July 5, 1960 T. S. SCHAUB 2,944,178

SPARK PLUGS

Filed Sept. 21, 1956

Fig. 1.

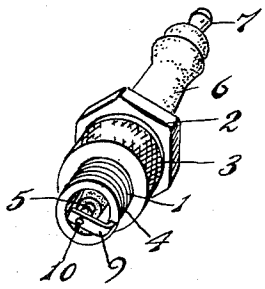


Fig. 2.

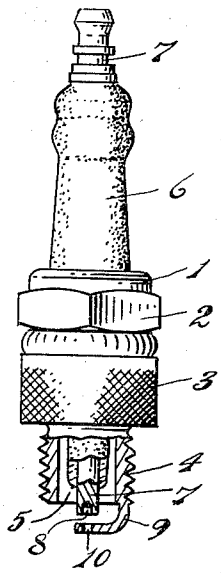


Fig. 5.

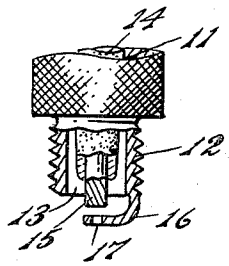


Fig. 3.

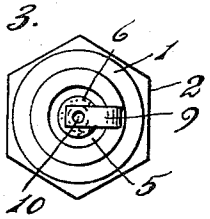
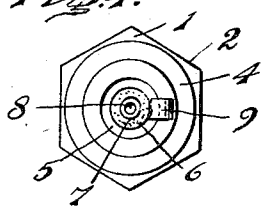


Fig. 4.



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SPARK PLUGS

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1 Claim. (Cl. 313—141)

The object of my invention is to devise a novel spark plug which will give increased power and also provide increased economy in fuel consumption.

A further object of the invention is to devise a novel spark plug in which the ground electrode is in the form of a rectangular bar having a small aperture through it in longitudinal alignment with the main electrode.

A further object of the invention is to provide the forward end of the main electrode, if desired, with a small recess opening through its forward end and preferably slightly greater depth than the thickness of the ground electrode, such recess being in longitudinal alignment with the aperture in the main electrode.

Other novel features of construction and advantage will hereinafter appear in the detailed description and the appended claim.

For the purpose of illustrating the invention, I have shown in the accompanying drawings preferred embodiments of it which I have found, in practice, to give satisfactory and reliable results. It is, however, to be understood that the various instrumentalities of which the invention consists can be variously arranged and organized, and the invention is not limited, except by the scope of the appended claim to the exact arrangement and organization of these instrumentalities as herein set forth.

Figure 1 is a perspective view of a spark plug embodying my invention.

Figure 2 is a side elevation, on an enlarged scale, with a portion in section.

Figure 3 is a bottom plan view.

Figure 4 is a bottom plan view similar to that shown in Figure 3 but having a portion of the ground electrode broken away.

Figure 5 is a side elevation partly broken away of another embodiment of the invention.

Similar numerals of reference indicate corresponding parts.

Referring to the drawings:

Considering first the embodiment shown in Figures 1 to 4 inclusive, the spark plug has a body portion 1 provided with a wrench receiving portion 2, a knurled portion 3 and a forwardly extending tubular portion of reduced diameter and forming a forward extension 4 having a chamber 5 open at its forward end.

An insulator 6 extends through and is sealed in the body portion and extends into the chamber 5 of the body portion.

A main electrode 7 is adapted to receive a terminal wire and extends through the insulator 6 and at its forward end has a small recess 8 opening through the front end of such main electrode.

A portion of the body portion is deflected laterally to form a ground electrode 9, preferably in the form of a

bar rectangular in cross section extending over the main electrode and spaced from it to provide a spark gap. This ground electrode has a small aperture of uniform diameter throughout its length through it in longitudinal alignment with the aperture or recess 8. These apertures 8 and 10, as stated, are small and I have found in practice that apertures having a diameter of 25 thousandths of an inch produce very good results.

The embodiment shown in Figure 5, is the same as that shown in Figures 1 to 4, inclusive, except that the recess 8 in the main electrode has been omitted. In this embodiment, the body portion 11 has a threaded tubular extension 12 with a chamber 13 into which an insulator 14 extends. A main electrode extends through and is sealed in the insulator.

The ground electrode 16 has an aperture 17 through it in longitudinal alignment with the main electrode.

In the operation, the compressed explosive mixture is forced through the apertures 10 or 17 and impacts against the forward end of the main electrode, so that when the explosion takes place the products of combustion radiate laterally in all directions forming a circle of flame to provide substantially complete combustion with increased power and economy in fuel consumption.

The employment of the recess in the main electrode appears to produce greater efficiency.

A complete set of these plugs in tests of thousands of miles with the aperture in the ground electrode has also shown that less carbon collects on the plug and the plug is cooled by the compressed fuel passing through the ground electrode aperture.

The aperture in the ground electrode is very small and provides a jet action against the main electrode during the compression stroke which aids in maintaining the main and ground electrodes free of carbon deposits.

Apparently, the direction of this jet action is reversed when ignition takes place.

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

A spark plug comprising a body portion threaded for insertion into a cylinder block and having a chamber opening through its forward end, an insulator sealed in said chamber, a main electrode of substantially uniform diameter throughout its length sealed in said insulator and terminating at its forward end in a flat portion, and a ground electrode in the form of a bar connected at one end to the forward end of said body portion and extending laterally across said opening in spaced relationship with said flat portion of the main electrode and terminating a slight distance beyond said main electrode, said ground electrode having a hole of aproximately twenty five thousandths of an inch through it in longitudinal alignment with the main electrode and of less diameter than that of the main electrode at its flat forward end.

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