May 29, 1934. H. RABEZZANA 1,960,317

RADIO SPARK PLUG

Filed Feb. 25, 1933

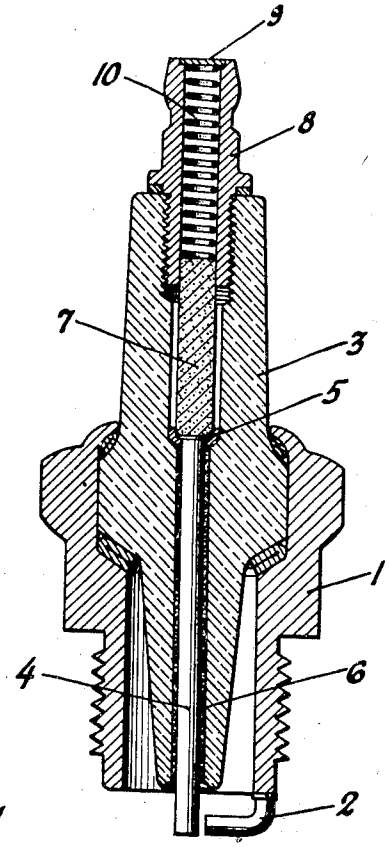


Fig. 1

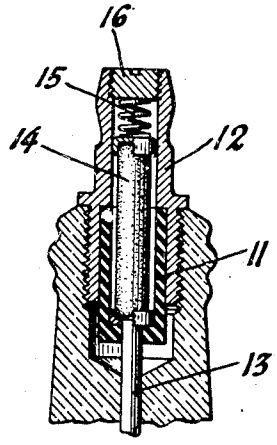


Fig. 2

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Patented May 29, 1934 1,960,317

UNITED STATES PATENT OFFICE

1,960,317

RADIO SPARK PLUG

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Application February 25, 1933, Serial No. 658,477

5 Claims. (Cl. 123—169)

This invention relates to spark plugs and more particularly to an improved arrangement and assembly of spark plug parts.

Spark plugs have been constructed heretofore in which the central electrode is made in sections with one of the sections of a material suitable for damping or suppressing the electrical discharges in the operation of the engine ignition system, and which interfere with communication through near by radio apparatus. The suppressor section ordinarily used for the purpose of reducing radio interference consists of a stick-like element of carbon or the like, having the proper degree of conductance or resistance usually of approximately 25,000 ohms resistance, and permanently cemented in the bore of the insulator core with its opposite ends in electrical contact with the metallic terminal sections of the electrode. Among the difficulties encountered in the manufacture of such plugs is the lack of uniformity in the finished product, due, in a measure, to the fact that the suppressor section, which is somewhat porous, absorbs moisture and cement during the drying out or setting process; which changes its character and action, depending on the degree of permeation.

One of the objects of the present invention is to promote uniformity of product by the provision of an improved assembly of electrode sections in the insulator core, by which is eliminated the necessity for cementing or otherwise permanently fixing the suppressor section in place, whereby no change occurs in the composition of the suppressor and its subsequent action.

Another object is to provide a construction in which the fragile suppressor section may be easily replaced if it becomes broken or cracked in use, so as to avoid the necessity for discarding the entire spark plug, as is the case when the suppressor is permanently cemented in the core.

Additional objects and advantages of the construction will be apparent in the course of the following detail description, having reference to the accompanying drawing, wherein Figure 1 is a vertical sectional view of a spark plug assembly embodying the invention, and Figure 2 is a sectional view illustrating a slight modification.

Referring to the drawing, the numeral 1 indicates a metallic shell or grounding member, having a screw threaded skirt for engagement with corresponding threads in the spark plug opening of the engine, and carrying an electrode wire 2. The shell 1 encloses an insulator core 3, of porcelain or the like, having a central shouldered bore to receive the sectional electrode. This electrode in the present instance, includes a conductor wire or sparking terminal 4, having one end projecting beyond the core for cooperation with the side electrode 2 to afford the spark gap, with its opposite end carrying a socketed cup member 5 seating on the shoulder of the bore. The cup 5 may be secured to the wire 4 by peening over the end of the wire, and the wire is shown fixed within the bore by a thin layer or film of cement 6. Seated within the cup 5 is one end of the suppressor section 7, whose opposite end is telescopically received within the bore of a hollow terminal connector section 8, which may project into the bore and screw threadedly held in position. The outer end of the opening through the terminal 8 may be closed by a suitable plug 9, which may be expanded or threaded into engagement with the terminal and which provides a seat for one end of a coil spring 10, whose opposite end seats against the suppressor element 7 to maintain it in tight engagement with the socket 5.

