

C. A. VANDERVELL & F. I. HOFFMAN.
MAGNETO ELECTRIC MACHINE FOR IGNITION PURPOSES.
APPLICATION FILED SEPT. 25, 1908.

939,357.

Patented Nov. 9, 1909.
2 SHEETS—SHEET 1.

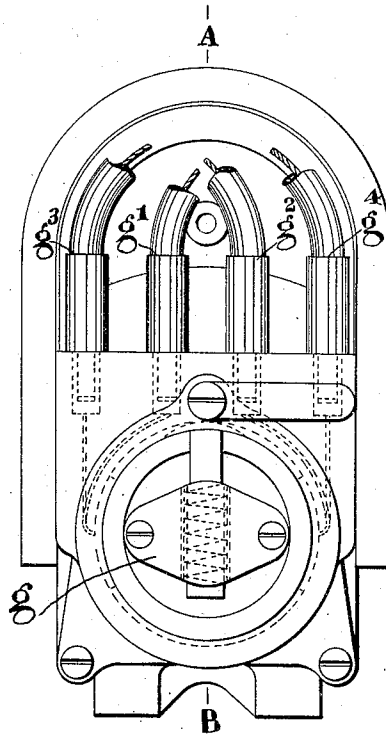


Fig. 1.

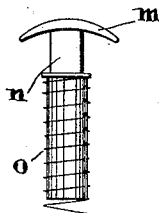


Fig. 5.

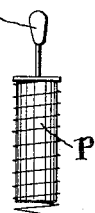


Fig. 6.

Attest.
Bent M. Stahl.
Edward N. Sarton

Inventors.
Charles A. Vandervell.
Frederick I. Hoffman
by Wm. Wallace White
Att'y's

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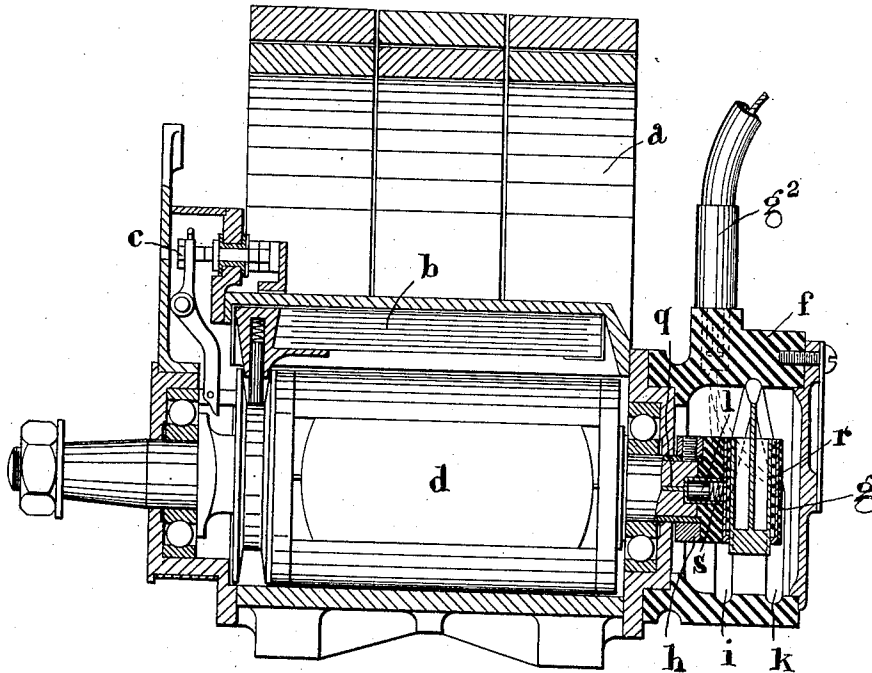


Fig 2.

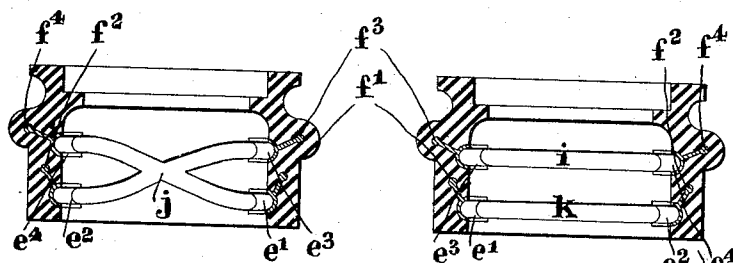


Fig. 3.

Fig. 4.

Attest.
Bentley Stahl.
Edward N. Sartou

Inventors.
Charles A. Vandervell
Frederick I. Hoffman.
by Wm Wallace White
Atty's.

UNITED STATES PATENT OFFICE.

CHARLES ANTHONY VANDERVELL AND FREDERICK ISIDORE HOFFMAN, OF LONDON,
ENGLAND.

MAGNETO-ELECTRIC MACHINE FOR IGNITION PURPOSES.

939,357.

Specification of Letters Patent.

Patented Nov. 9, 1909.

Application filed September 25, 1908. Serial No. 454,808.

