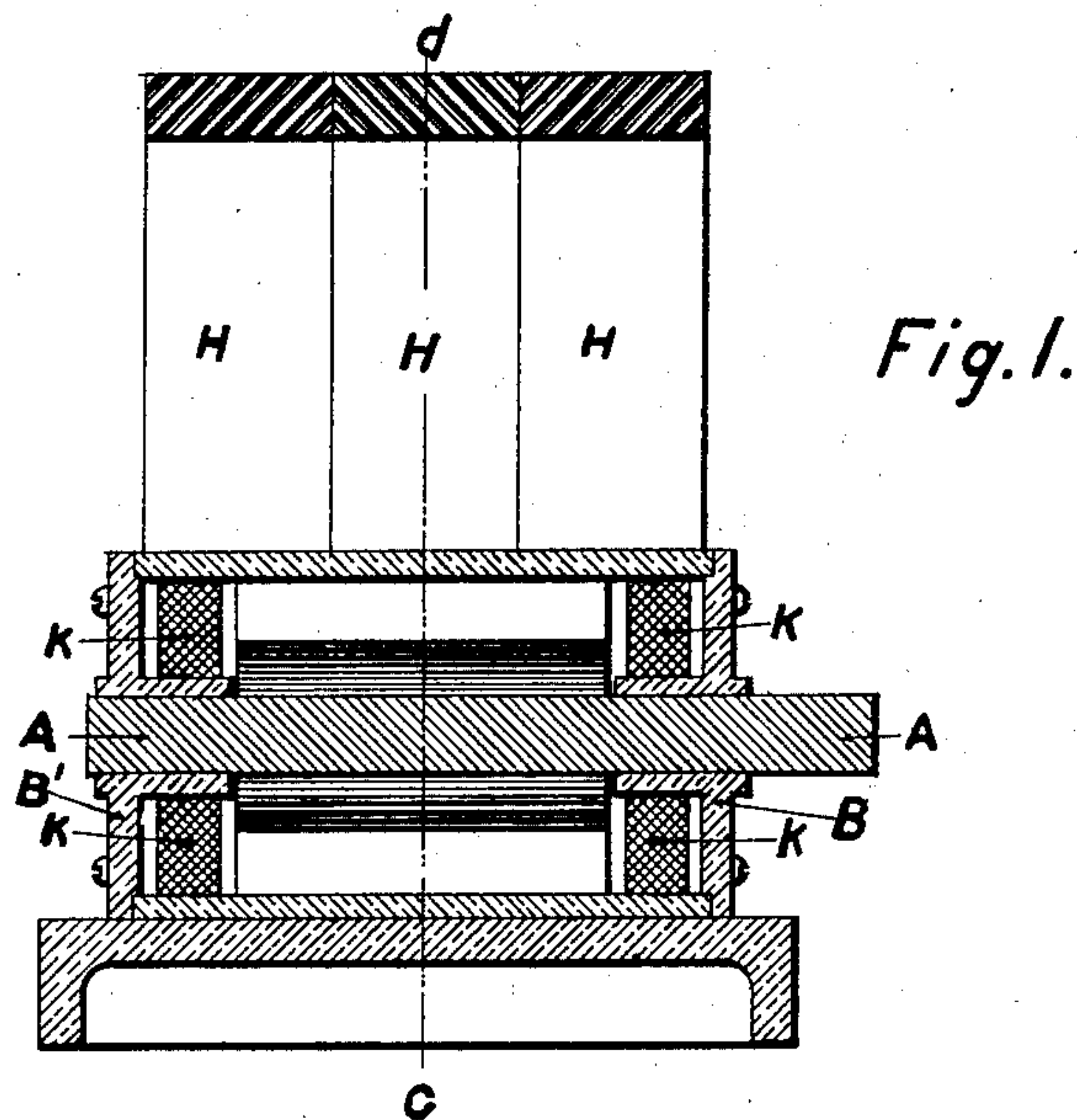
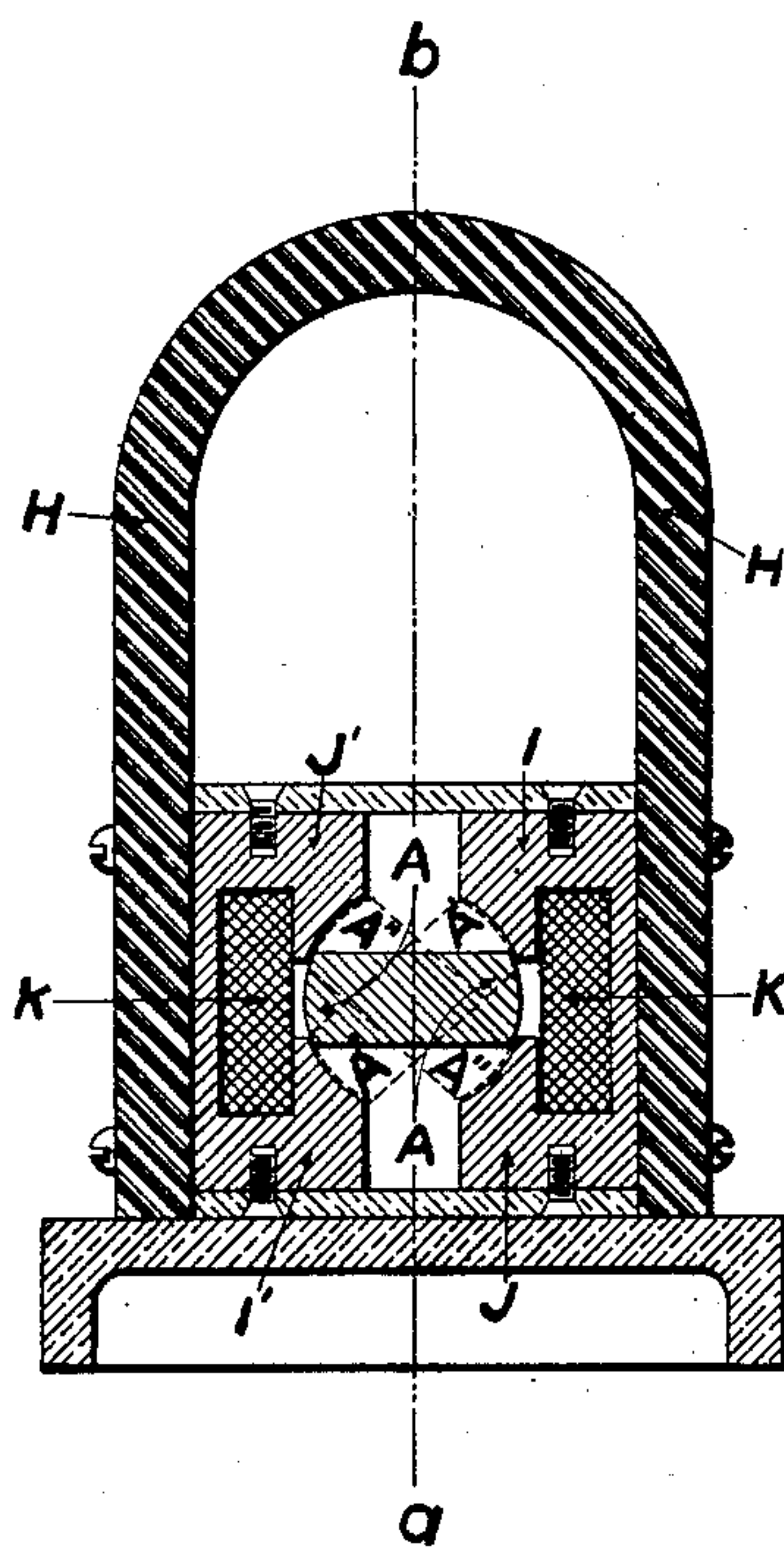


