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N. HENDRY ET AL

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DISTRIBUTOR FOR HIGH TENSION IGNITION APPARATUS

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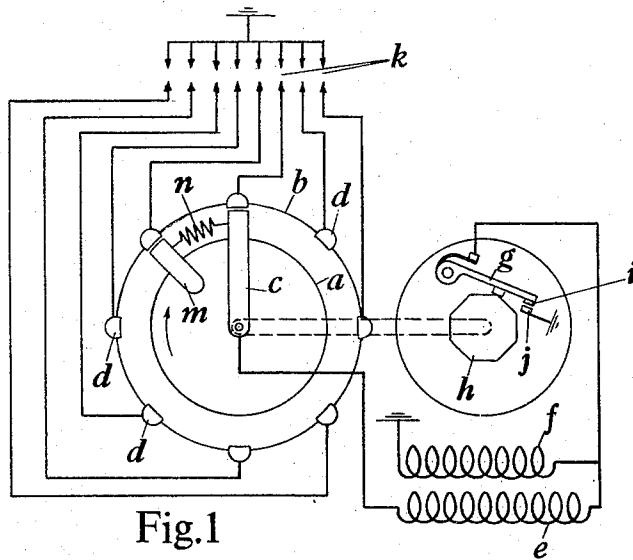


Fig.1

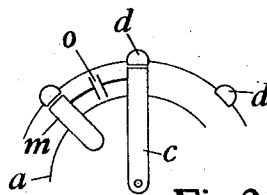


Fig.2

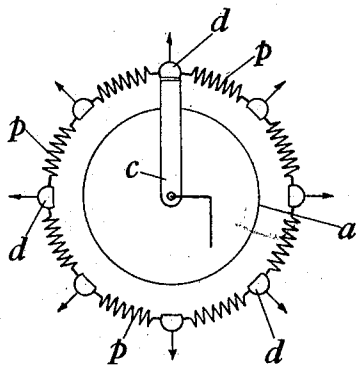


Fig.3

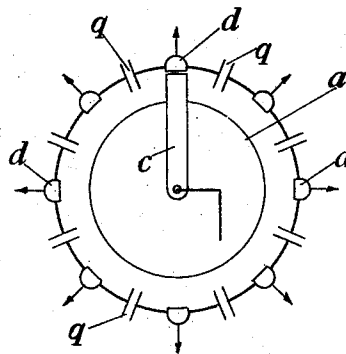


Fig.4

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DISTRIBUTOR FOR HIGH-TENSION
IGNITION APPARATUS

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3 Claims. (Cl. 123—148)

This invention relates to distributors of the kind used in high tension magneto or coil ignition apparatus for multi-cylinder internal combustion engines, and comprising a rotor and stator, the latter being provided with electrodes adapted to be connected to the sparking plugs of the engine, and the former with an electrode or electrodes adapted to be connected to the high tension winding of the magneto or coil. During rotation of the rotor the electrical impulses from the magneto or coil are communicated from the rotor to the stator electrodes in succession and usually across a narrow air gap between the rotor electrode and the adjacent stator electrode.

It has been found that when such a distributor is operating on an aircraft at high altitude, the impulses sometimes pass, not between the rotor electrode and the immediately opposite stator electrode, but between the rotor electrode and the preceding stator electrode, and also in certain circumstances between the rotor and the following stator electrode thereby preventing proper working of the engine.

The object of the present invention is to provide simple and convenient means for effectually preventing the condition above described.

The invention comprises the combination with the distributor of electrode-interconnecting impedance means for minimising the potential difference that would otherwise exist between adjacent stator electrodes.

In one form the invention comprises a distributor rotor having associated with its principal electrode or each such electrode an additional electrode which is connected to the principal electrode by a high resistance path, or condenser, and is arranged so that when the principal electrode is opposite any one of the stator electrodes the additional electrode is opposite the preceding stator electrode. In another form the invention comprises a distributor stator having condensers or high resistances connected between its electrodes.

In the accompanying sheet of explanatory diagrams—

Figure 1 illustrates the invention applied to a high tension coil ignition apparatus.

