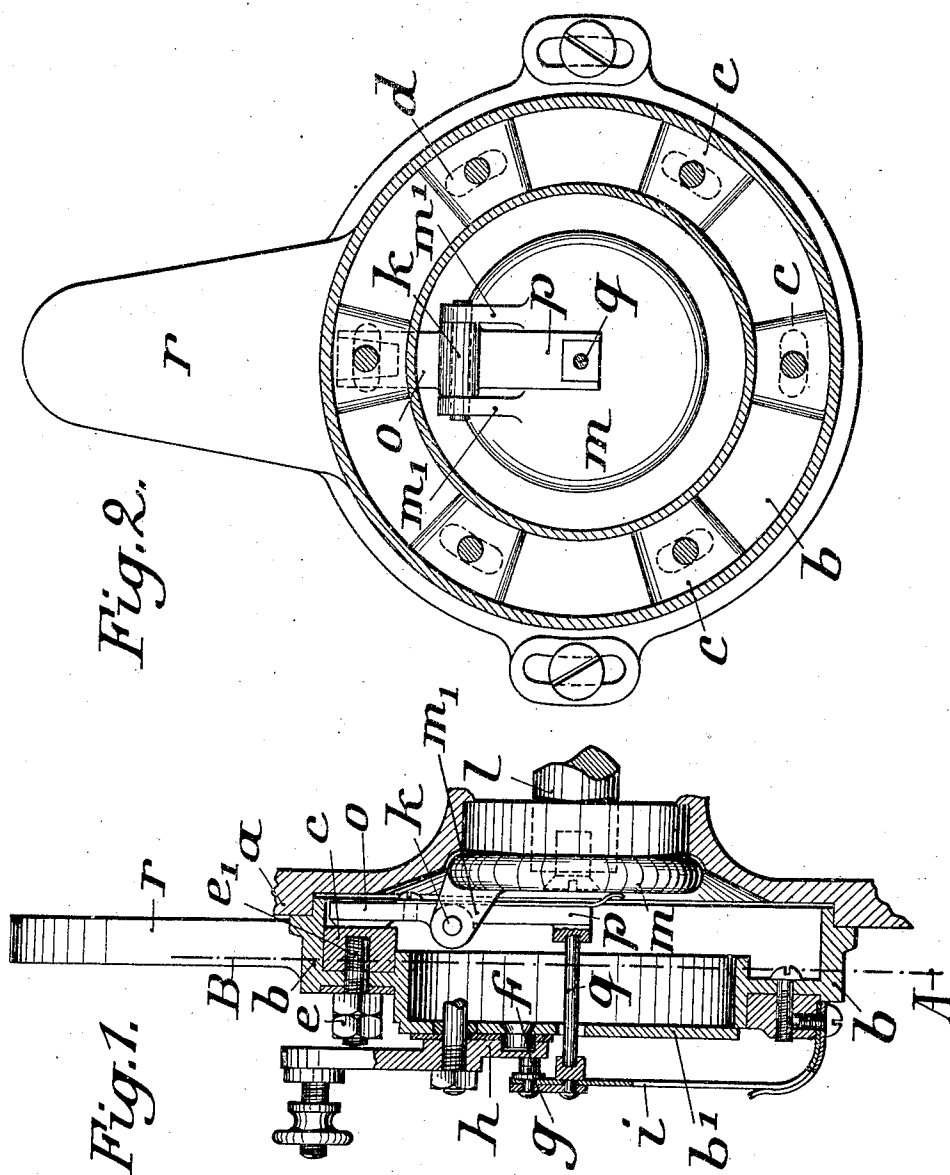


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 INTERRUPTING MECHANISM FOR ELECTRIC IGNITION SYSTEMS FOR  
 INTERNAL COMBUSTION ENGINES.  
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1,008,768.

Patented Nov. 14, 1911.



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# UNITED STATES PATENT OFFICE.

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INTERRUPTING MECHANISM FOR ELECTRIC IGNITION SYSTEMS FOR INTERNAL-COMBUSTION ENGINES.

1,008,768.

Specification of Letters Patent. Patented Nov. 14, 1911.

Application filed August 10, 1910. Serial No. 576,486.

*To all whom it may concern:*

Be it known that I, ARNOLD ZÄHRINGER, a subject of the Emperor of Germany, and residing at Stuttgart, Germany, have invented certain new and useful Improvements in Interrupting Mechanism for Electric Ignition Systems for Internal-Combustion Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The invention relates to interrupting mechanism for magneto-electric ignition systems for internal combustion engines, and particularly to that type of interrupting mechanism in which the circuit is interrupted a number of times during each rotation of a distributor shaft. The principal object of the invention is to provide mechanism of that character in which the adjustment of the time of interruption may be readily and accurately effected, and in which the terminal posts or contacts to which the circuit wires are connected do not rotate, but remain normally stationary so that the circuit wires may be brought directly thereto without the interposition of brushes.