Fig. 2.



Witnesses.

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No. 734,955.

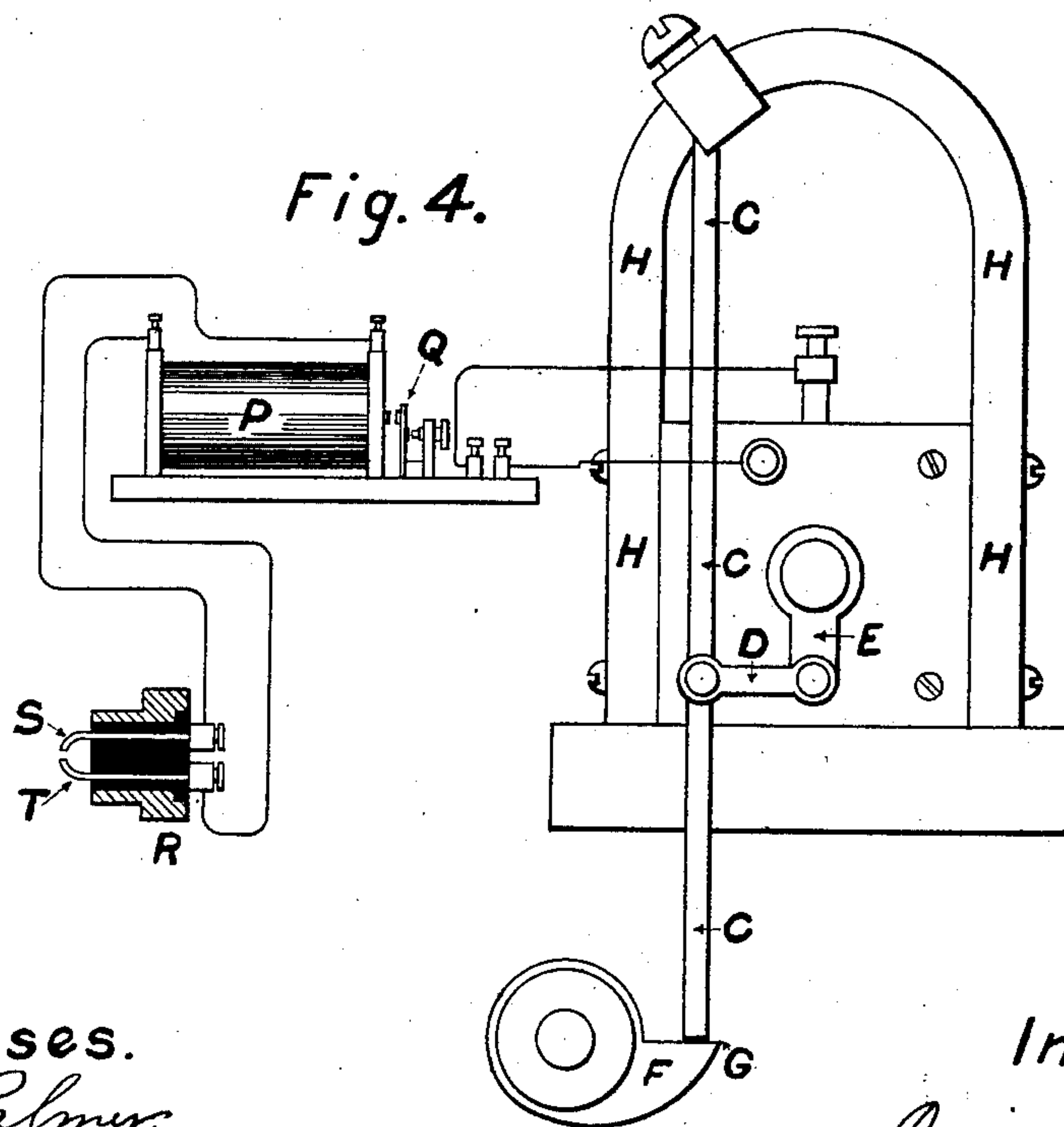
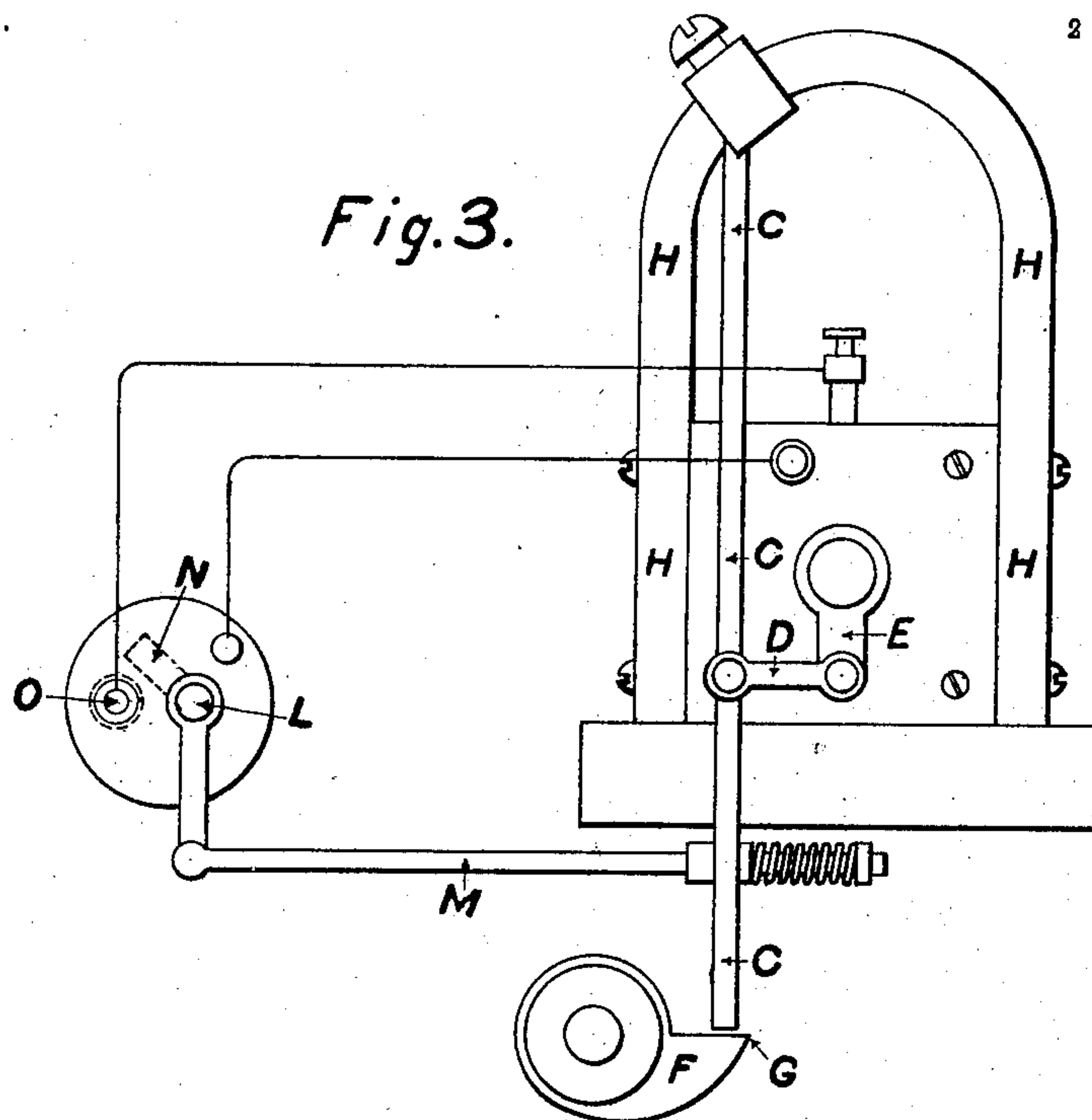
PATENTED JULY 28, 1903.

