E. W. PRESBREY.

KNOCKDOWN ARMATURE.

APPLICATION FILED MAY 19, 1908.

934,212.

Patented Sept. 14, 1909.

2 SHEETS—SHEET 1.

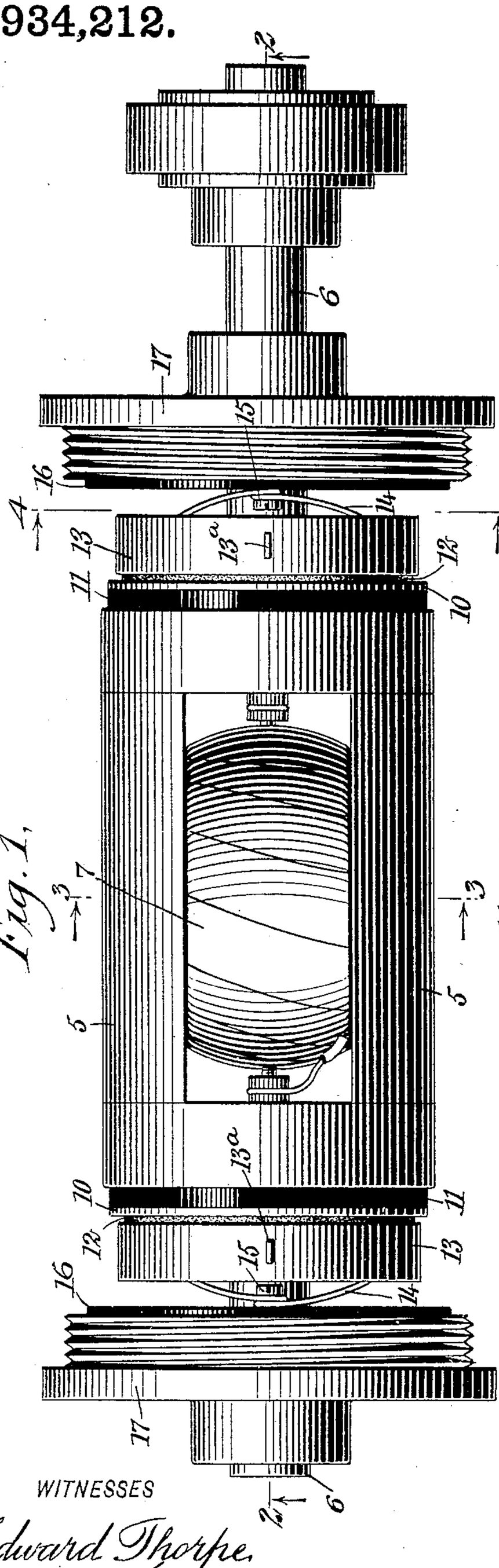

Fig. 1.

