Dec. 4, 1923. 1,476,252

A. C. HEMPEL

SPARKING DEVICE FOR INTERNAL COMBUSTION MOTORS

Filed Dec. 15, 1921

Fig. 1.

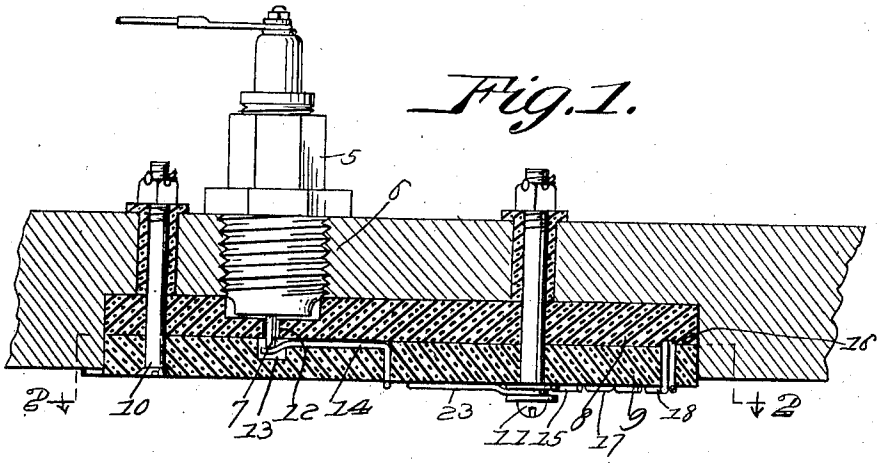


Fig. 2.

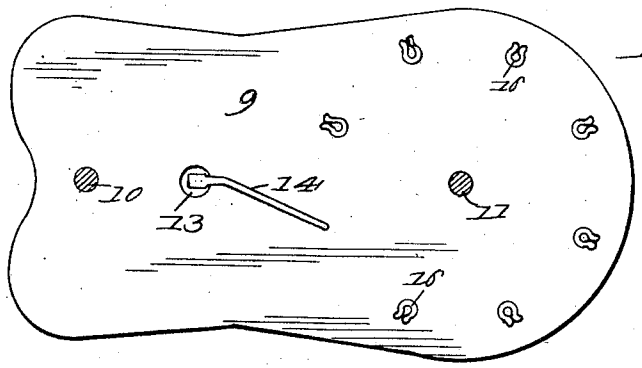
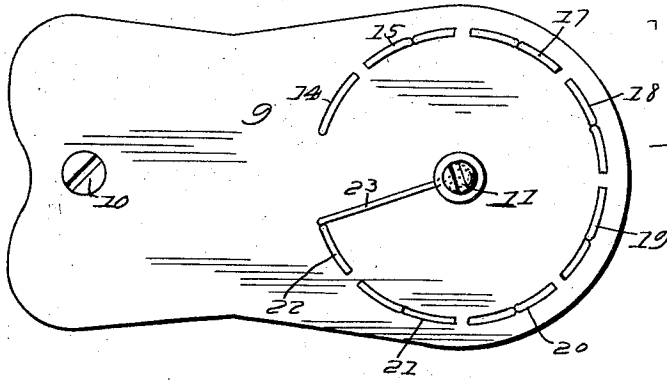


Fig. 3.



Inventor,
Albert C. Hempel,
By Frank Lauman
Attorney

Patented Dec. 4, 1923. 1,476,252

UNITED STATES PATENT OFFICE.

ALBERT C. HEMPEL, OF BARTLETT, TEXAS.

SPARKING DEVICE FOR INTERNAL-COMBUSTION MOTORS.

Application filed December 15, 1921. Serial No. 522,617.

To all whom it may concern:

Be it known that I, ALBERT C. HEMPEL, a citizen of the United States of America, and resident of Bartlett, in the county of Bell and State of Texas, have invented certain new and useful Improvements in Sparking Devices for Internal-Combustion Motors, of which the following is a specification.

This invention relates to igniting means for internal combustion motors, and has reference particularly to novel means whereby a plurality of sparks are produced in a combustion chamber of a motor to insure proper firing of the charge therein.

