A. MAIRE.

APPARATUS FOR DRIVING MAGNETOS IN CONNECTION WITH INTERNAL COMBUSTION ENGINES.

APPLICATION FILED SEPT. 25, 1917.

1,387,285.

Patented Aug. 9, 1921.

3 SHEETS—SHEET 1.

FIG. 1.

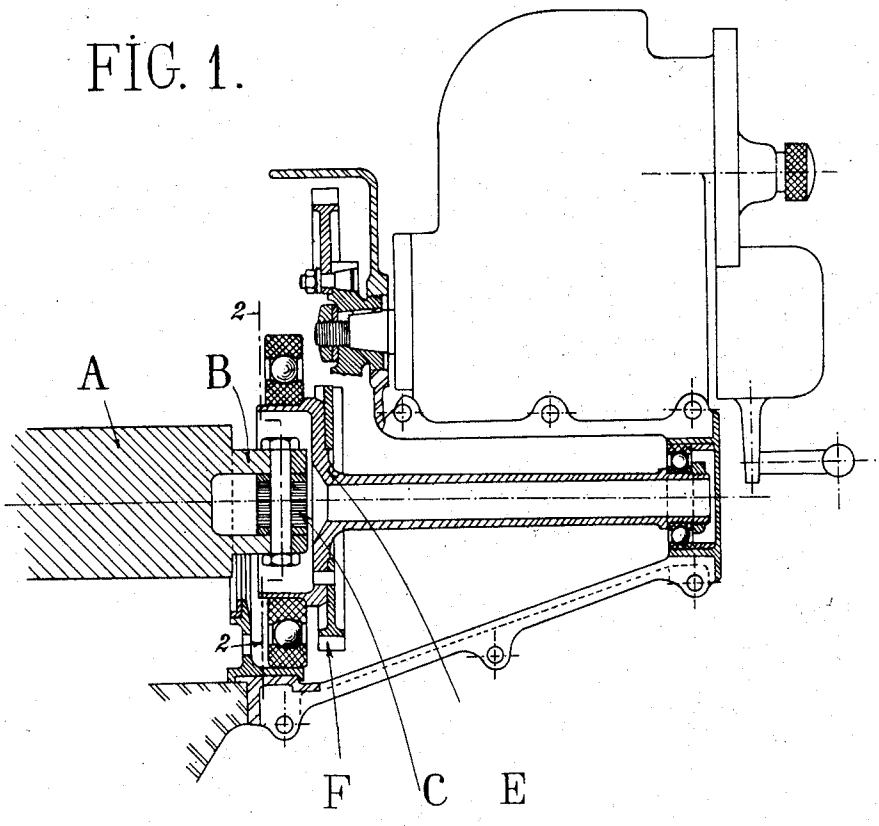
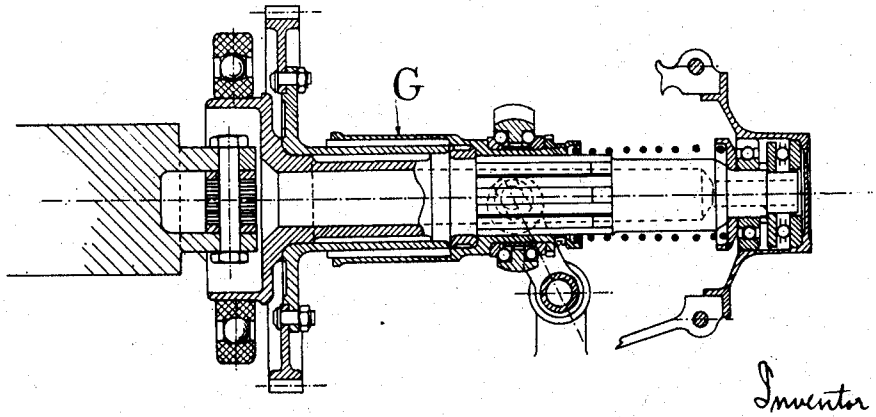


FIG. 3.



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3 SHEETS—SHEET 2.