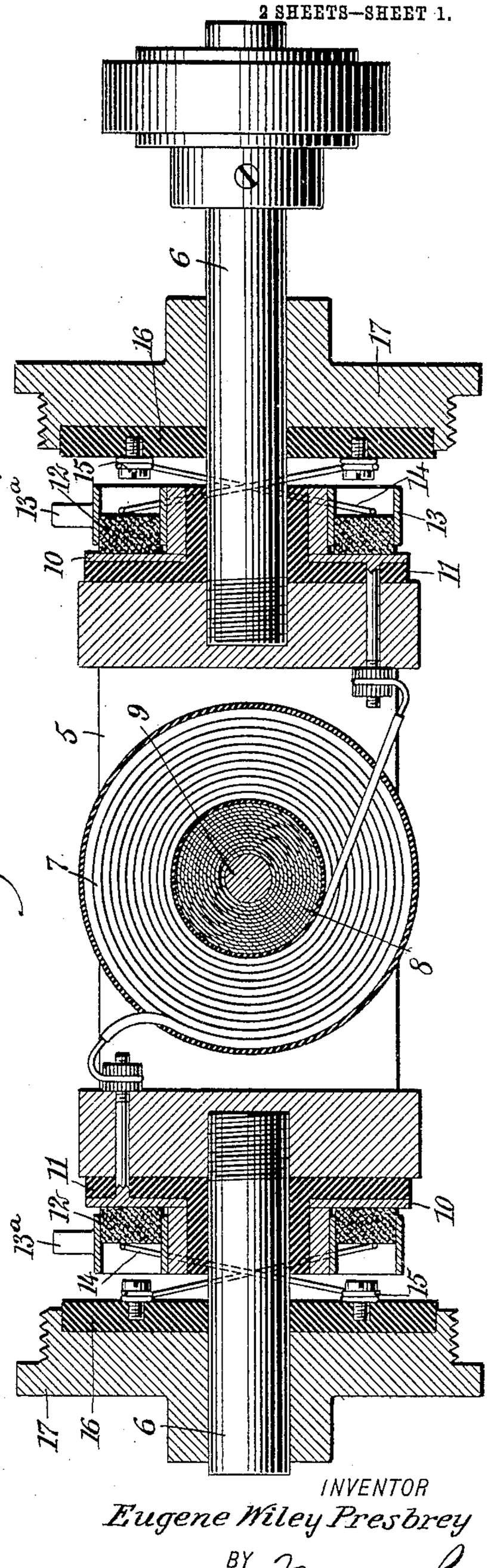

Fig. 2.

WITNESSES

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Fig. 3,

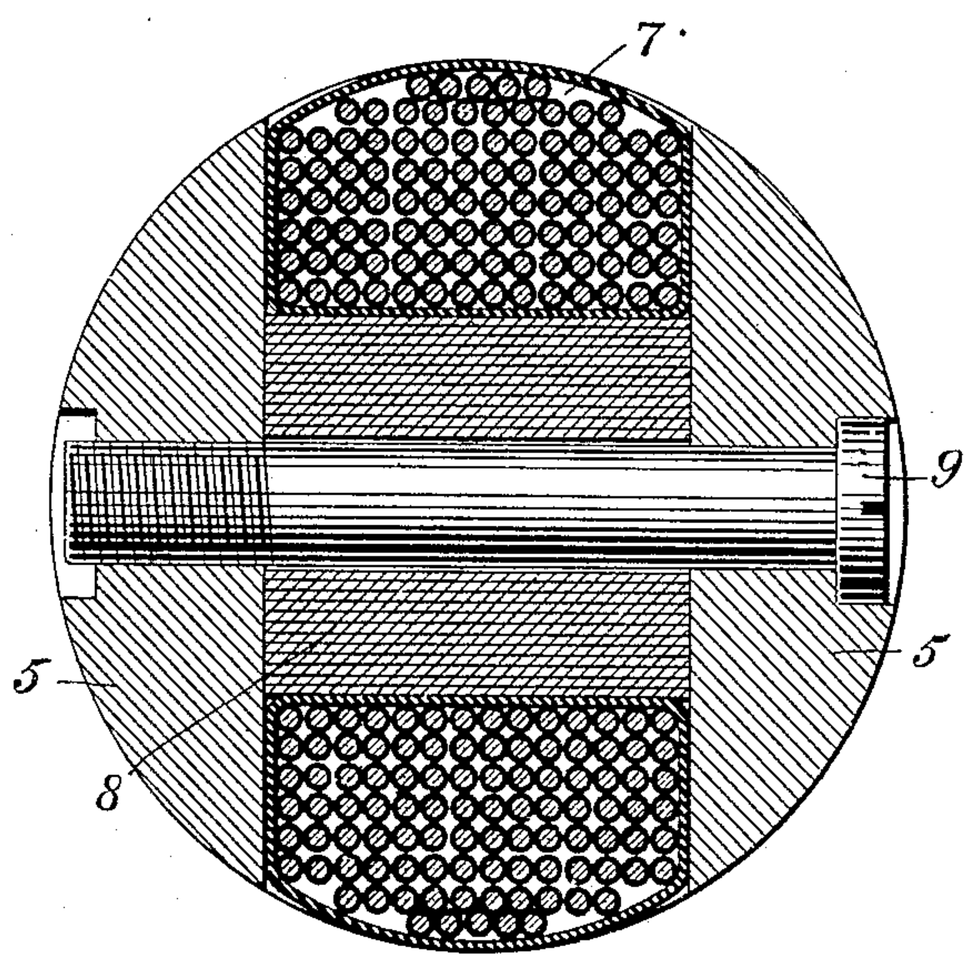
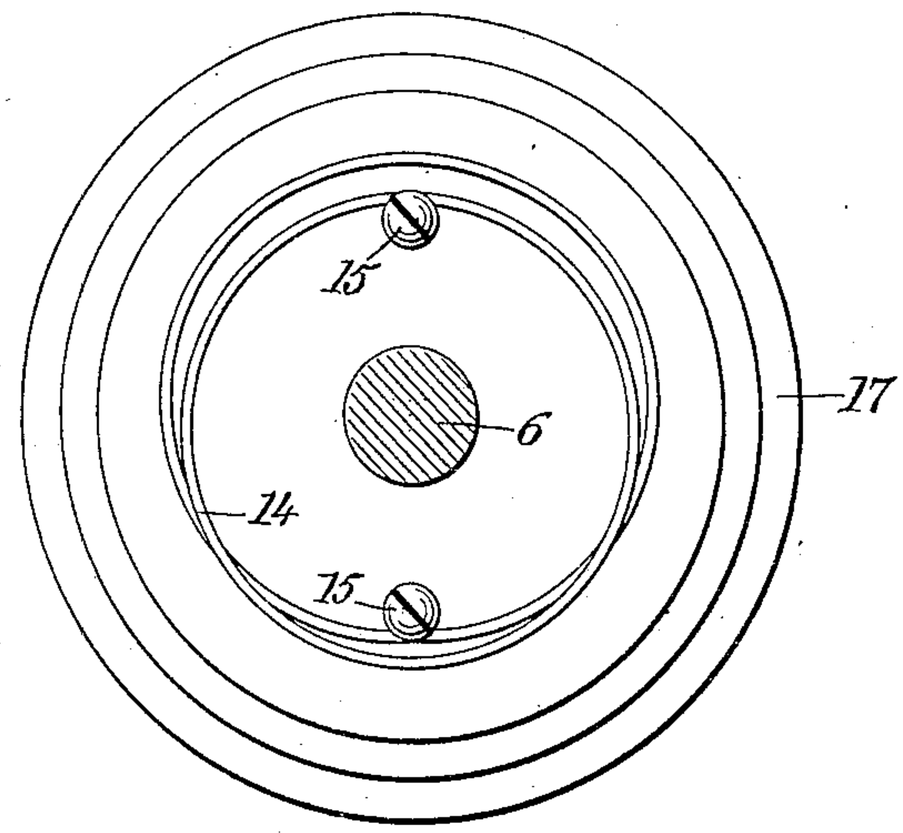