The specific form of the invention illustrated in the drawings embodies an arrangement in which it is not only possible to adjust the several points of interruption simultaneously, by a single movement of the adjusting lever, as is common in such apparatus, but it is also possible to adjust the several points of interruption individually with respect to one another, in accordance with the general plan disclosed in my earlier United States application.

The drawings show one particular embodiment of the invention in which an adjusting plate having an adjusting lever and six distributing cams, adapted to interrupt the circuit six times in each rotation of the distributor shaft, is used.

Figure 1 is a central vertical section of the improved interrupting device, parts being shown in elevation for clearness of illustration; and Fig. 2 is a section at right angles to the section of Fig. 1 and taken on the line A—B thereof.

The interrupting mechanism is mounted

on a suitable support, which may conveniently be the frame of the magneto-generator, and which is indicated in the drawings by the reference letter *a*. The cam-ring *b* is fitted against the face of frame *a* in such manner as to permit of a limited adjustment by means of the adjusting lever *r*, to advance or retard the several points of interruption simultaneously, as is common in mechanism of this character. As pointed out in my earlier application above mentioned it is desirable, particularly in the case of large internal combustion engines of relatively low speed and large cylinder volume, to provide for the individual adjustment of the time of ignition in each of the cylinders fed from a common distributor. To this end, in accordance with the present invention, I mount the individual interrupting cams *c*, corresponding in number with the number of cylinders or combustion chambers of the engine, so that they may be adjusted with respect to one another. In the particular embodiment illustrated this is accomplished by mounting the cams *c* on screw pins *e'* adjustable in slots *d* in the cam-ring, and providing locking nuts *e* to lock the cams in adjusted position. The interrupter terminals *f* and *g* are fixed in position on the cover plate *b'* of the cam-ring *b*, the terminal *f* being mounted on a plate *h* secured to but insulated from the cover plate, and the terminal *g* being carried by an interrupter spring *i* fixed to the cam-ring *b* as shown in Fig. 1. It will thus be seen that the terminals and the interrupting cams are in effect stationary. In order to bring about the separation of the interrupter terminals by the cams during the rotation of the distributor shaft *l*, there is provided on that shaft a disk *m* having projecting arms *m'* in which there is pivoted at *k* an interrupting lever of which one end, *o*, travels in the path of the interrupter cams *c*, and the other end *p*, carries a pin *q* at the center of the cam-ring, with its outer end lying beneath the spring *i*. With this construction, and upon rotation of the distributor shaft *l*, the end *o* of the interrupter lever is carried around in the path of cams *c* and each of those cams in turn actuates the lever and causes the pin *q* to lift the terminal *g* and interrupt the circuit. In this way the inter-

rupter terminals are stationary except at the instants of periodic actuation to interrupt their electrical circuit.

It is immaterial to the invention whether the arm *p* of the intermediate interrupter lever acts directly or indirectly on the interrupter contact, or whether it is arranged radially or axially. The essential thing is that stationary distributing cams actuate, by means of a rotating intermediate member, normally stationary interrupter terminals, so that no brushes need be used to transmit the current.

What I claim is:

1. In interrupting mechanism for electric ignition systems, a normally stationary interrupter cam, normally stationary contact terminals, and a rotatable member moving in the path of said cam and actuated thereby to separate the contact terminals periodically, substantially as described.

2. In interrupting mechanism for electric ignition systems, a normally stationary cam-ring, a plurality of cams thereon, normally stationary contact terminals, and a rotatable member moving in the path of said cams and actuated thereby to separate the contact terminals periodically, substantially as described.

3. In interrupting mechanism for electric ignition systems, a normally stationary cam-ring, a plurality of cams thereon, normally stationary contact terminals, and a rotatable member moving in the path of said cams and actuated thereby to separate the contact terminals periodically, the said cam-ring being mounted for limited adjustment to vary the time of interruption, substantially as described.

4. In interrupting mechanism for electric ignition systems, a normally stationary cam-ring, a plurality of cams adjustably mounted thereon, normally stationary contact terminals, and a rotatable member moving in the path of said cams and actuated thereby to separate the contact terminals periodically, substantially as described.

5. In an interrupting mechanism for electric ignition systems, an adjustable cam, normally stationary contact terminals, and a rotatable member adapted upon actuation by said cam to separate said contact terminals.

In testimony whereof I affix my signature, in presence of two witnesses.

ARNOLD ZÄHRINGER.

Witnesses:

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