Fig. 2

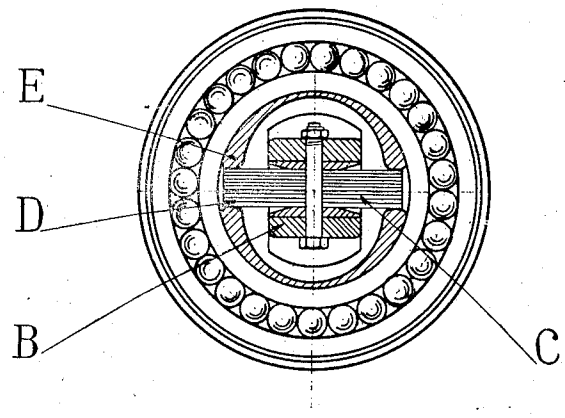


Fig. 5.

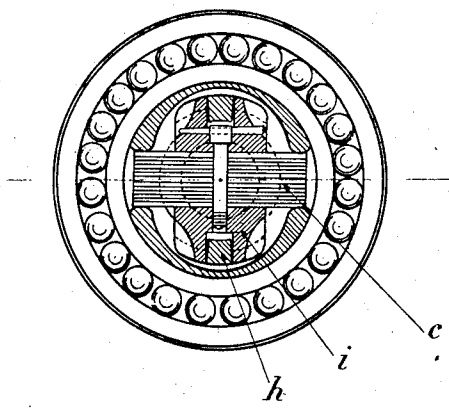
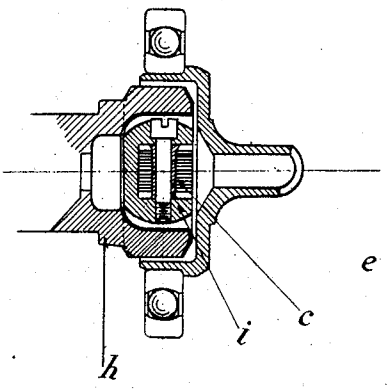


Fig. 4.



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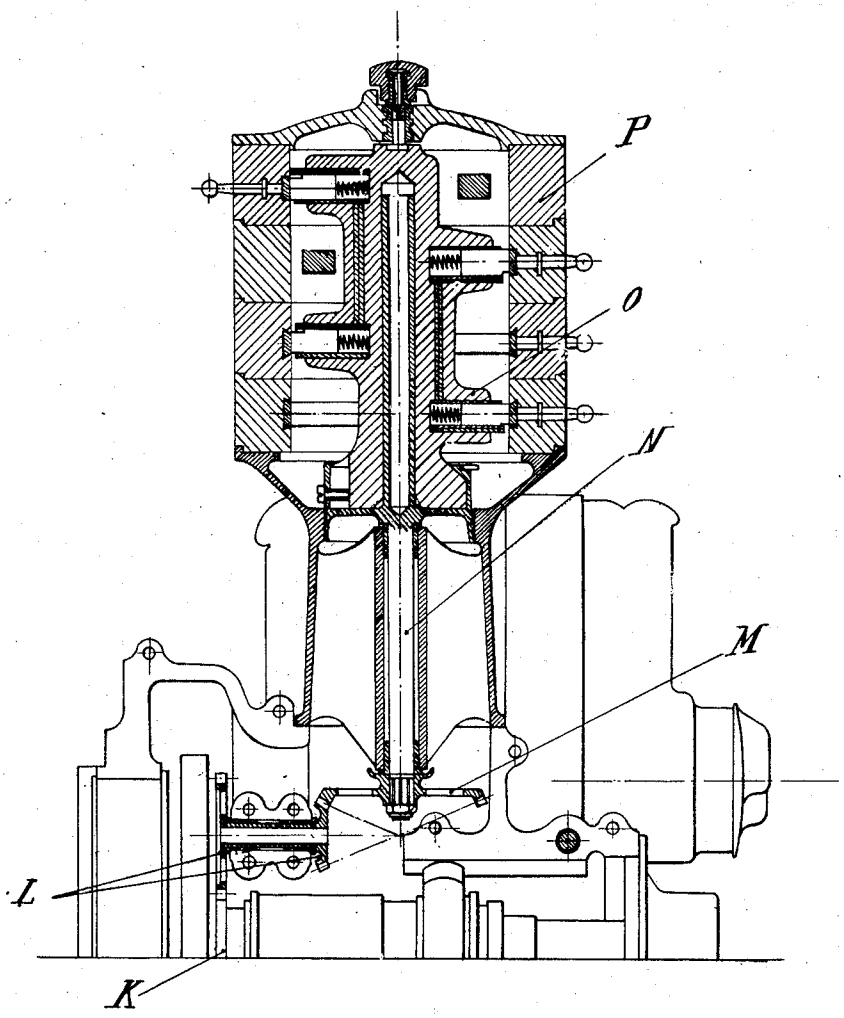
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3 SHEETS—SHEET 3.