Fig. 4.



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UNITED STATES PATENT OFFICE.

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KNOCKDOWN ARMATURE.

934,212. Specification of Letters Patent. Patented Sept. 14, 1909.

Application filed May 19, 1908. Serial No. 433,648.

To all whom it may concern:

Be it known that I, EUGENE WILEY PRESBREY, a citizen of the United States, and a resident of the city of New York, borough of Manhattan, in the county and State of New York, have invented a new and Improved Knockdown Armature, of which the following is a full, clear, and exact description.

This invention is an improvement in what I preferably term a knockdown armature, and has in view the provision of a magnetic armature that shall be reasonably serviceable under all conditions that govern the use of electricity for ignition purposes of internal combustion engines; an armature that shall deliver a usable current at both high and low speeds, without governors or regulators and without danger of overheating the coil; an armature that will permit the coils to be wound, insulated and tested outside of the armature; an armature in which the coil and core are easily removed or replaced for repair, experiment, or substitution of other coils and cores; an armature coil that shall because of its construction and relative location have no wire unexposed to the magnetic lines, no dead wire ends, but that shall have all of its wire uniformly exposed to the magnetic field and that shall utilize in minimum space the maximum number of magnetic lines; to provide for taking off the current in an efficient manner by a device that at the same time compels the armature to run smoothly and with reduced friction, the whole device or devices in combination making for greater security and convenience, economy in manufacture and ease in manipulation.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a plan of an armature embodying my invention; Fig. 2 is a longitudinal section of the same substantially on the line 2—2 of Fig. 1; Fig. 3 is a cross-section on the line 3—3 of Fig. 1; and Fig. 4 is a cross-section on the line 4—4 of Fig. 1.