In assembling the core and electrode, preferably before the core is secured in the shell 1, the wire 4 and its cap 5 may be introduced into the bore from the outer end, and after the cap 5 is seated on its shoulder the body of cement 6 is injected under pressure from the bottom to completely fill the space between the wire 4 and the core 3 At the same time, cement may be placed on the interengaging screw threads of the core and terminal 8 and these parts threaded home. Either before or after the cement has dried, the suppressor section 7 may be introduced through the bore of the terminal 8 followed by the spring 10, which is placed under compression by the application of the closure plug 9. In lieu of the open ended bore through the terminal 8, a socketed terminal may be employed, in which event the suppressor and follow-up spring would be inserted in the bore of the core and terminal, respectively, prior to the mounting of the connector terminal.

As an alternative construction, the sparking terminal and connector terminal may be connected as a unit prior to their assembly with the core, in which event the connection therebetween would involve a suitable insulator. A construction of this sort is illustrated in Figure 2, where 11 indicates a cup-shaped member of bakelite or the like, whose skirt is received within the enlarged lower portion of the bore of the connector terminal 12, and whose apertured base forms a seat for the head of the pin 13 projecting therethrough. These parts may be cemented in the core in the usual fashion. Within the cup 11 and bore of the terminal 12 is located the suppressor 14 bearing

on the enlarged head of pin 13 and held in place by the compression spring 15 seating at opposite ends against the suppressor and closure plug 16.

From the above description, it will be apparent that the suppressor, which connects the terminal sections for the flow of current therethrough, is free from any direct connection with the insulator core, so that it may be readily replaced if broken, and that it is not subjected to any change in its composition in its application and assembly.

I claim:

1. In a spark plug, a grounding shell, an insulator core having a shouldered bore, an electrode carried within the lower portion of the bore and projected beyond the core to provide a sparking terminal, a socketed head on the electrode, resting on the shoulder of the bore, cementitious material fixing the electrode within the bore, a stick-like element formed of a material suitable for damping electric oscillations and seated within the socketed head for electrical connection with the electrode, a hollow terminal connector at the outer end of the core, telescopically receiving the stick-like element, a closure plug for the open end of the hollow terminal connector, and a coil spring interposed between said plug and the element to main ain electrical connection between the parts.

2. A spark plug having a grounding shell and a core, a sectional electrode including a sparking terminal fixed at one end of the core, a hollow connector terminal fixed at the opposite end of the core in spaced relation with the sparking terminal, an oscillation damping element receivable through the hollow terminal for contact with the sparking terminal, a spring seating at one end on the element and means closing the outer end of the hollow terminal and forming a seat for the opposite end of said spring.

3. A spark plug having a grounded shell and an insulator core, a central electrode within the core, including a cup-shaped element of insulating material, a head pin projecting through the base of the cupped-element, a hollow terminal connector receiving the skirt of the cupped element and forming therewith a pocket, an oscillation damping element within said pocket in contact with the head of said pin, a closure device for the outer end of the pocket and a spring bearing at opposite ends on said closure device and said oscillating damping element.

4. In a spark plug, an insulator core having a bore therethrough provided with an enlargement at its outer end, a hollow binding post fitted to said enlargement, an electrode section extending through the bore, an insulator member connecting the electrode section and binding post and sealing the hollow interior of the post and a suppressor element enclosed within the hollow post to electrically bridge the post and electrode section.

5. In a spark plug, an insulator core having a shouldered bore, an electrode section of wire extending through the smaller portion of the bore and having a recessed head seated on a shoulder of the bore, fixing cement below the head fastening the wire and core and sealing the bore, a hollow binding post rigidly mounted at the outer end of the bore, a suppressor electrode section extending into the hollow binding post at one end and seating within the recess of the head at its other end, and a coil spring within the post bearing on the suppressor section to maintain good electrical contact through the parts.

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