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2 SHEETS—SHEET 2.



Witnesses.

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Inventor

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UNITED STATES PATENT OFFICE.

BENJAMIN P. REMY, OF ANDERSON, INDIANA, ASSIGNOR TO REMY ELECTRIC COMPANY, OF ANDERSON, INDIANA, A CORPORATION OF INDIANA.

ELECTRIC IGNITION-GENERATOR.

SPECIFICATION forming part of Letters Patent No. 734,955, dated July 28, 1903.

Application filed July 5, 1902. Serial No. 114,352. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN P. REMY, a citizen of the United States, residing at Anderson, in the county of Madison and State of Indiana, have invented a new and useful Improvement in Electric Ignition-Generators, of which the following is a specification.

My invention relates to improvements in generators furnishing the electric current to produce the spark for igniting internal-combustion or hydrocarbon motors or gas-engines, and in my invention the generator is not driven with a rotary motion in the usual manner, but is given a rapid motion for thirty degrees or forty degrees, more or less, by a spring which may be strained by a cam attached to the mechanism of engine which is to be ignited, as hereinafter described.

The objects of my invention are, first, to provide an ignition system having no moving contacts in its circuit—such as commutator and brushes, collector rings or shafts, and journals—as such arrangements are liable to become fouled by dirt or for other reasons fail to properly carry the current and render the system inoperative; second, to provide an electric current of the same strength regardless of the speed of the engine, so as to furnish the proper spark at all engine speeds and also to furnish the proper spark for starting when engine is turned by hand; third, to make the igniting system as simple as possible, so that no belts, friction-wheels, gears, batteries, switches, or coils are required; fourth, to provide a generator suitable for either contact-sparker or the jump-spark system. I accomplish these objects by the mechanism illustrated by the accompanying drawings, in which—

Figure I shows a section along the axis on the line *a b*, Fig. II. Fig. II is a section at right angles to the shaft on the line *c d*. Fig. III is an end view of generator with diagram showing how same may be connected to an engine using the contact-sparker. Fig. IV shows how same may be connected when used in connection with a jump-spark system.

Similar letters refer to similar parts throughout the several views.