To all whom it may concern:

Be it known that we, CHARLES ANTHONY VANDERVELL, subject of the King of Great Britain and Ireland, and FREDERICK ISIDORE HOFFMAN, subject of the Emperor of Austria-Hungary; both residing at London, England, have invented new and useful Improvements in and Relating to Magneto-Electric Machines for Ignition Purposes, of which the following is a specification.

This invention relates to magneto-electric machines particularly of the so-called high tension type for igniting the combustible mixture of high speed internal combustion engines and has for its object the direct driving by the magneto-electric machine of the current distributor without the intervention of any ratio gearing and the provision of simple means for igniting the charge in any number of cylinders without any change in the driving mechanism of the magneto-electric machine.

The usual form of magneto-machine has a double poled H-armature giving two sparks per revolution; and as multicylinder motors require the sparking to take place at certain intervals in relation to the angle of the cranks some form of gearing is adopted for driving a distributor from the magneto-machine. This invariably takes the form of a pinion on the armature spindle gearing into a wheel of double the size on the distributor for use with a 2 or 4 cylinder motor. For motors having a different number of cylinders a different driving gear of another ratio value has to be used.

By this invention we can obtain one spark per cylinder unit at the proper time for ignition of the combustible mixture in a very simple and efficient manner.

To carry our invention into effect we mount directly upon the armature shaft of the magneto-machine a device which may be the distributor itself or the actuating mechanism of the distributor and for sake of clearness we will describe it as the distributor itself. We arrange the device for example as a cylinder upon the internal or external periphery of which we arrange an endless path such as a groove or a rib or equivalent device, but the path is two, three or more times around the circumference. In the case of twice around, the path would cross itself once and in the case of thrice around, it would cross itself twice. In con-

junction with the path we arrange a movable device or shuttle adapted to follow the path. The cylinder may be substantially of insulating material and be provided with rubbing contacts at the proper position in the path and the movable device or shuttle will contact with these contacts as it travels along the path. It is obvious the endless path may be formed on the surface of a revolving disk or its equivalent and will produce the same effect as the cylindrical arrangement.

In order that our invention may be the better understood we will now proceed to describe the same in relation to the accompanying drawings, reference being had to the letters and figures marked thereon.

Like characters refer to like parts in the various figures.

Figure 1 is an end elevation of a magneto-machine with our distributor fitted thereto, the end cover being removed to show the interior of the distributor box. Fig. 2 is a side sectional elevation on the line A-B of Fig. 1. Figs. 3 and 4 are sectional views of the distributor box. Figs. 5 and 6 are two views of the shuttle or movable contact device.

By reference to the drawings it will be seen that a known construction of magneto-electric machine for four cylinders is illustrated to which our invention has been applied whereby the 2 to 1 gear is avoided and the distributor is driven directly by the armature shaft.

a represents the permanent magnets, *b* the condenser, *c* the low tension make and break device, and *d* the armature with high and low tension winding.

Upon the right hand end of the frame of the machine the distributor box *f* of insulating material is mounted having four separate metal contacts *e*¹, *e*², *e*³ and *e*⁴ arranged in grooves *i* and *k* which cross and join one another at the point *j*. These grooves form a series of annular paths, and a connecting path. The contacts *e*¹, *e*², *e*³ and *e*⁴ are connected by conductors *f*¹, *f*², *f*³, and *f*⁴ to sockets into which connecting plugs *g*¹, *g*², *g*³ and *g*⁴ are inserted for connecting the sparking plugs to the distributor. On the end of the armature shaft is fixed a device *g* consisting of a body of insulating material in which is disposed a metal casing *r*, having a tubular extension *s* in which a spring

pressed carbon brush *l* is adapted to slide and make contact with the end *g* of the high tension conductor. In the device *g* is slidingly held a plunger *p* spring pressed by a spring *o* and carrying a flexible metallic tongue *n* having at its end the shuttle *m*. It will be seen that every two revolutions 4 contacts *e*¹, *e*², *e*³, *e*⁴ are made successively by the shuttle *m* following the path of the convolutions *i* and *k* running first in one 10 groove and then in the other.

It is obvious that if the make and break device is done away with and the armature has only one primary winding this arrangement can be used for distributing the low 15 tension generated current as well.

What we claim as our invention, and desire to secure by Letters Patent is:—

1. In a magneto-electric machine having 20 a movable element a current distributor consisting of a device having a series of paths joined up as one continuous path, a series of contact pieces disposed in the said paths, a shuttle adapted to co-act with the said 25 paths and constituting a contact piece which

co-acts with the contact pieces of the said paths, the shuttle being carried directly by the movable element of the magneto-electric machine and means for permitting the shuttle to follow the continuous path, substantially as described. 30

2. In a magneto-electric machine, a current distributor comprising a box of insulating material, having a series of paths joined up as one continuous path, contact 35 pieces arranged in said paths, an armature, a shuttle carried by the armature, said shuttle constituting a contact piece connected to armature, and means for permitting the shuttle to travel in the continuous path and 40 make contact with the contact pieces arranged therein.

In witness whereof we have hereunto set our hands in presence of two witnesses.

CHARLES ANTHONY VANDERVELL
FREDERICK ISIDORE HOFFMAN.

Witnesses:

HARRY TAIST ROBERTS,
ELEANOR VICTORIA NORTH.