

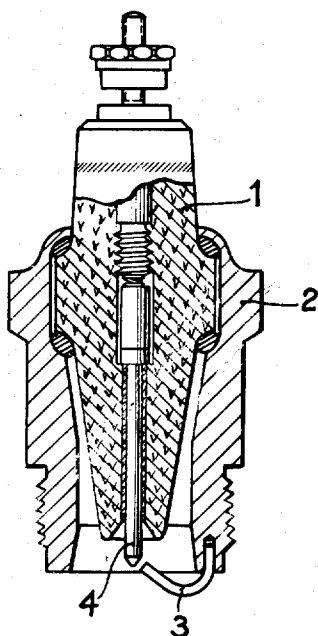
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W. DORN

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SPARKING PLUG

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SPARKING PLUG

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6 Claims. (Cl. 123—169)

The present invention relates to sparking ignition apparatus for internal combustion engines.

In using wireless apparatus in vehicles, the driving engine of which is operated by spark ignition, it is necessary to screen or shield the sources of interference to avoid interference by the ignition sparks. Such a screen may be obtained either by a metallic sheathing on all sides of all parts carrying high tension, or by locally limiting the disturbances by incorporating high ohmic resistances in the ignition current circuit. These resistances, which are usually arranged on or in the sparking plug, have the task of allowing the sharp break in tension at the plug at the moment of the passage of the spark to reach the cables only in a very weakened condition. The employment of series resistances entails, however, a loss in ignition energy, which manifests itself by a reduction in size of the head of the spark, which can be distinctly ascertained by test on an eccentric spark-gap. This is, however, undesirable, because the head of the spark in normal working plays an important part in keeping the plugs clear of soot.

In order to keep the head of the spark large in spite of the series resistance, either the part of the lead between the sparking plug and one end of the resistance must have a larger capacity relative to earth, or a condenser must be connected in parallel to the sparking plug. As however it is difficult to arrange such a condenser on the sparking plug, and it is exposed there to damage, according to the invention the capacity is transferred into the sparking plug itself by making the insulator from a material which has a dielectric constant of more than 15. The part of the insulator which is of decisive importance for the capacity of the portion of the lead situated between the sparking plug electrode and resistance should, at least, be made from such known materials as contain, for example, titanium oxide and in which dielectric constants up to 100 and more can be obtained. Preferably, the resistance will also be incorporated in the sparking plug. The capacity can then also be increased by suitable shaping.

In the accompanying drawing 1 denotes an insulator for a sparking plug formed of a material having a dielectric constant of more than 15. For instance it may consist of magnesiummetasilicate having a dielectric constant of 6.5 and titanium oxide having a dielectric constant of 173. Two examples of mixtures embodying the invention are as follows:

(1) 70 parts titanium oxide, 20 parts soapstone

(magnesiummetasilicate), together with suitable binding and/or fluxing materials, such as 6 parts blue clay, 2 parts barium carbonate and 2 parts calc-spar, the dielectric constant of the mixture being about 35;

(2) 45 parts titanium oxide, 45 parts soapstone (magnesiummetasilicate), together with suitable binding and/or fluxing materials such as 7 parts ball clay and 3 parts calc-spar, the dielectric constant of the mixture being about 20. The spark plug body is marked with number 2, and the grounded electrode with number 3. 4 is the centre electrode and 5 is the high resistance.

In this way, an arrangement for preventing interference is made possible, which has the advantage, on the one hand, as compared with the metallic sheathing on all sides of all parts carrying high tension, that it is substantially cheaper, and in which on the other hand, the drawback of the sooting-up of the plug, which occurs only when using series resistances, is avoided, without additional expense being incurred. A substantial technical advance is thus obtained, which is adapted to greatly promote the installation of radio sets in motor vehicles.

I declare that what I claim is:

1. In a sparking plug for internal combustion engines for use in conjunction with a conductor incorporating a high ohmic resistance to avoid interference in wireless apparatus, an insulator formed of a material having a dielectric constant of more than 15.

2. In a sparking plug for internal combustion engines for use in conjunction with a conductor incorporating a high ohmic resistance to avoid interference in wireless apparatus, an insulator having a dielectric constant of more than 15 and formed at least partly of a material containing titanium oxide.

3. In a sparking plug for internal combustion engines for use in conjunction with a conductor incorporating a high ohmic resistance to avoid interference in wireless apparatus, an insulator formed at least partly of a material present in sufficient quantity so that said insulator will have a dielectric constant of more than 15.

4. In an ignition apparatus for internal combustion engines employed adjacent wireless apparatus, a sparking plug lead incorporating a high ohmic resistance and a sparking plug having an insulator formed at least partly of a material present in sufficient quantity so that said insulator will have a dielectric constant of more than 15.

5. In a sparking plug for internal combustion

engines for use in conjunction with a conductor incorporating a high ohmic resistance to avoid interference in wireless apparatus, an insulator formed at least partly of a material containing titanium oxide present in sufficient quantity so that said insulator will have a dielectric constant of more than 15.

6. In a sparking plug for internal combustion engines for use in conjunction with a conductor incorporating a high ohmic resistance to avoid interference in wireless apparatus, an insulator formed of magnesiummetasilicate and titanium oxide.

WALTER DORN.

CERTIFICATE OF CORRECTION.

Patent No. 2,115,666.

April 26, 1938.

WALTER DORN.

It is hereby certified that the name of the assignee in the above numbered patent was erroneously described and specified as "Robert Bosch Aktiengesellschaft" whereas said name should have been described and specified as Robert Bosch Gesellschaft mit beschränkter Haftung, of Stuttgart, Germany, as shown by the record of assignments in this office; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 24th day of May, A. D. 1938.

(Seal)

Henry Van Arsdale,
Acting Commissioner of Patents.

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