Sept. 6, 1938. F. A. GORNY ET AL 2,129,576

SPARK PLUG

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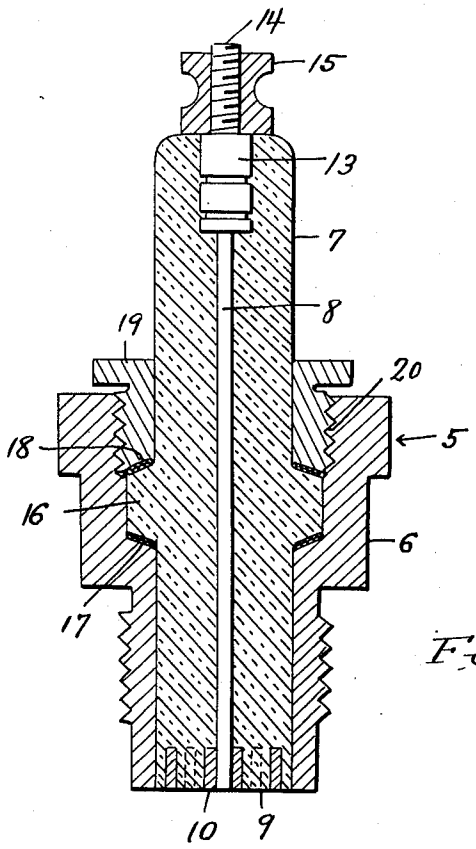


Fig. 1.

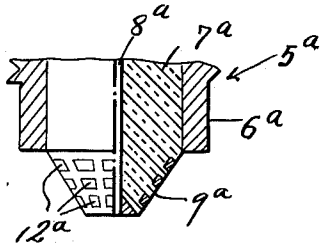


Fig. 3.

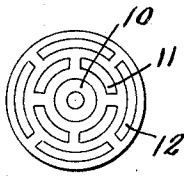


Fig. 2.

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SPARK PLUG

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6 Claims. (Cl. 123—169)

Our invention relates generally to internal combustion engine spark plugs, and particularly to a spark plug in which the electrodes are arranged to create a series of sparks to promote combustion of the charge in the cylinder of the engine and eliminate waste of fuel.

Another important object of our invention is to provide a spark plug in which the spark gaps cannot get out of adjustment, and which positively resists a tendency to foul, and to burn the sparking points thereof.

Other important objects of our invention will be apparent from a reading of the following description taken in connection with the drawing, wherein for purposes of illustration we have shown a preferred embodiment of our invention.

In the drawing:—

Figure 1 is a general transverse vertical sectional view taken through an embodiment of the invention.

Figure 2 is a bottom plan view of the core showing the arrangement of the segmental electrodes.

Figure 3 is a sectional elevational view of a modification of the invention showing a different distribution of the segments.

Referring in detail to the drawing, the numeral 5 generally designates the embodiment of the invention shown tn Figures 1 and 2 and this comprises a spark plug body or shell 6 in which is mounted an insulating core 7 which has disposed therethrough an axial electrode 8 which terminates flush with the bottom 9 of the insulator 7 where it is surrounded by a conductive bushing 10 which is concentrically spaced from and within a first circle of spaced conductive segments 11 and an outer circle of circumferentially spaced conductive segments 12 which are embedded in or moulded in the lower end 9 of the core 7. The electrode 8 consists of a bar or rod which terminates at its upper end in a corrogated body 13 which is embedded in the upper part of the core and which, in turn, terminates in a threaded portion 14 on which the binding post nut 15 with the spark plug wire in place on the electrode, is threaded.

The lower part of the insulator 7 has a radially expanded part 16 which is beveled top and bottom. The beveled bottom seats on a copper gasket 17 which rests on a conformable portion at the interior of the spark plug shell, while the beveled top is engaged by another copper gasket 18 which is held down in place by the beveled lower end of the nut 19 which is threaded as indicated by the numeral 20 in the upper part of the spark plug body or shell 6, whereby the insulator, the electrode 8, and the shell are assembled together.

The segments 11 and 12 are not limited in number or shape in accordance with the present invention, but may have a distribution such as that shown in Figure 3, where another embodiment 5*a* of the invention is shown. In this instance the lower end 9*a* of the core is frusto-conical in shape and has distributed along the walls thereof the different sized and shaped conductive segments 12*a*.

It is obvious that the spark must jump from the electrode 8 or 8*a* to more than one of the segments 11, 12 or 12*a* before reaching the lower end of the spark plug body to complete the circuit of the spark. In instance where one or more of the segments becomes burned, the next nearest segment to the electrode will carry the spark efficiently. It is believed to be obvious that owing to the lack of any projections or complicated parts at the firing end of the spark plug, the same is very easily cleaned and is not apt to accumulate foreign matter.

Although we have shown and described herein a preferred embodiment of our invention, it is to be definitely understood that we do not desire to limit the application of the invention thereto and any change or changes may be made in the materials, and in the structure and arrangement of the parts, within the spirit of the invention and the scope of the subjoined claims.

What is claimed is:—

1. A spark plug comprising a spark plug body, an insulator mounted therein, an electrode extending through said insulator, a plurality of conductive segments embedded in the lower end of said insulator around the exposed end of said electrode.

2. A spark plug comprising a spark plug body, an insulator mounted therein, an electrode extending through said insulator, a plurality of conductive segments embedded in the lower end of said insulator around and concentric with respect to the exposed end of said electrode, the lower end of said insulator being frusto-conical, and the segments being set in the slanting faces thereof.

3. A spark plug comprising a spark plug body, an insulator mounted therein, an axial electrode extending through said insulator and exposed at the lower end of the insulator, a plurality of circles of discontinuous conductive segments embedded in the lower end of the insulator and arranged concentrically spaced with respect to said electrode and with respect to each other.

4. A spark plug comprising a spark plug body, an insulator mounted therein, an axial electrode extending through said insulator and exposed at the lower end of the insulator, a plurality of circles of discontinuous conductive segments embedded in the lower end of the insulator and arranged concentrically spaced with respect to said electrode and with respect to each other, the segments of adjacent circles being arranged in overlapping relation.

5. A spark plug comprising a spark plug body, an insulator mounted therein, an electrode extending through said insulator, a plurality of conductive segments embedded in the lower end of said insulator around the exposed end of said electrode, said segments comprising arcuate vertically elongated bodies extending into the lower end of the electrode in planes parallel to the axis of said electrode.

6. A spark plug comprising a spark plug body, an insulator mounted therein, an electrode extending through said insulator, a plurality of conductive segments embedded in the lower end of said insulator around and concentric with respect to the exposed end of said electrode, the lower end of said insulator being frustro-conical, and the segments being set in the slanting faces thereof, said segments comprising vertically elongated bodies extending into said slanting faces at right angles to said faces.

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