Figures 2, 3 and 4 illustrate respectively three modified forms of the invention.

In Figure 1 of the diagrams *a* indicates the rotor and *b* the stator of a distributor. The rotor *a* is provided with an electrode *c*, and the stator *b* is provided with a plurality of electrodes *d*, the latter being arranged at equal distances

apart around the rotor axis. The rotor electrode *c* is connected to one end of the high tension winding *e* of the coil. The other end of this winding *e* is connected to the low tension winding *f* of the coil and to the contact arm *g* of any convenient contact breaker, the arm being movable by the usual cam *h* for separating the breaker contacts *i, j*. The stator electrodes *d* are connected to the sparking plugs *k* of the engine, and the arrangement is such that during rotation of the rotor *a* electrical impulses from the coil *e, f*, are communicated by the rotor electrode *c* to each of the stator electrodes *d* in turn. The direction of rotation of the rotor *a* is indicated by the arrow shown in Figure 1.

In carrying the invention into effect we provide means for minimising the potential difference that would otherwise exist between adjacent stator electrodes *d*. Thus, as shown in Figure 1 or 2, we provide on the rotor *a* an additional electrode *m* separated from the principal electrode *c* by an angular distance equal to the spacing of the stator electrodes *d*. The additional electrode *m* is situated behind the principal electrode *c*, that is to say, the arrangement is such that when the principal electrode is opposite any one of the stator electrodes *d* the additional electrode is opposite the preceding stator electrode. When the rotor has more than one principal electrode, an additional electrode is provided in association with each principal electrode. The additional electrode *m* may be connected to the principal electrode *c* by a wire or other high resistance *n* as shown in Figure 1. Alternatively the additional electrode *m* may be connected to the principal electrode *c* by a condenser *o* as shown in Figure 2. The resistance *n* or condenser *o* may be combined with the rotor *a* or it may be arranged externally, and moreover it may have combined with it a switch or other means for putting it into or out of action as desired.

Instead of employing the additional rotor electrode and associated resistance or condenser above described, we may interconnect the stator electrodes *d* by means of high resistances *p* as shown in Figure 3 or condensers *q* as shown in Figure 4. These resistances *p* or condensers *q* may be incorporated with the stator, or may be arranged externally, or the cables connecting the various stator electrodes *d* to the sparking plugs may be adapted to provide the required condenser effects. Also means may be provided for putting the resistances *p* or condensers *q* into or out of action as desired.

In a further manner of carrying the invention into effect we employ both the resistance n shown in Figure 1 or the condenser o shown in Figure 2 and either the resistances p shown in Figure 3 or the condensers q shown in Figure 4.

By this invention we find that we are able to solve in a very satisfactory manner the problem to which the invention is directed. The invention is not however limited to the examples above described as subordinate details may be varied to suit different requirements.

Having thus described our invention what we claim as new and desire to secure by Letters Patent is:

1. A distributor for high tension ignition apparatus, comprising in combination a stator provided with electrodes adapted to be connected to the sparking plugs of an internal combustion engine, a rotor provided with at least one electrode for communicating electrical impulses from the high tension winding of the apparatus to the stator electrodes in succession, and electrode-interconnecting impedance means for minimising the potential difference that would otherwise exist between adjacent stator electrodes.

2. For use in a distributor of the kind used in

high tension ignition apparatus and having a stator provided with electrodes adapted to be connected to the sparking plugs of an internal combustion engine, a rotor provided with at least one principal electrode for communicating electrical impulses from the high tension winding of the apparatus to the stator electrodes in succession, and with an additional electrode which is connected to the principal electrode by impedance means, the said additional electrode being arranged so that when the said principal electrode is opposite any one of the stator electrodes the additional electrode is opposite the preceding stator electrode.

3. For use in a distributor of the kind used in high tension ignition apparatus and having a rotor provided with at least one electrode, a stator provided with electrodes which are adapted to be connected to the sparking plugs of an internal combustion engine and to which electrical impulses can be successively communicated by the rotor electrode, and impedance means connected between the stator electrodes.

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