The inductor A A A is rotatively mounted

in bearings B and B' and is normally held in position A A (shown heavy in Fig. II) by spring C C C C, working through the link D and crank E. In operation the spring-bar C is strained to the right by spiral cam F, preferably mounted on engine-shaft or geared therewith, and when point G of cam passes end of spring-bar C spring-bar C through link D and crank E quickly moves inductor A A from position shown dotted A' A' to position shown A'' A''. When A A is passing position shown A A, the magnetic flux, furnished by powerful permanent magnets H H H H, will be shifted from pole-tips I and I' to J and J', thus reversing the magnetism through coil K, thereby generating a momentary current in coil K. To provide a means of opening the contact-making devices in the engine-cylinder, which may be of the ordinary form shown diagrammatically in Fig. III, at the right instant when current generated in coil K by movement of inductor A A is the strongest, the movable electrode L is connected by plunger-rod M to spring-bar C and fits loosely in same, so as to transmit a blow from C to L when A A reaches position shown A A, or thereabout, thereby opening the circuit in the cylinder of engine by removing electrode-finger N from insulated electrode O at the time when current generated in coil K is the strongest.

It is understood that mechanism designated by L and M might be varied considerably, and the mechanism illustrated is not claimed as part of this invention.

In the foregoing consideration has only been given to the application of my invention to the system of ignition variously known by the following different names: "contact," "make-and-break," "touch-spark," "wipe-spark," and "primary ignition." Fig. IV shows the application of my invention to a jump-spark system, and in the drawings, P represents diagrammatically an ordinary Ruhmkorff or induction coil commonly used for jump-spark ignition with ordinary vibrator Q. R represents an ordinary jump-spark plug to be screwed into the wall of combustion-chamber. When current is generated in coil K, as previously described, and

coil P, vibrator Q, and plug R perform their ordinary functions, a spark will pass between S and T in the usual manner.

I am aware that prior to my invention rotarily-driven dynamos and magneto-generators have been used for igniting internal-combustion engines; but

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

10 1. In an electric generator, one or more magnets, a stationary armature between the poles of said magnets and an oscillatory inductor passing through the armature.

2. In an ignition-generator the combination 15 with the cylinder of an internal-combustion engine and a sparking device of a generator adapted to furnish an electric current when said generator has been in motion but a short time and a spring adapted to furnish proper 20 motion to said generator and a means of straining said spring.

3. In an igniting apparatus for gas-engines the combination with the combustion-cylinder of the engine and a sparking device, of 25 field-magnets, stationary winding, movable inductor, spring adapted to move said inductor and a means of straining said spring.

4. The combination in an electric ignition 30 apparatus for explosive-engines, with a cylinder and a sparking device, of field-magnets, stationary winding adjacent to poles of said magnets, an inductor adapted to shift the magnetic flux of said magnets with relation to said stationary winding, a spring to move 35 said inductor and a means of straining said spring.

5. The combination in an electric ignition 40 apparatus, of a sparking device, field-magnets, stationary winding adjacent to poles of said magnets, an inductor adapted to shift the magnetic flux of said magnets with relation to said stationary winding, a spring to move said inductor and a means of straining 45 said spring.

6. The combination with an internal-com-

bustion cylinder and a sparking device, of field-magnets, stationary winding adjacent to poles of said magnet, an inductor within said magnets and winding, said inductor being so shaped and capable of such motion as 50 to shift the magnetic flux of said magnets with relation to said winding so as to generate an electric current in said winding, a spring to move said inductor and a means of straining said spring. 55

7. The combination in an electric ignition-generator of a cylinder, a sparking device therein, field-magnets, stationary winding adjacent to poles of said magnets, an inductor within said magnets and winding, said 60 inductor being so shaped and capable of such motion as to shift the magnetic flux of said magnets with relation to said winding so as to generate an electric current in said winding a spring to move said inductor and a 65 means of straining said spring.

8. In an ignition-generator the combination with a combustion-cylinder and a sparking device, of magnets, winding, inductor, spring and means of straining said spring substantially as and for the purpose set forth. 70

9. The combination, with a sparking device, of one or more powerful magnets, a stationary armature placed between the poles of said magnets, and an inductor passing through 75 the armature, having an oscillatory movement to reverse the magnetic flux through the coils of said armature.

10. In an ignition apparatus for gas-engines, the combination with a cylinder and a sparking 80 ing device, of one or more powerful magnets, a stationary armature placed between the poles of said magnets, and an inductor passing through the armature having an oscillatory movement to reverse the magnetic flux 85 through the coils of said armature.

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Witnesses:

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