Fig. 6.



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UNITED STATES PATENT OFFICE.

AUGUSTE MAIRE, OF ARGENTEUIL, FRANCE, ASSIGNOR TO SOCIETE LORRAINE DES ANCIENS ETABLISSEMENTS DE DIETRICH & CIE., DE LUNEVILLE, OF PARIS, FRANCE.

APPARATUS FOR DRIVING MAGNETOS IN CONNECTION WITH INTERNAL-COMBUSTION ENGINES.

1,387,285. Specification of Letters Patent. **Patented Aug. 9, 1921.**

Application filed September 25, 1917. Serial No. 193,213.

To all whom it may concern:

Be it known that I, AUGUSTE MAIRE, citizen of the Republic of France, residing at Route de Bezons, Argenteuil, Seine and Oise, in the Republic of France, have invented new and useful Improvements in Apparatus for Driving Magnetos in connection with Internal-Combustion Engines, of which the following is a specification.

In order to assure ignition in the cylinders of internal combustion engines, it is advisable to provide two magnetos each connected to a sparking plug in each cylinder. This arrangement is intended to avoid stoppage of the engine due to damage of one of the parts of the ignition apparatus.

In order, however, to benefit from the double ignition, it is necessary that the two magnetos shall produce sparks exactly at the same moment.

On the other hand, in order to protect the magnetos from shock and vibration, it is advisable to arrange between the magnetos and the engine an elastic device that will allow of the magneto being driven without shock.

The present invention has now for its object to provide an improved apparatus for driving two magnetos for producing double ignition in the cylinders of internal combustion engines. The improved apparatus is characterized by the feature that it will allow of the two magnetos being driven elastically, while assuring an absolute concordance of the passage of the two sparks.

Another feature of the invention consists in effecting the driving of the rotating carbon brush-carrier of the ignition distributer of the magnetos by a common shaft or driving sleeve of said magnetos. This improved arrangement allows the distributer to be rotated at a constant speed equal to half of the speed of the engine crank shaft irrespectively of the type of the magnetos employed. The improved arrangement also allows of grouping in one casing all the necessary parts for driving the magnetos.

One way of carrying out this invention is illustrated by way of example in the accompanying drawings, in which:—

Figure 1 is a sectional elevation of the general arrangement of the improved apparatus for driving the magnetos.

Fig. 2 is a cross section on the broken line 2—2 of Fig. 1.

Fig. 3 is a longitudinal section of a modified form of improved driving apparatus for magnetos, similar to that shown in Figs. 1 and 2, provided with a device that enables the moment of ignition to be varied.

Fig. 4 is a partial longitudinal section of a modified construction of the driving apparatus.

Fig. 5 is a cross section thereof.

Fig. 6 shows the driving apparatus and the distributer for the two magnetos.

Referring first to Figs. 1 and 2, the apparatus for driving the magnetos is composed as follows:

On the end of the engine crank shaft A there is mounted a forked head B in which a laminated spring C is fixed. The ends of this spring engage in two notches D formed in the sleeve E, and this sleeve carries a toothed wheel F meshing with the pinions of the magnetos that are to be driven.

The sleeve E revolves in two ball bearings in such a manner that it is not affected by the elastic deflections of the crank shaft A. These deflections are absorbed for the greater part by the driving spring which, in one direction, slides in the notches, and in the other direction, is capable of being deformed. This spring also absorbs the small variations in the speed of the shaft.

The modified construction shown in Fig. 3 comprises a device which allows of varying the moment of the passage of the spark.

