

PATENT SPECIFICATION

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(54) SPARKING-PLUG CAP FOR AN INTERNAL COMBUSTION ENGINE SPARKING PLUG

(71) We, KABEL- UND METALLWERKE GUTENHOFFNUNGSHUTTE AKTIENGESELLSCHAFT, a body corporate organised under the laws of Germany, of 3000 Hannover, Postfach 260, Vahrenwalder Strasse, 271, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a sparking-plug cap for an internal combustion engine sparking plug, the cap being carried on an end portion of an insulated electrical lead, which cap incorporates a contact means which makes contact with the conductor of the lead and which is adapted to make contact also with a contact means forming part of the sparking plug.

Many forms of sparking-plug cap as just mentioned are known, and they almost all comprise a body of a thermoset synthetic resin material. Generally, the known sparking-plug caps do meet the relevant requirements with respect to strength, but they are more brittle than could be desired; in consequence, and particularly on account of the fact that the body and contact means of the cap, and an interposed resistance, have to abut directly against one another, fractures easily occur in the cap body, so that the cap fails. Furthermore, the rigid construction of the cap body does in practice leave gaps between the cap body and the lead, through which gaps moisture can reach the contact means, with the result that there are creep currents which render the cap practically useless. In addition, there is a danger that the lead, where it emerges from the cap body, may become kinked; thus if it is carelessly handled the conductor may break at this point.

It is an object of the present invention to provide a sparking-plug cap which is easily produced, which provides protection for the

contact means against moisture, and which provides protection against kinking of the lead.

According to the present invention, we provide a sparking-plug cap for an internal combustion engine sparking plug, the cap being carried on an end portion of an insulated electrical ignition lead, which cap incorporates a contact means which makes contact with a conductor of the lead and which is adapted to make contact also with a contact means forming part of the sparking plug, the sparking-plug cap comprising a body of a thermoset synthetic resin material having a central polygonal bore which accommodates the lead and having a filling composed of an elastomer composition which fills all cavities between the body and the lead. By virtue of the polygonal configuration of its bore, a sparking-plug cap according to the present invention enables the lead to be automatically centred in the cap body. Also, the fact that the cavities between the body and the lead are filled with the elastomer composition means that the lead is securely held over a large area of its surface, so that there is no need to provide for any additional tension-relief means. The provision of the filling composed of an elastomer composition means also that there is no risk of kinking where the lead emerges from the cap body. According to a preferred feature of the invention, the central polygonal bore is triangular; with this cross-section the cavities between the body and the lead are large enough to ensure that the filling can be satisfactorily introduced into them.

Two embodiments of the invention are shown in the accompanying drawing, in which

Figure 1 is a view in axial section of a first sparking-plug according to the invention,

Figure 2 is a section on the line II—II of Figure 1.

[Price 33p]

Figure 3 is a view in axial section of a second sparking-plug cap according to the invention, and

5 Figure 4 is a section on the line IV—IV of Figure 3.

The sparking-plug cap shown in Figures 1 and 2 comprises a body 1 composed of a thermoset synthetic resin composition, which body has a bore 2 of a triangular cross-section (Figure 2). An ignition lead 3 is shown in position in the bore 2; the lead 3 is in fact automatically centred by the surfaces of the bore 2. The bore 2 also accommodates a resistor 4 and a contact means 5 intended to abut against a complementary contact means on a sparking plug whose intended position is indicated at 6; it will be seen that the body 1 has, at its end remote from the lead 3, a recess which will receive this sparking plug. When the lead 3 has been introduced into the bore 2 in the body 1, all cavities left between the lead 3, the resistor 4 and the body 1 are filled with an elastomeric composition, forming a filling 7. This filling 7 is forced into close contact with the body 1 and the lead 3, securely enclosing the lead 3 over a large area. For the purpose of anchoring the filling 7, the upper portion of the body 1 is provided with bores into which the filling 7 is forced, with the formation of protrusions 8.

35 Figures 3 and 4 show a sparking-plug cap which is screened to provide close-range suppression; for this purpose, it is provided with a metal sleeve 9 enclosing the body 1. For the purpose of securing the sleeve 9 on the body 1, the surface of the body 1 is provided with longitudinally extending depressions 10 (Figure 4). The cavities

afforded by the depressions 10 are filled by the filling 7. Also, at the end of the body 1 remote from the lead 3, an elastic ring 11 is applied to seal the body 1 with respect to the sparking plug to which the cap is applied.

WHAT WE CLAIM IS:—

1. A sparking-plug cap for an internal combustion engine sparking plug, the cap being carried on an end portion of an insulated electrical ignition lead, which cap incorporates a contact means which makes contact with the conductor of the lead and which is adapted to make contact also with a contact means forming part of the sparking plug, the sparking-plug cap comprising a body of a thermoset synthetic resin material having a central polygonal bore which accommodates the lead and having a filling composed of an elastomer composition which fills all cavities between the body and the lead.

2. A sparking-plug cap according to Claim 1, wherein the central polygonal bore is triangular.

3. A sparking-plug cap according to Claim 1 or 2, wherein the surface of the said body has longitudinally extending depressions, the said body is enclosed by a screen in the form of a metal sleeve, and the cavities between the said body and the sleeve are also filled by the said filling.

4. A sparking-plug cap according to Claim 1, substantially as described with reference to Figures 1 and 2, or Figures 3 and 4, of the accompanying drawings.

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Figure 3 is a view in axial section of a second sparking-plug cap according to the invention, and

5 Figure 4 is a section on the line IV—IV of Figure 3.

The sparking-plug cap shown in Figures 1 and 2 comprises a body 1 composed of a thermoset synthetic resin composition, which body has a bore 2 of a triangular cross-section (Figure 2). An ignition lead 3 is shown in position in the bore 2; the lead 3 is in fact automatically centred by the surfaces of the bore 2. The bore 2 also accommodates a resistor 4 and a contact means 5 intended to abut against a complementary contact means on a sparking plug whose intended position is indicated at 6; it will be seen that the body 1 has, at its end remote from the lead 3, a recess which will receive this sparking plug. When the lead 3 has been introduced into the bore 2 in the body 1, all cavities left between the lead 3, the resistor 4 and the body 1 are filled with an elastomeric composition, forming a filling 7. This filling 7 is forced into close contact with the body 1 and the lead 3, securely enclosing the lead 3 over a large area. For the purpose of anchoring the filling 7, the upper portion of the body 1 is provided with bores into which the filling 7 is forced, with the formation of protrusions 8.

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afforded by the depressions 10 are filled by the filling 7. Also, at the end of the body 1 remote from the lead 3, an elastic ring 11 is applied to seal the body 1 with respect to the sparking plug to which the cap is applied.

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1. A sparking-plug cap for an internal combustion engine sparking plug, the cap being carried on an end portion of an insulated electrical ignition lead, which cap incorporates a contact means which makes contact with the conductor of the lead and which is adapted to make contact also with a contact means forming part of the sparking plug, the sparking-plug cap comprising a body of a thermoset synthetic resin material having a central polygonal bore which accommodates the lead and having a filling composed of an elastomer composition which fills all cavities between the body and the lead.

2. A sparking-plug cap according to Claim 1, wherein the central polygonal bore is triangular.

3. A sparking-plug cap according to Claim 1 or 2, wherein the surface of the said body has longitudinally extending depressions, the said body is enclosed by a screen in the form of a metal sleeve, and the cavities between the said body and the sleeve are also filled by the said filling.

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