In the preferred construction of the armature I make use of two soft iron pole cheeks 5, 5, longitudinally arranged, spaced apart and secured to non-magnetic metal ends that carry the shaft ends 6, and in connection with the pole cheeks provide a slotted cylinder for the reception of a coil 7, the slot providing additional room for ventilation. A core of very thin soft iron 8, tightly-spirally rolled into a solid cylinder accurately fitting between the pole cheeks, furnishes a laminated path from each to the other for the magnetic lines. The coil with proper intervening insulation is wound upon the laminated core, and its diameter is approximately of the width of the pole cheeks from which it is properly insulated. This coil is fully prepared and tested before it is assembled in the armature. The coil and core constitute a perfect solenoid, the magnetic lines first passing from every direction across the face of the coil, then converging through it by means of the laminated core, and across the opposite face of the coil in passing out. As this coil is wound symmetrically, with all its turns parallel, it is obviously in the best form for the induction of the current. The coil and core are held in place by means of a single screw 9 which passes through the pole cheeks and core. With this screw in place it becomes a part of the core and magnetic path. An alternating current passes through the non-magnetic ends to the copper face-plates 10, the latter being separated from said ends by insulating washers 11. The current is taken off by carbon rings 12 inclosed in copper shells 13 that also inclose and protect springs 14 that hold the carbons in contact with the insulated ends, and at the same time compel the armature to run smoothly. Each of these springs consists of two intersecting wire loops which are fastened by suitable means, such as screws 15, to two insulating washers 16 bedded in the face of shaft bearings 17. The current is taken from the shells by means of clips 13^a so held as to prevent the carbon rings from turning. These rings offer extra large contact, both of carbon and copper, for the collection and easy delivery of the current and cannot get out of place or wear unevenly and so disturb the delivery of the current.

The armature is mounted in a field core within permanent magnets, and by reason of the particular arrangement and construction gives a high potential current of unusually steady character with a low number of revolutions. It is in no danger of burning out its coil at high speed, and consequently it needs no governing or protecting device. Its capacity can be changed by the removal of

the single screw and the substitution of another coil of any size of wire that may be desired.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. The combination of soft iron pole cheeks arranged longitudinally of and revoluble about a common intermediate axis, a soft laminated iron core extending between said pole cheeks substantially transversely of said axis, a screw extending between the pole cheeks and through the core, forming a part thereof, and a symmetrical coil wrapped about the core.

2. The combination of soft iron pole cheeks, non-magnetic ends rigidly attached to the pole cheeks and forming in connection therewith a slotted cylinder, bearings, shaft ends attached to the cylinder ends and journaled in the bearings, metallic face-plates surrounding the shaft ends at the outside of the cylinder and insulated therefrom, a generating coil arranged in the slot of the cylinder having its terminals connected with the metallic face-plates, metallic shells surrounding and insulated from the shaft ends, carbon rings within said shells in contact therewith, and springs interposed between the bearings and shells, forcing the carbon rings in contact with the metallic face-plates.

3. The combination of metallic face-plates, of conducting material, a generating coil having its terminals respectively connected with the metallic face-plates, shells of conducting material arranged adjacent to the metallic face-plates, and carbon rings in contact with the shells and metallic face-plates.

4. The combination of shells of conducting material, a generating coil arranged intermediate the shells and revoluble relatively thereto, metallic face-plates in fixed relation to the coil and connected to the terminals thereof, and carbon rings in contact with the face-plates and shells.

5. The combination of shells of conducting material, a generating coil arranged intermediate the shells and revoluble relatively thereto, metallic face-plates in fixed relation to the coil and connected to the terminals thereof, carbon rings fitting within the shells and movable longitudinally therein, and springs pressing the rings toward the face-plates.

6. The combination of metallic shells, soft iron pole cheeks, end pieces attached to the pole cheeks and forming in connection therewith a slotted cylinder, bearings, shaft ends attached to said end pieces of the cylinder, passing through the shells and journaled in said bearings, metallic face-plates arranged at the outside of the end pieces and insulated therefrom and from the shaft ends, a generating coil having its terminals connected to the face-plates, carbon rings movable longitudinally within the shells, and an intersecting loop spring carried by and insulated from the bearings and forcing the rings to the face-plates.

7. The combination of shells of conducting material, a generating coil revoluble relatively to the shells, having its terminals electrically connected to the annular conductors, and conductor rings arranged within the shells in contact therewith and in contact with the annular conductors.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EUGENE WILEY PRESBREY.

Witnesses:

W. W. Holt,

John P. Davis.