In this arrangement, the toothed wheel driving the pinions of the magnetos is not keyed upon the sleeve E above mentioned, but is driven by means of a second sleeve that is connected to the said toothed wheel by longitudinal keys and is also connected to the first mentioned sleeve by helical keys, in such a manner that by sliding the said second sleeve, an angular displacement can be produced between the aforesaid toothed wheel and the main shaft.

Referring now to Figs. 4 and 5, it will be seen that on the end of the engine crank shaft is fixed a fork which drives a member I in which the spring C is mounted. This spring in its turn drives the toothed wheel driving the magnetos in the manner described hereinbefore.

The object of this improved construction is as follows:

In cases where, owing to inaccuracies or differences of machining, the axis of the driving sleeve E shall happen not to coincide exactly with the prolongation of the axis of the engine crank shaft, the addition of the improvement according to the present invention will nevertheless enable the whole to rotate without risk of breaking owing to the well known properties of the joint which is of the Oldham type.

Fig. 6 shows that the sleeve E upon which the toothed wheel is mounted for driving the pinions of the magnetos to be driven, comprises also a toothed wheel K which drives through the medium of gearing L, a pinion M keyed on the axle N of the carbon brush-carrier O of the distributer.

The advantage of this improved construction consists in that magnetos of any type may be employed, revolving at a speed equal to the speed of the engine, or a multiple of said speed, and that the supply of current is assured to the distributer which itself revolves always at a speed that is equal to half the speed of the engine crank shaft. Further, all the essential parts for assuring the ignition in the engine can be grouped in one and the same casing.

The carbon brush-carrier is shown in the drawing simply for the sake of clearness. It is shown divided into a plurality of parts in order to allow of diminishing the actual diameter of the body of the distributer P, which latter may comprise a contact for a starting magneto.

The various arrangements hereinbefore described may be adopted without reference to the necessary ratio between the speed of the magneto and the speed of the engine crank shaft.

Having now described my invention, what I claim as new and desire to secure by Letters Patent is;

1. An igniting mechanism for explosion engines comprising in combination the motor shaft, two magnetos, two sparking plugs in each motor cylinder respectively connected to said magnetos, two toothed gears adapted to drive the two magnetos respectively, one toothed wheel meshing with said toothed gears, a sleeve concentric with said toothed wheel, secured to the same and mounted in the prolongation of the motor shaft, means for rigidly and rotatably supporting said sleeve, a bushing formed by one end of said sleeve and one elastic coupling operatively connecting said motor shaft to said bushing.

2. An igniting mechanism for explosive-engines comprising in combination two sparking plugs in each motor cylinder, two magnetos respectively connected to said sparking plugs, two toothed gears adapted to drive the two magnetos, respectively, one toothed wheel meshing with said toothed gears, a bushing splined on said toothed wheel, a sleeve mechanically connected to the bushing by spiral coacting members, means for rigidly and rotatably supporting said sleeve, a driving shaft and an elastic coupling connecting the driving shaft to the sleeve.

3. An igniting mechanism for explosive-engines comprising in combination two sparking plugs in each motor cylinder, two magnetos respectively connected to said sparking plugs, two toothed gears adapted to drive the two magnetos, respectively, one toothed wheel meshing with said toothed gears, a sleeve secured axially to said toothed wheel, means for rigidly and rotatably supporting said sleeve, a driving shaft, a floating member splined on said driving shaft and guided positively in a radial direction with respect thereto and an elastic coupling connecting the floating member to the sleeve.

4. An igniting mechanism for explosive-engines comprising in combination two sparking plugs in each motor cylinder, two magnetos respectively connected to said sparking plugs, two toothed gears adapted to drive the two magnetos, respectively, one toothed wheel meshing with said toothed gears, a sleeve secured axially to said toothed wheel, means for rigidly and rotatably supporting said sleeve, an operating toothed gear keyed on said sleeve, a current distributer adapted to simultaneously distribute the current from the two magnetos, a transmission between said operating toothed gear and the distributer and a casing adapted to inclose the operating parts of the above mechanism and support the distributer, substantially as described and for the purpose set forth.

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

AUGUSTE MAIRE.

Witnesses:

LOUIS MOSES,

CHAS. P. PRESSLY.