A further object of this invention is to provide a sparking device if the character indicated, capable of being used in association with spark plugs such as are now commonly employed, with the exception that the spark plug must be devoid of a grounding electrode.

A still further object of this invention is to provide a sparking device of the character indicated which may be installed in motors in a manner to prevent their being fouled by carbon, oil or the like, and whereby the contact between the electrode of the spark plug and the conductor of the sparking device may be so housed as to prevent the accumulation of carbon or oil which might have a tendency to interrupt the circuit between the sparking plug and the conductor leading to the sparking device.

A still further object of this invention is to produce a sparking device having an insulating body adapted to be secured on the interior of a cylinder head in association with a sparking plug applied to the usual spark plug socket or hole.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application wherein like characters denote corresponding parts in the several views, and in which—

Figure 1 illustrates a sectional view of a fragment of the cylinder head, showing a device embodying the invention applied thereto;

Figure 2 illustrates a sectional view on the line 2—2 of Fig. 1; and

Figure 3 illustrates an underneath plan view of the said device.

In carrying out the invention, I employ a spark plug 5 threaded in a cylinder head 6, the spark plug having a single electrode 7 which is adapted to conduct current to the sparking device, as will presently appear.

Within the cylinder head I prefer to anchor the sparking device which, in the present embodiment of the invention, comprises two insulating disks 8 and 9, secured together by fastenings 10 and 11, which may be in the nature of bolts, the fastening 11 being employed also as a ground connection for the circuit.

The insulating disk 8 has an aperture 12 therein through which the electrode 7 projects, and the insulating disk 9 has a recess 13 into which the said electrode projects.

A conductor 14 lies between the insulating disks and it terminates at the recess 13 in position to be engaged by the electrode 7. The conductor 14 extends through the insulator 9 and projects over the surface of the insulator 9. Another conductor 15 is anchored in the insulator 9 with its end in proximity to the end of the conductor 14, in order that a spark gap will be formed between the said conductors. The conductor 15 is anchored in the insulator by reason of the fact that the said conductor 15 is looped as shown at 16, the said looped portion extending through the insulator, and the looped portion is bent to engage the inner surface of the said insulator so that the conductor cannot be displaced. There are a series of conductors 17, 18, 19, 20, 21 and 22, all of which are preferably anchored in the insulator in the manner described. Of course these insulators may vary in number to suit particular requirements, and they are in spaced relation to each other, in order to form spark gaps, so that when the current is delivered through the conductors, a spark is produced at each of the spark gaps. The conductor 22 is grounded through the conductor 23 which is anchored on the securing member 11, thus establishing a sectional circuit with spark gaps between the spark plug and the ground.

The conductor 14 where it engages the electrode of the spark plug is imbedded between the insulators, and hence these elements are protected from the accumulation of foreign substances which might have a

tendency to short circuit them, by reason of the housing created by the insulators, and even though the mixture in the combustion chamber of the motor is not thoroughly mixed, the sparks which will cover a comparatively wide area of the combustion chamber, will reach the richer mixture and insure the ignition of the charge in the combustion chamber.

While I have shown the conductors as arranged in a circle, it is to be understood that they can be differently arranged, as, for instance, they could be stationed in certain relation to the edge of the insulator without departing from the spirit of the invention. Furthermore, the conductors 17 to 22 inclusive can be arranged or anchored in the insulator in different ways and instead of looping the said conductors as stated, they may be formed of split rivets with the ends imbedded or anchored in the insulator and the ends spread oppositely or divergently, at least, to lie in contact with an adjacent conductor to form the spark gaps similar to those shown in Fig. 3, but applicant does not wish to be restricted with respect to the elements employed forming the conductors.

I claim:

In a sparking device for internal combustion motors, an insulator comprising two disks, one of which has an aperture and the other a recess registering therewith, a spark plug having an electrode extending through the aperture into the recess, a conductor imbedded between the disks and having an end projecting into the recess, conductors imbedded in the insulator and having spark gaps between them, the said conductors being in such relation to each other that current from the first mentioned conductor will travel through the said conductors, and means for grounding one of the conductors.

ALBERT C. HEMPEL